

# Technical Reference

**ATSC TV A/D Controller  
FOR TFT LCD**

**Model : SKY-4100M**

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## 1. Description

The SKY-4100 is an interface board for LCD/PDP panel providing high quality of screen image from the analog RGB, DVI, HDMI, Component, CVBS and S-VHS from various type of VGA card & media player. And also provide **analog TV& HDTV**.

This solution supports various display used PIP and Internally embedded S/W on TV tuner for operating TV Function(HDTV on board) This board supports from VGA to WUXGA resolution and various range of panels interfaced with LVDS, TMDS type.

Reliable H/W and S/W designed for LCD/PDP TV other Applications.

## 2. General Features

### 2-1. PANEL

Category		Specification
LCD	Type	LG or SAMSUNG LCD Panel
	Supported Pixel Rate	852x480, 1024x768, 1280 x 768, 1440x900 1366 x 768, 1680x1050,1920x1080,1920x1200
	Interface	Single LVDS (24bit), Dual LVDS Up to 12 bits Panel support
	Aspect Ratio	4:3, 16 : 9

### 2-2. Signal Features

Category		Specification
TV	Analog	NTSC
	Digital	ATSC
	RF Frequency Range	54Mhz ~ 820Mhz
	Supported Video System (ATSC)	ISO-13818-2 MPEG-2 MP@HL , MP@ML ALL ATSC-compliant Format
	Audio System (ATSC)	Dolby AC-3 MPEG 1/2 Layer 1 & 2
CVBS/S-Video		NTSC
RGB (PC)	Max. Resolution	Up to 1920x1200 60Hz
	Max. Pixel Rate	170Mhz
Component		480i, 576i, 480p, 576p, 720p,1080i,1080p
HDMI (VER.1.3)	Input Signals	RGB (8bit per Channel)
		Y/Pb/Pr
	Max. Resolution	Up to 1920 x 1080p (DTV)
		Up to 1920 x 1200 (Monitor)
Audio	2 Channels: Up to 48kHz	
Data Protection	HDCP	

### 2-3. OSD Features

Category		Specification
OSD	Size	Full Screen Size
	Color	24bit True Color
	Type	Graphical & Text UI
	Language	Default
Option		French, Spanish, German, Italian, Dutch, Etc.,

**2-4. EPG Features**

		Category	Specification
EPG (ATSC only)		Size	Full Screen Size
		Color	24bit True Color
		Type	Graphical & Text UI
	Language	Default	Korean, English
		Option	

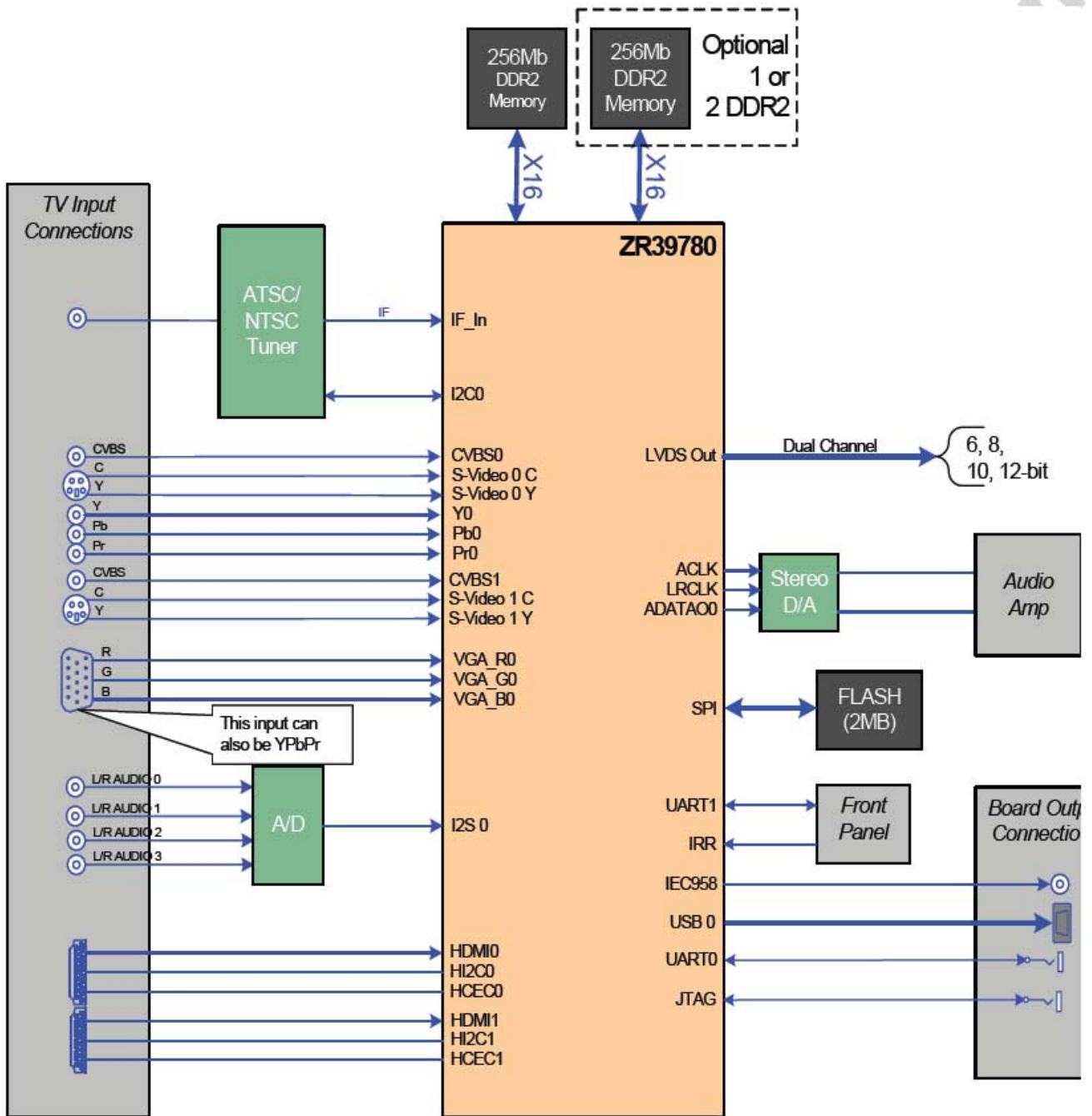
**2-5. Easy to use On-screen Display menu to control all supported function**

- Automatic adjustment for screen image control
- Bright and Contrast control
- DCR Control Available
- Manual Geometry control for H/V position, H size, and Phase adjustment
- Color balance and Color temperature control
- 2 language selection(English and Korean)
- Input source selection
- Hue and sharpness control for video screen
- Up to 5 ~ 7 key OSD control button
- Up to 5 ~ 7 key OSD control button
- Remote Control 29key button

**2-6. Audio control for I2C type Amp device****2-7. IR receiver interface for TV Remocon****2-8. VESA DDC1/2B Plug & Play operation****2-9. Compatible with VESA DPMS power saving modes****2-10. Support Audio amplifier and Tuner module for TV application**

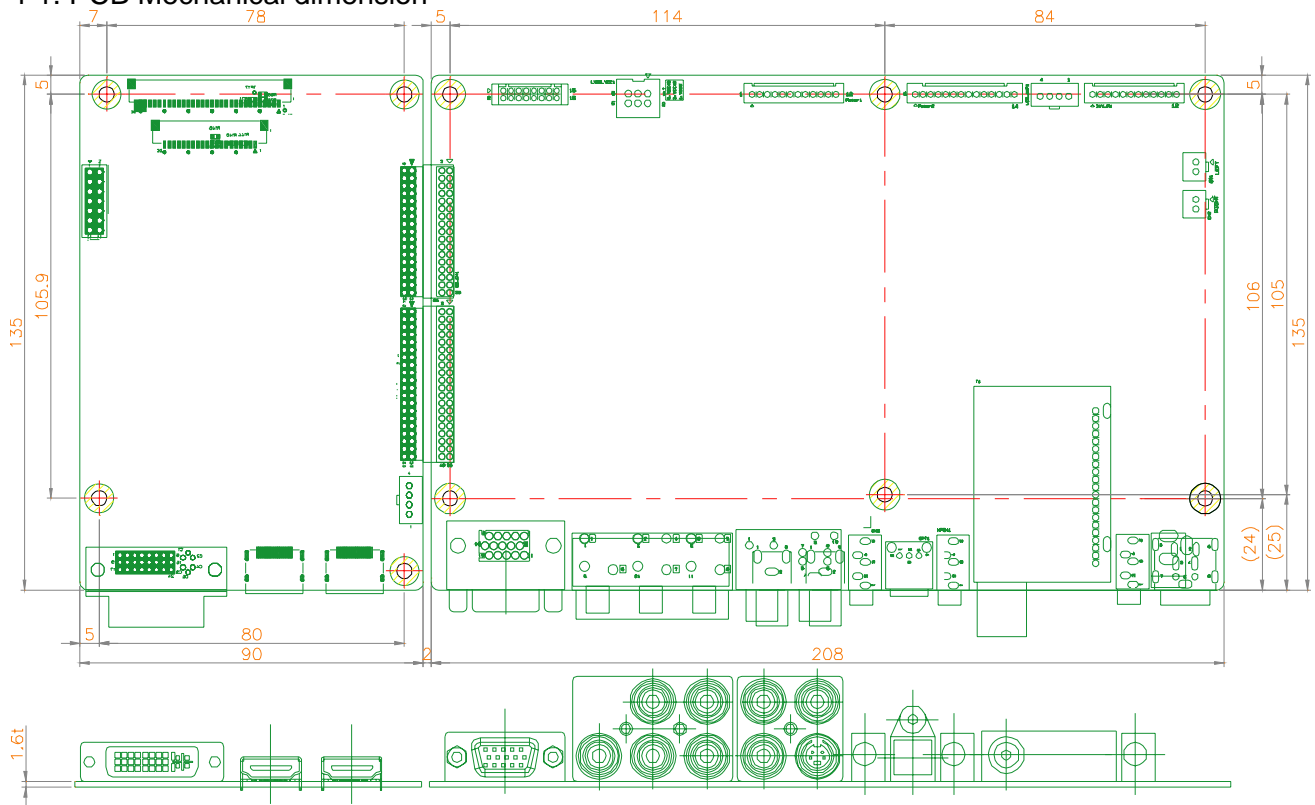
### 3. Electrical Specification

#### 3.1 Block diagram

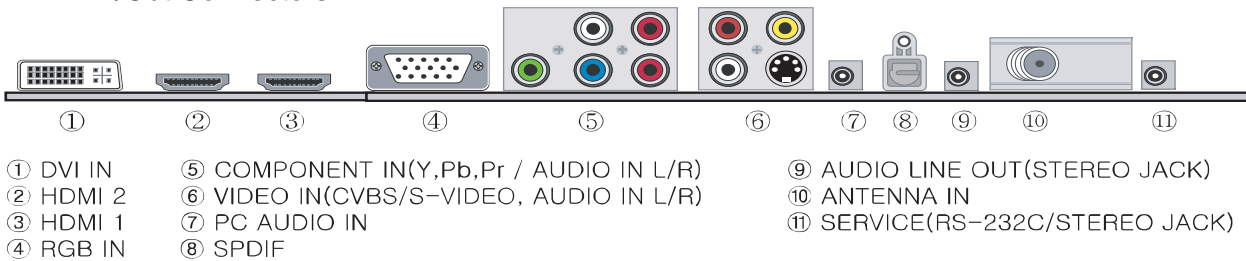


## 4. Mechanical Dimension and In/Out Details

### 4-1. PCB Mechanical dimension



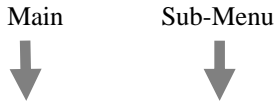
### 4-2. In/Out Connectors



## 5. Operation MENU

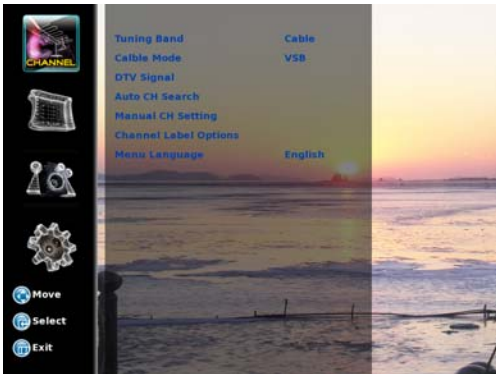
Once the circuit has been connected, a setup procedure for optimal operation is required some time. The following instructions are likely to form the basis of the finished product operation manual. OSD operation as a standard. The control functions defined on OSD operation are as below.

### 5-1. Main Menu



Select Main Menu and push up/down buttons of remote control to go to Sub-Menu. Push the OK button to move to Sub-Menu Window from Main Window.

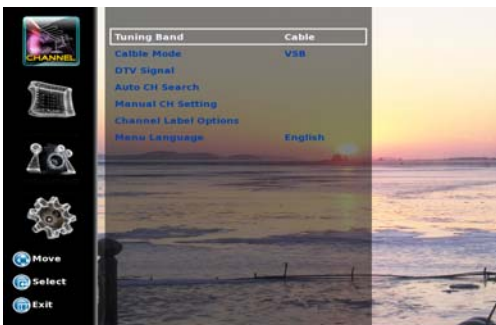
### 5-2 Channel Menu



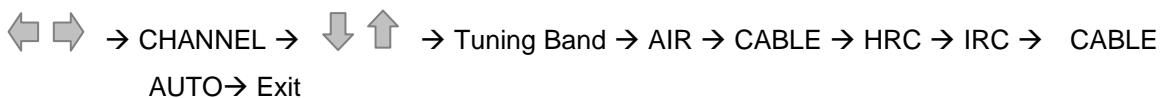
- Tuning Band
- DTV Signal
- Auto Channel Search
- Manual Channel Set
- Channel Labels
- Menu Language



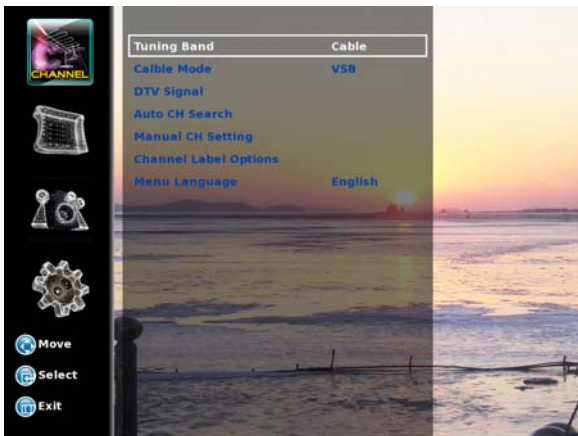
#### 5-2-1 Tuning Band



Push the OK button to change Tuning Band. Set Tuning Band to antenna when a terrestrial (indoor/outdoor) antenna is used.



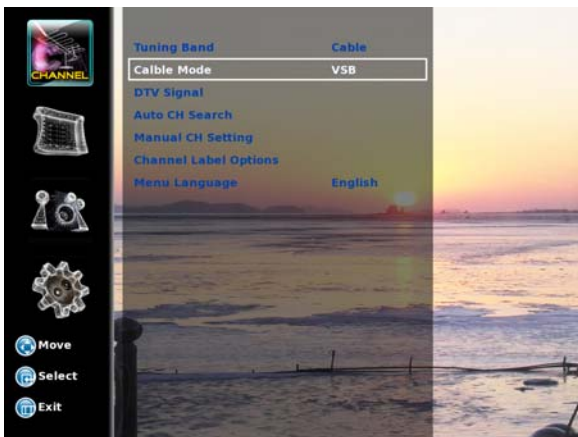
## 5-2-2 Tuning Band (Cable)



Push the OK button to change Tuning Band. When cable is used consult cable Provider of cable type prior to set up.

← → → CHANNEL → ↓ ↑ → Tuning Band → AIR → CABLE → HRC → IRC  
→ CABLE AUTO → Exit

## 5-2-3 Cable Mode



← → → CHANNEL → ↓ ↑ → Cable Mode → VSB → QAM → NONE → Exit

Push the OK button to change Cable Mode. As for digital cable, VSB/QAM is supported depending on transmission system. When QAM is set, 64/256 QAM is automatically detected and set.

<Note> This works only when Tuning Band is set to cable. As for digital cable, please check whether the transmission system is 8VSB, 64QAM or 256QAM with your cable provider.

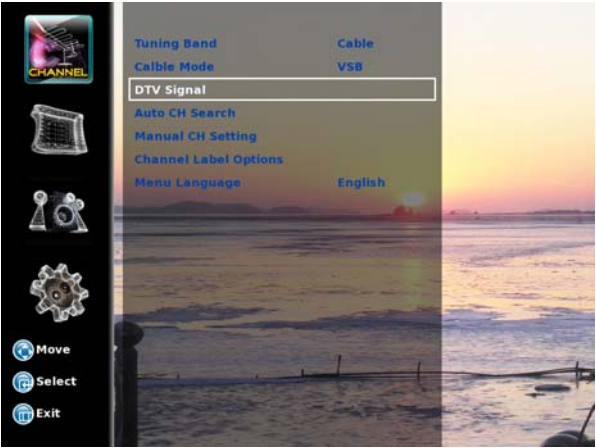
In addition, encrypted signals from paid channels cannot be converted into video/audio.

-Examples: When transmission is 8VSB, set cable mode at VSB.

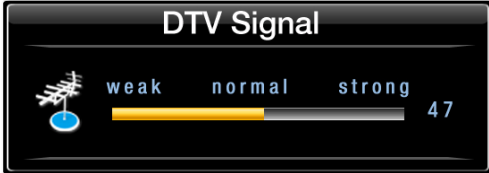
When transmission is 64/256 QAM, set cable mode at QAM.

<Note> "NONE" cable mode can only scan analog channel !

5-2-4 DTV Signal

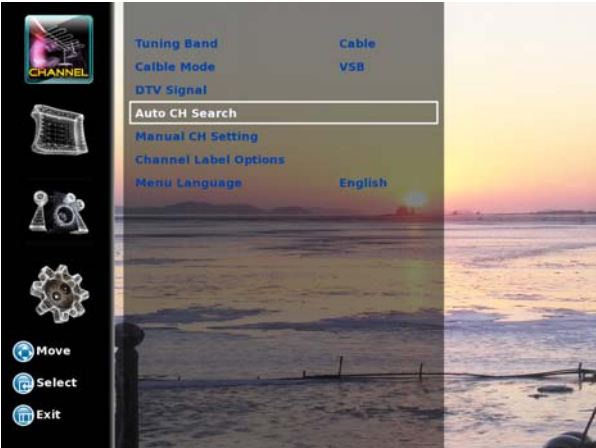


Move highlight bar to DTV Signal menu and push the OK button. And you will see Signal Window that shows the signal strength (weak/normal/good).



← → → CHANNEL → ↓ ↑ → DTV Signal → Select → Exit

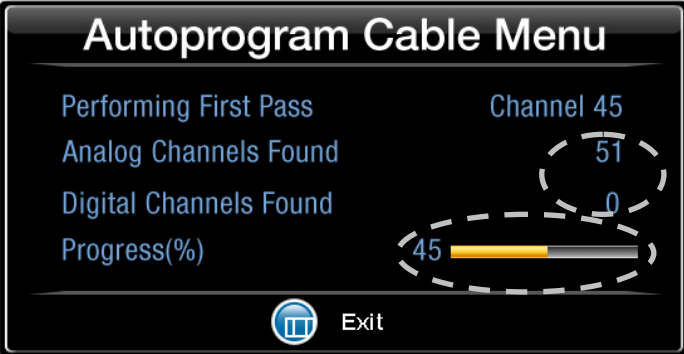
5-2-5 Auto CH Setting



Push the OK button, and broadcasting frequency is automatically searched and saved. The search starts from analog TV (NTSC) to digital TV (VSB/QAM), and it takes 2~4 min.

Channel numbers are allocated for weak signals from analog broadcasting. As for digital, however, weak signals or signals without broadcasting info are ignored.

← → → CHANNEL → ↓ ↑ → Auto CH Search → Select → Exit

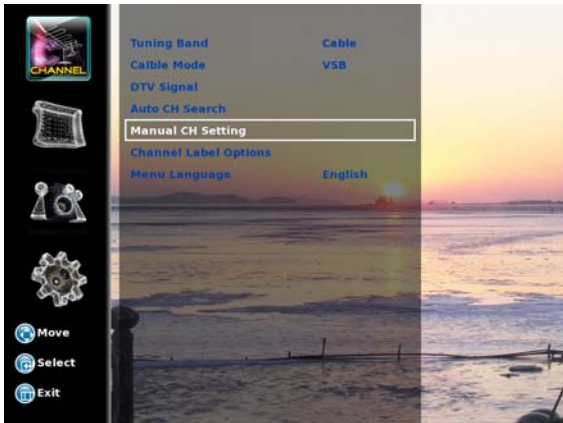


Check whether broadcasting frequency is found

The channel is being searched now

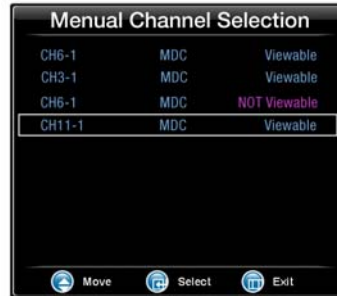


5-2-6 Manual CH Setting



It helps to edit all searched channels (save/delete/prefer).

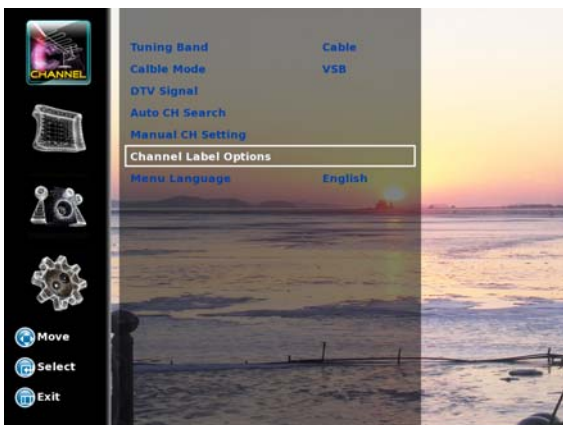
Save->Delete->prefer (by the OK setting)



← → → CHANNEL → ↓ ↑ → Manual Channel → Select → Exit

- Move to a channel you want by using “To move” keys. Push red OK button below to select.
- Registered channels can be deleted without needing to remember the channels.
- To delete, save and prefer the channel, use “To move” Key to move to blue-colored channel

4-2-8 CH Labels



Push the OK button,  
You'll see Channel Labels Options.

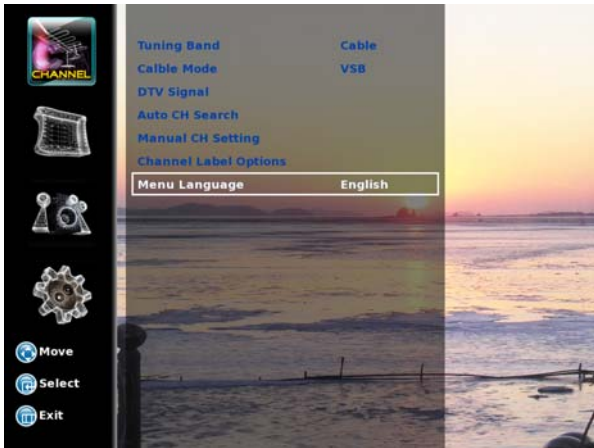


← → → CHANNEL → ↓ ↑ → Channel Labels → Select → Exit

You can change registered channels by using “To change” key. The name of registered channels can also be changed by moving to blue-colored names using “To move” key and then change using “To change” key.

Analog channels are shown as ----- because there is no channel name info. Digital channels without channel info, is also displayed as -----. **Some channels of digital broadcasting may be misnamed.**

### 5-2-9 Menu Language



← → → CHANNEL → ↓ ↑ → Select language → English → Spanish → French → Exit

Push OK and select Menu Language (English, French and Spanish).

Menu Language changes as you select, **but main menu remains in English.**

### 5-3 Video Menu

Contrast/Brightness/ Sharpness/Color/Tint/Color Temperature/Aspect Ratio/Setting

### 5-4 Audio Menu

Audio Language/Bass/Treble/Balance/Digital Audio Output/Settings

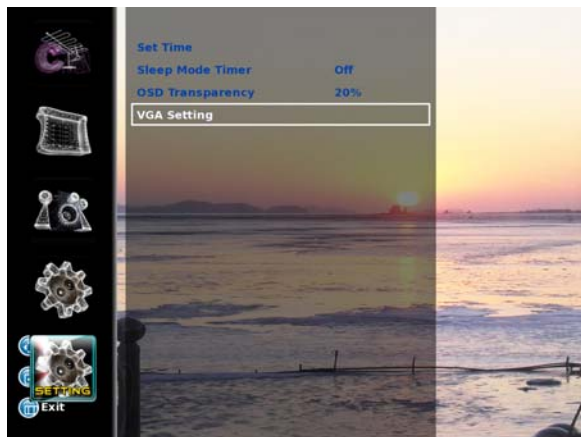
### 5-5 Setting Menu

#### 7-5-1 TV mode

TV Mode :Set Time/Sleep Mode Timer/OSD Transparency/Password Set/Closed Caption/etc.

#### 7-5-1 PC mode

TV Mode :Set Time/Sleep Mode Timer/OSD Transparency/PC Settings/etc.



Push the OK button, and you will see VGA

