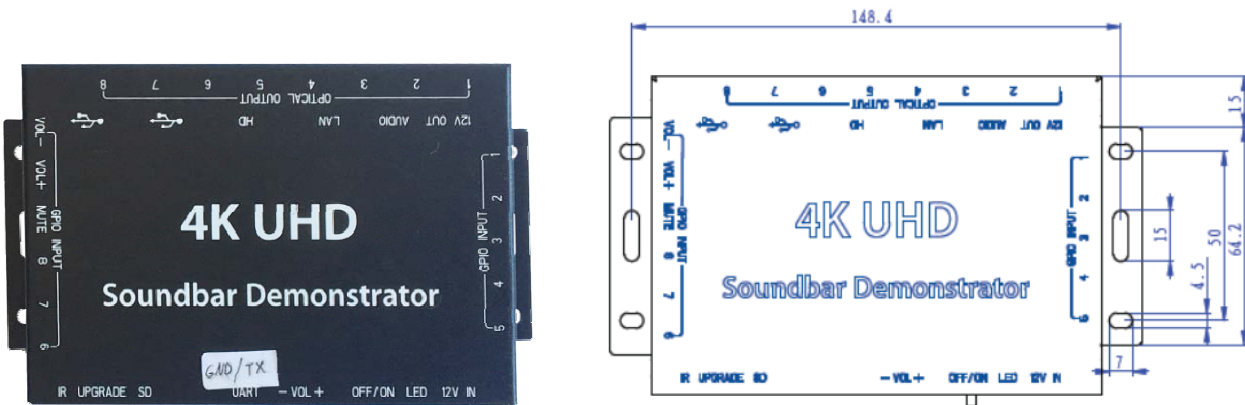


1. Overview



2. Understanding The Interface



IR >>>remote control sensor

Upgrade>>>USD port for firmware update

SD >>> SD card Slot

UART >>> LED control data, pin assignment GND/ TX

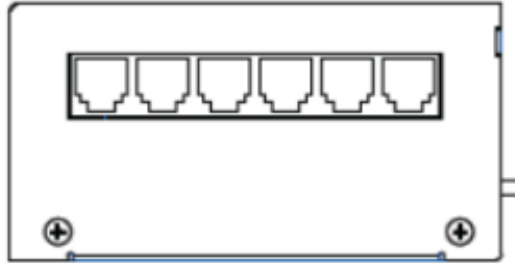
V- >>> Volume down * this button is very useful for store operators when external volume button is not required

V+ >>> Volume Up * this button is very useful for store operators when external volume button is not required

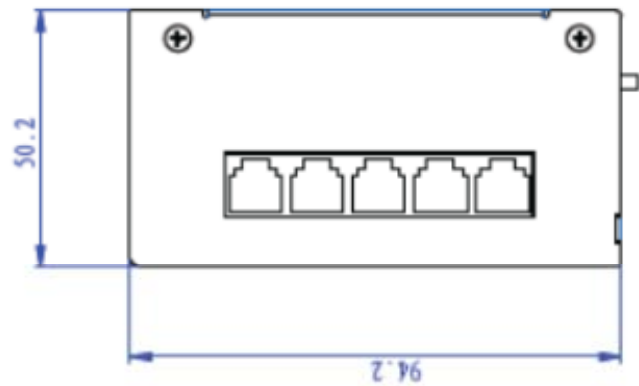
Off / On >>> Power Switch

LED >>> Power Indicator

12V in >>> 12V DC inlet

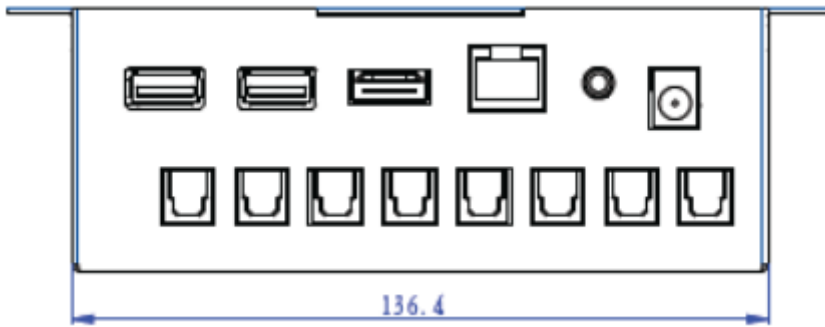


GPIO INPUT>>> Soundbar Selector Push Button With RJ11 Connector, from No.1 to No.5.



GPIO INPUT >>> Volume Control & Soundbar Selector Push Button With RJ11 Connector,
From Left To Right:
Volume Down, Volume Up, Mute, No. 8 Soundbar, No.7 Soundbar, No.6 Soundbar





Ports on the bottom:

12V-Out >>> For external device like LED lighting or other retail accessories

Audio >>> 3.5mm headphone

Lan >>> RJ45 Ethernet

HD >>> HDMI 2.0 Output

USB >>>USB Host 1

USB >>>USB Host 2

Ports on the top: Optical Output / Toslink For Soundbar Connection

From Left to Right, No.1 to No.8, Soundbar Toslink Inlet

3. Parts List



Component List:

Push Button For Volume Controls x3 pcs;

Push Button For Soundbar Selection x8 pcs;

AC Adapter x1pc;

Optical Cables x8pcs;

Remote Control x1pc;

Sandisk SD Card x1pc;

4. User Scenario

4.1# A button is pressed, play a video,

1>.When a button is pressed, a toslink port will be output and the fist video of the playlist (e.g. 00.avi) starts playing.

2>.Press again the same button, next video (e.g. 01.avi) would play. Each playlist can play up to 10 files. Go back to the first file if final file reached. (e.g. if 4 files for playlist0, then 00 -> 01-> 02-> 03 -> 00 ->01)

3>.If no more button is pressed, return to mu.avi.

4.2# Between button sand output ports,

1>.If the video in a playlist is playing and a new button (same playlist) is pressed, video continuous play but output port changes corresponding to the new button pressed one(audio toggled, video unchanged).

2>.If the video in a playlist is playing and a new button (different playlist) is pressed, fist video of the new playlist (e.g. 00.avi) starts playing and output port changes corresponding to the button pressed one.

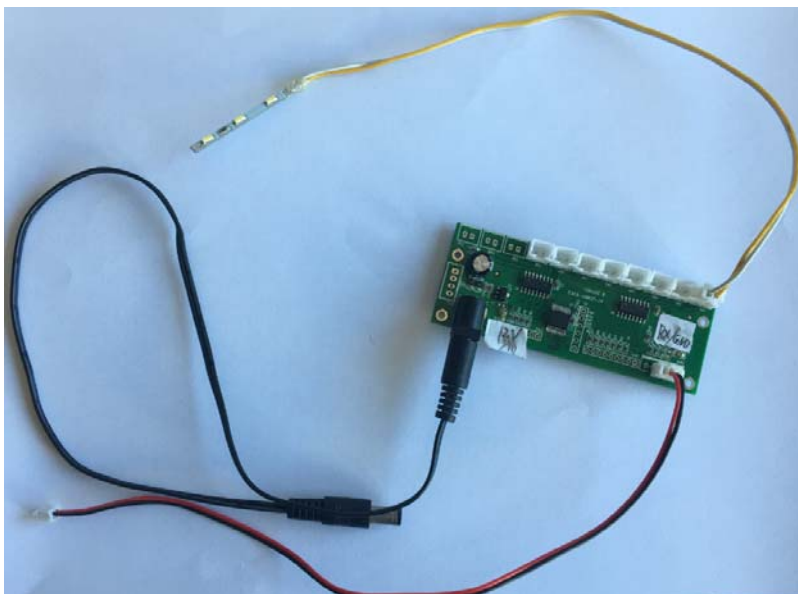
3>.If volume no change, new default volume will be used.

4>.If volume changed, ratio of default volumes would be applied and so new volume is set.

4.3# LED sync

The LED strip would be lighted up once the corresponding button is pressed, the light strip is synchronized to soundbar selector button LED illumination.

5. LED Lighting Setup





The LED strip would be lighted up once the corresponding button is pressed, the light strip is synchronized to soundbar selector button LED illumination.

6. File Structure












am/ play / # directory of SD card

listA	2018-07-30 16:33
listB	2018-07-30 16:38
listC	2018-07-30 16:38
listD	2018-07-30 16:38
listE	2018-07-30 16:38
listF	2018-07-30 16:38
listG	2018-07-30 16:38
listH	2018-07-30 16:39
mu.avi	2018-07-27 17:37
TPANEL.XML	2018-07-27 17:37












And in folder listA:

00.avi	2018-07-27 17:40
01.avi	2018-07-27 17:40
02.avi	2018-07-27 17:40
03.avi	2018-07-27 17:40
04.avi	2018-07-27 17:40
05.avi	2018-07-27 17:40
06.avi	2018-07-27 17:40
07.avi	2018-07-27 17:40
08.avi	2018-07-27 17:40
09.avi	2018-07-27 17:40
TPANEL.XML	2018-07-27 17:40












In folder list B:

 00.avi	2018-07-27 17:38
 01.avi	2018-07-27 17:38
 02.avi	2018-07-27 17:38
 03.avi	2018-07-27 17:38
 04.avi	2018-07-27 17:38
 05.avi	2018-07-27 17:38
 06.avi	2018-07-27 17:38
 07.avi	2018-07-27 17:38
 08.avi	2018-07-27 17:38
 09.avi	2018-07-27 17:40
 TPANEL.XML	2018-07-27 17:40












In folder list C:

 20.avi	2018-07-27 17:38
 21.avi	2018-07-27 17:38
 22.avi	2018-07-27 17:38
 23.avi	2018-07-27 17:38
 24.avi	2018-07-27 17:38
 25.avi	2018-07-27 17:38
 26.avi	2018-07-27 17:38
 27.avi	2018-07-27 17:38
 28.avi	2018-07-27 17:38
 29.avi	2018-07-27 17:38
 TPANEL.XML	2018-07-27 17:38












In folder list D:

 30.avi	2018-07-27 17:38
 31.avi	2018-07-27 17:38
 32.avi	2018-07-27 17:38
 33.avi	2018-07-27 17:38
 34.avi	2018-07-27 17:38
 35.avi	2018-07-27 17:38
 36.avi	2018-07-27 17:38
 37.avi	2018-07-27 17:38
 38.avi	2018-07-27 17:38
 39.avi	2018-07-27 17:38
 TPANEL.XML	2018-07-27 17:38












In folder list E:

 40.avi	2018-07-27 17:38
 41.avi	2018-07-27 17:38
 42.avi	2018-07-27 17:38
 43.avi	2018-07-27 17:38
 44.avi	2018-07-27 17:38
 45.avi	2018-07-27 17:38
 46.avi	2018-07-27 17:38
 47.avi	2018-07-27 17:38
 48.avi	2018-07-27 17:38
 49.avi	2018-07-27 17:38
 TPANEL.XML	2018-07-27 17:38












In folder list F:

 50.avi	2018-07-27 17:37
 51.avi	2018-07-27 17:37
 52.avi	2018-07-27 17:37
 53.avi	2018-07-27 17:37
 54.avi	2018-07-27 17:37
 55.avi	2018-07-27 17:37
 56.avi	2018-07-27 17:37
 57.avi	2018-07-27 17:38
 58.avi	2018-07-27 17:38
 59.avi	2018-07-27 17:38
 TPANEL.XML	2018-07-27 17:38

In folder list G:

 60.avi	2018-07-27 17:37
 61.avi	2018-07-27 17:37
 62.avi	2018-07-27 17:37
 63.avi	2018-07-27 17:37
 64.avi	2018-07-27 17:37
 65.avi	2018-07-27 17:37
 66.avi	2018-07-27 17:37
 67.avi	2018-07-27 17:37
 68.avi	2018-07-27 17:37
 69.avi	2018-07-27 17:37
 TPANEL.XML	2018-07-27 17:37

In folder list H:

 70.avi	2018-07-27 17:37
 71.avi	2018-07-27 17:37
 72.avi	2018-07-27 17:37
 73.avi	2018-07-27 17:37
 74.avi	2018-07-27 17:37
 75.avi	2018-07-27 17:37
 76.avi	2018-07-27 17:37
 77.avi	2018-07-27 17:37
 78.avi	2018-07-27 17:37
 79.avi	2018-07-27 17:37
 TPANEL.XML	2018-07-27 17:37

7. Understanding The XML Configurator

The following Authoring Tool TPanel explains the A-Z details on how to configure your own scripts to drive the unit based on your custom applications. Syntax rules as well as examples are provided in the manual to let you create your own content in several minutes.

Record of Version

Version	Revise Date	Page	Content	Remark
Ver 1.0	2018/9/04		First Draft	

Content

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1. Introduction

Introducing new command set as Version 1 of TPANEL Authoring Tool, i.e. TPANEL.V1.

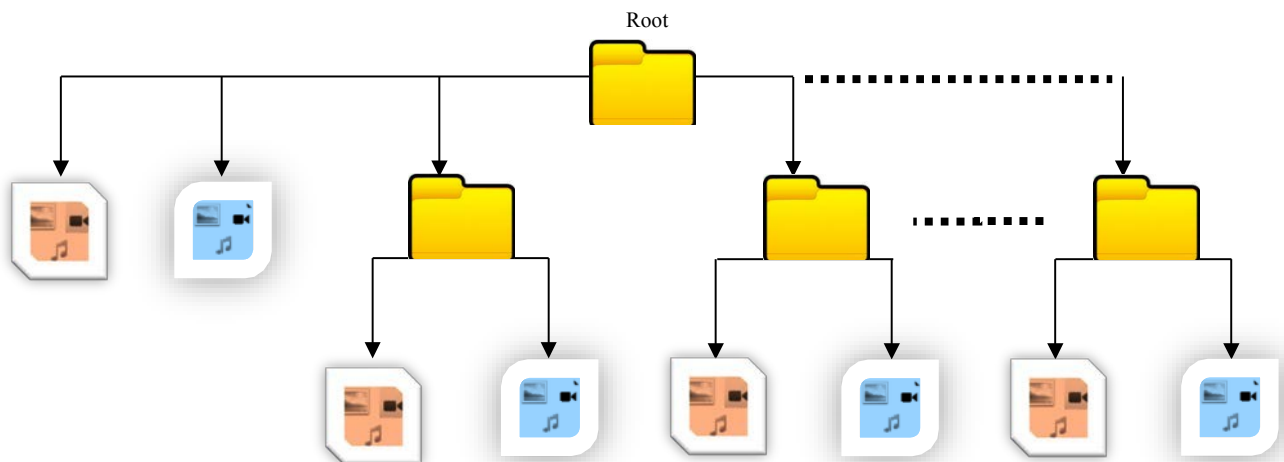
The TPANEL provides customization and interactive, low cost and effective way to present products by using touch panels, buttons or sensors.

The document shows how to use and present products by using customized TPANEL command file, “TPANEL.XML”.

The TPANEL commands work with AT1505 / AT1506 / AT1507 / AT1508/Droid (Android) series. For which AT1507 supports video file only and AT1505 supports music files only.

2. Directory Based Structure

The file structure of the TPANEL command consists of directories, video, pictures or music files. The directories are at the same level, that is sub-directories of ROOT.



Title File: 
Picture / Video / Music

Directory 

Target File: 
Picture / Video / Music

3. Terms

Command File

TPANEL.XML command file is in every directory. The device loads the command file in the root directory after powering up and read once if going into a directory or being back from other directories.

Root Directory

The root directory is the SD card / USB drive / internal memory root directory. A directory should consist of a command file, a title file or target files.

The root directory for AT1508 series are designated as /am/play

Title File

A file, could be video, picture or music file, that looks like menu showing button areas to be pressed, or buttons or sensors to load a directory or a target file. The title file is played after the TPANEL.XML file has been loaded.

Target Files or Directory

A target file, could be video, picture or music file, or a directory would be loaded after a button area/button/sensor of the title file is pressed.

4. TPANEL.V1 Structures

The TPANEL file consists of identifiers, which the devices could understand and run. TPANEL file may have the following structures.

n Start

```
<programe>
```

n Setting (only in ROOT Directory and read once)

```
<set .../>
```

n Default Actions (only in ROOT Directory and read once)

```
<dacts .../>
```

n Title and Actions

```

    title
    <title="00" interval="0" back="F01"
      hp="AM" ha="0" bled="ALL" bledfcn="ON" bledotherfcn="ON" vledfcn="OFF"/>
    actions
  
```

n Inputs, Types, File and Actions

```

    inputs          types          file
    <btn="00" type="1" mode="0" file="00" interval="0" back="CUR"
    actions
      hp="00" ha="5" bled="00" bledfcn="ON" bledotherfcn="OFF"
      vledfcn="ON" vol="8" volmin="0" volmax="16"/>
  
```

n End

```
</programe>
```

Remark

- (1) No space before or after "<", "=", ">" and identifiers.
- (2) There is only one space between identifiers, e.g. <sx="519" sy="4"...
- (3) For Settings, Default Actions, "Title and Actions" and "Inputs, Types, File and Actions", each line is started with "<" and ended with ">" and should be in the same line.
- (4) For better reading experiences and understanding, identifiers are written in lower-case letters whereas parameters are in upper-case letters.
- (5) Parameters are not case sensitive to the device, i.e. "video1" is the same as "VIDEO1" and file video1.mp4 or VIDEO1.mp4 is the same.

4.1 Examples

a. TPANEL.XML in ROOT Directory

```
<programe>
<set .../>
<dacts .../>
<title="VIDEO" .../>
<btn="00" .../>
...
...
</programe>
```

b. TPANEL.XML in Sub-Directories

```
<programe>
<title="VIDE01" .../>
<btn="00" .../>
...
...
</programe>
```

c. Going to Directories

```
<programe>
<set ver="1" width="1920" height="1080">
<title="VIDE01">
<sx="71" sy="253" ex="239" ey="410" type="2" file="L1"/>
<sx="416" sy="253" ex="596" ey="412" type="2" file="L2"/>
<sx="176" sy="85" ex="368" ey="216" type="2" file="L3"/>
<sx="539" sy="72" ex="729" ey="231" type="2" file="L4"/>
</programe>
```

d. Using hp and back Function

```
<programe>
<title="VIDE01" back="ROOT" hp="AM" >
<sx="519" sy="4" ex="771" ey="54" type="1" mode="0" file="01 " interval="0" back="CUR" hp="01"/>
</programe>
```

5. Identifier

5.1 Note to Identifiers

a. Fixed Value Items

Designated for specific values and special usages.

Do not use the following items to name files or directories.

Value Items	Description or Meaning	Usage for Identifiers
CUR	Current Directory	file back
ROOT	ROOT Directory	file back
REC0/ REC1/ REC2/ REC3/ REC4	Recorded Directory path	file back recpath
LASTPATH	Last Directory path	file back
DACTS	Default actions	back (if and only if type="7")
ON/ OFF/ FLASH	LED lighting function.	bledfc bledotherfc vledfc muteledfc pauseledfc preledfc nextledfc stopledfc
LOW/HIGH/ FLASH	Extra Control Pin (<code>xpin</code>) function.	xpinfc xpinotherfc
ON/ OFF	Enable button function or not.	envolbtn enmutebtn enpausebtn enprebtn ennextbtn enstopbtn

ALL	To select all button LED	bled
AM/AU	AM is all mute AU is all unmute	hp

b. Required or Optional or Not Used

REQ? ‡ Required?

Req È Required

Opt È Optional

NU È Not Used

5.2 Start

Identifier	Description	REQ?	Values/Examples/Default Values
<code><programe></code>	Start of TPANEL.XML	Req	

5.3 Setting

Note

1. It is optional. If no setting is set, default values will be used.
2. Only in ROOT Directory and read once when startup.

Identifier	Description	REQ?	Values/Examples/Default Values
Base			
<code><set</code>	Start of setting	Req	
<code>ver</code>	Define version	Req	0, 1 and 1 is used
<code>width</code>	Width of this project.	Opt	(default width: 1920 height: 1080) If the screen width/height is different from <code>width/height</code> , TPANEL will scale all
<code>height</code>	Height of this project.	Opt	coordinates of touch areas to fit the screen.
<code>volunit</code>	Selection of Volume unit	Opt	(default: 16 for AT1508 series) (default: 100 for other series)
Functional Buttons			
<code>volbtn</code>	Volume buttons are normally disabled and set to support button mode, i.e. <code>btn05/btn06</code> .	Opt	Enable: 1 Disable: 0 (default) volume button is used for movie selection.
<code>mutebtn</code>	Set the mute button as button number xx	Opt	e.g. <code>mutebtn="xx"</code>
<code>prebtn</code>	Set the previous button as button number xx	Opt	e.g. <code>prebtn="xx"</code>
<code>nextbtn</code>	Set the next button as button number xx	Opt	e.g. <code>nextbtn="xx"</code>
<code>pausebtn</code>	Set the pause button as button number xx	Opt	e.g. <code>pausebtn="xx"</code>

<code>stopbtn</code>	Set the stop button as button number xx	NU	e.g. <code>stopbtn="xx"</code>
External Controls			
<code>xhp</code> ⁽¹⁾	Set 1 to enable external headphone control board	Opt	0, 1 Enable: 1 Disable: 0 (default)
<code>xcec</code> ⁽²⁾	Set 1 to enable external cec control	Opt	0, 1 Enable: 1 Disable: 0 (default)
<code>rec0/rec1/ rec2/rec3/ rec4</code>	Set the initial values of recorded paths	Opt	e.g. <code>rec0="DIR0"</code>
<code>lastpath</code>	Set the initial value of last path	Opt	e.g. <code>lastpath="DIR0"</code>

Note:

(1) `xhp` is project and platform specified

(2) `xcec` is project and only worked to specified projects of AT1508 series with HDMI output.

Example:

```
<set ver="1" width="1920" height="1080" volunit="16" volbtn="1" mutebtn="01" xhp="1" rec0="DIR0" lastpath="DIR0"/>
```

5.4 Default Actions

Note:

1. It is optional and runs only for `type="7"` and acts if and only if `back="DACTS"`
2. Only in ROOT Directory and read once when startup

Identifier	Description	REQ?	Values/Examples/Default Values
Base			
<code><dacts</code>	Start of default actions	Req	
(See more details in Actions (Ch 5.7) details below)			

Example:

```
<program>
<set ver="1" width="1920" height="1080" volunit="16" volbtn="1" xhp="1"/>
-><dacts hp="AM" ha="0" bled="ALL" bledfcn="ON" bledotherfcn="ON" vledfcn="OFF"... />
<title="00" interval="0" back="F01" hp="AM" ha="0" bled="ALL" bledfcn="ON" ... />
-><btn="00" type="7" mode="0" file="00" interval="50" back="DACTS" hp="00" ... />
-><btn="01" type="7" mode="0" file="00" interval="50" back="DACTS" hp="01" ... />
-><btn="05" type="7" mode="0" file="00" interval="50" back="DACTS" hp="AM" ... />
</program>
```

5.5 Title and Actions

Note:

1. It is required to have title and actions line for all TPANEL.XML

Identifier	Description	REQ?	Values/Examples/Default Values
Base			
	Start of title line	Req	
<code><title</code>	A file to be a title or menu page	Req	Filename without extension. If the video file is 00.avi, we use <code>title="00"</code> instead of <code>title="00.avi"</code> . Same way as <code>file</code>
<code>interval</code>	Play time in seconds. If video is shorter than <code>interval</code> , video length time is used.	Opt	If <code>interval="0"</code> or omitted, for video/music, video/music length time is used. for picture, default 5 seconds is used.
<code>back</code>	Finishing playback, back to directory indicated.	Req	<code>back="XXX"</code> : directory name (finished playback and back to "XXX") If <code>back="ROOT"</code> , it will go to root folder If <code>back="CUR"</code> , it will go to current folder If <code>back="RECx"</code> , it will go to recorded path number x and go to that directory If <code>back="LASTPATH"</code> , it will go to lastpath directory.
<code>recpath</code> ⁽³⁾	Record this path as <code>REC0/REC1/REC2/REC3/REC4</code>	Opt	e.g. <code>recpath="REC0"</code>
Actions			
(See more details in Actions (Ch 5.7) details below)			

Note:

(3) `recpath` : Recorded paths will be renewed every time when `recpath="RECx"` called.

e.g. if we have two directories dirA and dirB. Both directories have `recpath="REC0"` in the title line. When go to dirA. REC0 is dirA. After certain operations, if go to dirB. REC0 is changed to dirB.

Example:

```
<title="00" interval="0" back="F01"
  hp="AM" ha="0" bled="ALL" bledfcn="ON" bledotherfcn="ON" vledfcn="OFF" recpath="REC0"/>
```

5.6 Inputs, Types, File and Actions

Identifier	Description	REQ?	Values/Examples/Default Values	
Base				
<code>sx, sy</code>	Touch area start-point coordinates	Opt	Refer to Ch 6 for details.	
<code>ex, ey</code>	Touch area end-point coordinates	Opt	Refer to Ch 6 for details.	
<code>btn</code>	Buttons or Sensors numbers	Opt	00 to 99	
Types				
<code>type</code>	Control types of inputs		Req	Refer to "Volume Control Function" (Ch 7) for <code>type="6"</code>
	0	Exit current folder when target is playing or Exit and go to ROOT when title playing		
	1	Play a target file		
	2	Go to a directory		
	3	Play and Next File in the same directory.		
	4	N.A.		
	5	N.A.		
	6	Volume Control Command		
<code>mode</code>	For some purposes helping <code>type</code>		Opt	<p>If not used, set <code>mode="0"</code> or omit it.</p> <p>If <code>type="3"</code> and <code>mode="0"</code>, the file as indicated by <code>file</code> is ignored and will play "Next" file function.</p> <p>If <code>type="3"</code> and <code>mode="1"</code>, the file as indicated by <code>file</code> is played when first time pressed/touched. Press again will be "Next" function.</p> <p>If <code>type="6"</code> and <code>mode="2"</code> to increase volume level.</p> <p>If <code>type="6"</code> and <code>mode="1"</code> to decrease volume level.</p> <p>(Refer to "Volume Control Function" (Ch 7))</p>

File			
<code>file</code>	<p>The file name of target file to be played or directory to be loaded.</p> <p>File in the storage uses 8+3 standard filename structure i.e. "12345678.avi".</p> <p><code>file</code> is without extension. If the video file is 00.avi, we use <code>file="00"</code>.</p>	Opt	<p>If <code>type="1"</code>, <code>file</code> is target file name.</p> <p>If <code>type="2"</code>, <code>file</code> is directory name</p> <p>If <code>type="2"</code> and <code>file="ROOT"</code>, it will go to root folder</p> <p>If <code>type="2"</code> and <code>file="CUR"</code>, it will go to current folder</p> <p>If <code>type="2"</code> and <code>file="RECx"</code>, it will go to recorded path number x and go to that directory</p> <p>If <code>type="2"</code> and <code>file="LASTPATH"</code>, it will go to <code>lastpath</code> directory</p>
<code>interval</code>	<p>Play time in seconds.</p> <p>If video is shorter than <code>interval</code>, video length time is used.</p>	Opt	<p>If <code>interval="0"</code> or omitted, for video/music, video/music length time is used.</p> <p>for picture, default 5 seconds is used.</p>
<code>repeat</code>	Repeat playing times	NU	Not used.
<code>back</code>	<p>Finishing playback, back to directory indicated.</p> <p><code>back</code> is allowed only when <code>type="1"</code> or <code>"7"</code> is used.</p>	Req	<p><code>back="XXX"</code>: directory name (finished playback and back to "XXX")</p> <p>If <code>back="ROOT"</code>, it will go to root folder</p> <p>If <code>back="CUR"</code>, it will go to current folder</p> <p>If <code>back="RECx"</code>, it will go to recorded path number x and go to that directory</p> <p>If <code>back="LASTPATH"</code>, it will go to <code>lastpath</code> directory.</p>
Actions			
(See more details in Actions (Ch 5.7) details below)			

Example:

```

<programme>
<title="MU" interval="0" back="CUR" .../>
<btn="00" type="1" mode="0" file="00" interval="0" back="CUR" .../>
<btn="01" type="1" mode="0" file="01" interval="0" back="CUR" .../>
<btn="02" type="1" mode="0" file="02" interval="0" back="CUR" .../>
<btn="03" type="1" mode="0" file="03" interval="0" back="CUR" .../>
<btn="04" type="1" mode="0" file="04" interval="0" back="CUR" .../>
<btn="05" type="1" mode="0" file="05" interval="0" back="CUR" .../>
<btn="06" type="1" mode="0" file="06" interval="0" back="CUR" .../>
<btn="07" type="1" mode="0" file="07" interval="0" back="CUR" .../>
</programme>

```

5.7 Actions

Identifier	Description	REQ?	Values/Examples/Default Values
Audio Control and Headphones			
<code>hp</code> ⁽³⁾	headphone channels	Opt	00, 01, 02 ... 99, AM or AU hp is only applicable when the board supports headphone outputs. However, setting <code>hp="AM"</code> or <code>hp="AU"</code> could be used for mute control.
<code>ha</code> ⁽⁴⁾	HDMI audio and S/PDIF output controls	Opt	0 HDMI audio off, S/PDIF no change.
			1 HDMI audio on, S/PDIF no change.
			2 HDMI audio no change, S/PDIF off.
			3 HDMI audio no change, S/PDIF on.
			4 HDMI audio off, S/PDIF off.
			5 HDMI audio on, S/PDIF on.
			6 HDMI audio off, S/PDIF on.
			7 HDMI audio on, S/PDIF off.
Button LEDs			
<code>bled</code>	Button LED number	Opt	00, 01, 02 ... 99 or ALL
<code>bledfcn</code>	Button LED function	Opt	ON/ OFF/ FLASH
<code>bledotherfcn</code>	Other buttons LED function. Other than the one stated as <code>bled</code> . (volume button not included)	Opt	ON/ OFF/ FLASH
<code>vledfcn</code>	Volume Button LED functions	Opt	ON/ OFF/ FLASH
Functional Buttons ⁽⁵⁾			
<code>enmutebtn</code>	Enabling mute button	Opt	ON/ OFF Enable: ON (default) Disable: OFF
<code>muteledfcn</code>	Mute button LED function	Opt	ON/ OFF/ FLASH
<code>enpausebtn</code>	Enabling pause button	Opt	ON/ OFF Enable: ON (default) Disable: OFF

<code>pauseledfcn</code>	Pause button LED function	Opt	ON/ OFF/ FLASH
<code>enprebtn</code>	Enabling previous button	Opt	ON/ OFF Enable: ON (default) Disable: OFF
<code>preledfcn</code>	Previous button LED function	Opt	ON/ OFF/ FLASH
<code>ennextbtn</code>	Enabling next button	Opt	ON/ OFF Enable: ON (default) Disable: OFF
<code>nextledfcn</code>	Next button LED function	Opt	ON/ OFF/ FLASH
<code>enstopbtn</code>	Enabling stop button	NU	ON/ OFF Enable: ON (default) Disable: OFF
<code>stopledfcn</code>	Stop button LED function	NU	ON/ OFF/ FLASH
<code>envolbtn</code>	Enabling volume buttons	Opt	ON/ OFF Enable: ON (default) Disable: OFF
Volume Level			
<code>vol</code>	Volume level	Opt	0 ~ 99 / 0 ~ 16 Refer to <code>volunit</code> in settings and (a) Maximum 16 for AT1508 series (b) Maximum 100 for other series
<code>volmin</code>	The lowest volume level that pressing volume down button.	Opt	
<code>volmax</code>	The highest volume level that pressing volume up button.	Opt	
Extra Control Pin ⁽⁶⁾			
<code>xpin</code>	Extra Control Pin number	Opt	00, 01, 02 ... 99 or ALL
<code>xpinfcn</code>	Extra Control Pin function	Opt	LOW/ HIGH/ FLASH
<code>xpinotherfcn</code>	Other Extra Control Pin function. Other than the one stated as " <code>xpin</code> "	Opt	LOW/ HIGH/ FLASH
External Messages ⁽⁷⁾			
<code>xmsg</code>	Sending special string messages to external devices via UART or I2C. Maximum length is 8	Opt	<code>xmsg="VXXV"</code> External Device will receive like,

	<p>characters.</p> <p>When sending the message out, message will be surrounded with '[' and ']' and a 0x0D ("<code>\r</code>") is attached at the end of the message.</p>		<p>"<code>[vxxxv]\r</code>", (" not included and 0x0D is the ASCII code of "<code>\r</code>", Carriage Return).</p>
--	---	--	--

Note:

- (4) `hp` is project and platform specified. Different boards may have different number of headphones. Some projects also use `hp` as outputs or S/PDIF control.
- (5) `ha` is project specified and may only worked to specified projects of AT158 series with HDMI output. It controls HDMI audio or S/PDIF in the system level.
- (6) Functional Buttons are project and platform specified. Different boards may have different number of buttons and functions.
- (7) Extra Control Pin different boards may have different number of extra control pins.
- (8) External Messages `xmsg` are project and platform specified. Different boards may have different messages or interfaces (UART or I2C) or not supported by some boards.

Example:

```
<programme>
<title="00"... bledfcn="FLASH" bledotherfcn="FLASH" vledfcn="OFF" vol="8" volmin="0" volmax="16"/>
<btn ... hp="00" ha="5" bled="00" bledfcn="ON" bledotherfcn="OFF" vledfcn="ON" vol="8" volmin="0" volmax="16"/>
<btn ... hp="01" ha="5" bled="01" bledfcn="ON" bledotherfcn="OFF" vledfcn="ON" vol="8" volmin="0" volmax="16"/>
<btn ... hp="02" ha="5" bled="02" bledfcn="ON" bledotherfcn="OFF" vledfcn="ON" vol="8" volmin="0" volmax="16"/>
<btn ... hp="03" ha="5" bled="03" bledfcn="ON" bledotherfcn="OFF" vledfcn="ON" vol="8" volmin="0" volmax="16"/>
<btn ... hp="04" ha="5" bled="04" bledfcn="ON" bledotherfcn="OFF" vledfcn="ON" vol="8" volmin="0" volmax="16"/>
<btn ... hp="05" ha="5" bled="05" bledfcn="ON" bledotherfcn="OFF" vledfcn="ON" vol="8" volmin="0" volmax="16"/>
<btn ... hp="06" ha="5" bled="06" bledfcn="ON" bledotherfcn="OFF" vledfcn="ON" vol="8" volmin="0" volmax="16"/>
<btn ... hp="07" ha="5" bled="07" bledfcn="ON" bledotherfcn="OFF" vledfcn="ON" vol="8" volmin="0" volmax="16"/>
</programme>
```

5.8 End

Identifier	Description	REQ?	Values	Notes
</programme>	End of TPANEL.XML	Req		

6. Setting Coordinates for Touch Areas

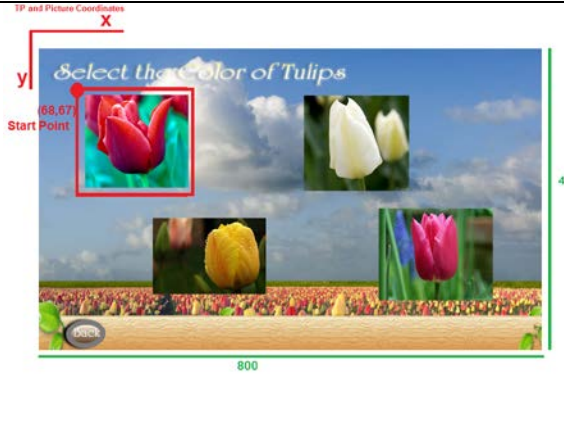
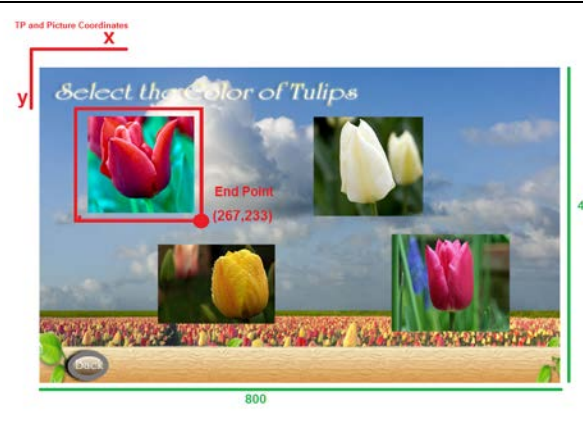
The coordinates are set based on 1920x1080 resolutions. The units are in pixel.

Origin

The (0,0) origin is set at left-top corner.

Start and End Points of a Touch Area

For 1920x1080, one of the touch area should be like the following.

Start Point at left-top corner	End Point at right-bottom corner
	
<p>e.g. sx=68 sy=67</p>	<p>e.g. ex=267 ey=233</p>

7. Volume Control Function

There is a method with the help of “`type`” and “`mode`” commands to perform volume control function.

Direct Control of Volume

Using `type="6"` and `mode="2"` or `"1"` to increase or decrease volume level. The volume bar would show if one of the areas is pressed. User CANNOT press the OSD volume bar for some machines.

Example:

To increase volume,

```
<sx="664" sy="269" ex="784" ey="358" type="6" mode="2"/>  
<btn="06" type="6" mode="2"/>
```

To decrease volume,

```
<sx="667" sy="90" ex="785" ey="180" type="6" mode="1"/>  
<btn="07" type="6" mode="1"/>
```

Note: if the final target is a video file (e.g. *.avi) and user have to add volume buttons onto the video.

8. Support

We are happy to provide you the authoring support if the syntax is too complicated for you:

What we may need from you is the only FULL view of user flow and file structures.

We can sign NDA before you send us the original files for our testing verification,

Or you just provide us some file names then you copy our files with the original media files,

On your own.