FOR.A
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

OPERATION MANUAL

VTW-350HS
Video Type Writer

1st Edition

FOR-A COMPANY LIMITED

Edition Revision History

Edit.	Rev.	Date	Description	Section/Page
1	-	2014/09/17		

USO RESTRITO

2

Precautions

Important Safety Warnings

[Power]

⚠ Caution	Operate unit **only** at the specified supply voltage.
🔌	Disconnect the power cord via the power plug only. **Do not** pull on the cable portion.
🚫 Stop	**Do not** place or drop heavy or sharp-edged objects on the power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check the power cord for excessive wear or damage to avoid possible fire / electrical hazards.

[Grounding]

❗ Caution	**Ensure** the unit is properly grounded at all times to prevent electrical shock.
⚠ Hazard	**Do not** ground the unit to gas lines, units, or fixtures of an explosive or dangerous nature.
❗ Caution	**Ensure** the power cord is firmly plugged into the AC outlet.

[Operation]

⚠ Hazard	**Do not** operate the unit under hazardous or potentially explosive atmospheric conditions. Doing so could result in fire, explosion, or other hazardous results.
⚠ MHazard	**Do not** allow liquids, metal pieces, or other foreign materials to enter the unit. Doing so could result in fire, other hazards, or a unit malfunction.
🔌	If a foreign material does enter the unit, turn the power off and **immediately** disconnect the power cord. Remove the material and contact an authorized service representative if damage has occurred.

[Transportation]

❗ Caution	**Handle** with care to avoid impact shock during transit, which may cause malfunction. When you need to transport the unit, use the original or suitable alternative packing material.

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[Circuitry Access]

⊗	**Do not** remove covers, panels, casing, or access the circuitry with power applied to the unit. Turn the power off and disconnect the power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.
⊘ Stop	**Do not** touch any parts / circuitry with a high heat factor. Capacitors can retain enough electric charge to cause mild to serious shock, even after the power has been disconnected. Capacitors associated with the power supply are especially hazardous.
⚠ Hazard	Unit **should not** be operated or stored with cover, panels, and / or casing removed. Operating the unit with circuitry exposed could result in electric shock / fire hazards or a unit malfunction.

[Potential Hazards]

⚠ Caution	If abnormal odors or noises are noticed coming from the unit, immediately turn the power off and disconnect the power cord to avoid potentially hazardous conditions. If problems similar to the above occur, contact an authorized service representative **before** attempting to operate the unit again.

[Rack Mount Brackets, Ground Terminal, and Rubber Feet]

❗ Caution	To rack-mount or ground the unit, or to install rubber feet, **do not** use screws or materials other than those supplied. Doing so may cause damage to the internal circuits or components of the unit. If you remove the rubber feet that are attached to the unit, **do not** reinsert the screws that secure the rubber feet.

[Consumables]

⚠ Caution	Consumable items that are used in the unit must be periodically replaced. For further details on which parts are consumables and when they should be replaced, refer to the specifications at the end of the Operation Manual. Since the service life of the consumables varies greatly depending on the environment in which they are used, such items should be replaced at an early date. For details on replacing consumable items, contact your dealer.

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Upon Receipt

Unpacking

VTW-350HS Video Typewriter units and their accessories are fully inspected and adjusted prior to shipment. Operation can be performed immediately upon completing all required connections and operational settings.

Check your received items against the packing lists below.

ITEM	QTY	REMARKS
VTW-350HS	1	
AC Cord	1 set	One AC cord and one AC cord retaining clip
Rack Mount Brackets	1 set	EIA standard type
Rubber Feet	1 set	
DVI (29-pin)-VGA conversion adapter	1	For VGA monitor connection
CD-ROM	1	VTW-350HS Operation manual (PDF) VTW Software manual (PDF)

* The monitor, the keyboard, and the mouse for controlling VTW-350HS are available for the separate purchase.

IMPORTANT

Do not install any additional software on the VTW-350HS. It may cause system malfunction.

To turn off the VTW-350HS, **shut down Windows** and then press the power switch on the front of the unit.

When turning back on the VTW-350HS after powering off, wait **at least 10 seconds**.

Check

Check to ensure no damage has occurred during shipment. If damage has occurred, or items are missing, inform your supplier immediately.

Trademark

Microsoft ® Windows ® 7 Embedded operating system is a trademark of Microsoft Corporation.

Rack Mounting

The VTW-350HS can be mounted to EIA standard rack units. When rack mounting a unit, use the supplied rack mount brackets (rack ears).

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1. Prior to Starting

1-1. Welcome

Congratulations! By purchasing VTW-350HS Video Typewriter you have entered the world of FOR-A and its many innovative products. Thank you for your patronage and we hope you will turn to FOR-A products again and again to satisfy your video and audio needs.

FOR-A provides a wide range of products, from basic support units to complex system controllers, which have been increasingly joined by products for computer video based systems. Whatever your needs, talk to your FOR-A representative. We will do our best to be of continuing service to you.

1-2. Features

VTW-350HS is a low cost HD/SD Video Typewriter. With its lightweight, compact design, the VTW-350HS is an extremely portable video typewriter perfect for relay applications. The software offers a rich array of drawing functions, more than 260 transition functions, template control, general-purpose file interface and more.

All the functions you need are packed into an extremely compact case. With its excellent cost performance, the VTW-350HS makes CG production affordable for all.

> ➢ More than 260 transition functions come standard, including roll, crawl, fade in, fade out, slide and wipe
> ➢ 1U size compact design excellent for relay applications. The vibration-resistant case makes it perfect for portable and on-board applications
> ➢ Capable of capturing and storing still images from SDI inputs (video and key signals can be stored simultaneously)
> ➢ Program and preview outputs

2. Panel Descriptions

2-1. Front Panel

No.	Name	Description		
1	Status Indicators	POWER	Lit green	Power is supplied to the unit.
			Unlit	The unit is powered off or power cord is not plugged in properly.
		ACT	Not used	
		FAN	Unlit	All cooling fans are operating properly.
			Lit red	One or more fans failed. Power off the unit and replace the failed fan, if necessary.
2	Power switch Power indicator	Switch used to turn unit power ON / OFF. Power indicator will be lit green when power switch is turned ON. It takes about 5 seconds for the indicator to be lit. Wait at least 10 seconds to turn ON after power switch is turned OFF. Be sure to shut down Windows before turning OFF this power switch.		
3	USB1 USB2	Used to connect USB devices such as a keyboard, mouse, and other USB devices (USB2.0).		
4	RESET	If the POWER indicator does not light up green 5 seconds after the power switch is turned on, press the RESET switch (Not for normal use.).		

IMPORTANT

If the FAN indicator lights up red, there is a fan failure. Turn off the VTW-350HS and contact your retailer.

2-2. Rear Panel
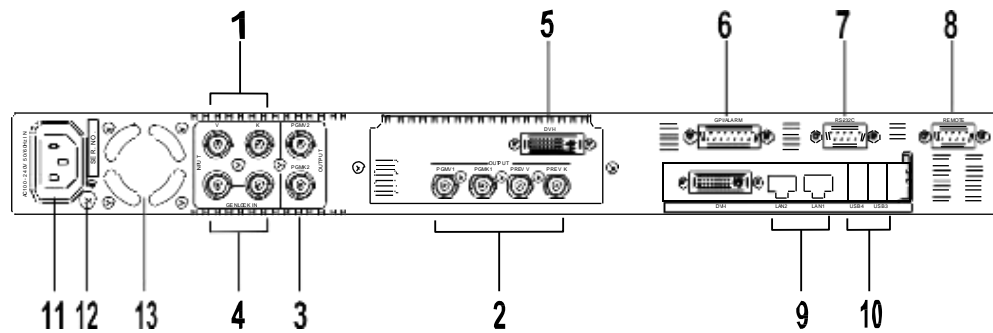
No.	Name		Description	Refer to
1	INPUT	V	HD/SD SDI Video input with built-in frame synchronizer, BNC	
		K	HD/SD SDI Key input with built-in frame synchronizer, BNC	
2	OUTPUT	PGM V1	HD/SD SDI program (On-air) output (Video), BNC	
		PGM K1	HD/SD SDI program (On-air) output (Key), BNC	
		PREV V	HD/SD SDI Preview output (Video), BNC	
		PREV K	HD/SD SDI Preview output (Key), BNC	
3	OUTPUT	PGM V2	Program distribution output (Video), BNC	
		PGM K2	Program distribution output (Key), BNC	
4	GENLOCK IN		External reference signal input (Black Burst signal or Tri-level sync signal), BNC (Terminate with 75Ω terminator, if unused.)	3
5	DVI-I		For digital monitor connection. Use the supplied adapter for VGA monitor connection. Bottom DVI-I connector is unavailable.	
6	GPI / ALARM		For power / fan alarm output and the GPI input/output. (15-pin D-sub, female)	2-4-1
7	RS232C		RS-232C serial port. 9-pin D-sub, male	2-3-2
8	REMOTE		RS-422 serial port. 9-pin D-sub, female.	2-3-1
9	LAN 1		For the connection to a computer Ethernet port. (100BASE-TX/1000BASE-T, RJ-45)	
10	USB3 USB4		For the connection to USB devices such as a keyboard, mouse, and other USB devices (USB 3.0).	3-1
11	AC IN		For the connection to AC power source via supplied accessory cord. (100-240VAC 50/60Hz)	
12	Ground Terminal		For grounding unit to protect operators against static electricity and / or electrical shock.	
13	Cooling Fan		For cooling unit to prevent overheating. Do not block the vent with other equipment or objects.	

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2-3. Serial Interfaces

2-3-1. Remote

The remote connector is normally not active.
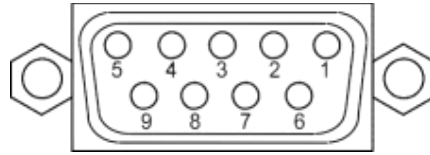
9-pin D-sub, female

◆ **Pin Assignment**

Pin No.	Signal	I/O	Description
1	FG	-	Frame ground
2	TX-	Out	Transmit data (-)
3	RX+	In	Receive data (+)
4	SG		Signal ground
5	NC		No connection
6	SG		Signal ground
7	TX+	Out	Transmit data (+)
8	RX-	In	Receive data (-)
9	FG		Frame ground

2-3-2. RS-232C

9-pin D-sub, male
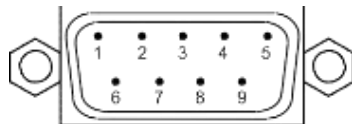
◆ **Pin Assignment**

Pin No.	Signal	I/O	Description
1	DCD		Detect carrier detect
2	RXD	In	Receive data
3	TXD	Out	Transmit data
4	DTR	Out	Data terminal ready
5	GND		Signal ground
6	DSR	In	Data set ready
7	CTS	In	Clear to send
8	RTS	Out	Request to send
9	RI		Ring indicator

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2-4. Parallel Interface

2-4-1. GPI / ALARM
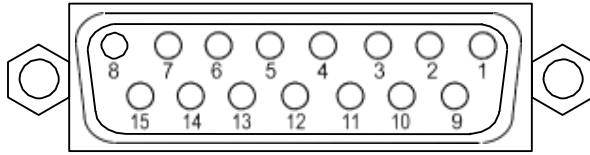
15-pin D-sub, female

◆ **Pin Assignment**

Pin No.	Signal	I/O	Description	VTW function
1	GND	─	Signal ground	
2	POW ALARM	Out	Power alarm output (*1)	
3	FAN ALARM	Out	Fan alarm output (*1)	
4	NC	─	Not used	
5	GPI IN3	In	GPI input(*2)	Pause
6	GPI IN2	In	GPI input (*2)	Stop / Clear
7	GPI IN1	In	GPI input (*2)	Play
8	+5VOUT	Out	+5V DC output	
9	COMMON	─	Power/fan alarm output, common (*1)	
10	NC	─	Not used	
11	NC	─	Not used	
12	GPI IN4	In	GPI input (*2)	Cut
13	GPI OUT2	Out	GPI output(*3)	(No use)
14	GPI OUT1	Out	GPI output(*3)	(No use)
15	GND	─	Signal ground	

*   The maximum current rating for +5V output is 200mA.

(*1) See "Alarm Output Circuit" in the following page.

(*2) See "GPI IN Circuit" in the following page.
   See "VTW Software Operation Manual" for function assignments.

(*3) See "GPI OUT Circuit" in the following page.
   See "VTW Software Operation Manual" for function assignments.

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Alarm Output Circuit
Normally open relay circuit. The circuit behaves as below.

When operating normally:	An alarm pin and the common pin are open.
When a malfunction occurs or the power is off:	An alarm pin and the common pin are closed.

Pin 9 is a common pin for both power alarm and fan alarm.
Contact rating is 0.5A@30VDC

Alarm Output   VTW-350HS

Max：30V

Relay contact   Pow Alarm

Closed when a
malfunction
occurs or power
is off.   Relay contact   Fan Alarm

Common
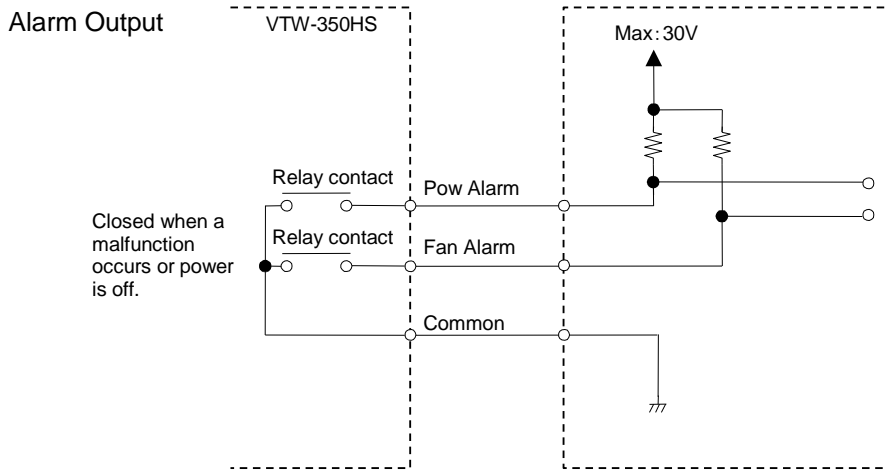
GPI IN Circuit
Pulse level trigger type. GPI IN pin and GND pin change the state from open to close.
Pulse width: 100msec or more, pulse interval: 100msec or more.

GPI IN1 (Pin7)

From open to closed position	Enables the assigned function

GPI IN pulse

More than 100msec   More than 100msec

OPEN

CLOSE

More than 100msec

GPI IN   VTW-350HS

GPI IN1-4

GND

12
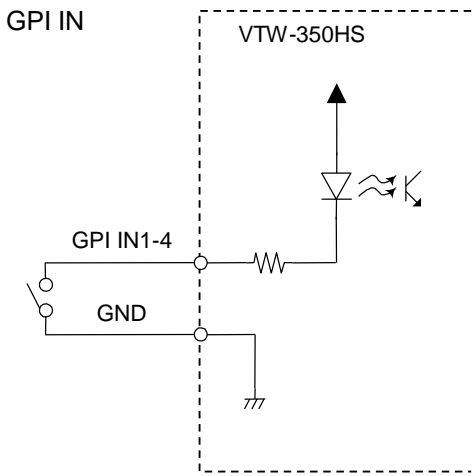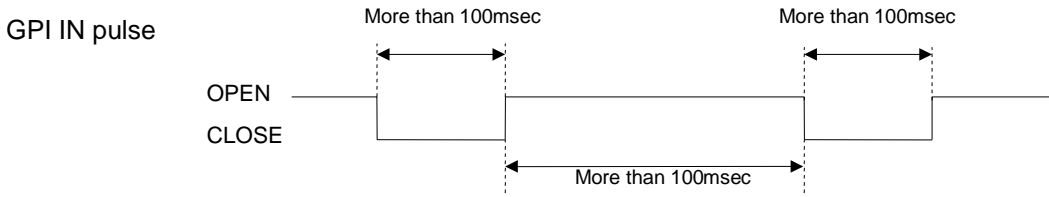
GPI OUT Circuit
Open collector output.
When using an external power source, its voltage should be 12V or less.
The output current of each GPI OUT pin should be less than 20mA.

GPI OUT1 (Pin14)

When function is ON:	The pin and the ground pin are shorted.
When function is OFF:	The pin and the ground pin are open.

GPI OUT

VTW-350HS

GPI OUT1-2

GND

Max: 12V

13
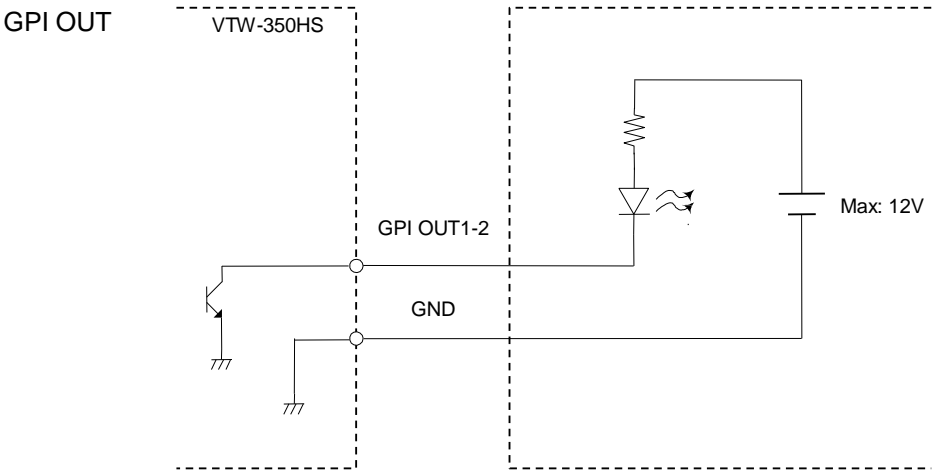
3. Connections

Connect peripherals as depicted below.

<table>
<tr><td></td><td></td></tr>
</table>

VTW-350HS

LINE VIDEO (HD/SD SDI) → Input V

LINE KEY (HD/SD SDI) → Input K

PGM1 — VIDEO → On air
       — KEY

PREV — VIDEO → Preview
      — KEY

BB/Tri sync → GENLOCK IN

Loopthrough ←

PGM2 — VIDEO → On-air signals monitoring
       — KEY
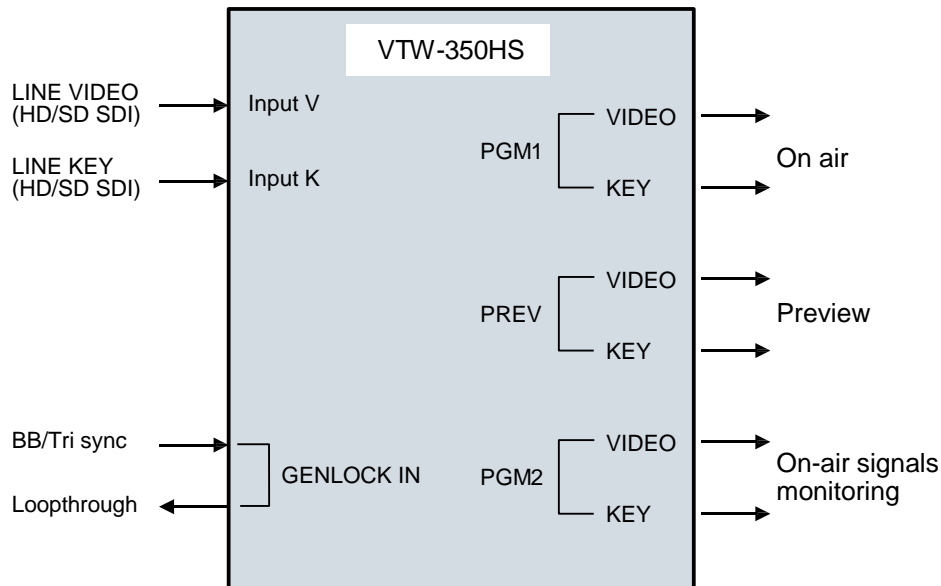
IMPORTANT

USB ports are provided for connecting a keyboard and a mouse. If you are using a PS/2 mouse and PS/2 keyboard, use USB-PS2 adapters.

VTW-350HS with provided frame synchronizer does not need to have reference signal in GENLOCK IN connector.

3-1. Connecting Monitor, Keyboard, and Mouse

Before starting the VTW Software, connect a monitor, keyboard and mouse as shown below. (The monitor, keyboard and mouse need separate purchase.)

VTW-350HS

DVI cable

Mouse

Keyboard

USB cable

USB cable

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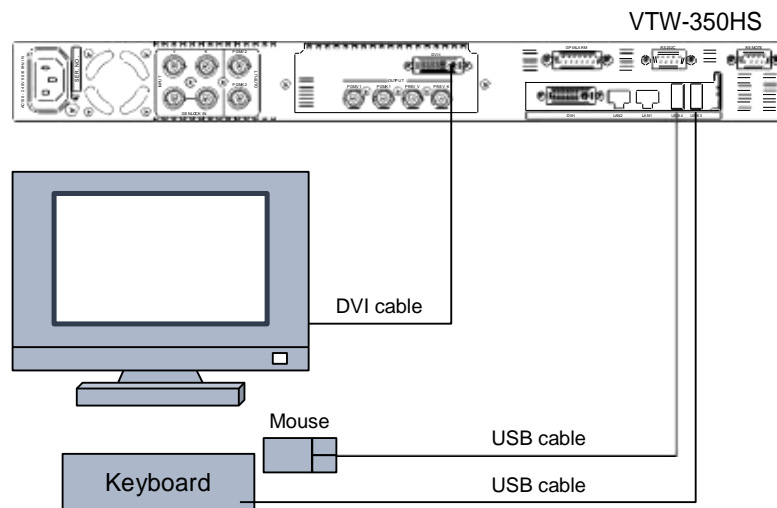
4. System Adjustment

The dedicated utility software, FOR-A MBP Utility allows you to select a genlock signal, adjust the genlock phase, select a mix mode and set to mix the text on the video.

IMPORTANT
To use the FOR-A MBP Utility, connect a monitor, a mouse and a keyboard. The FOR-A MBP Utility and the VTW software cannot be run on the VTW-350HS at the same time.

4-1. Selecting Genlock Signal and Adjusting Phase

1. Exit the VTW software.

2. Double-click the **FOR-A_MBP_Utility** icon on the desk top to start the application.

3. The **FOR-A_MBP_Utility** starts up, and the **Info** page opens. In the **Info** page, the information about the installed boards can be seen.

4. Select **Genlock** tab.

5. Select a **Video format** to set the genlock.

6. Select a **Genlock format**.

BB	**Black burst**
TRI	**Tri-level sync**

7. Genlock status is indicated.

Indication	Status	Remedy
LOCK	The signal is properly locked. The specified reference input is present in GENLOCK IN.	Not needed
UNLOCK	The present reference input is not the one specified. For example, a Tri-level sync signal is present when a Black burst is selected.	Check the reference input, and input proper reference signal. The box indication changes to LOCK, if a proper reference signal is input.
NONE	No reference input in GENLOCK IN.	Check the reference input, and input a proper reference signal. The box indication changes to LOCK, if a proper reference signal is input.

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8. Select a color bar to output if the color bar is needed to adjust the genlock phase.

9. Adjust genlock phase.
   Adjust the genlock phase by using sliders or entering numeric values.

● H Phase
   Horizontal Phase is adjusted in clocks by using the slider or entering the numeric value.

Video format	Setting Range	Step value	Default
1080/59.94i	-1100 - +1099 (-14.83μs - +14.81μs)	1 (13.48ns)	0
1080/50i	-1320 - +1319 (-17.78μs - +17.78μs)	1 (13.47ns)	0
720/59.94p	-825 - +824 (-11.12μs - +11.11μs)	1 (13.48ns)	0
720/50p	-990 - +989 (-13.34μs - +13.32μs)	1 (13.47ns)	0
525/60	-858 - +857 (-31.78μs - +31.74μs)	1 (37.04ns)	0
625/50	-864 - +863 (-32.00μs - +31.96μs)	1 (37.04ns)	0

● V Phase
   Vertical Phase is adjusted in lines by using the slider or entering the numeric value.

Video format	Setting Range	Step value	Default
1080/59.94i	-562 lines - +562 lines (-16.68ms - +16.68ms)	1 lines (29.66μs)	0
1080/50i	-562 lines - +562 lines (-16.68ms - +16.68ms)	1 lines (35.59μs)	0
720/59.94p	-375 lines - +374 lines (-8.34ms - +8.32ms)	1 lines (22.24μs)	0
720/50p	-375 lines - +374 lines (-10.00ms - +9.97ms)	1 lines (26.67μs)	0
525/60	-262 lines - +262 lines (-16.68ms - +16.68ms)	1 lines (63.56μs)	0
625/50	-312 lines - +312 lines (-16.68ms - +16.68ms)	1 lines (64.00μs)	0

● Unity button
   Allows you to reset setting values to the factory default (H Phase = 0 / V Phase = 0).

10. Close the **FOR-A MBP Utility**.
    Click **Close** on the **FOR-A MBP Utility** window to exit the application.

11. Start the VTW software.

The setting data of the genlock selection (BB/TRI), H Phase and V Phase are retained per Video format.

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4-2. Output Settings

1. Exit the VTW software.

2. Double-click the **FOR-A_MBP_Utility** icon on the desk top to start the application.

3. Select the **Mixer** tab.

Mix Mode

Allows you to select a key mode for the mixing that will be performed in the connected device. Select a mode suitable for your system.
The selection can be made for PGM and PREV separately.

Linear: Applies the linear key. The transparency and soft edge of the key fill will be retained.
Add: Applies the additive key. The key fill will be mixed without attenuation.

Background (Input V and K)

Allows you to select whether to output the input video and key signals.
The selection can be made for PGM and PREV separately.

OFF: Outputs only the images generated by the VTW. The image will not be mixed with the input video or key signal, even if there is an input in the Input V or Input K connector.
ON: Outputs the mixed videos of the input video and the key signal with the images generated by the VTW. Mix mode must be set to Add.

4. Close the **FOR-A MBP Utility**.
Click **Close** on the **FOR-A MBP Utility** window to exit the application.

5. Start the VTW software.

5. Specifications and Dimensions

5-1. Unit Specifications

TV Standards	HD-SDI	1080/59.94i, 1080/50i, 720/59.94p, 720/50p
	SD-SDI	525/60, 625/50
Processing	4:2:2:4 digital component	
Quantization	10 bit	
Video Inputs	HD: 1.5Gbps or SD : 270Mbps, 75Ω, BNC x 2	
Video Outputs	HD: 1.5Gbps or SD : 270Mbps, 75Ω, BNC x 6	
Genlock Input	BB: 0.429Vp-p (NTSC) / 0.45Vp-p (PAL) or Tri-level Sync: 0.6Vp-p 75Ω or Loopthrough (75Ω termination required if unused), BNC x 1	
Input Lock range	±1 frame with respect to genlock signal phase	
I/O Delay	Max. 1 frame	
Interface		
REMOTE	9-pin D-sub (female) x 1	
RS-232C	9-pin D-sub (male) x 1	
USB	2.0 (High speed), Series-A type connector x 2 (on front panel) 3.0 (Super speed), Series-A type connector x 2 (on rear panel)	
LAN1/LAN2	100BASE-TX / 1000BASE-T compatible, RJ-45 x 2	
DVI-I	DVI-I (Dual-Link, female) x 1 (Bundled DVI-VGA conversion adapter for a VGA monitor connection) Bottom DVI-I connector is unavailable.	
GPI/ALARM	15-pin D-sub (female) x 1	
	ALARM: power and fan alarm (Relay make contact output) GPI: 4-input/2-output (Input: contact closure, Ouput: open collector)	
Temperature	0°C - 40°C	
Humidity	20% - 80% (no condensation)	
Power	100VAC - 240VAC ±10%, 50/60Hz	
Power Consumption	110VA(108W) at 100 - 120 VAC 110VA(93W) at 220 - 240VAC	
Dimensions	430 (W) x 44 (H) x 500 (D) mm, EIA 1RU	
Weight	9 kg	
Consumables (if used 24 hours a day at room temperature)		
	Cooling fans:	Replace every 3 years
	Power unit:	Replace every 5 years
	Battery:	Replace every 5 years

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5-2. External Dimensions

(All dimensions in mm.)

500

2.3

4-6. 4 x12

430

462

480

44

32

19
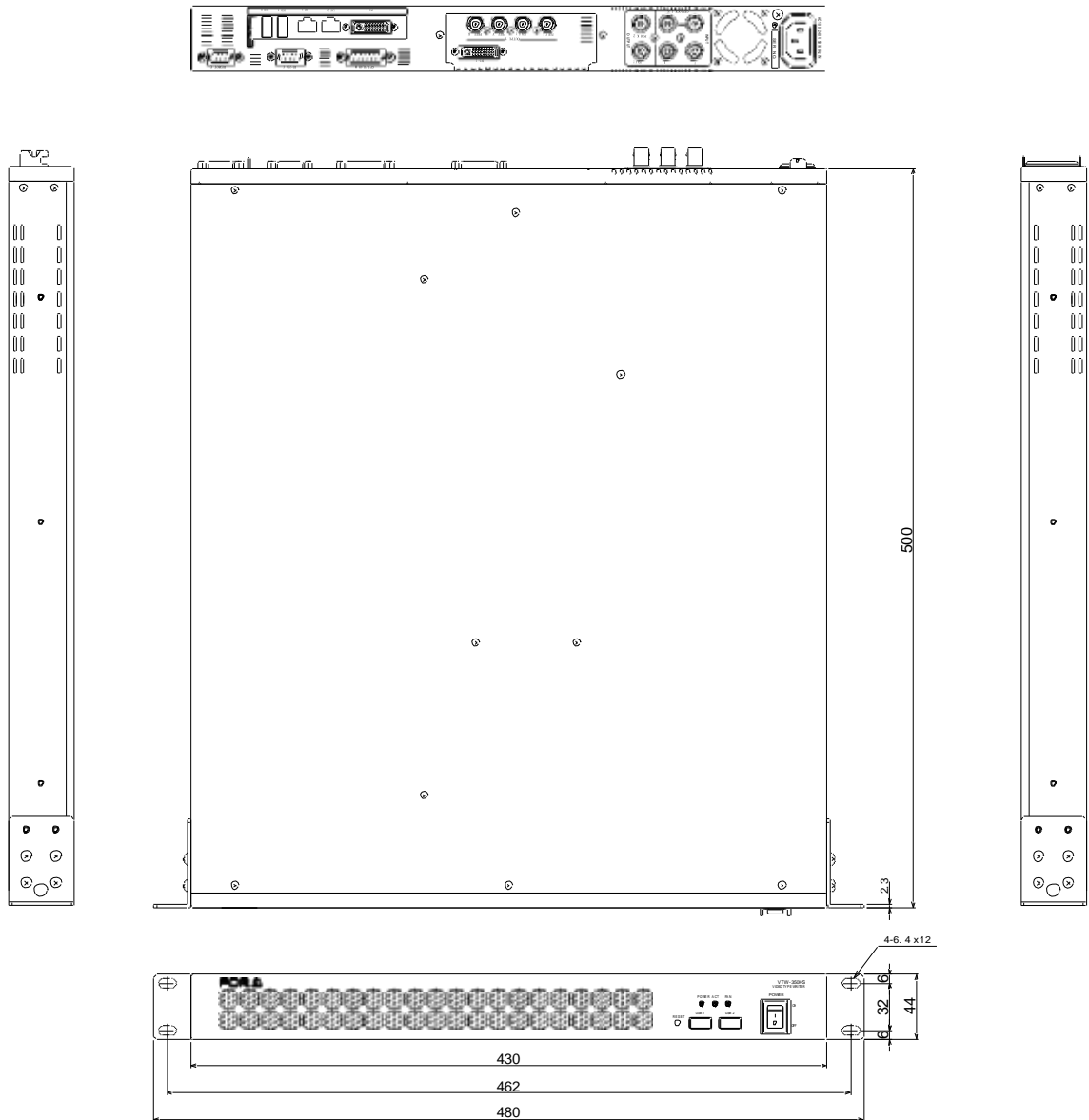
Appendix. How to Reset BIOS

This appendix explains how to reset the BIOS. Please follow the procedure below in case you need to reset the BIOS due to the battery failure or such reason.

1. Opening the BIOS Setup Menu

1. Connect a PC monitor, keyboard, and mouse to your VTW unit and turn on the unit.
2. The screen appears as shown below. Press the **F2** key.

   * The **F2** key is used to open the BIOS setup menu when BIOS is initialized due to various causes such as the battery failure. The **F2** key is used to open the BIOS setup menu while the VTW unit is running normally.

3. The **Phoenix SecureCore Tiano Setup** page is opened.
   On the menu bar, select the menu page using the right and left arrow keys.
   The **Configuration** menu page is displayed in the figure below.

20
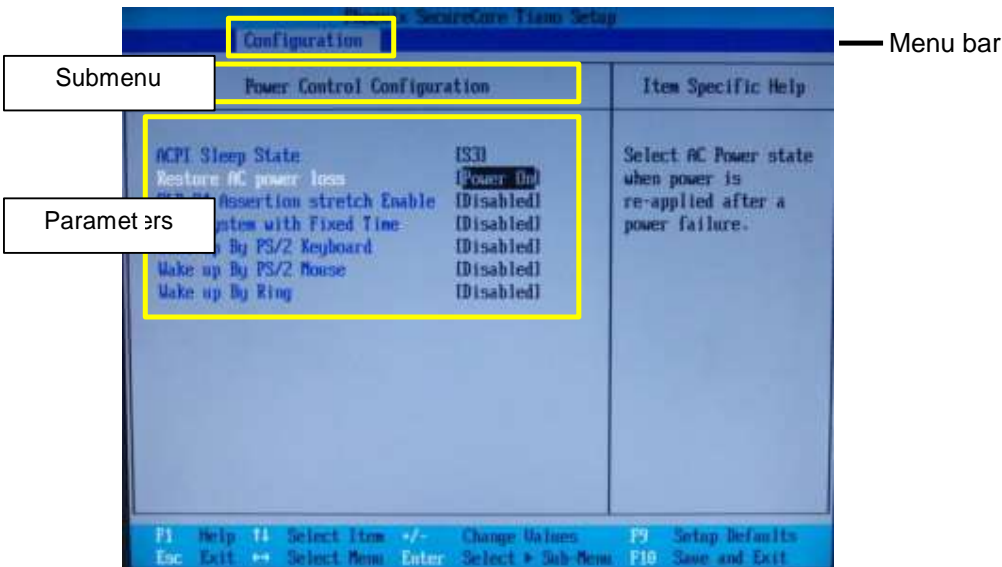
Set the values for the menus as shown below on this page.
The detailed procedure is given in the following section.

Menu	Submenu	Parameter	Value
Main	-	System Time	Current time
	-	System Date	Current date
Configuration	PCI/PCIE Configuration	PEG0~PEG3	Auto
	Power Control Configuration	Restore AC Power Loss	Power On
	Chipset Configuration	Max TOLUD	Dynamic
Boot	-	Boot Priority Order	1. ATA HDD1

2. Main Menu Settings

Set the **current date** and **time** in the **Main** menu provided on the menu bar.
On the menu bar, select **Main** using the right and left arrow keys to display the Main menu page.

◆ **Setting the current date**
(1) Select **System Date** (month, day or year) using the up and down arrow keys.
(2) Enter the current value using the numeric keys and press **Enter** to confirm the change.
Move the cursor to the next item of **System Date** to change the value in the same manner.
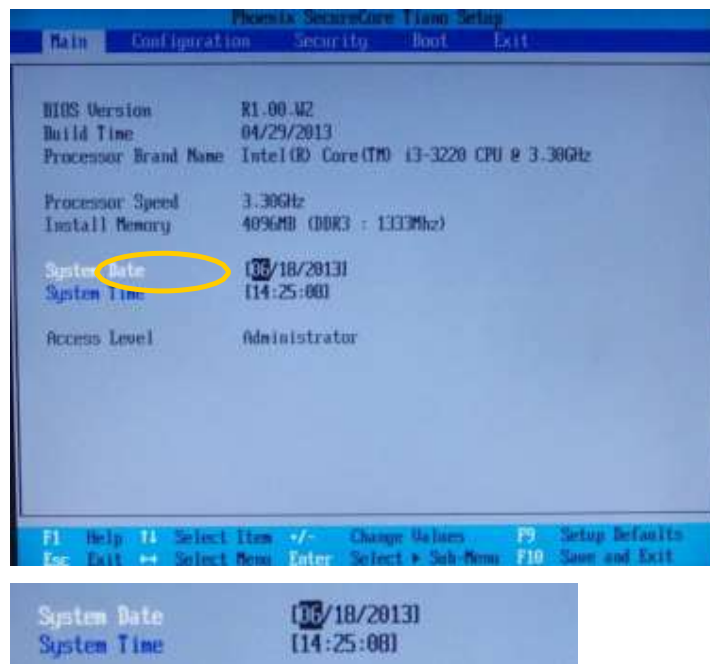
◆ **Setting the system time**
(1) Select **System Time** (hour, minute or second) using the up and down arrow keys.
(2) Enter the current value using the numeric keys and press **Enter** to confirm the change.
Move the cursor to the next item of the **System Time** to change the value in the same manner.

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3. Configuration Menu Settings

Perform the following settings in the **Configuration** menu.

PCI/PCIE Configuration
Power Control Configuration
Chipset Configuration

On the menu bar, select **Configuration** using the right and left arrow keys to display the Configuration menu page.
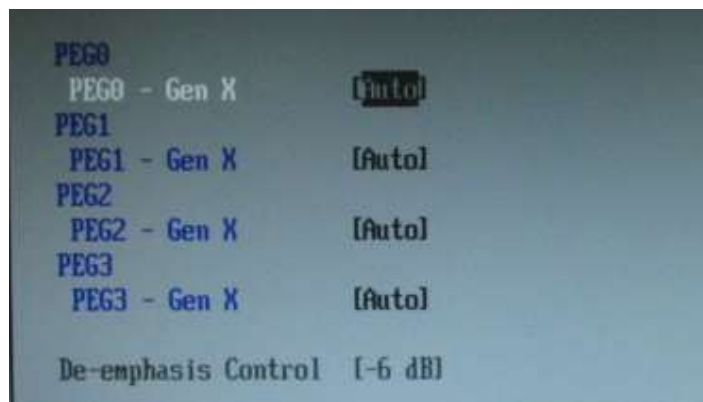
◆ **PCI/PCIE Configuration setting**

(1) Select **PCI/PCIE Configuration** using the right and left arrow keys. Press **Enter** to display the submenu.
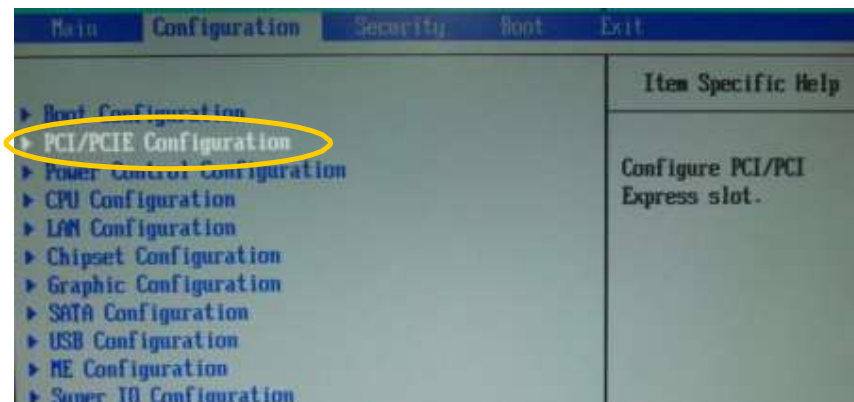
(2) Select **Processor PCI Express Configuration** using the right and left arrow keys. Press **Enter** to display menu parameters.

(3) To set PEG0 to PEG3 to Auto, first, press **Enter** on the **PEG0** setting. The Options page will appear. Select **Auto**, then press **Enter**. Set others to **Auto** in the same manner.
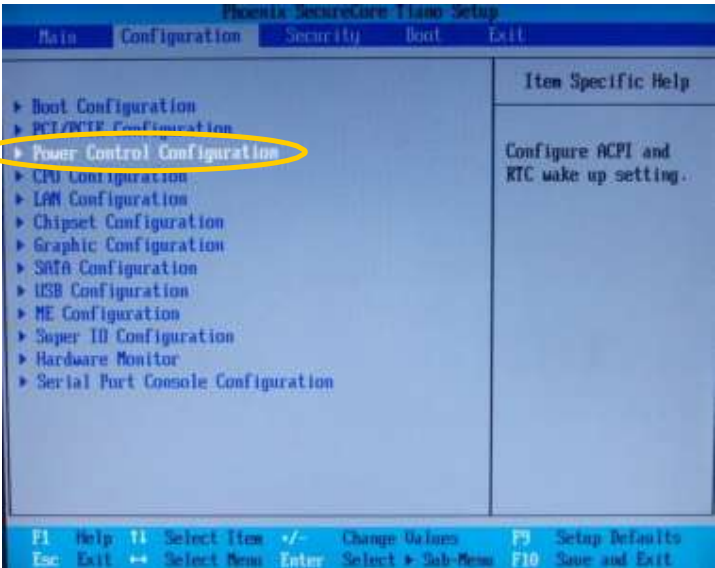

Verify that all PEG parameters are set to **Auto** as shown above.
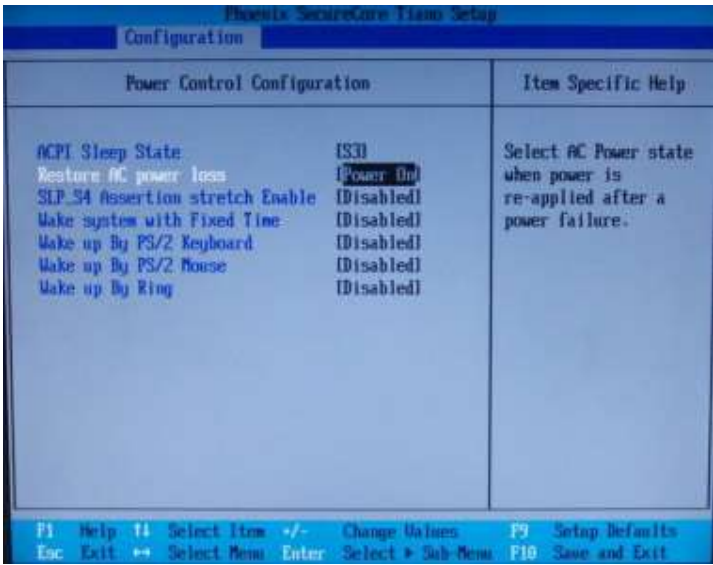
(4) Press **Esc** to return to the Configuration menu page.

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◆ **Power Control Configuration setting**
   (1) Select **Power Control Configuration** using the up and down arrow keys. Press **Enter** to
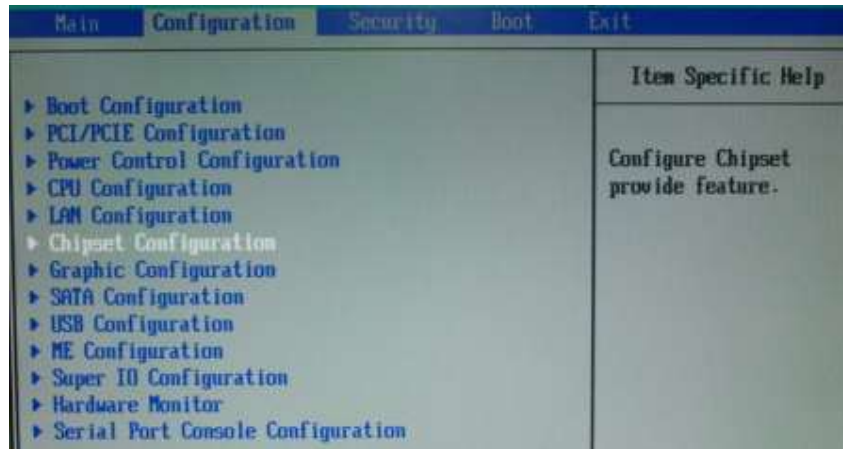   display the submenu.

   (2) Select **Restore Restore AC Power Loss** using the up and down arrow keys. Change the
      setting to **Power On** using the plus and minus keys.


   (3) Press **Esc** to return to the Configuration menu page.

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◆ **Chipset Configuration setting**

(1) Select **Chipset Configuration** using the up and down arrow keys. Press **Enter** to display the submenu.

Main	Configuration	Security	Boot	Exit

	Item Specific Help
▸ Boot Configuration ▸ PCI/PCIE Configuration ▸ Power Control Configuration ▸ CPU Configuration ▸ LAN Configuration ▸ Chipset Configuration ▸ Graphic Configuration ▸ SATA Configuration ▸ USB Configuration ▸ ME Configuration ▸ Super IO Configuration ▸ Hardware Monitor ▸ Serial Port Console Configuration	Configure Chipset provide feature.

(2) Select **Memory Configuration** using the up and down arrow keys. Press **Enter** to display menu parameters.

▸ NB PCIe Configuration
▸ Memory Configuration
▸ SB Azalia Config
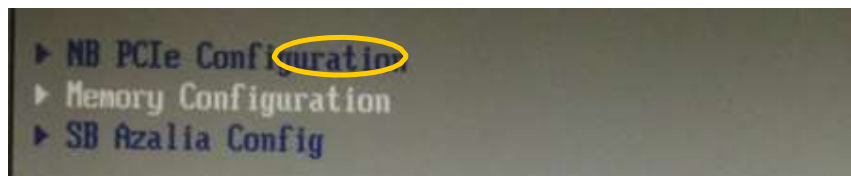
(3) To set **Max TOLUD** to **Dynamic**, first press **Enter** on the **Max TOLUD** parameter to display the Options. Select **Dynamic**, then press **Enter**.
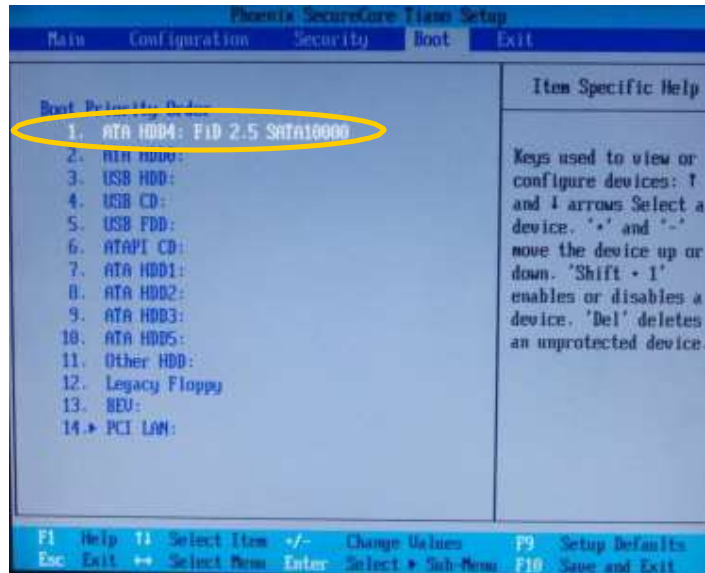
Max TOLUD   [Dynamic]
Memory Frequency   [Auto]

24
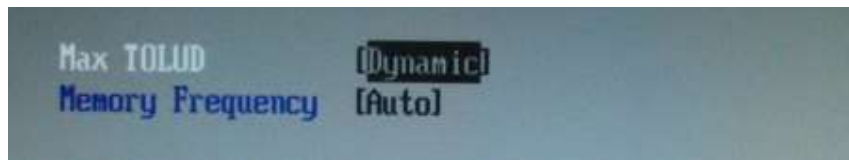
4. Boot Menu Setting

Change the **Boot Priority Order** in the **Boot** menu.
On the menu bar, select **Boot** using the right and left arrow keys to display the Boot menu page.

◆ **Boot Priority Order setting**
  (1) Select **ATA HDD1** using the up and down arrow keys. Use the plus key to move **ATA HDD1** to the top of the list.

5. Saving Settings and Exiting BIOS Setup Menu

Once you have completed the settings, press the **F10** key. A confirmation message appears asking if you want to save the settings and exit the BIOS setup menus. Click **Yes**. The **BIOS SETUP Menu** will close and the Windows restarts with new BIOS settings.

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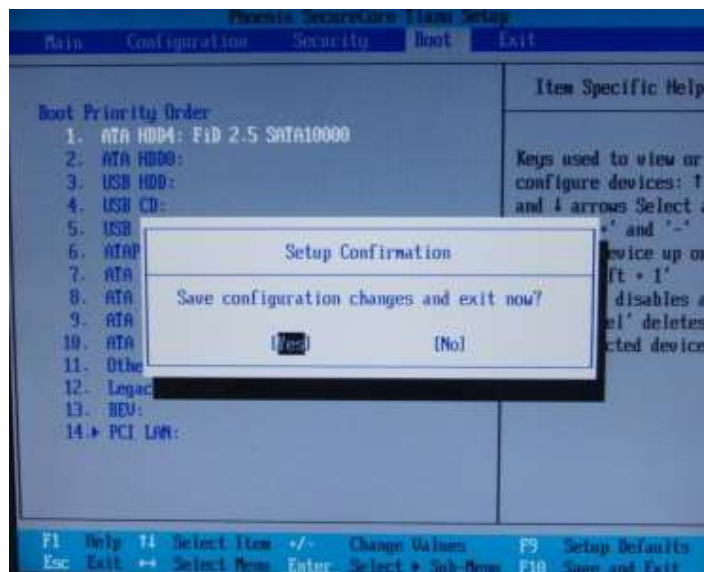
Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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