TRANSDUCTION

USER'S MANUAL

Version 3.0
03/29/10

TR-5195F FANLESS PANEL/RACK MOUNT INDUSTRIAL
PC WITH INTELATOM PROCESSOR AND
19" LCD TOUCH SCREEN

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Important Information

The information in this document is subject to change without notice.

All relevant issues have been considered in the preparation of this document.

Should you notice an omission or any questionable item in this document, please feel free to notify Transduction.

Regardless of the foregoing st atement, Transduction assumes no responsibility for any errors that may appear in this document nor for results obtained by the user as a result of using this product.

Return policy

Warranty is 5 years for the whole system from the date of purchase. Product s returned for repair must be accompanied by a Return Material Authorization (RMA) number, obtained from Transduction prior to return. Freight on all returned items must be prepaid by the customer. The customer is responsible for any loss or damage caused by the carrier in transit.

To obtain an RMA number, call us at 905-625-1907. We will need the following information:

· Return company address and contract

· Model name, model number and serial number

· Description of the failure

Mark the RMA number clearly on the outside of each box, include a failure report and return the product to:

Transduction

5155 – 23 Spectrum Way

Mississauga ON Canada L4W 5A1

Attn: RMA Department

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Introduction

This manual is designed to give you information on the TR-5195F industrial PC.The topics covered in this chapter are as follows:

TR-5195F Description

The TR-5195F is a fanless version of our dependable TR-5190 panel/rack mount industrial computer. TR-5195F has been designed to meet long term demand of a high performance PC for electrical utility sub-stations and industrial automation. It is powered by a reliable telecom grade single board computer with Intel ATOM processor at 1.6GHz.

This industrial PC can be supplied with 2GB memory, high speed 2.5" SATA flash drive with a capacity of up to 128GB. It can operate at a temperature range of 0 ~ 50ºC, under full system load. Internal heatsinks with air convection chimney have been used to remove heat from the processor and the chipset.

Panel Mount Version

Rack Mount Version

Back View

TR-5195F Specifications

Model	TR-5195F Fanless Panel/Rack Mount Industrial PC With NEMA 4 Steel Baked Epoxy Black Front Panel
Processor	1.6GHz Intel Atom N270 Processor Cooling - internal heatsinks with air convection chimney
Chipset	Intel 945GSE and ICH7M
BIOS	Award PnP Ver. 6.0
Display	19" TFT LCD, resolution 1280 x 1024 (SXGA) Backlight MTBF > 50,000 hours Brightness - 300cd/m², Contrast ratio - 750:1 (brightness and contrast software adjustable) USB resistive touch screen
Memory	2GB high temperature DDR2 533MHz
Drive Bay	Internal 2.5" SATA high speed, high temperature flash drive up to 256GB
Video	Intel GMA950 Graphic Engineinterface, DB15 SVGA connector
Ethernet	2 x Realtek RT8111C Gigabit LAN ports
External I/O	1 x SVGA DB15 - mirror of LCD 1 x serial RS232 port 1 x parallel port 4 x USB 2.0 2 x RJ-45 LAN ports PS2 keyboard and mouse Optional BNC IRIG A/B port Optional up to 4 isolated RS-232 or RS-422/485 serial ports
System Monitor	Processor temerature, system temperature and DC power voltages Watchdog timer - 1 ~ 255 seconds
Power Requirements	Input voltage - 100 ~ 240VAC @ 50/60Hz Optional DC input power - 24V, 48V, 125V and 250V MTBF > 150,000 hours UL/cUL approved
Chassis Colour	Black, OEM colour optional
Dimensions	17.75" (W) x 15.25" (H) x 4.5" (D) Rack mount version is 8U high
Weight	Net weight - 22lbs, gross weight - 37lbs, CUFT - 6
Operating Temperature	0 ~ 50ºC (32º ~ 122ºF) or 60ºC for 2 hours @ 100% system load
Humidity	10 ~ 95% relative humidity, non-condensing
Shock	Shock - 25G, vibration - 5G
Warranty	5 year warranty
Ordering Information	TR-5195F Fanless computer with Intel ATOM 1.6GHz processor and 2.5" SATA SSD or SATA hard drive
Options	8U rack mount version - allows the TR-5195F to be mounted in a standard 19" rack configuration, includes 3 USB ports Solid State Flash drives up to 256GB Safety glass, no touch screen 178º viewing angle LCD Up to 4 x isolated RS-232 or RS-422/485 COM ports
	Compatible with Windows XP 32-bit, Windows 2000, QNX and LINUX kernel 2.4.16 or above

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TR-5195F SBC

This chapter provides detailed information on the TR-5195F Single Board Computer. The topics covered are:

2 Section 1

Introduction

This section provides an overview on the TR-5195F
Single Board Computer. The topics covered are:

❖Specifications

Processor
- Intel Atom processor N270 on board.
- 1.6GHz Core Speed with Hyper-threading support.
- 533MHz front side bus speed.

BIOS
- Award Standard PnP Flash BIOS 6.0.
- 8Mbit FlashROM with BootBlock for Fail-safe.

System Memory
- Two DDR2 SO-DIMM Sockets.
- DDR2-533 non-ECC memory2.0 GB.

Chipset
- Intel 945GSE and ICH7M chipset.

Video
- Intel 945GSE Integrated GMA950 graphic engine.
- One D-Sub Female connector for CRT displays.
- One 40-pins connector for Dual 18/24-bits LVDS LCD.
- One 20-pins connector for DVI displays (option).
- One Mini-DIN 7-pins connector to support TV-OUT
- Support dual Independent display, Display devices can be selectable by BIOS or graphic drivers.

10/100M/1000M Ethernet
- Two Realtek RT8111C on board for Dual Gigabit LAN support.

On Board I/O
- Winbond 83627HF LPC I/F Super I/O chip.
- Six serial ports as COM1~COM6. COM2 is RS232/422/485 selectable by jumper.
- COM1 and COM2 are D-Sub 9-pins male on rear panel. Pin9 is powered with either +5V or +12V by jumper.
- COM3~COM6 are pin-headers for internal connections.
- One Parallel port supports SPP/ECP/EPP mode.
- 1 x IrDA port.

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- 1 x IrDA port.

PIDE and SATA
- PIDE controller built in ICH7M support up to UltraDMA mode 5 or ATA100 speed.
- One standard 44-pins box header to supports 2.5" HDD or DOM Flash Disk.
- Two SATA connectors from ICH7M support SATA-I and SATA-II devices.
- One 50-pins CF-II socket for Compact Flash Card.

Watchdog Timer
- Programmable watchdog timer for 1~255 seconds.

CMOS
- On-board RTC with 242 bytes of Battery-back CMOS RAM.

Audio
- RealTek ALC888 High-Definition Audio chip on-board.
- Two Audio-Jacks on rear for Audio Line-OUT and MIC.

Power
- Single DC 12V input with 4-pins Mini-DIN connector.
- Supplies +5V and +12V output power for peripheral devices and LCD panel

Software Compatibility
- Microsoft windows: Win2K, Win XP 32-bits, Vista 32-bits.
- Linux 32-bits and DOS 6.22.

Cooling
- Two cooling FAN connectors close to CPU for CPU cooler and System FAN.

Dimensions
- 190mm (W) x 135mm (L).
- 4 screw holes on four corners.

Operating Temperature
- 0 to 50 °C operating range.
- Relative Humility: 5~95%, non-condensing.

2 Section 2

Jumper Settings

This section provides information on the TR-5195F SBC jumper settings. The topics covered are:

Jumper Locations on the TR-5195F SBC

JP1, JP2, JP3: FSB SPD Selection

JP1 and JP2 and JP3 allow users to select the CPU FSB speed. It can be 533M or 667M. User should select the correct FSB speed to make their CPU run on correct speed and ensure the system runs stably.

FSB SPD	JP1~JP3
533M	JP3 JP2 JP1
667M	JP3 JP2 JP1

JP4: Clear CMOS RAM Data

This 3-pin Jumper allows the user to disconnect the built-in 3V battery power to clear the information stored in the CMOS RAM. To clear the CMOS data:
(1) Turn off the system power,
(2) Remove Jumper cap from pin1&2,
(3) Short the pin2 and pin3 for three seconds,
(4) Put Jumper cap back to pin1 & 2.
(5) Turn on your computer,
(6) Hold Down <Delete> during boot up and enter BIOS setup to enter your preferences.

COMS	NORM	CLR
JP4	1-2	2-3

JP5: CF Card Mode Selection

This Jumper is to select the CF works as Secondary Channel Master device or Slave device.

Master	Slave
□ □	□ □
JP5	JP5
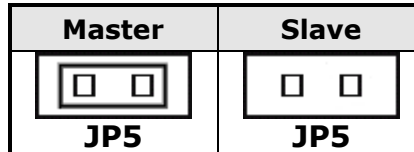
JP6, JP7: COM Power Selection

JP6, JP7 can be used to select the COM supple power: +5V, Ring-IN or +12V.
JP6: COM1 Pin9 power or Ring-IN
JP7: COM2 pin9 power or Ring-IN

+5V	RI	+12V
2	4	6
□□ □	□□□	□□ □
□□ □	□□□	□□ □
1	3	5
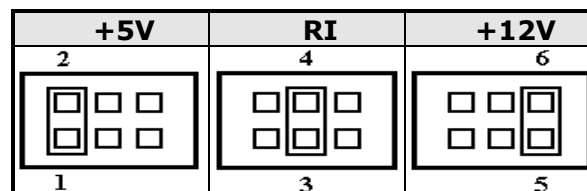
JP8: COM6 Power Pin (Pin9)

JP8: COM6 Pin9 power.

+5V	+12V
□ □ □	□ □ □
1	1
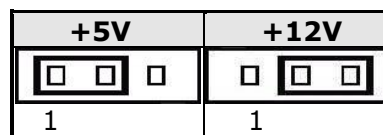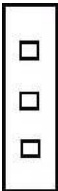
LCDPWR: LCD PANEL Power Selection
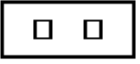
LCDPWR can be used to select the Panel LCD supple power: +3.3V or +5V.The default setting is on +3.3V.User need to check the LCD panel spec and adjust this jumper to make Panel work in specified power rail. This Jumper serves LVDS LCD connector.

LCDPWR	+5V	+3.3V
1	1	1

AT MODE: AT Mode Selection

AT Mode	ATX Mode
1	1

COM2MODE: RS232/RS422/RS485
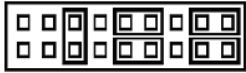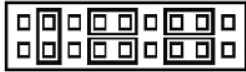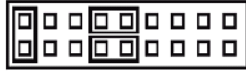
COM2 support multi-protocols include RS232, RS422 and RS485, while COM3, COM4. COM6 and COM6 support diffused RS232 protocol.
The Protocols of COM2 can be set up through jumpers.
COM2MODE: COM2 Protocols selection.
The pin-out for each mode is illustrated on next chapter.

COM2MODE1	I/F TYPE
2 18 1 17	RS-232
2 18 1 17	RS-422
2 18 1 17	RS-485

2 Section 3

Connectors

This section provides information on the TR-5195F SBC internal and external connectors. The topics covered are:

Connector Locations on the TR-5195F SBC
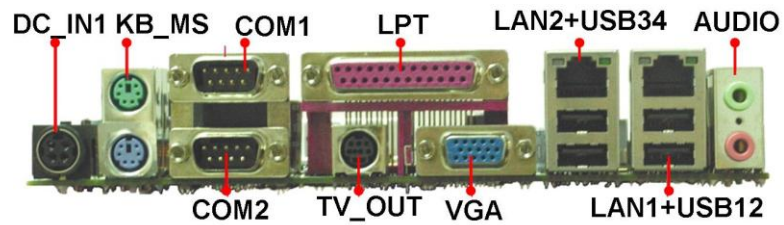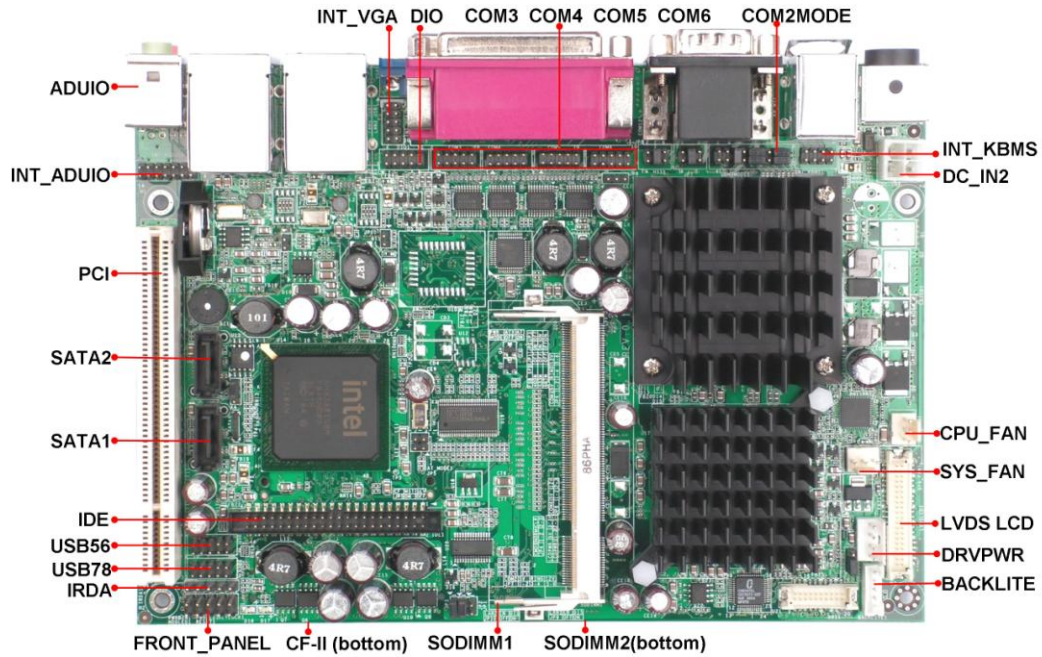
Front Panel Connector

The front panel of the case has a control panel, which provides light indication of the computer activities and switches to change the computer status.
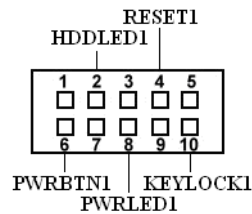
➢ **ATX Power ON/OFF Button**
    This 2-pin connector acts as the "Power Supply On/Off Switch" on the TR-5195F SBC.
    When pressed, the switch will force the Main board to power on. When pressed again, it will force the main board to power off.
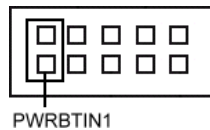
PWR BTN Pin #	Signal Name
1	PWR–BTN
6	GND

➢ **IDE Hard Disk LED Connector**
    This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.
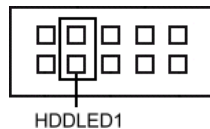
IDE LED Pin #	Signal Name
2	VCC
7	HDDLED

Power-On LED
This connector allows users to connect to Front Panel Power indicator.
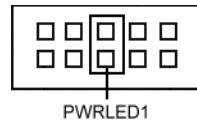
PWR LED Pin #	Signal Name
3	VCC
8	GND

RESET Switch
The reset switch allows the user to reset the system without turning the main power switch off and then on. Orientation is not required when making a connection to this header.
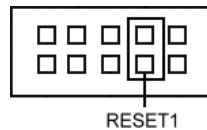
RESET Pin #	Signal Name
4	Reset
9	GND

KEYLOCK Switch
The keylock switch, when closed, will disable the keyboard function.
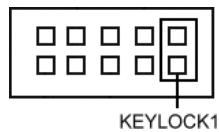
RESET Pin #	Signal Name
5	KEYLOCK
10	GND

BACKLIGHT Connector
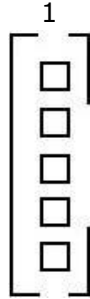
Pin #	Signal Name
1	+12V
2	GND
3	Brightness
4	ON/OFF
5	GND

TV-OUT Connector
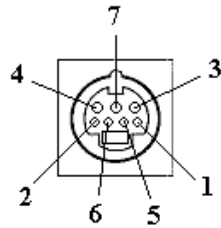
Pin #	Signal Name
1	GND
2	GND
3	LUMA
4	CHOMA
5	CVBS
6	GND
7	NC

IRDA Connector

This connector is used for an IRDA connector for wireless communication.

```
+5V   IRTX  IRRX
 ┌──┬──┬──┬──┐
 │□ │■ │□ │□ │
 └──┴──┴──┴──┘
      CIRRX   GND
   1
```
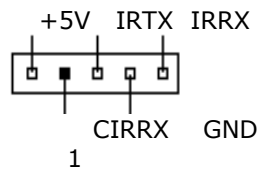
IrDA Pin #	Signal Name
1	+5V
2	FIR
3	IR-RX
4	GND
5	IR-TX

IDE Connectors

```
43                                    1
 ┌─────────────────────────────────┐
 │ ▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯ │
 │ ▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯ │
 └─────────────────────────────────┘
44                                    2
```
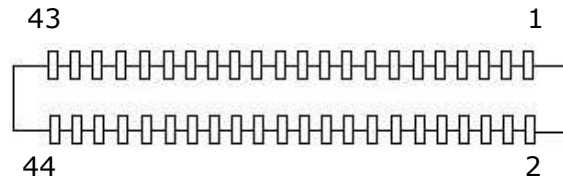
Primary IDE Connector

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host PU 0
DACK	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	P66DET
Address 0	35	36	Address 2
Chip select 1	37	38	Chip select 3
Activity LED	39	40	GND
VCC	41	42	VCC
GND	43	44	NC

COM1 Serial Ports

COM1, a 9-pin D-Sub male connector, is the onboard COM1 serial port of the TR-5195F SBC. The following table shows its pin assignments.
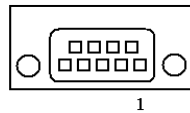
Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	+5V,Ring-IN or +12V

COM2 Serial Ports

COM2, a 9-pin D-Sub male connector, is the onboard COM2 serial port of the TR-5195F SBC. The following table shows its pin assignments.
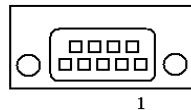
Pin #	RS232 Mode Signal Name	RS422/RS485 Mode Signal Name
1	DCD, Data carrier detect	TX- (422/485)
2	RXD, Receive data	TX+ (422/485)
3	TXD, Transmit data	RX+ (422)
4	DTR, Data terminal ready	RX- (422)
5	GND, ground	GND
6	DSR, Data set ready	N.C.
7	RTS, Request to send	N.C.
8	CTS, Clear to send	N.C.
9	+5V,Ring-IN or +12V	N.C.

COM3, COM4,COM5 Serial Ports

COM3, COM4, COM5 a 10-pin header connector, is the onboard COM3, COM4, COM5 serial port of the TR-5195F SBC. The following table shows its pin assignments.
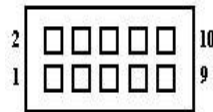
Pin #	RS232 Mode Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	Ring-IN
10	NC

COM6 Serial Ports

COM6, a 10-pin header connector, is the onboard COM6 serial port of the TR-5195F SBC. The following table shows its pin assignments.
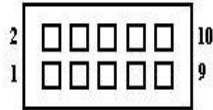
Pin #	RS232 Mode Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	+5V, +12V
10	NC

Pin9 is power pin to support devices required power. The voltage can be selected by jumper JP8.

LPT Port

The LPT parallel port is a standard DSUB 25-pins Female connector. It can be configured as EPP or ECP or SPP mode.
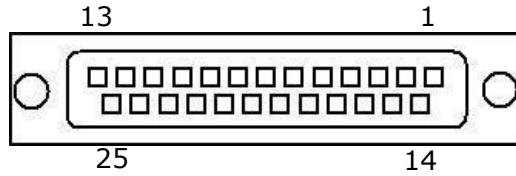
Signal Name	Pin #	Pin #	Signal Name
Strobe	1	14	AUTOFD
DATA0	2	15	ERROR
DATA1	3	16	INIT
DATA2	4	17	SLIN
DATA3	5	18	GND
DATA4	6	19	GND
DATA5	7	20	GND
DATA6	8	21	GND
DATA7	9	22	GND
ACK	10	23	GND
BUSY	11	24	GND
PE	12	25	GND
SLCT	13		

PS/2 Keyboard & Mouse Connector

The following table describes the pin assignment of PS/2 Keyboard and Mouse connector.
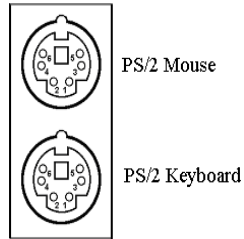
Pin #	Signal Name
1	Keyboard/Mouse data
2	NC
3	GND
4	5V
5	Keyboard/Mouse clock
6	GND

VGA Connector

The pin assignments of VGA CRT connector are as follows:
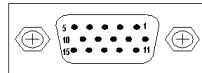
Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	DDC_DATA
HSYNC	13	14	VSYNC
DDC_CLK	15		

INT_VGA Connector

INT_VGA is for internal Video A/D board connection. The pin out is listed as below:
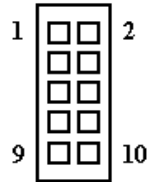
Signal Name	Pin #	Pin #	Signal Name
RED	1	2	GND
GREEN	3	4	GND
BLUE	5	6	GND
HSYNC	7	8	DDC_DATA
VSYNC	9	10	DDC_CLK

INT_KBMS Connector

KBMS is for internal input devices or MSR connection. The pin out is listed as below:
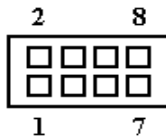
Signal Name	Pin #	Pin #	Signal Name
VCC	1	2	GND
KBDAT	3	4	MSCLK
KBCLK	5	6	MSDAT
GND	7	8	VCC

DC_IN1 Connector

DC_IN1 is for external power input connection to supply system power. It needs to be +12V input from AC/DC adapter within 5% tolerance.
Users should calculate the total system power required and use sufficient rating adapter.

Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+12V
GND	3	4	GND

DC_IN2 Power Connector

The CD_IN2 power connector is for internal connection to +12V input power. If you already have external +12V power input connected on DC_IN1, please leave DC_IN2 unconnected.
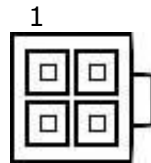
Pin #	Signal Name
1	GND
2	GND
3	+12V
4	+12V

CPU Fan Power Connector

This is a 3-pin header for the CPU fan.

Pin #	Signal Name
1	Ground
2	+12V
3	CPUPWM

System FAN Power Connector

This is a 3-pin header for the system fan.
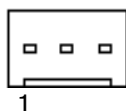
Pin #	Signal Name
1	Ground
2	+12V
3	SYSPWM

DRVPWR Connector

DRVPWR is output power connector to supply power required for peripheral device like Hard Disk, DOM, CDROM and etc.
The pin out is listed as below:

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

USB56 USB78 Connectors

The following table shows the pin outs of the USB56 USB78 connectors.
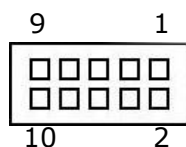
USB5,USB6 USB7,USB8 Pin#		Signal Name
10	1	N.C.
2	9	+5V
8	3	Ground
4	7	USB-
6	5	USB+

LANGbE+USBx2 Connectors

Below pictures show the location of LAN GbE ports and USB Type-A ports on the Combo GbE + USB connector.
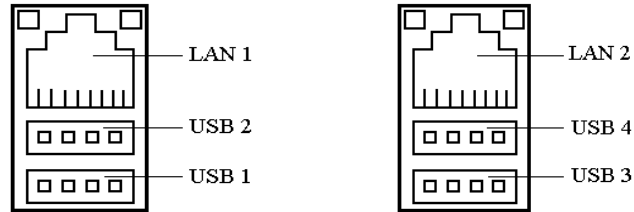
Before you connect your device(s) into USB connector(s), please make sure your device(s) such as USB keyboard, mouse, scanner, zip, speaker and etc., Have a standard USB interface. Also make sure your OS supports USB controller.
If your OS does not support USB controller, please contact OS vendor for possible patch or driver upgrade. For more information please contact your OS or device(s) vendors.

LAN- GBE Connectors

This connector is for the 10/100/1000Mbps Ethernet capability. The figure below shows the pin out assignments of this connector and its corresponding input jack.
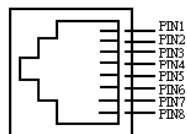
Pin #	Signal Name
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	MDI2+
6	MDI2-
7	MDI3+
8	MDI3-

LAN RJ45 LED1, 2

The LAN_LEDs on top of RJ45 are to display the current network connection status. The green color LED on the right-hand side shows the link status and TX/RX activity. The Orange/Green Dual color LED on the left-hand side indicates the operation mode, i.e. 10Base-T, 100Base-T or 1000Base-T.
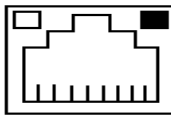
LNK/ACT	STATUS
YELLOW	Link
OFF	Disconnected
FLASH	Packets TX/RX
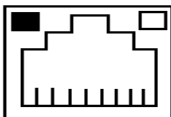
SPEED	MODE
ORANGE	1000 Mbps
GREEN	100 Mbps
OFF	10 Mbps

Audio Connectors

After install onboard audio driver, you may connect speaker to Line Out jack, microphone to MIC In jack.

Line Out

Mic In
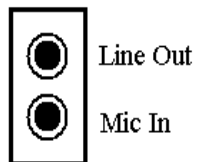
INT_AUDIO Connector
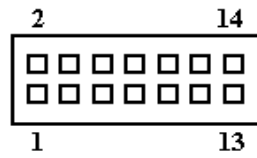
Pin #	Signal Name
1	LINE-IN-L
2	LINE-IN-R
3	GND
4	GND
5	LINEOUT-L
6	LINEOUT-R
7	GND
8	GND
9	MIC1-IN-L
10	MIC1-IN-R
11	LFE OUT
12	CENTER OUT
13	SURR OUTL
14	SURR OUTR

LVDS LCD Connector

The LCD panel, inverter for LCD LAMP, Touch-screen Serial Interface must be connected to this LVDS header, using the below described connector:
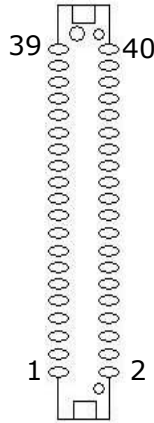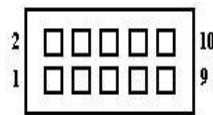
Signal Name	Pin #	Pin #	Signal Name
+12V	2	1	+12V
GND	4	3	GND
LCDVDD 5V/3.3V	6	5	LCDVDD 5V/3.3V
GND	8	7	GND
BCKLITE_ON	10	9	BRIGHTNES
LVDS_GND	12	11	LVDS_GND
CHB_TX0+	14	13	CHA_TX0+
CHB_TX0-	16	15	CHA_TX0-
LVDS_GND	18	17	LVDS_GND
CHB_TX1+	20	19	CHA_TX1+
CHB_TX1-	22	21	CHA_TX1-
LVDS_GND	24	23	LVDS_GND
CHB_TX2+	26	25	CHA_TX2+
CHB_TX2-	28	27	CHA_TX2-
LVDS_GND	30	29	LVDS_GND
CHB_TXC+	32	31	CHA_TXC+
CHB_TXC-	34	33	CHA_TXC-
LVDS_GND	36	35	LVDS_GND
CHB_TX3+	38	37	CHA_TX3+
CHB_TX3-	40	39	CHA_TX3-

DIO Connector
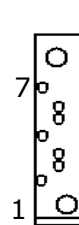
DIO port supports 8 digital I/O bits. Each bit can be configured as Input or output individually. All bits are 5V tolerant.

Signal Name	Pin #	Pin #	Signal Name
GND	1	2	+5V
DIO_0	3	4	DIO_4
DIO_1	5	6	DIO_5
DIO_2	7	8	DIO_6
DIO_3	9	10	DIO_7

SATA1, SATA2 Connectors

Pin #	Signal Name
1	GND
2	SATATX+
3	SATATX-
4	GND
5	SATARX-
6	SATARX+
7	GND

CF-II Connector
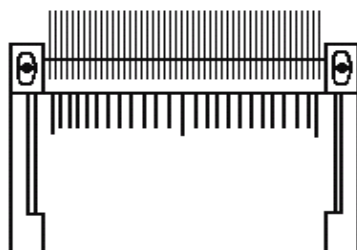
Signal Name	Pin #	Pin #	Signal Name
GND	1	2	PDD3
PDD4	3	4	PDD5
PDD6	5	6	PDD7
PCS1-	7	8	GND
GND	9	10	GND
GND	11	12	GND
VCC	13	14	GND
GND	15	16	GND
GND	17	18	PDA2
PDA1	19	20	PDA0
PDD0	21	22	PDD1
PDD2	23	24	N.C.
N.C.	25	26	N.C.
PDD11	27	28	PDD12
PDD13	29	30	PDD14
PDD15	31	32	PCS3-
N.C.	33	34	PDIOR-
PDIOW-	35	36	VCC
IRQ14	37	38	VCC
MST#_SLV	39	40	N.C.
PST1-	41	42	PIORDY
PDDREQ	43	44	PDDACK-
CF_LED-	45	46	N.C.
PDD8	47	48	PDD9
PDD10	49	50	GND

2 Section 4

BIOS Configuration

This section provides information on the BIOS that comes with TR-5195F SBC. The topics covered are:

BIOS Introduction

This Chapter discusses Award™ Setup program built into the TR-5195F BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The AwardBIOS™ installed in TR-5195F is a custom version of an industry standard BIOS. This means that it supports Intel Core 2 Duo in a standard IBM-AT compatible input/output system. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports. It also adds non-standard, features such as virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

The rest of this chapter is intended to guide you through the process of configuring your system using Setup.

Starting Setup

The AwardBIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or
2. by pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you
do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

Navigating through the menu bar
Use the left and right arrow keys to choose the menu you want to be in.

To display a sub menu
Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AwardBIOS™ supports an override to the CMOS settings which resets your system to its defaults. The best advice is to only alter settings that you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and TR-5195F manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

3.1 Main Menu

Phoenix-AwardBIOS CMOS Setup Utility	
►Standard CMOS Features	►Frequency/Voltage Control
►Advanced BIOS Features	Load Fail-Safe Defaults
►Advance Chipset Features	Load Optimized Defaults
►Integrated Peripherals	Set Supervisor Password
►Power Management Setup	Set User Password
►PnP/PCI Configurations	Save & Exit Setup
►PC Health Status	Exit Without Saving
Esc :Quit F10:Save & Exit Setup	↑ ↓ ← → : Select Item
Load Optimized Defaults	

(Figure 1)
Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items

The main menu includes the following main setup categories.

➢Standard CMOS Features

Use this menu for basic system configuration.

➢ Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

➢ Advance Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

➢ Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

➢ Power Management Setup

Use this menu to specify your settings for power management.

➢ PnP/PCI Configurations

Use this menu to set up the PnP/PCI configuration.

➢ PC Health Status

Use this menu to display the CPU temperature, FAN speed and voltages.

➢ Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.

➢ Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

➢ Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

➢ Set Supervisor/ User Password

Use this menu to set User and Supervisor Passwords.

➢ Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

➢ Exit Without Saving

Abandon all CMOS value changes and exit setup.

3.2 Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <Pg Dn> keys to select the value you want in each item.

```
           Phoenix-Award BIOS CMOS Setup Utility
                  Standard CMOS Features
  Date (mm :dd: yy)        Mon, Apr 28 2008    │ Item Help
  Time (hh: mm: ss)        15 : 35 : 35        │
                                               │ Menu Level ▶
                                               │
  ▶IDE Channel 0 Master    [None]              │ Change the day,
  ▶IDE Channel 0 Slave     [None]              │ month, year, and
  ▶IDE Channel 1 Master    [None]              │ century
  ▶IDE Channel 1 Slave     [None]              │
                                               │
  Drive A                  [None]              │
  Drive B                  [None]              │
                                               │
  Video                    [EGA/VGA]           │
  Halt On                  [All , But Disk/Key]│
                                               │
  Base Memory              639K                │
  Extend Memory            1038336K            │
  Total Memory             1039360K            │
 ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
 F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default
```

(Figure 2)

This table shows the selections that you can make on the Standard CMOS Menu

Item	Options	Description
Date	Month DD YYYY	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	HH : MM : SS	Set the system time
IDE Channel 0 Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 0 Slave	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 1 Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 1 Slave	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

IDE Channel 0, 1 Master/ Slave

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive. Figure 3 shows the IDE Channel 0 / Channel 1 master sub menu.

```
                Phoenix-Award BIOS CMOS Setup Utility
                         IDE Channel 0 Master
  IDE HDD                    [Press Enter]   Item Help
  Auto-Detection
                                             Menu Level ▶
  IDE Channel 0 Master    [Auto]
  Access Mode             [Auto]             To auto-detect the HDD's
                                             size, head…on this
                                             channel
  Capacity                 0 MB

  Cylinder                 0
  Head                     0
  Precomp                  0
  Landing Zone             0
  Sector                   0
  ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
  F5:Previous Value        F6:Fail-Safe Defaults            F7:Optimized Default
```

(Figure 3)

Use the legend keys to navigate through this menu and exit to the main menu. Use the Table listed below to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Channel 0 Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
The following options are selectable only if the 'IDE Channel 0 Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

Drive A/B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

None**(default)** 360K 1.2M 720K 1.44M 2.88M
                   5.25 in. 5.25 in. 3.5 in. 3.5 in.   3.5 in.

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA: For EGA, VGA, SEGA, SVGA or PGA monitor adapters. **(default)**
CGA 40: Power up in 40 column mode.
CGA 80: Power up in 80 column mode.
MONO: For Hercules or MDA adapters.

Halt On

This field determines whether the system will halt if an error is detected during power up.

All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
No errors	The system boot will not be halted for any error that may be detected.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a key- board or disk error; it will stop for all others. **(default)**

3.3 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

```
          Phoenix-Award BIOS CMOS Setup Utility
                 Advanced BIOS Features
  ►CPU Features              [Press        Item Help
                             Enter]
  ►Hard Disk Boot Priority   [Press Enter]  Menu Level ►
   Virus  Warning            [Disabled]
   CPU L1 &  L2  Cache       [Enabled]
   CPU L3  Cache             [Enabled]
   Quick  Power  On  Self  Test  [Enabled]
   First  Boot  Device       [Hard Disk]
   Second  Boot  Device      [CDROM]
   Third  Boot  Device       [LS120]
   Boot   Other Device       [Enabled]
   Swap  Floppy Drive        [Disabled]
   Boot Up  Floppy  Seek     [Enabled]
   Boot UP  Num Lock  Status [Off]
   Gate A20  Option          [Fast]
    Typematic Rate Setting   [Disabled]
  x Typematic Rate (Chars/Sec)  6
  x Typematic Delay (Msec)   250
   Security  Option          [Setup]
  x  APIC  Mode              Enabled
   MPS  Version  Control For OS  [1.4]
   OS Select For DRAM > 64MB [Non-OS2]
   Report No FDD For WIN 95  [No]
 ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
 F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default
```

(Figure 4)

➢CPU Feature

Phoenix-Award BIOS CMOS Setup Utility
CPU Feature

Delay Prior to Thermal	[16 Min]	Item Help
Limit CPUID MaxVal	[Disabled]	
C1E Function	[Auto]	Menu Level ►
Execute Disabled Bit	[Enabled]	

↑↓←→ : Move Enter: Select +/-/PU/PD: Value F10:Save Esc: Exit F1:General Help F5:Previous Value F6:Fail-Safe Defaults   F7:Optimized Default

(Figure 5)
Delay Prior to Thermal
Delay Prior To Thermal is set at 16 minutes as default, which means the board will wait 16 minutes before it activates the processor's integrated thermal control circuit.

The choice: 4 Min , 8 Min, 16 Min **(default)**, 32 Min.

Limit CPUID Max Val
The choice: Enabled, Disabled **(default).**

C1E Function
The choice: Auto **(default)**, Disabled

Execute Disabled Bit
The choice: Enabled **(default)**, Disabled

➢**Hard Disk Boot Priority**

Phoenix-Award BIOS CMOS Setup Utility
Hard Disk Boot Priority

1.Bootable Add-in Cards	Item Help
	Menu Level ▶
	Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.
↑↓←→ : Move Enter: Select +/-/PU/PD: Value F10:Save Esc: Exit F1:General Help F5:Previous Value F6:Fail-Safe Defaults F7:Optimized Default	
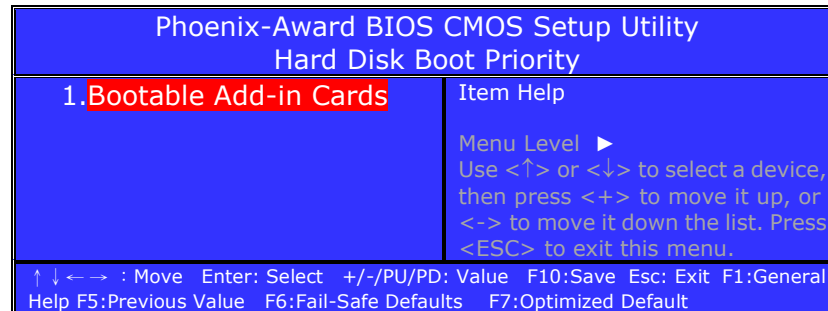
(Figure 6)

Bootable Add-in Cards

This is for setting the priority of the hard disk boot order when the
"Hard Disk" option is selected in the "[First/Second/Third] Boot Device "menu item.

Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection.
If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table. **(default)**

CPU L1 & L2 Cache

These two categories speed up memory access.
However, it depends on CPU/chipset design.

Enabled	Enable cache**(default)**
Disabled	Disable cache

CPU L3 Cache

This field is used to enable or disable the CPU's L3 cache.
The choice: Enabled **(default)**, Disabled.

Quick Power On Self Test

Allows the system to skip certain tests while booting.
This will decrease the time needed to boot the system.

Enabled	Enable quick POST**(default)**
Disabled	Normal POST

First/Second/Third Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.
The Choice: Floppy, LS120, Hard-Disk, ZIP100, CDROM, Disabled, USB-FDD, USB-ZIP, USB-CDROM, Legacy LAN.

Item	Default
First Boot Device	Hard-Disk
Second Boot Device	CDROM
Third Boot Device	LS120

Boot Other Device

When enabled, BIOS will try to load the operating system from other device when it failed to load from the three devices above.
The choice: Enabled **(default)**, Disabled.

Swap Floppy Drive

If the system has two floppy drives, choose "Enabled" to assign physical drive B to logical drive A and vice-versa.
The choice: Enabled, Disabled **(default)**.

Boot Up Floppy Seek

Selection of the command .Disabled. will speed the boot up. Selection of .Enabled. Searches disk drives during boot up.
The choice: Enabled **(default)**, Disabled

Boot Up Num Lock Status

Selects power on state for Num Lock.
The choice: On, Off **(default)**.

Gate A20 Option

The choice:
Normal: A pin in the keyboard controller controls GateA20.
Fast **(default)**: Lets chipset control GateA20.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.
The choice: Enabled, Disabled **(default)**.

If Typematic Rate Setting is [Enabled]
can choice Rate and Delay:

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a keystroke when you hold the key down.
The choice: 6 **(default)**, 8, 10, 12, 15, 20, 24, 30

Typematic Rate (Chars/Sec)
6 ….. [█]
8 ….. [ ]
10 ….. [ ]
12 ….. [ ]
15 ….. [ ]
20 ….. [ ]
24 ….. [ ]
30 ….. [ ]
↑↓: Move Enter: Accept ESC:Abort

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.
The choice: 250 **(default)**, 500, 750, and 1000.

Typematic Delay (Msec)
250 ….. [█]
500 ….. [ ]
750 ….. [ ]
1000 ….. [ ]
↑↓: Move Enter: Accept ESC:

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt. **(default)**

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

APIC Mode

This setting allows to enable the APIC mode.
The choice: Enabled **(default)**, Disabled

MPS Version Control For OS

The BIOS supports version 1.1 and 1.4 of the Intel multiprocessor specification.
Select version supported by the operation system running on this computer.
The choice: 1.1, 1.4 **(default)**.

OS Select For DRAM > 64MB

Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.
The choice: Non-OS2 **(default)**, OS2.

Report No FDD For WIN 95

The choice: No **(default)**, Yes.

3.4 Advanced Chipset Features

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

```
                  Phoenix-Award BIOS CMOS Setup Utility
                        Advanced Chipset Features
┌──────────────────────────────────────────────────┬─────────────────┐
│   DRAM  Timing  Selectable    [By SPD]            │ Item Help       │
│ x CAS  Latency Time           [Auto]              │                 │
│ x Dram RAS#  to CAS# Delay    [Auto]              │ Menu Level  ▶   │
│ x DRAM  RAS#  Precharge       [Auto]              │                 │
│ x Precharge  dealy (tRAS)     [Auto]              │                 │
│ x System Memory Frequency     [Auto]              │                 │
│   SLP_S4#Assertoin Width      [4 to 5 Sec]        │                 │
│   System  BIOS Cacheable      [Enabled]           │                 │
│   Video  BIOS Cacheable       [Disabled]          │                 │
│   Memory  Hole At 15M-16M     [Disabled]          │                 │
│                                                    │                 │
│   **VGA Setting**                                  │                 │
│   On-Chip Frame Buffer Size   [8MB]               │                 │
│   DVMT  Mode                  [DVMT]              │                 │
│   DVMT / FIXED Memory Size    [128MB]             │                 │
│   Boot  Display               [CRT+LFP]           │                 │
│   Panel  Number               [3]                 │                 │
│   TV Standard                 [Off]               │                 │
│   Video Connector             [Automatic]         │                 │
│   TV Format                   [Auto]              │                 │
│   Lan1 Chip Control           [Enabled]           │                 │
│   Lan2 Chip Control           [Enabled]           │                 │
├──────────────────────────────────────────────────┴─────────────────┤
│ ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save Esc: Exit F1:General Help │
│ F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default    │
└─────────────────────────────────────────────────────────────────────┘
```

(Figure 7)

DRAM Timing Selectable

The choice: Manual, By SPD **(default)**.

If DRAM Timing Selectable is [Manual], can choice these Items:

►CAS Latency Time
►Dram RAS# to CAS# Delay
►DRAM RAS# Precharge
►Precharge dealy (tRAS)
►System Memory Frequency

CAS Latency Time

This controls the latency between DDR RAM read command and the time that the data actually becomes available.
Leave this on the default setting.
The choice: 5, 4, 3, 6, Auto **(default)**.

DRAM RAS# to CAS# Delay

In order to improve performance, certain space in memory is reserved for PISA cards.
This memory must be mapped into the memory space below 16MB.
The choice: 2, 3, 4, 5, 6, Auto **(default)**.

DRAM RAS# Precharge

This controls the idle clocks after issuing a precharge command to DRAM.
Leave this on the default setting.
The choice: Auto **(default)**, 2, 3,4,5,6.

Precharge dealy (tRAS)

The choice: Auto **(default)**, 4,5,6,7,8,9,10,11,12,13,14,15.

System Memory Frequency

The choice: Auto **(default)**, 533MHz, 667MHz

SLP_S4#Assertoin Width

Set SLP_S4# pin.
The choice: 4 to5 Sec **(default)**, 3 to 4Sec, 2to 3Sec,
1to2Sec.

System BIOS Cacheable

Selecting the "Enabled" option allows caching of the
system BIOS ROM at F0000h-FFFFFh, which is able to
improve the system performance. However, any
programs that attempts to write to this memory block
will cause conflicts and result in system errors.
The choice: Enabled (**default)**, Disabled.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS,
resulting in better system performance. However, if any
program writes to this memory area, a system error may
occur.
The choice: Enabled, Disabled **(default)**

Memory Hole At 15M-16M

Enabling this feature reserves 15 MB to 16 MB memory
address space for ISA expansion cards that specifically
require this setting. This makes memory from 15 MB and
up unavailable to the system. Expansion cards can only
access memory up to 16 MB.
The choice: Enabled, Disabled **(default)**

On-Chip Frame Buffer Size

User can select frame buffer size.
The choice: 1MB, 8MB **(default)**.

DVMT Mode

This field shows the current DVMT mode.
The choice: FIXED, DVMT **(default)**, BOTH

DVMT / FIXED Memory Size

This field is used to select the graphics memory size used by DVMT/ Fixed mode.
The choice: 64MB, 128MB **(default)**, 224MB

Boot Display

This field is used to select the type of display to use when the system boots.
The choice:

Auto	CRT	TV	EFP
LFP	CRT+LFP **(default)**	EFP+LFP	

Panel Number

The choice: 1,2,3 **(default)**,4,5,6,7,8,9,10,11,12,13,14,15,16

TV Standard

The choice: Off **(default)**, NTSC, PAL, SECAM.

Video Connector

The choice: Automatic **(default)**, Composite, Component, Both.

TV Format

The choice:

Auto**(default)**	NTSC_M	NTSC_M_J
NTSC_433	NTSC_N	PAL_B
PAL_G	PAL_D	PAL_H
PAL_I	PAL_M	PAL_N
PAL_60	SECAM_L	SECAM_L1
SECAN_B	SECAN_D	SECAN_G
SECAN_H	SECAN_K	SECAN_K1

Lan1 Chip Control

The choice: Enabled **(default)**, Disabled.

Lan2 Chip Control

The choice: Enabled **(default)**, Disabled.

3.5 Integrated Peripherals

```
                Phoenix-Award BIOS CMOS Setup Utility
                      Integrated Peripherals
   ┌──────────────────────────────────────────────┬───────────────────┐
   │  ► On Chip  IDE Device      [Press Enter]     │  Item Help        │
   │  ► Onboard  Device          [Press Enter]     │                   │
   │  ► Super IO  Device         [Press Enter]     │  Menu Level  ►    │
   │    Onboard Serial Port 3    [3E8]             │                   │
   │    Serial Port 3 Use IRQ    [IRQ3]            │                   │
   │    Onboard Serial Port 4    [2E8]             │                   │
   │    Serial Port 4 Use IRQ    [IRQ4]            │                   │
   │    Onboard Serial Port 5    [4F8]             │                   │
   │    Serial Port 5 Use IRQ    [IRQ5]            │                   │
   │    Onboard Serial Port 6    [4E8]             │                   │
   │    Serial Port 6 Use IRQ    [IRQ7]            │                   │
   │    Watch Dog Timer Select   [Disabled]        │                   │
   ├──────────────────────────────────────────────┴───────────────────┤
   │ ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help │
   │ F5:Previous Value F6:Fail-Safe Defaults  F7:Optimized Default      │
   └───────────────────────────────────────────────────────────────────┘
```

(Figure 8)

➢On Chip IDE Device

```
          Phoenix-Award BIOS CMOS Setup Utility
                    On Chip IDE Device
    IDE  HDD  Block Mode          [Enabled]        Item Help
    On-Chip Primary PCI IDE       [Enabled]
    IDE  Primary Master PIO       [Auto]           Menu
    IDE  Primary Slave PIO        [Auto]           Level  ►
    IDE  Primary Master UDMA      [Auto]           If your IDE
    IDE  Primary Slave UDMA       [Auto]           hard drive
    On-Chip Secondary PCI IDE     [Enabled]        suppers
    IDE  Secondary Master PIO     [Auto]           block
    IDE  Secondary Slave PIO      [Auto]           mode
    IDE  Secondary Master UDMA    [Auto]           select
    IDE  Secondary Slave UDMA     [Auto]           Enabled
                                                   for
    *** On-Chip  Serial ATA Setting***            automatic
    x  SATA  Mode                 IDE              detection
       On-Chip  Serial ATA        [Auto]           of the
    x  SATA  PORT Speed Settings  Disable          optimal
    x  PATA  IDE Mode             Secondary        number of
    x  SATA Port                  PO, P2 is Primary lock
                                                   read/write
                                                   s per
                                                   sector the
                                                   drive can
                                                   support
↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default
```

(Figure 9)

IDE HDD Block Mode
Block mode is also called block transfer, multiple commands, or multiple sectors read / write.
 If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block mode (most new drives do), select
Enabled for automatic detection of the optimal number of block read /write per sector where the drive can support.
The choice: Enabled **(default)**, Disabled

On-Chip Primary PCI IDE

This field allows you to enable or disable the primary and secondary IDE controller.
Select disabled if you want to add a different hard drive controller.
The choice: Enabled **(default)**, Disabled

IDE Primary/Secondary, Master/Slave   PIO

The choice: Auto **(default)**, Mode0, Mode1, Mode2, Mode3, Mode4

⚠️ Caution: Do not use the wrong setting or you will have drive errors

PIO means Programmed Input/output.
Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves.
Your system supports five modes, 0 (default) to 4, which primarily differ in timing.
When Auto is selected, the BIOS will select the best available mode after checking your drive.

Auto	The BIOS will automatically set the system according to your hard disk drive's timing **(default)**.
Mode 0-4	You can select a mode that matches your hard disk drive's timing.

IDE Primary/Secondary, Master/ Slave UDMA

The choice: Disabled,   Auto **(default)**

On-Chip Secondary PCI IDE

These fields allow you to enable or disable the primary and secondary IDE controller.
Select disabled if you want to add a different hard drive controller.
The choice: Enabled **(default)**, Disabled.

On-Chip Serial ATA

Choose the status of serial ATA, the default setting is
"**Auto**" which let system to arrange all parallel and serial

Disabled	Will disable SATA controller. **(Figure11)**
Combined Mode	Will combine PATA and SATA, and max of 2 IDE drives in each channel. **(Figure 12)**
Enhanced Mode	Will enable both SATA and PATA, and max of 6 IDE drives is supported. **(Figure 13)**
SATA Only	Means SATA is operating in legacy mode.**(Figure 14)**
Auto	This is the default setting.

ATA resource automatically.
The choice: Disabled, Auto **(default)**, Combined Mode,
Enhanced Mode, SATA Only.

```
              Phoenix-Award BIOS CMOS Setup Utility
                      On Chip IDE Device

    IDE  HDD  Block Mode              [Enabled]        Item
    On-Chip Primary PCI IDE           [Enabled]        Help
    IDE  Primary Master PIO           [Auto]
    IDE  Primary Slave PIO            [Auto]           Menu
    IDE  Primary Master  UDMA         [Auto]           Level  ►
    IDE  Pri                          o]               If your
                On-Chip Serial ATA                     IDE hard
    On-Chip                           bled]            drive
    IDE  Se   Disabled      ..... [    ]    o]         suppers
    IDE  Se   Auto          ..... [ █ ]     o]         block
    IDE  Se   Combined Mode ..... [    ]    o]         mode
    IDE  Se   Enhanced Mode ..... [    ]    o]         select
              SATA Only     ..... [    ]               Enabled
                                                       for
    *** On-C                                           automati
    x  SATA   ↑↓: Move Enter: Accept                   c
       On-Chip  Serial ATA            [Auto]           detectio
    x  SATA  PORT Speed Settings      Disable          n of the
    x  PATA  IDE Mode                 Secondary        optimal
    x  SATA Port                      PO, P2 is Primary number
                                                       of lock
                                                       read/wri
                                                       tes per
                                                       sector
                                                       the drive
                                                       can
                                                       support
  ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
  F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default
```

(Figure 10)

When you press [Disabled] or [Auto] on this item will show:
[Auto] is the default choice.

```
              Phoenix-Award BIOS CMOS Setup Utility
                         On Chip IDE Device
┌─────────────────────────────────────────────────┬──────────────────────┐
│   IDE  HDD  Block Mode           [Enabled]       │ Item Help            │
│   On-Chip Primary PCI IDE        [Enabled]       │                      │
│   IDE  Primary Master PIO        [Auto]          │ Menu Level  ▶        │
│   IDE  Primary Slave PIO         [Auto]          │ If your IDE          │
│   IDE  Primary Master UDMA       [Auto]          │ hard drive           │
│   IDE  Primary Slave UDMA        [Auto]          │ suppers block        │
│   On-Chip Secondary PCI IDE      [Enabled]       │ mode select          │
│   IDE  Secondary Master PIO      [Auto]          │ Enabled for          │
│   IDE  Secondary Slave PIO       [Auto]          │ automatic            │
│   IDE  Secondary Master UDMA     [Auto]          │ detection of         │
│   IDE  Secondary Slave UDMA      [Auto]          │ the optimal          │
│                                                  │ number of lock       │
│                                                  │ read/writes          │
│  *** On-Chip  Serial ATA Setting***              │ per sector the       │
│  x  SATA  Mode                IDE                │ drive can            │
│     On-Chip  Serial ATA        [Auto]            │ support              │
│  x  SATA  PORT Speed Settings  Disable           │                      │
│  x  PATA  IDE Mode             Secondary         │                      │
│  x  SATA  Port                 PO, P2 is Primary │                      │
├─────────────────────────────────────────────────┴──────────────────────┤
│ ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help │
│ F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default        │
└─────────────────────────────────────────────────────────────────────────┘
```

(Figure11)

When you press [Combined Mode] on this item will show:

```
         Phoenix-Award BIOS CMOS Setup Utility
                On Chip IDE Device
─────────────────────────────────────────────────────────────
    IDE  HDD  Block Mode          [Enabled]      Item Help
    On-Chip Primary PCI IDE       [Enabled]
    IDE  Primary Master PIO       [Auto]         Menu Level
    IDE  Primary Slave PIO        [Auto]         ▶
    IDE  Primary Master UDMA      [Auto]         If your IDE
    IDE  Primary Slave UDMA       [Auto]         hard drive
    On-Chip Secondary PCI IDE     [Enabled]      suppers
    IDE  Secondary Master PIO     [Auto]         block mode
    IDE  Secondary Slave PIO      [Auto]         select
    IDE Secondary Master UDMA     [Auto]         Enabled for
    IDE  Secondary Slave UDMA     [Auto]         automatic
                                                 detection of
                                                 the optimal
 *** On-Chip  Serial ATA Setting***              number of
    SATA  Mode              [IDE]                 lock
    On-Chip  Serial ATA     [CombinedMod]         read/writes
  x SATA  PORT Speed Settings   Disable          per sector
    PATA  IDE Mode          [Secondary]          the drive can
  x SATA Port               PO, P2 is Primary    support
─────────────────────────────────────────────────────────────
↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default
```

(Figure12)

SATA Mode
....
Controls the SATA controller's operating mode.
The choice: IDE **(default)**, RAID, AHCI.

PATA IDE Mode
....
This field is used to select the function mode of the IDE connector.
The only choice:
 Secondary: IDE serves as Secondary Master and
            Secondary Slave channel. SATA 1 and SATA 2
            serve as Primary Master and Primary Slave
            channel.

When you press [Enhanced Mode] on this item will show:

```
            Phoenix-Award BIOS CMOS Setup Utility
                    On Chip IDE Device
    IDE  HDD  Block Mode            [Enabled]       | Item Help
    On-Chip Primary PCI IDE         [Enabled]       |
    IDE  Primary Master PIO         [Auto]          | Menu Level
    IDE  Primary Slave PIO          [Auto]          | ►
    IDE  Primary Master UDMA        [Auto]          | If your IDE
    IDE  Primary Slave UDMA         [Auto]          | hard drive
    On-Chip Secondary PCI IDE       [Enabled]       | suppers
    IDE  Secondary Master PIO       [Auto]          | block mode
    IDE  Secondary Slave PIO        [Auto]          | select
    IDE  Secondary Master UDMA      [Auto]          | Enabled for
    IDE  Secondary Slave UDMA       [Auto]          | automatic
                                                    | detection of
                                                    | the optimal
   *** On-Chip  Serial ATA Setting***              | number of
    SATA  Mode                      [IDE]           | lock
    On-Chip  Serial ATA             [Enhanced Mode] | read/writes
    SATA  PORT Speed Settings       [Disable]       | per sector
  x  PATA  IDE Mode                 Secondary       | the drive can
  x  SATA Port                      PO, P2 is  Primary | support
─────────────────────────────────────────────────────────────────
↑↓←→  : Move   Enter: Select   +/-/PU/PD: Value   F10:Save  Esc: Exit  F1:General Help
F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default
```

(Figure13)

SATA Mode

Controls the SATA controller's operating mode.
The choice: IDE **(default)**, RAID, AHCI.

SATA Port Speed Settings

Select SATA speed.
The choice: Disabled **(default)**, Force GEN I, Force GEN II.

When you press [SATA Only] on this item will show:

```
              Phoenix-Award BIOS CMOS Setup Utility
                      On Chip IDE Device
      IDE  HDD  Block Mode            [Enabled]        Item Help
      On-Chip Primary PCI IDE         [Enabled]
      IDE  Primary Master PIO         [Auto]           Menu
      IDE  Primary Slave PIO          [Auto]           Level  ►
      IDE  Primary Master UDMA        [Auto]           If your IDE
      IDE  Primary Slave UDMA         [Auto]           hard drive
      On-Chip Secondary PCI IDE       [Enabled]        suppers
      IDE  Secondary Master PIO       [Auto]           block
      IDE  Secondary Slave PIO        [Auto]           mode
      IDE  Secondary Master UDMA      [Auto]           select
      IDE  Secondary Slave UDMA       [Auto]           Enabled
                                                       for
                                                       automatic
    *** On-Chip  Serial ATA Setting***                detection
      SATA  Mode                      [IDE]            of the
      On-Chip  Serial ATA             [SATA Only]      optimal
    x  SATA  PORT Speed Settings      Disable          number of
    x  PATA  IDE Mode                 Secondary        lock
    x  SATA Port                      PO, P2 is  Primary  read/write
                                                       s per
                                                       sector the
                                                       drive can
                                                       support
    ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
    F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default
```

(Figure14)

SATA Mode

Controls the SATA controller's operating mode.
The choice: IDE **(default)**, RAID, AHCI.

➢On board Device

Phoenix-Award BIOS CMOS Setup Utility		
Onboard Device		
USB Controller	[Enabled]	Item Help
USB 2.0 Controller	[Enabled]	Menu Level ▶
USB Keyboard Support	[Disabled]	
Azalia/AC97 Audio Select	[Auto]	
↑↓←→ : Move Enter: Select +/-/PU/PD: Value F10:Save Esc: Exit F1:General Help F5:Previous Value F6:Fail-Safe Defaults F7:Optimized Default		

USB Controller

Select enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.
The choice: Enabled **(default)**, Disabled.

USB 2.0 Controller

This entry is for disable/enable USB2.0 controller only.
The BIOS itself may/may not have high speed USB support.
If the BIOS has high speed USB support built in, the support will be automatically turn on when high speed device were attached.
The choice: Enabled **(default)**, Disabled

USB Keyboard Support

Select enabled if user plan to use an USB keyboard.
The choice: Enabled, Disabled **(default)**.

Azalia/AC97 Audio Select

The choice: Auto **(default)**, Azalia, AC97 Audio and Modem, AC97 Audio only, AC97 Modem only, ALL Disabled.

➢Super IO Device

```
            Phoenix-Award BIOS CMOS Setup Utility
                         Super IO  Device
      Onboard  Serial Port 1     [3F8/IRQ4]    Item Help
      Onboard  Serial Port 2     [2F8/IRQ3]
      UART   Mode Select         [Normal]      Menu Level ▶
   x  RxD  ,  TxD  Active        Hi, Lo
   x  IR Transmission Delay      Enabled
   x  UR2  Duplex  Mode          Half
      Onboard  Parallel  Port    [378/IRQ7]
      Parallel  Port Mode        [SPP]
   x  EPP Mode Select            EPP1.7
   x  ECP Mode  Use DMA          3
      PWRON  After  PWR-Fail     [Off]
   ↑↓←→ :Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit
   F1:General Help F5:Previous Value F6:Fail-Safe Defaults  F7:Optimized Default
```

Onboard Serial Port 1

Select an address and corresponding interrupt for the first serial ports.
The choice: Disable, 3F8/IRQ4 **(default)**, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto.

Onboard Serial Port 2

Select an address and corresponding interrupt for the second serial ports.
The choice: Disable, 3F8/IRQ4, 2F8/IRQ3 **(default)**, 3E8/IRQ4, 2E8/IRQ3, Auto.

UART Mode Select

This item allows you to select which mode for the Onboard Serial Port 2.

The choice: IrDA, ASKIR, Normal **(default)**

If UART Mode Select is IrDA and ASKIR will show:

Phoenix-Award BIOS CMOS Setup Utility		
Super IO Device		
Onboard Serial Port 1	[3F8/IRQ4]	Item Help
Onboard Serial Port 2	[2F8/IRQ3]	
UART Mode Select	[IrDA]	Menu Level
RxD , TxD Active	[Hi, Lo]	▶
IR Transmission Delay	[Enabled]	
UR2 Duplex Mode	[Half]	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[SPP]	
x EPP Mode Select	EPP1.7	
x ECP Mode Use DMA	3	
PWRON After PWR-Fail	[Off]	
↑↓←→ : Move Enter: Select +/-/PU/PD: Value F10:Save Esc: Exit		
F1:General Help F5:Previous Value F6:Fail-Safe Defaults F7:Optimized Default		

RxD, TxD Active

The choice:

UART Mode Select
Hi, Hi   ……[   ]
Hi, Lo   ……[   ]
Lo, Hi   …..[   ]
Lo, Lo   …..[   ]
↑↓: Move Enter: Accept ESC:

IR Transmission Delay

The choice: Disabled, Enabled **(default)**.

UR2 Duplex Mode

The choice: Full, Half **(default)**.

Onboard Parallel Port

This item allows you to determine onboard parallel port controller I/O address setting.
The choice: 378/IRQ7 **(default)**, 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

The choice: SPP **(default)**, EPP, ECP, ECP+EPP, Normal.

SPP	Sets the parallel port to function as a Standard Parallel Port. This is the default (and slowest) option.
EPP	Sets the parallel port to Enhanced Parallel Port mode. Sometimes also called "Bi-directional"
ECP	Sets the parallel port up as an Enhanced Capabilities Port. This setting requires the use of a DMA channel

If Parallel Port Mode Select is [SPP] and [Normal] will show:

```
          Phoenix-Award BIOS CMOS Setup Utility
                    Super IO  Device

     Onboard  Serial Port 1     [3F8/IRQ4]     Item Help
     Onboard  Serial Port 2     [2F8/IRQ3]
     UART   Mode Select         [IrDA]         Menu Level ▶
     RxD  ,  TxD  Active        [Hi, Lo]
     IR Transmission Delay      [Enabled]
     UR2  Duplex  Mode          [Half]
     Onboard  Parallel  Port    [378/IRQ7]
     Parallel  Port Mode        [SPP]
  x  EPP Mode Select            EPP1.7
  x  ECP Mode  Use DMA          3
     PWRON  After  PWR-Fail     [Off]

↑ ↓ ← → : Move   Enter: Select   +/-/PU/PD: Value   F10:Save  Esc: Exit
F1:General Help F5:Previous Value  F6:Fail-Safe Defaults   F7:Optimized Default
```

If Parallel Port Mode Select is [EPP] will show:

Phoenix-Award BIOS CMOS Setup Utility		
Super IO Device		
Onboard Serial Port 1	[3F8/IRQ4]	Item Help
Onboard Serial Port 2	[2F8/IRQ3]	
UART Mode Select	[IrDA]	Menu Level ▶
RxD , TxD Active	[Hi, Lo]	
IR Transmission Delay	[Enabled]	
UR2 Duplex Mode	[Half]	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[EPP]	
EPP Mode Select	[1.7]	
x ECP Mode Use DMA	3	
PWRON After PWR-Fail	[Off]	
↑↓←→ : Move Enter: Select +/-/PU/PD: Value F10:Save Esc: Exit		
F1:General Help F5:Previous Value F6:Fail-Safe Defaults F7:Optimized Default		

EPP Mode Select

Select EPP port type 1.7 or 1.9.

The choice: 1.7 **(default)**, 1.9.

If Parallel Port Mode Select is [ECP] will show:

```
          Phoenix-Award BIOS CMOS Setup Utility
                    Super IO  Device
   Onboard  Serial Port 1      [3F8/IRQ4]     Item Help
   Onboard  Serial Port 2      [2F8/IRQ3]
   UART   Mode Select          [IrDA]         Menu Level ▶
    RxD  ,  TxD  Active        [Hi, Lo]
    IR Transmission Delay      [Enabled]
   UR2  Duplex  Mode           [Half]
   Onboard  Parallel  Port     [378/IRQ7]
   Parallel  Port Mode         [ECP]
 x  EPP Mode Select            1.7
    ECP Mode  Use DMA          [3]
   PWRON  After  PWR-Fail      [Off]

↑ ↓ ← → : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General
Help F5:Previous Value  F6:Fail-Safe Defaults  F7:Optimized Default
```

ECP Mode Use DMA

If your system supports ECP parallel port mode and you have the port set to use ECP, you must use this setting to assign a DMA channel for use by the port.
The choice: DMA1, DMA3 **(default)**.

If Parallel Port Mode Select is [ECP+EPP] will show:

```
              Phoenix-Award BIOS CMOS Setup Utility
                      Super IO  Device
      Onboard  Serial Port 1        [3F8/IRQ4]     │ Item Help
      Onboard  Serial Port 2        [2F8/IRQ3]     │
      UART   Mode Select            [IrDA]         │ Menu Level ▶
       RxD  ,  TxD  Active          [Hi, Lo]       │
       IR Transmission Delay        [Enabled]      │
       UR2  Duplex  Mode            [Half]         │
      Onboard  Parallel  Port       [378/IRQ7]     │
      Parallel  Port Mode           [ECP+EPP]      │
       EPP Mode Select              [1.7]          │
       ECP Mode  Use DMA            [3]            │
      PWRON  After  PWR-Fail        [Off]          │
────────────────────────────────────────────────────────────────
↑↓←→ : Move   Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
F5:Previous Value  F6:Fail-Safe Defaults   F7:Optimized Default
```

EPP Mode Select

Select EPP port type 1.7 or 1.9.
The choice: 1.7 **(default)**, 1.9.

ECP Mode Use DMA

If your system supports ECP parallel port mode and you
have the port set to use ECP, you must use this setting to
assign a DMA channel for use by the port.
The choice: DMA1, DMA3 **(default)**.

PWRON After PWR-Fail

When power fails, you can select power ON or Off or
Former status.
The choice: Off **(default)**, On, Former-Sts.

Onboard Serial Port 3

This is used to select an I/O address for the onboard serial port 3.
The choice: Disabled, 3F8, 2F8, 3E8 **(default)**, 2E8

Serial Port 3 Use IRQ

This is used to select an IRQ for the onboard serial port 3.
The choice: IRQ3 **(default)**, IRQ4, IRQ5, IRQ7, IRQ10, IRQ11.

Onboard Serial Port 4

This is used to select an I/O address for the onboard serial port 4.
The choice: Disabled, 3F8, 2F8, 3E8, 2E8 **(default).**

Serial Port 4 Use IRQ

This is used to select an IRQ for the onboard serial port 4.
The choice: IRQ3, IRQ4 **(default)**, IRQ5, IRQ7, IRQ10, IRQ11.

Onboard Serial Port 5

This is used to select an I/O address for the onboard serial port 5
The choice: Disabled, 4F8 **(default)**, 4E8**.**

Serial Port 5 Use IRQ

This is used to select an IRQ for the onboard serial port 5.
The choice: IRQ3, IRQ4, IRQ5 **(default)**, IRQ7, IRQ10, IRQ11.

Onboard Serial Port 6

This is used to select an I/O address for the onboard serial port 6.
The choice: Disabled, 4F8, 4E8 **(default).**

Serial Port 6 Use IRQ

This is used to select an IRQ for the onboard serial port 6.
The choice: IRQ3, IRQ4, IRQ5, IRQ7 **(default)**, IRQ10,
IRQ11

Watch Dog Timer Select

The choice: Disabled **(default)**, Enable

3.6 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

```
                Phoenix-Award BIOS CMOS Setup Utility
                      Power Management Setup

  ▶PCI  Express  PM  Function    [Press Enter]      Item Help
    Power-Supply  Type           [AT]
    ACPI    Function             [Enabled]          Menu Level ▶
    Power   Management           [User  Define]
    Video   Off   Method         [DPMS]
    Video   Off  In  Suspend     [Yes]
    Suspend  Type                [Stop   Grant]
    MODEM   Use   IRQ            [3]
    Suspend  Mode                [Disabled]
    HDD  Power Down              [Disabled]
    Soft-Off   by  PWR-BTTN      [Instant-Off]
    CPU  THRM-Throttling         [50.0%]
    Wake-Up   by   PCI  card     [Enabled]
    Power  On  by   Ring         [Enabled]
    Resume   by   Alarm          [Disabled]
  x  Data(of  Month)Alarm         0
  x  Time(hh: mm: ss)Alarm        0 :  0  :  0

    **Reload  Global  Timer Events**
    Primary  IDE 0               [Disabled]
    Primary  IDE 1               [Disabled]
    Secondary  IDE 0             [Disabled]
    Secondary  IDE 1             [Disabled]
    FDD , COM , LPT  Port        [Disabled]
    PCI   PIRQ[A-D]#             [Disabled]

  ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
  F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default
```

➢PCI Express PM Function

Phoenix-Award BIOS CMOS Setup Utility	
PCI Express PM Function	
PCI Express PME [Enabled]	Item Help
	Menu Level ▶
↑↓←→ : Move Enter: Select +/-/PU/PD: Value F10:Save Esc: Exit	
F1:General Help F5:Previous Value F6:Fail-Safe Defaults F7:Optimized Default	

PCI   Express   PME

The choice: Enabled **(default)**, Disabled.

Power-Supply Type

The choice: AT **(default)**, ATX

ACPI Function

This item allows you to enable/disable the Advanced
Configuration and Power Management (ACPI).
The choice: Enabled **(default)**, Disabled.

Power Management

The choice: User Define **(default)**, Min Saving, Max
Saving.

Max Saving	Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode.
User Define	Set each mode individually. Select time-out periods in the section for each mode, below.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

Video off Method

This determines the manner in which the monitor is blanked.
This specifies the power saving state that the VGA video subsystem enters after the specified period of display inactivity has expired.
The choice: Blank Screen, V/H SYNC+ Blank, DPMS **(default).**

Blank Screen	The BIOS will only black the screen when the system gets into power management mode and writes blanks to the video buffer.
V/H SYNC + Blank	Writes blanks to the video buffer, and turns off the vertical and horizontal scanning.
DPMS	Allows the BIOS to control the video display card if it supports the DPMS feature **(default).**

Video Off   In Suspend

This field is used to activate the video off feature when the system enters the Suspend mode.
The choice: No, Yes **(default)**.

Suspend   Type

The choice: Stop Grant **(default)**,PwrOn Suspend

MODEM   Use   IRQ

This field is used to set an IRQ channel for the modem installed in your system.
The choice: NA, 3 **(default)**, 4, 5, 7, 9, 10, 11.

Suspend Mode

This field specifies the length of time of system inactivity while in full power on state before the computer enters suspend mode and motivates the enable 'Wake up Events in Doze & Standby' / 'PM Events'.
The choice: 1Min, 2Min, 4Min, 8Min, 12Min, 20Min, 30Min, 40Min,1Hour, Disable **(default)**.

HDD Power Down

When enable and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
The choice: 1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min, 8Min, 9Min, 10Min, 11Min, 12Min, 13Min, 14Min, 15Min, Disable **(default)**.

Soft-Off   by PWR-BTTN

This field defines the power off mode when using an ATX power supply.
The choice: Instant-Off, Delay 4 Sec.

Instant-Off	Press power button then Power off instantly .**(default)**
Delay 4 Sec	Press power button 4 sec. to Power off. Enter suspend if button is pressed less than 4 sec.

CPU THRM-Throttling

This field allows you to select the CPU THRM-Throttling rate.
The choice: 75.0%, 50.0% **(default)**, 25.0%.

Wake-Up by PCI card

Enable/Disable PCI PME wake up function.
The choice: Enabled **(default)**, Disabled.

Power On by Ring

Enable/Disable Power On By Ring function.
The choice: Enabled **(default)**, Disabled.

Resume   by   Alarm

You can set "Resume by Alarm" item to enabled and key in Date/time to power on system.
The choice: Enabled, Disabled **(default)**

If Resume by Alarm is [Enabled], can choice Date Alarm and Time Alarm:

Date (of Month) Alarm

Every day, 1~31

```
┌─────────────────────────────────────┐
│ Date(of Moth)Alarm                   │
├─────────────────────────────────────┤
│ Min=   0                             │
│ Max=   31                            │
│                                      │
│ Key in a DEC number:  ▌▌▌▌▌▌         │
├─────────────────────────────────────┤
│ ↑↓: Move Enter: Accept  ESC:Abort    │
└─────────────────────────────────────┘
```

Time (hh: mm: ss) Alarm

(0~23): (0~59): (0~59)

```
┌─────────────────────────────────────┐
│ Time (hh: mm: ss) Alarm              │
├─────────────────────────────────────┤
│ Min=   0                             │
│ Max=   23                            │
│                                      │
│ Key in a DEC number:  ▌▌▌▌▌▌         │
├─────────────────────────────────────┤
│ ↑↓: Move Enter: Accept  ESC:Abort    │
└─────────────────────────────────────┘
```

Primary/ Secondary IDE 0/1

When Enabled, the system will resume from suspend mode if Primary IDE 0 (1) or Secondary IDE 0 (1) is active.
The choice: Enabled, Disabled **(default)**

FDD, COM, LPT Port

When Enabled, the system will resume from suspend
mode if FDD, COM port, or LPT port is active.
The choice: Enabled, Disabled **(default)**.

PCI PIRQ [A-D]

When Enabled, the system will resume from suspend
mode if interrupt occurs.
The choice: Enabled, Disabled **(default)**.

3.7 PnP/PCI Configuration

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
          Phoenix-Award BIOS CMOS Setup Utility
                 PnP/PCI Configuration
    Init Display First          [PCI  Slot]        Item Help
    Reset  Configuration  Data  [Disabled]
                                                   Menu Level
                                                   ►
    Resources  Controlled  By   [Auto(ESCD)]
  x IRQ  Resources              Press Enter

    PCI/VGA Palette  Snoop       [Disabled]
    INT Pin 1 Assignment         [Auto]
    INT Pin 2 Assignment         [Auto]
    INT Pin 3Assignment          [Auto]
    INT Pin 4 Assignment         [Auto]
    INT Pin 5 Assignment         [Auto]
    INT Pin 6 Assignment         [Auto]
    INT Pin 7 Assignment         [Auto]
    INT Pin 8 Assignment         [Auto]


    **PCI Express relative items**
    Maximum Payload Size         [4096]
↑ ↓ ←→ :Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
        F5:Previous Value   F6:Fail-Safe Defaults     F7:Optimized Default
```

Init Display First

This item allows you to choose which one to activate first, PCI Slot or onchip VGA.
The choice: PCI Slot **(default)**, Onboard, PCIEx.

Reset Configuration Data

Default is disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.
The choice: Enabled, Disabled **(default)**.

Resources Controlled By

BIOS can automatically configure all the boot and Plug and Play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.
The choice: Auto (ESCD) **(default)**, Manual.

If Resources Controlled By is [Manual], can choice IRQ Resource:

```
                 Phoenix-Award BIOS CMOS Setup Utility
                         PnP/PCI Configuration
  ────────────────────────────────────────────────────────────────
    Init Display First         [PCI  Slot]      │ Item Help
    Reset  Configuration  Data [Disabled]       │
                                                │ Menu Level  ▶
    Resources  Controlled  By  [Manual]         │
  ▶ IRQ  Resources             [Press Enter]    │
                                                │
    PCI/VGA Palette  Snoop     [Disabled]       │
    INT Pin 1 Assignment       [Auto]           │
    INT Pin 2 Assignment       [Auto]           │
    INT Pin 3Assignment        [Auto]           │
    INT Pin 4 Assignment       [Auto]           │
    INT Pin 5 Assignment       [Auto]           │
    INT Pin 6 Assignment       [Auto]           │
    INT Pin 7 Assignment       [Auto]           │
    INT Pin 8 Assignment       [Auto]           │
                                                │
    **PCI Express relative items**              │
    Maximum Payload Size      [4096]            │
  ────────────────────────────────────────────────────────────────
   ↑↓←→ : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General Help
         F5:Previous Value   F6:Fail-Safe Defaults      F7:Optimized Default
```

➢IRQ Resource

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt. This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot.

Phoenix-Award BIOS CMOS Setup Utility

IRQ Resource		Item Help
IRQ-3 assigned to	[PCI Device]	Menu Level ▶
IRQ-4 assigned to	[PCI Device]	Legacy ISA for devices
IRQ-5 assigned to	[PCI Device]	compliant with the original
IRQ-7 assigned to	[PCI Device]	PC AT bus specification,
IRQ-9 assigned to	[PCI Device]	PCI/ISA PnP for devices
IRQ-10 assigned to	[PCI Device]	compliant with the Plug
IRQ-11 assigned to	[PCI Device]	and Play standard whether
IRQ-12 assigned to	[PCI Device]	designed for PCI or ISA
IRQ-14 assigned to	[PCI Device]	bus architecture
IRQ-15 assigned to	[PCI Device]	

↑↓←→ : Move   Enter: Select   +/-/PU/PD: Value   F10:Save   Esc: Exit   F1:General Help
F5:Previous Value   F6:Fail-Safe Defaults   F7:Optimized Default

IRQ-3,4,5,7,9,10,11,12,14,15 assigned to

IRQ-3 assigned to
PCI Device   ….. [▮]
Reserved   ….. [   ]
↑↓: Move Enter: Accept

The choice: PCI Device, Reserved.

PCI/VGA Palette Snoop

This BIOS feature determines if your graphics card should allow VGA palette snooping by a fixed function display card.
The choice: Enabled, Disabled **(default).**

INT Pin 1/2/3/4/5/6/7/8 Assignment

The choice: Auto **(default)**,3,4,5,7,9,10,11,12,14,15.

Maximum Payload Size

The choice: 128 (**default)**, 256,512,1024,2048,4096.

3.8 PC Health Status

This section helps you to get more information about your system including CPU temperature, FAN speed and voltages. It is recommended that you contact with your motherboard supplier to get proper value about your setting of the CPU temperature.

```
                Phoenix-Award BIOS CMOS Setup Utility
                         PC Health Status
  CPU Warning  Temperature    [Disabled]      Item Help
  Current System Temp.        40°C / 107°F
  Current CPU                 40°C / 100°F     Menu Level ▶
  Temperature:
  CPU   FAN   Speed           0 RPM
  CHASSIS  Fan  Speed         7670 RPM
  Vcore                       1.20V
  +1.5V                       1.52V
  +3.3V                       3.47V
  +5V                         5.16V
  +12V                        12.22V
  -12V                        -12.44V
  VBAT(V)                     3.32V
  5VSB(V)                     5.04V
  Shutdown Temperature        [Disabled]
 ↑ ↓ ← → : Move  Enter: Select  +/-/PU/PD: Value  F10:Save  Esc: Exit  F1:General
 Help F5:Previous Value   F6:Fail-Safe Defaults    F7:Optimized Default
```

CPU Warning Temperature

Select the CPU over-heated warning temperature.
The choice: Disabled **(default)**, 50°C/122°F, 53°C/127°F, 56°C/133°F, 60°C/140°F, 63°C/145°F, 66°C/151°F, 70°C/158°F.

Current System Temp

Show System Temperature.

Current CPU Temperature

Shows Board Temperature

CPU FAN Speed

Shows CPU Fan speed.

CHASSIS Fan Speed

Shows CHASSIS Fan speed

Shutdown Temperature
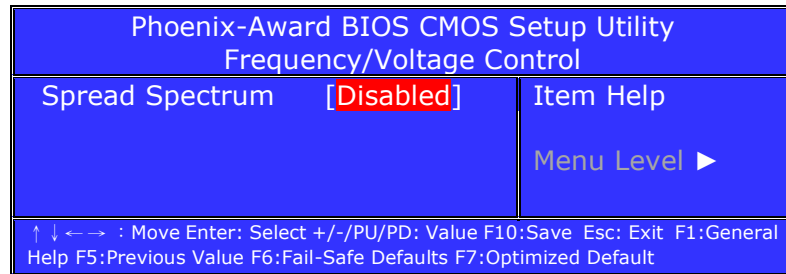
Select the CPU over-heated shutdown temperature.
The choice: Disabled **(default)**, 60°C/140°F, 65°C/149°F,
70°C/158°F, 75°C/167°F

3.9 Frequency/Voltage Control

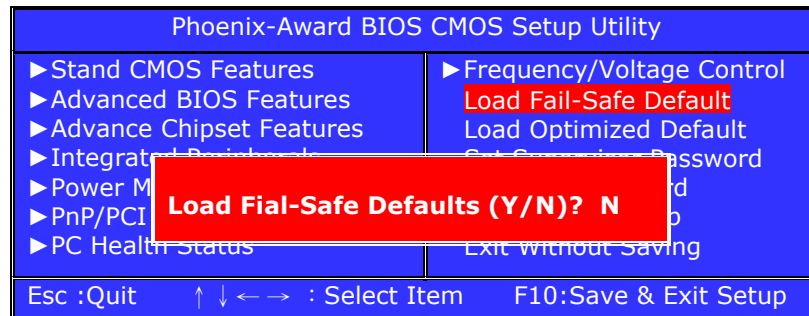| Phoenix-Award BIOS CMOS Setup Utility Frequency/Voltage Control	
Spread Spectrum [Disabled]	Item Help Menu Level ▶
↑↓←→ : Move Enter: Select +/-/PU/PD: Value F10:Save Esc: Exit F1:General Help F5:Previous Value F6:Fail-Safe Defaults F7:Optimized Default	

Spread Spectrum

Leave this field in its default setting. Do not alter this setting unless advised by an engineer or technician.
The choice: Disabled **(default)**, +/-0.1%, +/-0.2%, +/-0.3%, +/-0.4%,
+/-0.5%,+/-0.6%,+/-0.7%,+/-0.8%,+/-0.9%.

3.10 Load Fail-Safe Defaults

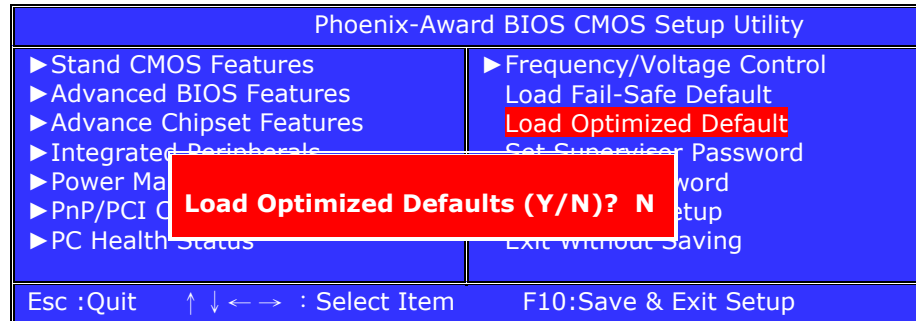When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Phoenix-Award BIOS CMOS Setup Utility	
►Stand CMOS Features	►Frequency/Voltage Control
►Advanced BIOS Features	Load Fail-Safe Default
►Advance Chipset Features	Load Optimized Default
►Integrated Peripherals	Set Supervisor Password
►Power M	d
►PnP/PCI	Load Fial-Safe Defaults (Y/N)? N
►PC Health Status	Exit without Saving
Esc :Quit ↑↓←→ : Select Item F10:Save & Exit Setup	

Pressing '**Y**' loads the BIOS default values for the most stable, minimal-performance system operations.

3.11 Load Optimized Defaults

When you press <Enter> on this item you get a
confirmation dialog box with a message similar to:

```
          Phoenix-Award BIOS CMOS Setup Utility
 ►Stand CMOS Features          ►Frequency/Voltage Control
 ►Advanced BIOS Features        Load Fail-Safe Default
 ►Advance Chipset Features      Load Optimized Default
 ►Integrated Peripherals        Set Supervisor Password
 ►Power Ma                              word
 ►PnP/PCI C  Load Optimized Defaults (Y/N)?  N  etup
 ►PC Health Status              Exit Without Saving

 Esc :Quit    ↑ ↓ ← → : Select Item    F10:Save & Exit Setup
```
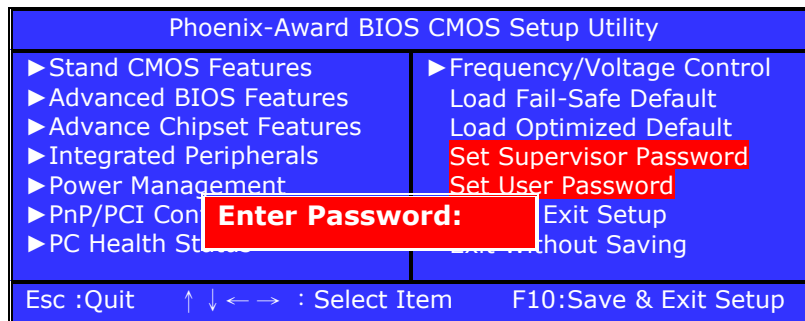
Pressing '**Y**' loads the default values that are factory
settings for optimal performance system operations.

3.12 Set Supervisor/User Password

You can set either supervisor or user password, or both
of them. The differences between are:
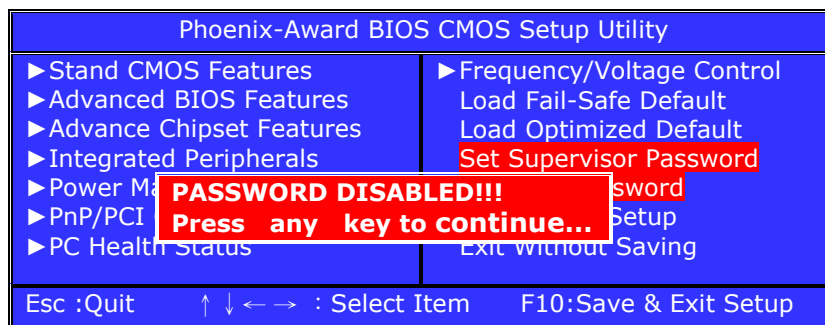**Supervisor password:** can enter and change the
options of the setup menus.
User password: just can only enter but do not have the
right to change the options of the setup menus. When
you select this function, the following message will
appear at the center of the screen to assist you in
creating a password.

```
          Phoenix-Award BIOS CMOS Setup Utility
  ►Stand CMOS Features        ►Frequency/Voltage Control
  ►Advanced BIOS Features       Load Fail-Safe Default
  ►Advance Chipset Features      Load Optimized Default
  ►Integrated Peripherals       Set Supervisor Password
  ►Power Management            Set User Password
  ►PnP/PCI Con  Enter Password:      Exit Setup
  ►PC Health St                    Exit Without Saving

  Esc :Quit      ↑ ↓ ← →  : Select Item      F10:Save & Exit Setup
```

ENTER PASSWORD:
Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

```
          Phoenix-Award BIOS CMOS Setup Utility
  ►Stand CMOS Features        ►Frequency/Voltage Control
  ►Advanced BIOS Features       Load Fail-Safe Default
  ►Advance Chipset Features      Load Optimized Default
  ►Integrated Peripherals       Set Supervisor Password
  ►Power Ma  PASSWORD DISABLED!!!    sword
  ►PnP/PCI   Press  any  key to continue...  Setup
  ►PC Health Status             Exit Without Saving

  Esc :Quit      ↑ ↓ ← →  : Select Item      F10:Save & Exit Setup
```
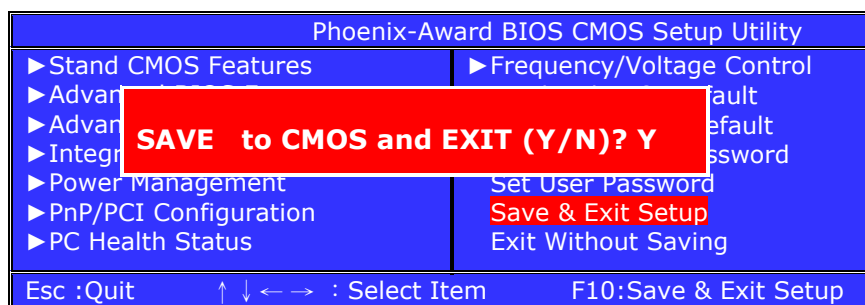
PASSWORD DISABLED:

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

3.13 Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Phoenix-Award BIOS CMOS Setup Utility	
►Stand CMOS Features	►Frequency/Voltage Control
►Advan	fault
►Advan **SAVE to CMOS and EXIT (Y/N)? Y**	efault
►Integr	ssword
►Power Management	Set User Password
►PnP/PCI Configuration	Save & Exit Setup
►PC Health Status	Exit Without Saving
Esc :Quit ↑ ↓ ← → : Select Item F10:Save & Exit Setup	

Pressing "**Y**" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

3.14 Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

```
                 Phoenix-Award BIOS CMOS Setup
Utility
►Stand CMOS Features        ►Frequency/Voltage Control
►Advanced BIOS Features        Load Fail-Safe Default
►Advanc                                      Default
►Integra   Quit Without Saving (Y/N)? N    Password
►Power N                                    rd
►PnP/PCI Configuration          Save & Exit Setup
►PC Health Status               Exit Without Saving

Esc :Quit      ↑ ↓ ← →  : Select Item     F10:Save & Exit Setup
```
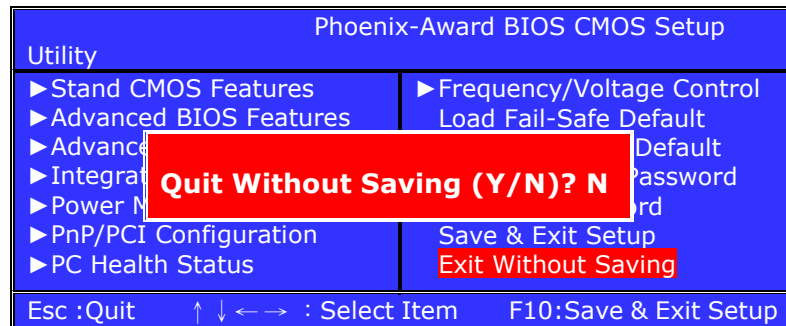
This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

3

Power Supply

This chapter provides information on the power supply used on the TR-5195F computer. The topics covered are:

TR-DCW100-12VDC Description

The TR-DCW100-12VDC industrial DC/DC converter uses a field proven topology to generate 100W output power with input range of 20 ~ 60VDC. This chassis-mount design is optimized for reliability and cost efficiency. The use of components with established reliability results in a high demonstrated MTBF. The TR-DCW100-12VDC is rated for operation over a temperatuer range of 0 ~ 50°C, without derating. It is cooled by conduction via baseplate to a heatsinking surface and by natural convection.

For more information on the TR-DCW100-12VDC, please call the Transduction sales team.

Figure 1: TR-DCW100-12VDC

TR-DCW100-12VDC Specifications

Model	TR-DCW100-12VDC DC/DC converter
Input Voltage	20 ~ 60VDC
Input Protection	Inrush current limiting Varistor Reverse polarity protection Internal safety fuse Lower voltage than the specified minimum input will not damage the unit
Isolation	1500VDC input to chassis 1500VDC input to output 500VDC output to chassis
Frequency	Switchable, 47KHz ±2KHz
Output Voltage/Current	12V/8A
Line/Load Regulation	±1% combined from no load to full load
Dynamic Response	Max 5% voltage deviation for 10 ~ 50% load step, with better than 1msec recovery time
Output Ripple/Noise	Better than 1% of output voltage peak to peak or 0.2% RMS of the output voltage (20MHz BW)
Output Overload Protection	Current limiting with short circuit protection (hiccup mode)
Output Overvoltage Protection	Double regulator loop and transzorb clamp
Cooling	Conduction to customer heatsink or chassis and natural convection
Efficiency	80% at full load
Operating Temperature	0 ~ 50ºC (32º ~ 122ºF)
Temperature Drift	0 .03% per ºC over operating temperature range
MTBF	> 150,000 hours
Standards	EN 60950 and corresponding UL and CSA standards
EMI	EN 55022 Class A
RoHS Compliant	Fully compliant
Warranty	5 years

TR-MIW100-12VDC Description

The TR-MIW100-12VDC industrial AC/DC converter uses a field proven topology to generate 100W output power with input range of 95 ~ 264V AC or 105 ~ 350VDC. This chassis-mount design is optimized for reliability and cost ef ficiency. The use of components with established reliability results in a high demonstrated MTBF . The TR-MIW100-12VDC is rated for operation over a temperature range of 0 ~ 50°C, without derating. It is cooled by conduction via baseplate to a heatsinking surface and by natural convection.

For more information on the TR-MIW100-12VDC, please call the Transduction sales team.

Figure 1: TR-MIW100-12VDC

TR-MIW100-12VDC Specifications

Model	TR-MIW100-12VDC AC/DC power supply
Input Voltage	Universal 95 ~ 264VAC, 47 ~ 63Hz 105 ~ 350VDC available option
Input Protection	Inrush current limiting Varistor Internal safety fuse Lower voltage than the specified minimum input will not damage the unit
Isolation	2250VDC input to chassis 4300VDC input to output, 8mm spacing 500VDC output to chassis
Frequency	Switchable, 47KHz ±2KHz
Hold Up Time	Minimum 10ms at full load for 5% drop of output voltage at > 120VAC input
Output Voltage/Current	12VDC/8A
Line/Load Regulation	±1% combined from no load to full load
Dynamic Response	Max 5% voltage deviation for 10 ~ 50% load step, with better than 1msec recovery time
Output Ripple/Noise	Better than 1% of output voltage peak to peak or 0.2% RMS of the output voltage (20MHz BW)
Output Overload Protection	Current limiting with short circuit protection on both outputs Thermal shutdown in case of insufficient cooling (self-resetting)
Output Overvoltage Protection	Double regulator loop on both outputs
Cooling	Conduction to customer heatsink or chassis and natural convection
Efficiency	80% at full load
Operating Temperature	0 ~ 50ºC (32º ~ 122ºF)
Temperature Drift	0 .03% per ºC over operating temperature range
MTBF	> 150,000 hours
Standards	EN 60950 and corresponding UL and CSA standards
EMI	EN 55022 Class B
RoHS Compliant	Fully compliant
Warranty	5 years

4

Isolated Serial Adapters

This chapter provides information on the isolated serial adapters option on the TR-5195F computer. The topics covered are:

TR-USB-COM-SI-M Description

The TR-USB-COM-SI-M is designed to make industrial communication RS-232 isolated serial port expansion quick and simple, with easy plug-and-play features.   Two high speed RS-232 isolated serial ports can be added via USB connection.

There is no IRQ and COM port conflict, since the port does not require any additional IRQ, DMA or memory on the system. The RS-232 isolated serial port functions as a native Windows COM port and is compatible with Windows serial communication applications. Each port is individually configurable.

TR-USB-COM-SI-M provides instant connectivity to RS-232 communication devices for industrial automation, multi-drop data collection devices, barcode readers, time clocks, scales, data entry terminals, and PC to PC long distance communication in harsh environments if needed.
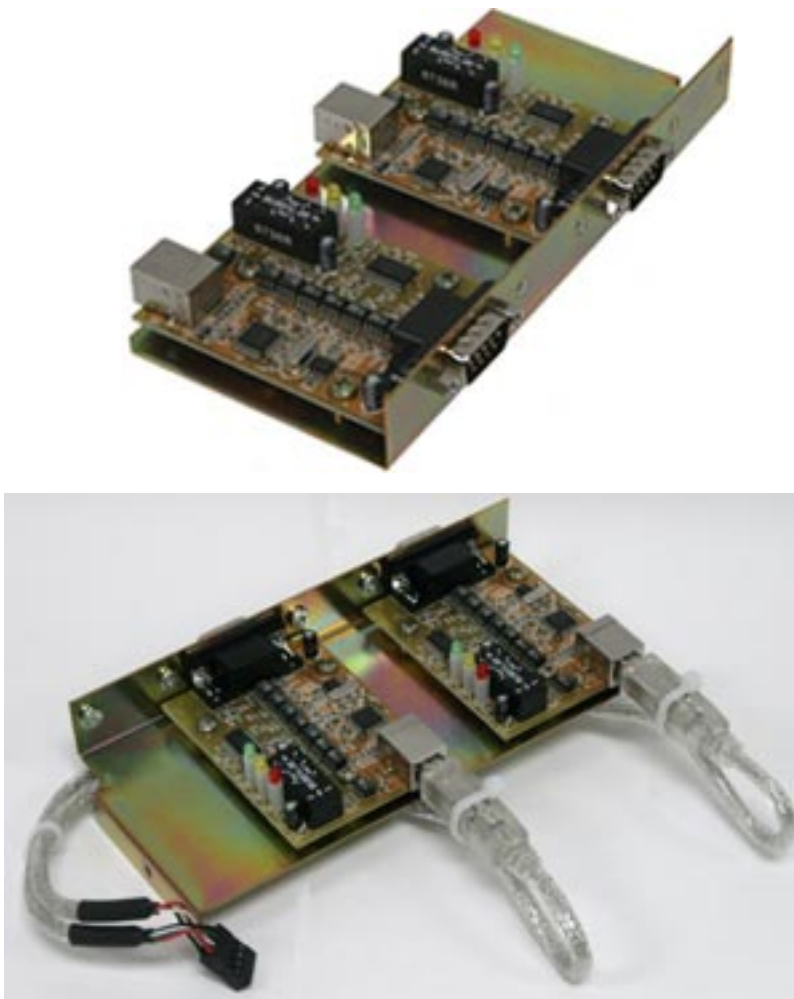
TR-USB-COM-SI-M Specifications

Model	TR-USB-COM-SI-M RS-232 Isolated Serial Port
Connector	Serial DB-9 male connector
Buffer Speed	Transmit - 128-byte Receive - 385-byte
Port Speed	Up to 230K bps
Isolation	2KV DC optical isolation protection
Surge Protection	25KV ESD surge protection
LED's	Power, TxD and RxD indicating power and port status
Serial Communication Parameters	Parity - none, even, odd Data bits - 7, 8 Flow control - RTS/CTS
COM Port	COM1 ~ COM4 can be changed to support HyperTerminal, or any other COM port number
Power Requirements	USB 1.1 or USB 2.0 port
Warranty	5 years
	Compatible with all versions of Windows XP, 2003, 2000, ME and 9x

TR-USB-COM-SI-M Connector Pin Drawing
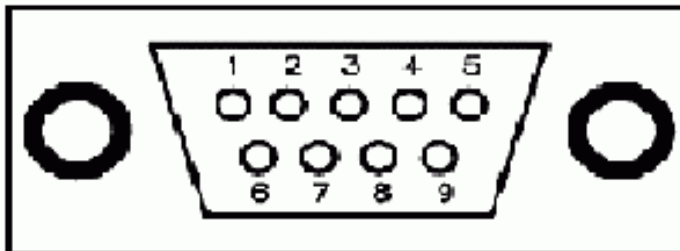
Pin 1	**DCD**
Pin 2	**RxD**
Pin 3	**TxD**
Pin 4	**DTR**
Pin 5	**GND**
Pin 6	**DSR**
Pin 7	**RTS**
Pin 8	**CTS**
Pin 9	**RI**

TR-USB-COMi-SI-M Description

The TR-USB-COMi-SI-M is designed to make industrial communication RS-422/485 port expansion quick and simple, with easy plug-and-play features.

Plugging the TR-USB-COMi-SI-M Serial Adapter into the USB port, the adapter is automatically detected and installed. There is no IRQ and COM port conflict, since the port does not require any additional IRQ, DMA or memory on the system. The RS-422/485 port functions as a native Windows COM port and it is compatible with Windows serial communication applications. Each port is individually configurable.

TR-USB-COMi-SI-M provides instant connectivity to RS-422/485 communication devices for industrial automation, multi-drop data collection devices, barcode readers, time clocks, scales, data entry terminals, and PC to PC long distance communication in harsh environments if needed.

TR-USB-COMi-SI-M Specifications

Model	TR-USB-COMi-SI-M RS-422/485 Isolated Serial Port
Connector	Serial DB-9 male connector
Buffer Speed	Transmit - 128-byte Receive - 385-byte
Buffer Control	Automatic transmit buffer control for 2-wire RS-485 half-duplex operation
Port Speed	Up to 230K bps
Isolation	2KV DC optical isolation protection
Surge Protection	25KV ESD surge protection
LED's	Power, TxD and RxD indicating power and port status
RS-422/485 Mode Setting	1 x external DIP switch for easy RS-422, RS-485 mode setting RS-422 mode - 4-wire with handshaking ON, ON, OFF, OFF RS-485 mode - 4-wire full duplex ON, OFF, OFF, OFF, OFF RS-485 mode - 2-wire half duplex with echo OFF, OFF, OFF, ON RS-485 mode - 2-wire half duplex without echo OFF, OFF, ON, ON
Serial Communication Parameters	Parity - none, even, odd Data bits - 7, 8 Flow control - RTS/CTS
Resistance	Built-in 120 Ohm termination resistors for Tx/Rx/CTS termination Built-in 750 Ohm biasing resistor for Tx/Rx biasing
COM Port	COM1 ~ COM4 can be changed to support HyperTerminal, or any other COM port number
Power Requirements	USB 1.1 or USB 2.0 port
Warranty	5 years
	Compatible with all versions of Windows XP, 2003, 2000, ME and 9x

TR-USB-COMi-SI-M Connector Pin Drawing
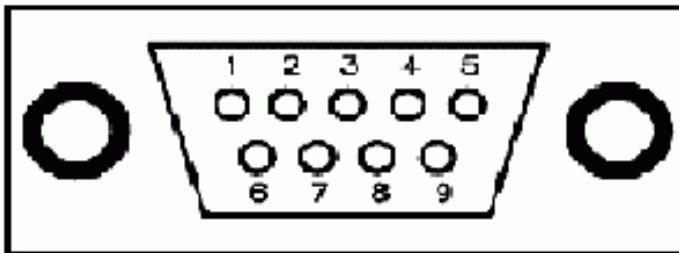
Pin 1	TxD-(A)
Pin 2	TxD+(B)
Pin 3	RxD+(B)
Pin 4	RxD-(A)
Pin 5	GND
Pin 6	RTS-(A)
Pin 7	RTS+(B)
Pin 8	CTS+(B)
Pin 9	CTS-(A)

Windows Drivers Installation

You need to have administrator privileges to inst all any new drivers under W indows Vista/2003/XP/ 2000. To install the driver or update the configuration, log on Windows as "Administrator" or ask the system administrator to install the TR-USB-COM driver.

NOTE: Prior to hardware installation, the driver must first be installed. Do not connect the USB Isolated Serial Adapter to the computer USB port, before the driver inst allation is completed.

Please proceed with the following steps to install the driver:

1.   Insert the **USB to Serial Driver and Utility** CD in the CD-ROM.

2.   The **USB to Serial Driver and Utility CD** dialog box appears.

3.   Under **Driver Installation**, double click **Windows Vista, 2003, XP, 2000 driver** to inst all the device driver.

4.   If using Windows (64-bit), select **Windows (64-bit) Vista, 2003, XP driver** for driver installation.

5.   After the message **FTDI CDM drivers have been successfully installed** appears, click **finish** to complete the driver installation.

6.   Plug in the USB Isolated Serial Adapter to the USB port and Windows will finish installing the driver files.

Verify the installation has been completed successfully by looking under Device Manager of the System Properties screen.   **(Click on Start-Settings-Control Panel-System Properties-Hardware-Device Manager)**.

The device should have installed as a **USB Serial Port (COMx)** attached to **USB Serial Converter (A/B)**.

COM Port Properties and Port Number

This feature is particularly useful for programs, such as HyperTerminal, which only work with COM1 through COM4. Please ensure to leave the COM port number setting already in use.

To change the virtual COM port properties:

- Select the **USB Serial Port**

- Click **Properties**

- Select **Port Setting** and **Advanced**

- Click the drop down arrow on COM port number and scroll to the required COM port.

    Select **OK**.

- Return to the Device Manager screen. You will see that the USB Serial Port inst allation has been changed to the new COM port number .

Uninstalling Windows Driver

To uninstall Windows Vista/2003/XP/2K driver:

- Remove the USB serial device from the USB port or hub.

- Go to the **Control Panel**

- Open **Add or Remove Program**

- Select **FTDI USB Serial Converter Driver**

- Click **Change/Remove**

- Select **Continue** to delete the drivers

- Select **Finish**

- Reboot the computer to complete the driver uninstall

RS-422/485 Mode Configuration of USB to RS-422/485 Adapter

Jumper Settings for RS-422 or RS-485

Inside the unit, there is a 2 x 10 (20-pin) header block which is jumpered to select the mode of operation. The plastic or metal cover needs to be opened to set the jumper setting to RS-422 or RS-485 mode as per the requirement s of the application. After setting the jumpers and connecting the power supply to the adapter, plug the adapter to the USB port to start driver inst allation.
The RS-422 and RS-485 Mode Block Configuration Settings are listed as follows.

RS-422 Mode Block Configuration

Jumper	Function
1-2	TxD / RxD Termination of 120 Ohm. This jumper should be always populated for RS-422 mode.
3-4	CTS / RTS Termination of 120 Ohm. This jumper should be always populated for RS-422 mode.
9-10	TxD Driver Always ON. As RS-422 is full duplex point to point, the transmitter should always be enabled.
13-14	RxD Driver Always ON. As RS-422 is full duplex point to point, the receiver should always be enabled.
17-18	Enable CTS Handshaking. This setting allows the data flow to be controlled using CTS/RTS handshaking if required by the application.

Note : all other positions = no jumper populated.

RS-485 Mode Block Configuration

Jumper	Function
1-2	TxD / RxD Termination of 120 Ohm. This jumper should only be populated at each end of the cable to meet RS-485 termination requirements.
5-6 7-8	TxD / RxD Single pair (half duplex for RS-485). Populate both these jumpers.
11-12	Enable TxD Driver only when transmitting. This is required by the RS-485 as multiple devices can transmit over the same twisted pair. When a RS-485 is not transmitting, it's transmitter must be turned off to allow other devices to communicate over the same wire.
13-14 (Echo) OR 15-16 (No Echo)	RxD Always Enabled. In this RS-485 mode characters transmitted by the RS-485 device will also be received by the same device. These echoed characters are usually stripped out by the application software. Transmit Data Echo Suppression Mode. In this mode characters transmitted by the RS-485 device will NOT be received by the same device. In this mode there is no need for the application software to strip out the transmitted data from the received data as it is handled by the hardware.
19-20	CTS Always Enabled. As there is no hardware handshaking in RS-485, CTS should be permanently enabled to allow unrestricted flow of data. If handshaking is required for RS-485 it can be done using X-On / X-Off handshaking protocol.

Note : all other positions = no jumper populated.

Sometimes, when operating in RS-422 or RS-485 mode, it is necessary to configure 120 Ohm termination of the data transmission lines. Generally this must be done in the cabling, since this depends on the installation of connections. Before applying the option, check the cable specifications for proper impedance matching.

Optical Isolation and Surge Protection

Each RS-422/485 port is individually optically isolated with 2000 VDC optical isolation. The optical isolation protects the PC from spikes and surges on the RS-422/485 network, by converting the electrical pulse into an optical signal and then changing it back into an electrical pulse. The computer is well protected, since the surges and spikes cannot cross the optical link.

Each RS-422/485 port is individually protected by surge protector to withstand electrostatic discharge and power surges up to 25KV ESD. Surge suppression on all signals prevent from damages caused by lighting or high voltage.

RS-232 Signal Pin-outs of DB-9 Male

Pin 1	DCD
Pin 2	RxD
Pin 3	TxD
Pin 4	DTR
Pin 5	GND
Pin 6	DSR
Pin 7	RTS
Pin 8	CTS
Pin 9	RI

RS-422 Signal Pin-outs of DB-9 Male

Pin 1	TxD- (A)
Pin 2	TxD+(B)
Pin 3	RxD+(B)
Pin 4	RxD-(A)
Pin 5	GND
Pin 6	RTS- (A)
Pin 7	RTS+(B)
Pin 8	CTS+(B)
Pin 9	CTS- (A)

RS-422 Signal Wiring

● **Point-to-Point 4 Wire Full Duplex**

USB-xCOMi   **RS-422 Device**

2	TxD+(B)	←→	RxD+ (B)
1	TxD- (A)	←→	RxD- (A)
3	RxD+ (B)	←→	TxD+(B)
4	RxD- (A)	←→	TxD- (A)
5	GND	←→	GND

● **RS-422 with Handshaking**

USB-xCOMi   **RS-422 Device**

2	TxD+(B)	←→	RxD+ (B)
1	TxD- (A)	←→	RxD- (A)
3	RxD+ (B)	←→	TxD+(B)
4	RxD- (A)	←→	TxD- (A)
5	GND	←→	GND
7	RTS+(B)	←→	CTS+(B)
6	RTS- (A)	←→	CTS- (A)
8	CTS+(B)	←→	RTS+(B)
9	CTS- (A)	←→	RTS- (A)
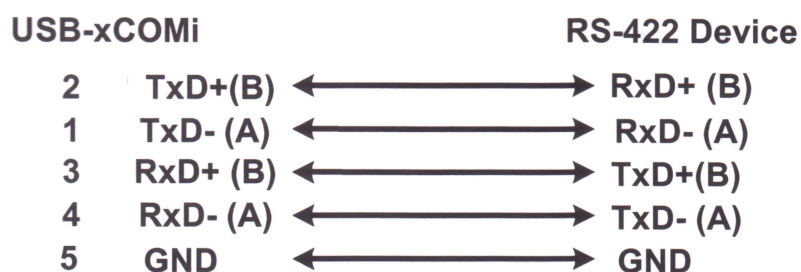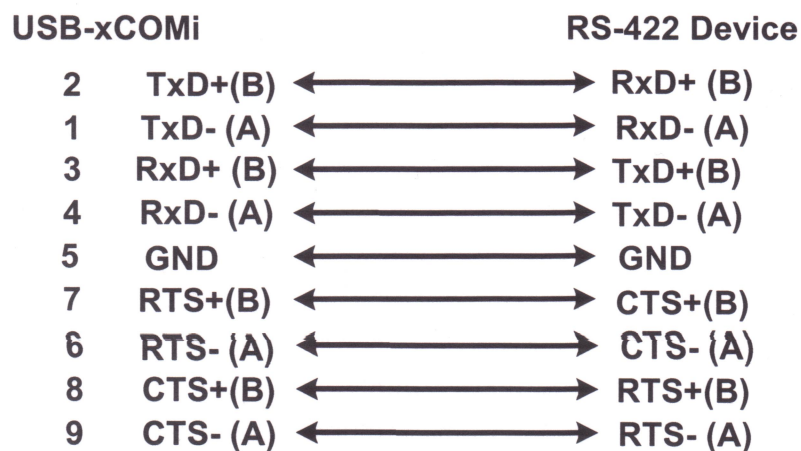
RS-485 2-Wire (Half Duplex) Signal Pin-outs of DB-9 Male

Pin 1	Data- (A)
Pin 2	Data+(B)
Pin 5	GND

RS-485 Signal Wiring

- **Multidrop RS-485 2-Wire Half-duplex**
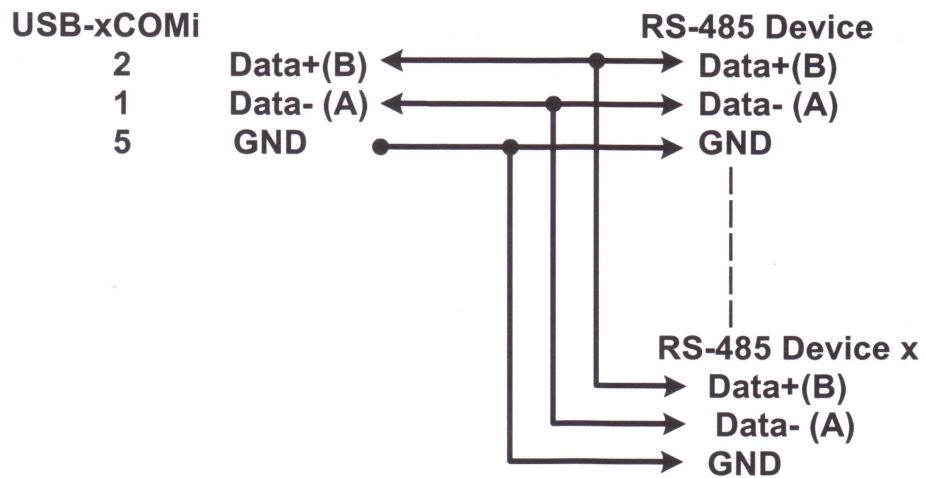
5

TR-IRIG-A/B Time Sync

This chapter provides information on the time synchronization option for the TR-5195F computer. The topics covered are:

TR-IRIG-A/B Time Synchronization Option Description

The TR-IRIG-A/B was developed for Transduction panel and rack mount computer systems with USB connection. It provides a professional solution for synchronization requirements in mobile applications like field data acquisition and can be deployed whenever to synchronize a PC, laptop or server when no PCI or serial port is available.

The TR-IRIG-A/B time code reader shows the receiver status via integrated LED's and uses a buffered real time clock to maintain the time while powered off. The driver software supplied with the board maintains the computer system time synchronous to the board time.

TR-IRIG-A/B Specifications

Model	TR-IRIG-A/B Time Code Reader
Receiver Input	AM-input (external BNC, internal SMB) Isolated by a transformer Impedance settable 50 ohms Input signal - 600mV ~ 8V (Mark) *other ranges on request* DC Level Shift input (external BNC, internal SMB) Isolated by photocoupler Internal series resistance - 220 ohms Maximum forward current - 50mA Diode forward voltage - 1.0V ~ 1.3V
Decoding Time Standards	IRIG-A133/A132/A003/A002 IRIG-B123/B122/B003/B002
Accuracy of Time Base	±5 usec compared to IRIG reference marker
Accuracy of Time Code Source	±100ppm
Holdover Mode	Automatic switching to crystal time base Accuracy approximately 1E-6 if decoder has been synchronous for more than 1 hour
Backup Battery	If power supply fails, onboard realtime clock keeps time and date information. Realtime clock can work with backup battery for approximately 5 days. Important system parameters are stored in the RAM of system.
Reliability of Operation	Microprocessor supervisory circuit provides watchdog timer, power supply monitoring and backup battery switchover Software watchdog monitors correct program flow and generates a reset in case of error detection
Initialization	Software and realtime clock can be set by USB monitor program
Interface	USB connection
Power Requirements	±5V @ 80mA
Dimensions	2.87" (L) x 4.61" (W) x 0.94" (H)
Operating Temperature	0 ~ 70ºC (32ºF ~
Humidity	Max. 85%
Warranty	3 year

6

Regulatory & Safety Compliance

This chapter provides information on the TR-5195F computer regulatory and safety compliance. The topics covered are:

Regulatory and Safety Compliance

The TR-5195F fanless panel/rack mount PC complies with the following safety and regulation standards:

- NEMA 4 Front Panel and Seal
- UL, C-UL or equivalent electrical safety approval
- FCC Class A or B depending on final configuration
- CE including EMC and Low Voltage Directive
- RoHS
- Shock and Vibration 25G, 5G 10 ~ 300Hz
- IEEE 1613 Class 2 Standard for substation computers
- NV Marine compliant but not certified

Appendix

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. There is a total of 1K port address space
available. The following table lists the I/O port addresses
used on the Industrial PC.

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
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

Interrupt Request Lines (IRQ)

There are a total of 15 IRQ lines available on the Industrial PC. Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on the Industrial PC.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Software Redirected to Int 0Ah
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

POST Beep

Currently there are two kinds of beep codes in BIOS.
This code indicates that a **video error** has occurred and
the BIOS cannot initialize the video screen to display any
additional information.

This beep code consists of a single long beep followed by
two short beeps.

The other code indicates that your **DRAM error** has
occurred.
This beep code consists of a single long beep repeatedly.

NOTE:

The following discussion applies to DOS environment. For other operating systems e.g. Windows, LINUX, etc., please contact Transduction technical support for assistance.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table 1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer,

otherwise the system resets.

Example program:

; **INITIAL TIMER PERIOD COUNTER**

;

W_LOOP:

```
        MOV     AX, 6F02H         ;setting the time-out value
        MOV     BL, 30                  ;time-out value is 48 seconds
        INT        15H
 ;
```

; **ADD THE APPLICATION PROGRAM HERE**

;

```
        CMP        EXIT_AP, 1           ;is the application over?
        JNE           W_LOOP        ;No, restart the application

        MOV     AX, 6F02H         ;disable Watchdog Timer
        MOV     BL, 0                ;
        INT        15H
;
```
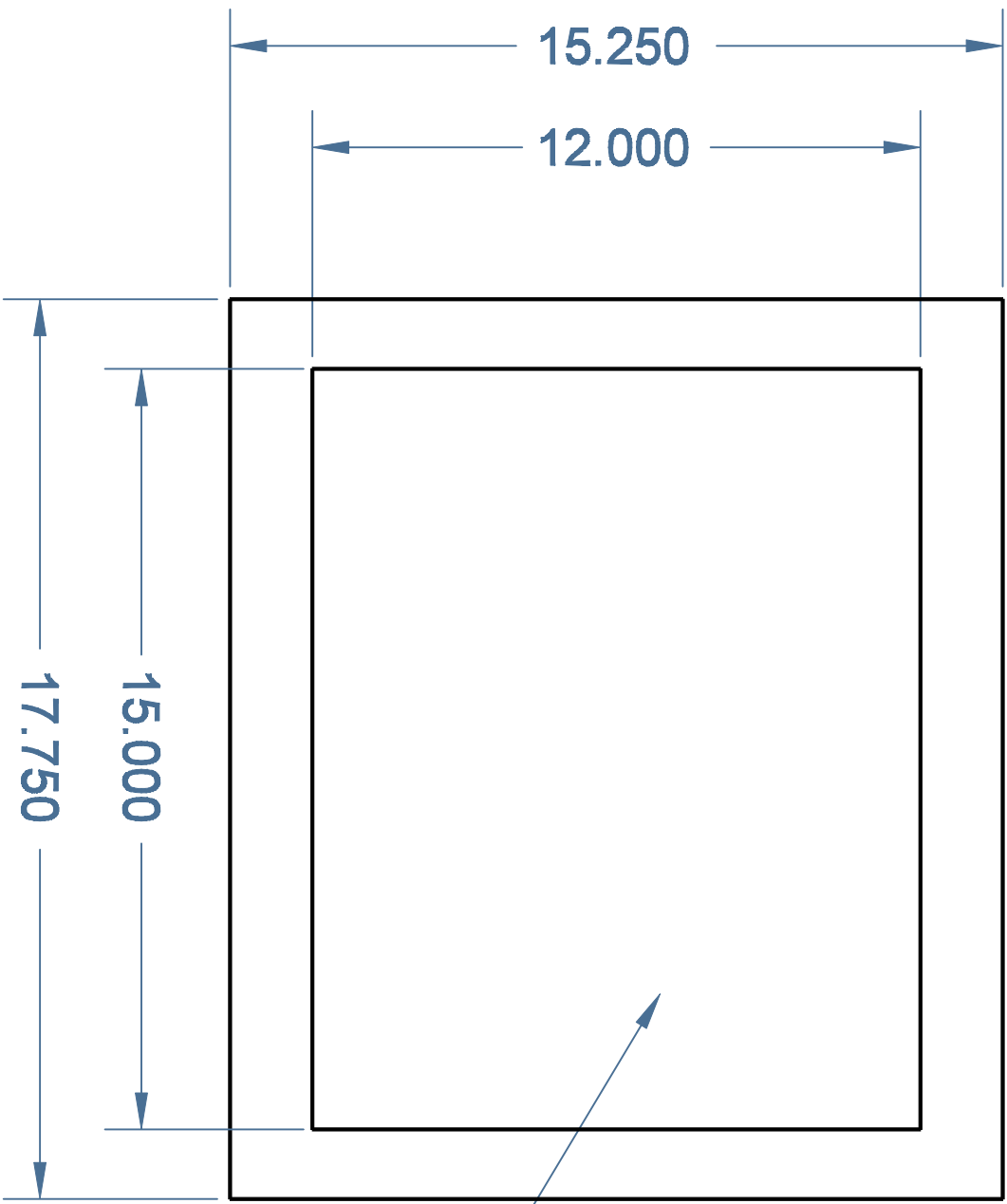
; **EXIT** ;

Your Configuration Sheet

The TR-5195F fanless panel/rack mount PC configuration sheet will help you decide on the configuration of the system:
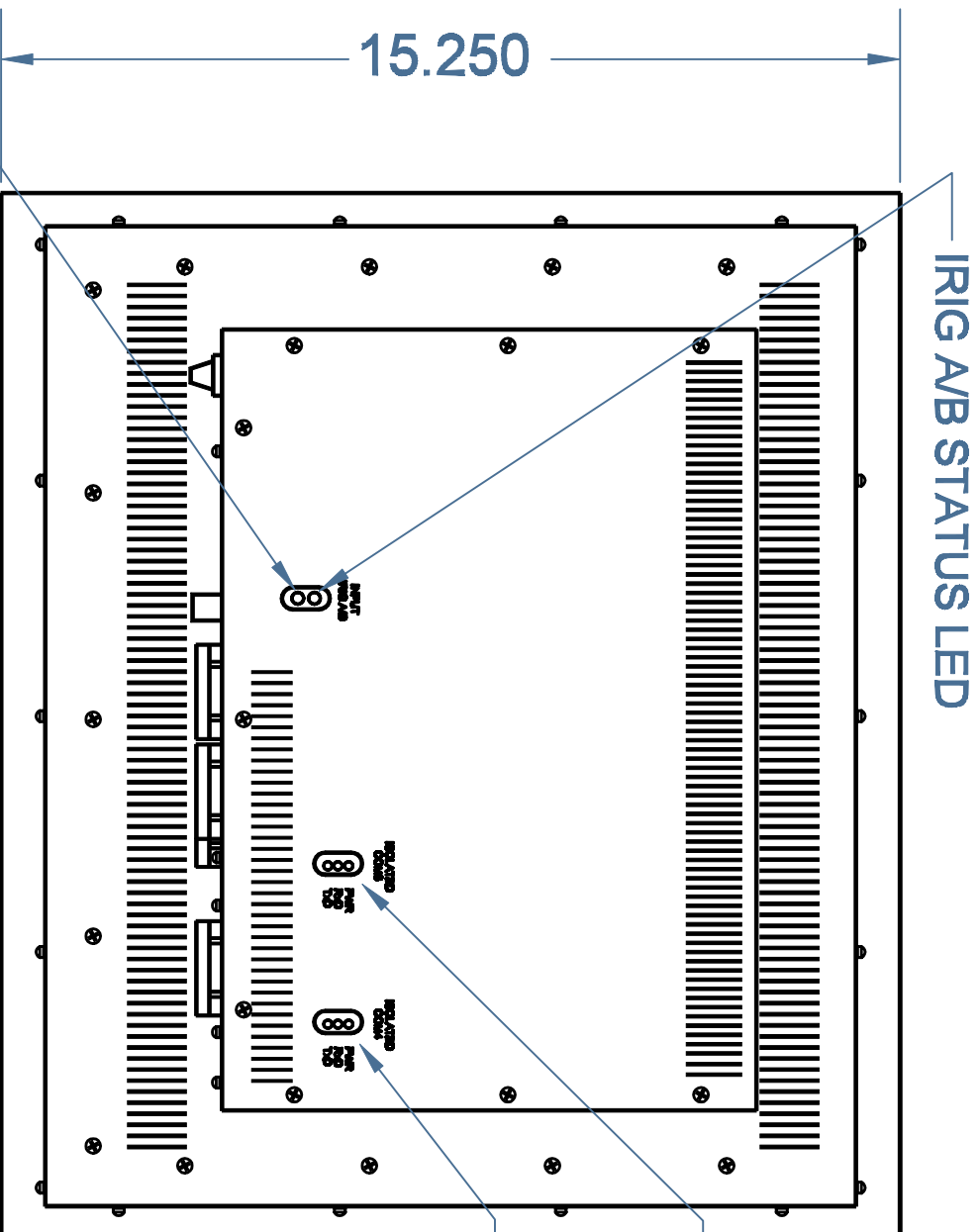
- Rack mount?

- Panel mount?

- Touch screen?

- Notouch screen - safety glass?

- Wide viewing angle - no touch screen, no safety glass?

- High brightness LCD for outdoor use?

- Universal AC power supply 50/60Hz?

- DC input power supply 24, 48, 125, 250VDC?

- How much memory 2GB or 3GB?

- How big solid state flash drive 32, 64, 128, 256GB?

- Which operating system to be installed?

- How many RS-232 isolated serial ports?

- How many RS-422/485 isolated serial ports?

- IRIG-A/B time sync option?

- Heat chamber test and for how long?

- Is CE certificate needed?

FRONT VIEW

15.250

12.000

17.750

15.000

19" LCD MONITOR

DATE 02-14-2009	DRAWN BY B.G.	MODEL		
PRODUCT PANEL MOUNT VERSION		TR 5195F		
FINISH CRINKLE BLACK POWDER PAINT	Transduction			
TITLE LAYOUT		DRAWING No B-410	CHECKED BY	REVISION
				SCALE NTS

15.250

17.750

POWER ON / DISK ACTIVITY LED

REAR VIEW

IRIG A/B STATUS LED

ISOLATED COM4 SERIAL PORT
POWER, RxD, TxD
STATUS LEDS

ISOLATED COM3 SERIAL PORT
POWER, RxD, TxD
STATUS LEDS

DATE 02-14-2009	DRAWN BY B.G.	MODEL TR 5195F
PRODUCT PANEL MOUNT VERSION		
FINISH CRINKLE BLACK POWDER PAINT		
TITLE LAYOUT	CHECKED BY	REVISION
	DRAWING No B-411	SCALE NTS

Transduction

1.750

"A"

15.250

13.750

CHASSIS

3.000

4.750
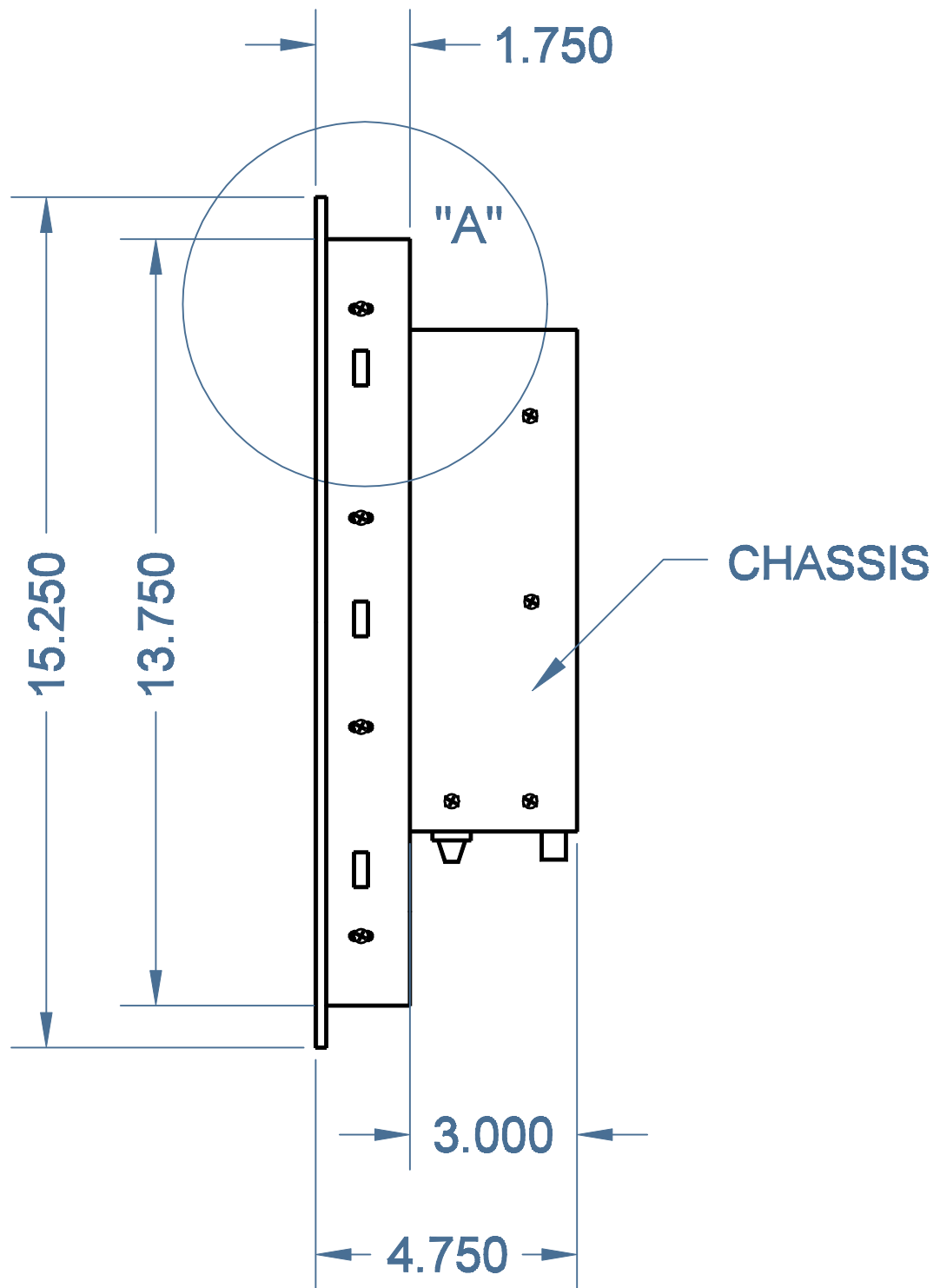
<u>RIGHT SIDE VIEW</u>

NOTE: FOR DETAIL "A" LOOK
DRAWING B-415

DATE 02-14-2009	DRAWN BY B.G.	MODEL TR 5195F		
PRODUCT PANEL MOUNT VERSION			REVISION	SCALE NTS
FINISH CRINKLE BLACK POWDER PAINT	Transduction		CHECKED BY	
TITLE LAYOUT			DRAWING No B-412	

BOTTOM VIEW

1.750

2 NON-ISOLATED RS-232 COM PORTS

IRIG A/B BNC PORT

AC INLET

PARALLEL PORT

ON/OFF SWITCH

FUSE

PS2 MOUSE CONNECTOR
PS2 KEYBOARD CONNECTOR

TV_OUT CONNECTOR

16.625

17.750

13.250

ISOLATED RS-232 OR RS-422/485 SERIAL PORTS

ANALOG SVGA OUTPUT

4 USB PORTS

3.000

AUDIO CONNECTORS

LAN PORTS

4.750

DATE	DRAWN BY	MODEL				
08-21-2009	B.G.	TR5195F				
PRODUCT			REVISION			
PANEL MOUNT VERSION						
FINISH		CHECKED BY	SCALE			
CRINKLE BLACK POWDER PAINT			NTS			
TITLE		DRAWING No				
LAYOUT		B-413				

Transduction

BOTTOM VIEW

2 NON-ISOLATED RS-232 COM PORTS

IRIG A/B BNC PORT

DC INPUT TERMINAL BLOCK

PARALLEL PORT

FUSE

ON/OFF SWITCH

PS2 MOUSE CONNECTOR
PS2 KEYBOARD CONNECTOR

TV_OUT CONNECTOR

FUSE

+
–
G

1.750

16.625

17.750

13.250

3.000

4.750

ISOLATED RS-232 OR RS-422/485 SERIAL PORTS

LAN PORTS

AUDIO CONNECTORS

ANALOG SVGA OUTPUT

4 USB PORTS

DATE	DRAWN BY	MODEL		
08-21-2009	B.G.	TR5195F		
FINISH	PRODUCT			
CRINKLE BLACK POWDER PAINT	PANEL MOUNT VERSION			
TITLE			DRAWING No	
LAYOUT DC INPUT OPTION			B-413A	
		REVISION	CHECKED BY	SCALE
				NTS

Transduction

OPEN

16.950

13.900

DATE 02-14-2009	DRAWN BY	MODEL	REVISION
PRODUCT PANEL MOUNT VERSION	B.G.	TR 5195F	
FINISH CRINKLE BLACK POWDER PAINT		DRAWING No	CHECKED BY
TITLE CUTOUT	Transduction	B-414	SCALE NTS

MONITOR
ENCLOSURE

CHASSIS

PANEL MOUNT CLIP

PANEL

FRONT BEZEL

NOTE: CLIP ATTACHED FROM
BEHIND AFTER
CHASSIS PLACEMENT
IN THE PANEL
OPENING

19" LCD MONITOR

FRONT VIEW

13.980 (8U)

12.000

18.960

15.000

.865 3.500 5.250 3.500 .865

DATE	02-14-2009	DRAWN BY	B.G.	MODEL	TR 5195F		
PRODUCT	RACK MOUNT VERSION						
FINISH	CRINKLE BLACK POWDER PAINT		Transduction	DRAWING No	B-416	CHECKED BY	REVISION
TITLE	LAYOUT					NTS	SCALE

REAR VIEW

13.980 (8U)

18.960

POWER ON / DISK ACTIVITY LED

IRIG A/B STATUS LED

ISOLATED COM4 SERIAL PORT POWER, RxD, TxD STATUS LEDS

ISOLATED COM3 SERIAL PORT POWER, RxD, TxD STATUS LEDS

DATE	DRAWN BY	MODEL		
02-14-2009	B.G.	TR 5195F		
PRODUCT			REVISION	SCALE
RACK MOUNT VERSION				
FINISH			CHECKED BY	NTS
CRINKLE BLACK POWDER PAINT	Transduction			
TITLE		DRAWING No		
LAYOUT		B-417		

1.750

13.980 (8U)

13.750

CHASSIS

3.000

4.750

RIGHT SIDE VIEW

DATE 02-14-2009	DRAWN BY B.G.	MODEL TR 5195F		
PRODUCT RACK MOUNT VERSION			REVISION	SCALE NTS
FINISH CRINKLE BLACK POWDER PAINT	Transduction		CHECKED BY	
TITLE LAYOUT			DRAWING No B-418	

BOTTOM VIEW

1.750

18.960

16.625

13.250

3.000

4.750

TV_OUT CONNECTOR

PS2 MOUSE CONNECTOR
PS2 KEYBOARD CONNECTOR

FUSE

ON/OFF
SWITCH

AC INLET

IRIG A/B BNC PORT

2 NON-ISOLATED RS-232
COM PORTS

PARALLEL PORT

ISOLATED RS-232 OR
RS-422/485 SERIAL PORTS

LAN PORTS

AUDIO
CONNECTORS

4 USB
PORTS

ANALOG SVGA OUTPUT

DATE
08-21-2009

DRAWN BY
B.G.

PRODUCT
RACK MOUNT VERSION

MODEL
TR5195F

FINISH
CRINKLE BLACK
POWDER PAINT

Transduction

TITLE
LAYOUT

DRAWING No
B-419

CHECKED BY

REVISION

SCALE
NTS

BOTTOM VIEW

1.750

18.960

16.625

13.250

3.000

4.750

PS2 MOUSE CONNECTOR
PS2 KEYBOARD CONNECTOR

TV_OUT CONNECTOR

FUSE

ON/OFF
SWITCH

DC INPUT TERMINAL BLOCK

IRIG A/B BNC PORT

2 NON-ISOLATED RS-232
COM PORTS

PARALLEL PORT

ANALOG SVGA OUTPUT

4 USB
PORTS

ISOLATED RS-232 OR
RS-422/485 SERIAL PORTS

AUDIO
CONNECTORS

LAN PORTS
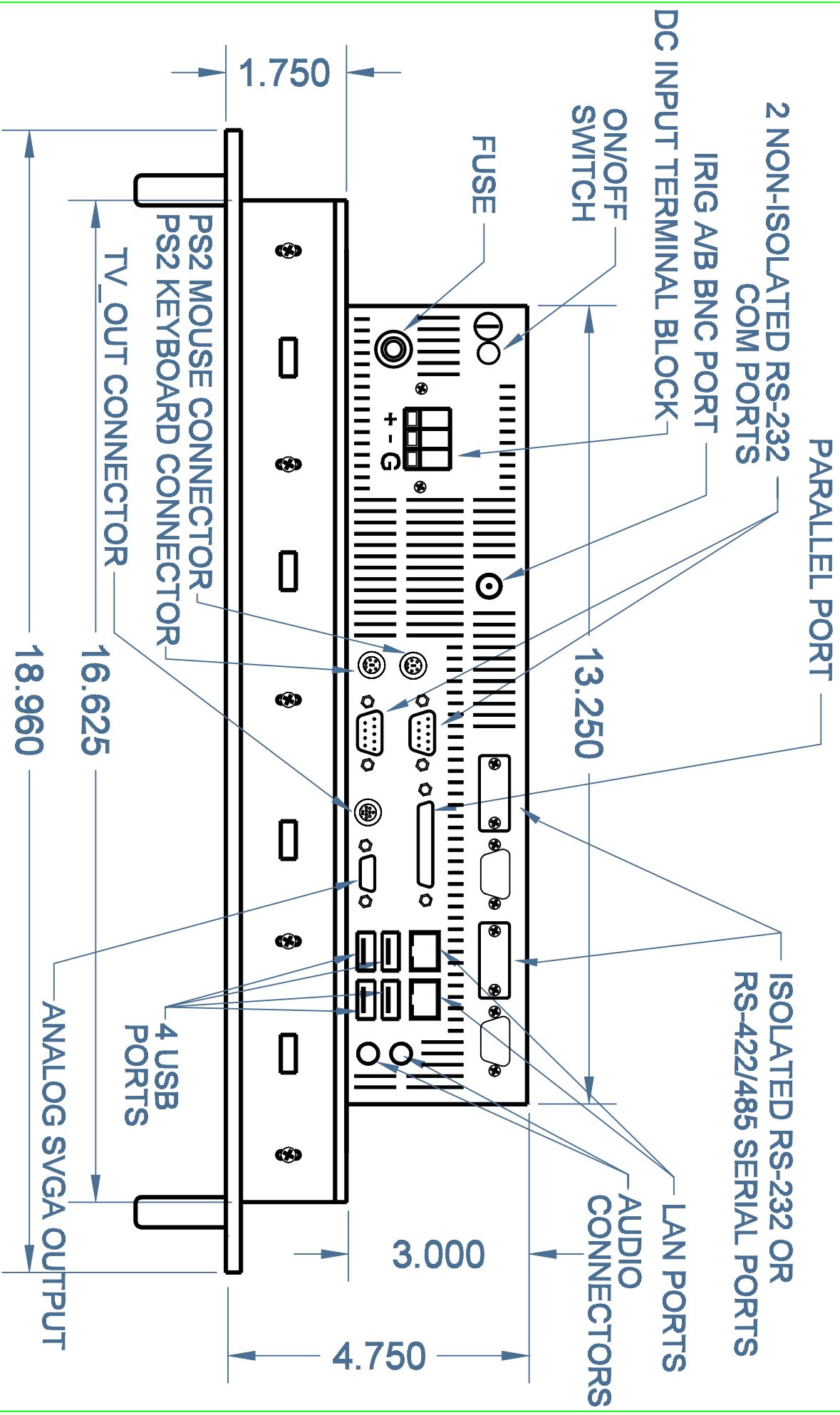
DATE 08-21-2009	DRAWN BY B.G.	MODEL TR5195F		
PRODUCT RACK MOUNT VERSION				
FINISH CRINKLE BLACK POWDER PAINT		Transduction		
TITLE LAYOUT DC INPUT OPTION			DRAWING No B-419A	
			REVISION	SCALE
		CHECKED BY		NTS

SIDE VIEW

.250

1.750 (1U)

FRONT VIEW

3.800

1.650

19.000

USB PORTS

CN.1

TWO USB CABLES
MOUNTED ON THE PLATE

3' - 0" ±0.5"

CN.2
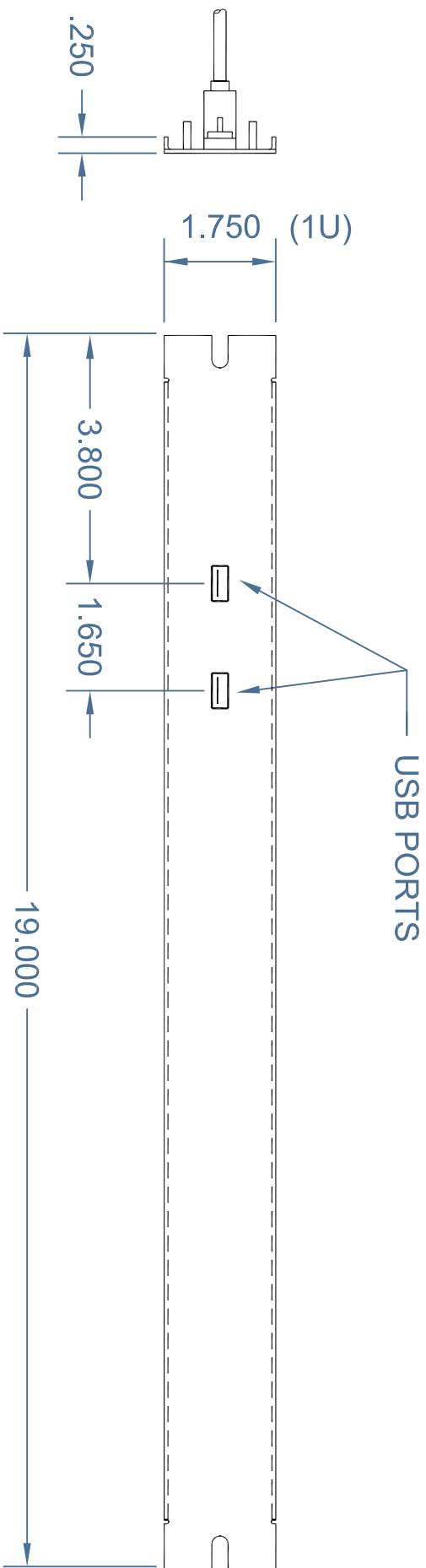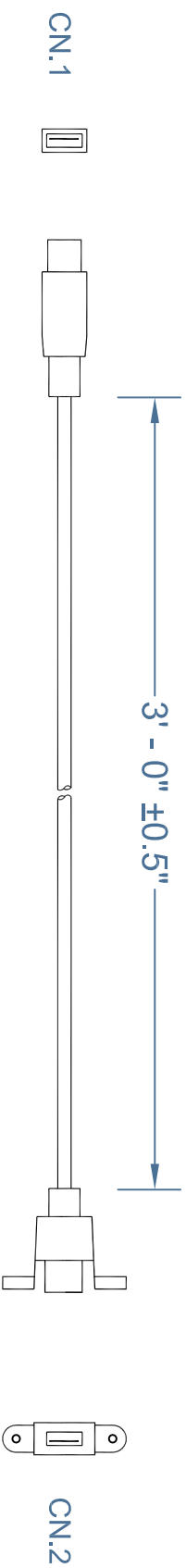
DATE	02-01-2010	DRAWN BY	B.G.	MODEL	1U USB FILLER
FINISH	SANDTEX BLACK PAINT				
TITLE		TR-RM-USB PLATE	Transduction		
	LAYOUT		DRAWING No	B-436A	
			REVISION	CHECKED BY	NTS

SIDE VIEW

.105

STUD #6-32 x .500 4 PLACES FOR PANEL MOUNTING

USB PORTS

Ø .166 4 PLACES

1.300

1.475

2.350

5.300

FRONT VIEW

CN.1

TWO USB CABLES
MOUNTED ON THE PLATE

3' - 0" ±0.5"

CN.2

PANEL CUTOUT

.900

OPEN

4.600

4.900

.700

COVER PLATE