P712
12.1” XGA TFT Railway Monitor
User’s Manual
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Safety Precautions

Before getting started, read the following important cautions.

1. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.

2. Disconnect the power cords from the P712 Series before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could damage sensitive components. Make sure the P712 Series is properly grounded.

3. Do not open the system's top cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:
   - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on a human body.
   - When handling boards and components, wear a grounding wrist strap, available from most electronic component stores.

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Chapter 1
Introduction

This chapter contains general information and detailed specifications of the P712. Chapter 1 includes the following sections:

- General Description
- Features
- Specifications
- Dimensions and Outlines
- I/O Outlets
- Package List

1.1 General Description

The P712 is an industrial and rail grade 12.1 inches viewing area LCD monitor with slim, lightweight, and reliable design to replace traditional bulky CRT in the transportation market. Its unique and flat design fit for panel mounting and VESA mounting. The display interface offers DVI-D, HDMI and VGA for different image input sources from computer or multimedia system. That allows you to upgrade the display without changing your current configuration. The rugged LCD monitor is a perfect fit for train and other mobile vehicles.

This LCD monitor builds in color active matrix thin-film-transistor (TFT) liquid crystal display to provide superior display performance. A maximum resolution of 1024x768 is ideal for displaying complex graphics and high-definition images. Other outstanding designs to enhance the LCD monitor user experience include Plug & Play compatibility, OSD (On Screen Display) control pad and remote control. The remote control allows you to make setting adjustments via a computer from a distance.
1.2 Features

- High contrast 12.1” XGA TFT LCD display supports resolution up to 1024x768
- Auto-dimming for changing environmental conditions adaption
- Flat design with front frame IP65-compliant
- Reliable resistive touch
- High Brightness and ultra-wide viewing angle with anti-glare feature
- VESA standard power management conformity
- Advanced OSD control for picture quality adjustment
- Remote OSD function control and management (refer to Appendix C)

1.3 Specifications

- 12.1” XGA (1024x768) LCD with LED backlight
- Resistive touch
- Front bezel IP65-compliant
- Control: OSD (on-screen display) control pad
- Mounting: panel mounting and VESA mounting
- Net weight
  - P712: 2.3 KGS
- Dimension (main body size)
  - P712: 330(W)*245(H)*50.2(D) mm
- Operation temperature
  - -25°C to 55°C
- Relative humidity
  - 20% to 90% @ 40°C, Non-condensing
- Power input
  - M12 A-coded Male 5 pin 24~110VDC power input
- Audio
  - 3W speaker x 2
  - Line-in for VGA / DVI-D

NOTE: All specifications and images are subject to change without notice.
1.4 Dimensions and Outlines

The following diagram show the dimensions and outlines of the P712.

The following diagram show the VESA mounting and cut-out dimension of P712.
1.5 I/O Outlets

The following pictures show the I/O outlets of the P712.

<table>
<thead>
<tr>
<th>No</th>
<th>Function</th>
<th>No</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Menu (Enter function)</td>
<td>8</td>
<td>M12 A-coded Male 5 pin DC power input</td>
</tr>
<tr>
<td>2</td>
<td>SEL+</td>
<td>9</td>
<td>Multi-function of T/S &amp; remote control</td>
</tr>
<tr>
<td>3</td>
<td>SEL-</td>
<td>10</td>
<td>VGA</td>
</tr>
<tr>
<td>4</td>
<td>Exit</td>
<td>11</td>
<td>HDMI</td>
</tr>
<tr>
<td>5</td>
<td>Power LED</td>
<td>12</td>
<td>DVI-D</td>
</tr>
<tr>
<td>6</td>
<td>Power Switch</td>
<td>13</td>
<td>Line-in</td>
</tr>
<tr>
<td>7</td>
<td>M4 ground screw hole</td>
<td>14</td>
<td>Speaker</td>
</tr>
</tbody>
</table>
1.6 Packing List

When you receive the P712, the bundled package should contain the following items:

- P712 unit x 1
- RS-232 cable x1 (for resistive touch)
- HDMI bracket x1
- Cable tie x1
- Cable clamp x1
- Screw M3*5L x2

If you cannot find the package or any items are missing, please contact Axiomtek distributors immediately.
Chapter 2
System Setup

This chapter details the system parts and components with figures. Sections include:

- System Configuration
- Panel Mounting
- VESA Mounting
- I/O Pin Assignment
  - M12 A-coded Male 5 pin DC power input
  - Multi-function of T/S and remote control
- HDMI bracket & cable clamp installation
- Y cable for T/S and remote control
2.1 System Configuration

The figure below shows the OSD on the side of the monitor.

1. **Menu:**
   a. Press to turn on/off the OSD (on-screen display) main menu.
   b. Press to execute selected items.

2. **SEL+:**
   a. Press to scroll up the menu.
   b. Press to increase the level of the selected item.
   c. When the menu is not on displayed the screen, press for brightness setting.

3. **SEL-:**
   a. Press to scroll down the menu.
   b. Press to decrease the level of the selected item.
   c. When the menu is not displayed on the screen, press for volume setting.

4. **Exit: menu exit / input switch**
   a. When the menu is displayed on the screen, short press to exit.
   b. When the menu is not displayed on the screen, press for Auto Adjust (VGA only).

5. **Status LED:**
   a. The light turns green when the power is on.
   b. The green light will be flashing when the monitor goes into standby mode.

6. **Power switch:**
   Press to turn on/off the monitor.
2.2 Panel Mounting

The P712 supports panel mounting. To mount the P712, the standard holes are on the front side of the P712.
2.3 VESA Mounting

The P712 is VESA compliant. Tighten the four screws firmly to fix the kit on the back chassis.

M4 Screw (L=5mm or more) x 4pcs

VESA MIS-D 100mm x 100mm
2.4 I/O Pin Assignment

The P712 supports M12 A-coded Male 5 pin power input connector, Multi-function of T/S & remote control, VGA, HDMI, DVI-D, and Line-in. The diagrams below show the detailed pin assignment.

2.4.1 DC power connector

M12 A-coded Male 5 pin power input : 24~110Vdc

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Power input</td>
</tr>
<tr>
<td>2.</td>
<td>Power input</td>
</tr>
<tr>
<td>3.</td>
<td>GND</td>
</tr>
<tr>
<td>4.</td>
<td>GND</td>
</tr>
<tr>
<td>5.</td>
<td>Earth ground</td>
</tr>
</tbody>
</table>

2.4.2 Multi-function of T/S and remote control

<table>
<thead>
<tr>
<th>Pin</th>
<th>Define</th>
<th>Pin</th>
<th>Define</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Remote RXD</td>
<td>6</td>
<td>Touch DTR</td>
</tr>
<tr>
<td>2</td>
<td>Touch TXD</td>
<td>7</td>
<td>Touch RTS</td>
</tr>
<tr>
<td>3</td>
<td>Touch RXD</td>
<td>8</td>
<td>Remote TXD</td>
</tr>
<tr>
<td>4</td>
<td>Touch DSR</td>
<td>9</td>
<td>N.C.</td>
</tr>
<tr>
<td>5</td>
<td>Ground</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.5  HDMI bracket & Cable clamp installation

2.5.1 HDMI bracket installation

Step 1  Align the hole on the bracket with the hole on the chassis, insert the M3 screw and fasten the screw tightly to the bracket, as the pictures shown below.

Step 2  Connect the HDMI cable to the port, insert the cable tie through the loop of the cable fixing plate to bind the HDMI connector with the bracket, as the picture shown below.

2.5.2 Cable clamp installation

Step 1  Align the hole on the clamp with the hole on the chassis, insert the screw into the hole, then tighten the screw to fix the HDMI cable, as the picture shown below.
2.6 Y cable for T/S and remote control (optional)

Y cable for resistive touch and remote control is optional, also available for self-made by referring to the following correspondence:

![Y cable diagram]

<table>
<thead>
<tr>
<th>Connector</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>DB9-male</td>
<td>DB9-female</td>
<td>DB9-female</td>
</tr>
<tr>
<td>System</td>
<td>P710</td>
<td>PC-Touch</td>
<td>PC-Remote</td>
</tr>
<tr>
<td>Pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>N.C.</td>
<td>3 (Remote RXD)</td>
</tr>
<tr>
<td>2</td>
<td>2 (Touch TXD)</td>
<td>N.C.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3 (Touch RXD)</td>
<td>N.C.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4 (Touch DSR)</td>
<td>N.C.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5 (Ground)</td>
<td>5 (Ground)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6 (Touch DTR)</td>
<td>N.C.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7 (Touch RTS)</td>
<td>N.C.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>N.C.</td>
<td>2 (Remote TXD)</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>N.C.</td>
<td>N.C.</td>
<td></td>
</tr>
</tbody>
</table>
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## Appendix A

### Supported Input Timing Modes

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Refresh rate</th>
<th>Resolution</th>
<th>Refresh rate</th>
<th>Resolution</th>
<th>Refresh rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>640 x 480</td>
<td>60 Hz</td>
<td>640 x 480</td>
<td>60 Hz</td>
<td>640 x 480</td>
<td>60 Hz</td>
</tr>
<tr>
<td>640 x 480</td>
<td>72 Hz</td>
<td>640 x 480</td>
<td>72 Hz</td>
<td>640 x 480</td>
<td>72 Hz</td>
</tr>
<tr>
<td>640 x 480</td>
<td>75 Hz</td>
<td>640 x 480</td>
<td>75 Hz</td>
<td>640 x 480</td>
<td>75 Hz</td>
</tr>
<tr>
<td>720 x 400</td>
<td>70 Hz</td>
<td>720 x 400</td>
<td>70 Hz</td>
<td>720 x 400</td>
<td>70 Hz</td>
</tr>
<tr>
<td>800 x600</td>
<td>56 Hz</td>
<td>800 x600</td>
<td>56 Hz</td>
<td>800 x600</td>
<td>56 Hz</td>
</tr>
<tr>
<td>800 x600</td>
<td>60 Hz</td>
<td>800 x600</td>
<td>60 Hz</td>
<td>800 x600</td>
<td>60 Hz</td>
</tr>
<tr>
<td>800 x600</td>
<td>72 Hz</td>
<td>800 x600</td>
<td>72 Hz</td>
<td>800 x600</td>
<td>72 Hz</td>
</tr>
<tr>
<td>800 x600</td>
<td>75 Hz</td>
<td>800 x600</td>
<td>75 Hz</td>
<td>800 x600</td>
<td>75 Hz</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>60 Hz</td>
<td>1024 x 768</td>
<td>60 Hz</td>
<td>1024 x 768</td>
<td>60 Hz</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>70 Hz</td>
<td>1024 x 768</td>
<td>70 Hz</td>
<td>1024 x 768</td>
<td>70 Hz</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>75 Hz</td>
<td>1024 x 768</td>
<td>75 Hz</td>
<td>1024 x 768</td>
<td>75 Hz</td>
</tr>
</tbody>
</table>

*NOTE: Timing depends on LCD panel requirements.*
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## Appendix B
### OSD Operation

**Function Description of OSD Menu**

※ The OSD layout and format are constructed as below.

<table>
<thead>
<tr>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Brightness</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td></td>
<td>Contrast</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td></td>
<td>Sharpness</td>
<td></td>
<td>1-4</td>
</tr>
<tr>
<td></td>
<td>Ambient Sense</td>
<td></td>
<td>Off/Indoor/Outdoor</td>
</tr>
<tr>
<td>Display</td>
<td>Auto Adjust</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H Position</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td></td>
<td>V Position</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td></td>
<td>Clock</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td></td>
<td>Phase</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td></td>
<td>Rotate</td>
<td>0°/180°</td>
<td>0° (default)</td>
</tr>
<tr>
<td>Color</td>
<td>Gamma</td>
<td>Off/1.8/2.2/2.2/2.4</td>
<td>Off (default)</td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td>5800/6500/7500/9300/User</td>
<td>6500 (default)</td>
</tr>
<tr>
<td></td>
<td>Color Effect</td>
<td>Standard/Game/Move/Photo/Vivid/User</td>
<td>Standard (default)</td>
</tr>
<tr>
<td></td>
<td>Hue</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td></td>
<td>Saturation</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>Advance</td>
<td>Aspect Ratio</td>
<td>Full/16:9/4:3/5:4/1:1</td>
<td>Full (default)</td>
</tr>
<tr>
<td></td>
<td>DDCI/CI</td>
<td>Off/On</td>
<td>Off (default)</td>
</tr>
<tr>
<td></td>
<td>Touch on/off</td>
<td>Off/On</td>
<td>Off (default)</td>
</tr>
<tr>
<td>Input</td>
<td>Auto select</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VGA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HDMI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DVI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audio</td>
<td>Volume</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td></td>
<td>Mute</td>
<td>Off/On</td>
<td>Off (default)</td>
</tr>
<tr>
<td>Other</td>
<td>Reset</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Menu Time</td>
<td>10-60 (seconds)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSD H Position</td>
<td>0-100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSD V Position</td>
<td>0-100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>English, Spanish, French, German, Italy, Portugal, Russia, Chinese</td>
<td>English (default)</td>
<td></td>
</tr>
<tr>
<td>Transparency</td>
<td>0-255</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSD Rotate</td>
<td>0°/90°/180°/270°</td>
<td>0° (default)</td>
<td></td>
</tr>
<tr>
<td>Power On Status</td>
<td>On/Off/User</td>
<td>On (default)</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timing Clock</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FW Version</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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## Appendix C
Remote Control Utility

### Files:
1. **ADS_Client.exe**: main application
2. **ADS_RS-232_x32.dll** / **ADS_RS-232_x64.dll**: library for application reference. The files must be manually copied to System Disk (C:\Windows\System32) or installed with ADS_Client.exe

### UI

The remote control utility is for adjusting the system setting via multi-function port. The items are:
1. Get and set Brightness scale
2. Get and set Contrast scale
3. Get and set Color Temperature scale
4. Set Power on/off for the monitor
5. Get and set Auto-Dimming on/off and timer
6. Adjust the frame position on a monitor (only works with the monitor connecting to the VGA port)
• Application UI and functions
  - When you start the system, it will auto scan all the serial port to find out correct port you connect to.

  ![AD Board Management System](image)

  ![Scanning AD Board...](image)

• Control items
  1. Brightness
     - Control: scroll bar
     - Range: 0 ~ 100
     - Remark: if the getting or setting fails, the application will show “Brightness - Failed”

  ![Brightness - 90](image)

  2. Contrast
     - Control: scroll bar
     - Range: 0 ~ 100
     - Remark: if the getting or setting fails, the application will show “Contrast - Failed”

  ![Contrast - 58](image)
3. **Color Temp.:**
   - Control: drop-down list
   - Range: 6500, 7500 and 9300
   - Remark: if the getting or setting fails, the application will show “Color Temp. - Failed”

4. **Power:**
   - Control: button
   - Way: set only, ON and OFF
   - Remark: if the setting fails, the application will show “Power - Failed”

5. **Dim: (Option)**
   - Control: button
   - Way: ON and OFF
   - Remark: if the setting fails, the application will show “Auto-Dimming - Failed”
   - Remark: if there is no Auto-Dimming, it will show “Auto-Dimming - Disable”

6. **Adjust:**
   - Control: button
   - Way: set only, Adjust
   - Remark: if the setting fails, the application will show “Adjust - Failed”
7. Rescanning all Status
   - Control: button
   - Remark: getting all status

8. Input Source
   - Control: Text box
   - Remark: showing which one is input source (DVI/VGA/HDMI/DP)
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