

# Engineering Specification

Model No. **EFL-5502H**

**55inches High resolution LCD Monitor**

- **AUO P-DID TFT LCD Panel**
- **High performance up-Scaling characteristic**
- **Automatic Scanning**
- **High Speed Response**
- **Enhanced Video Quality**
- **Embedded Power Supply**
- **Power Supply with enhanced Design Margin**
- **Test Pattern for Burn-in & Self Check**
- **Built in IR receiver for remote controller**
- **3 Inputs(VGA, HDMI 1, HDMI 2)**
- **RoHS Compliance**

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## 1. GENERAL DESCRIPTION

### 1-1. Overview

Effinet open frame LCD Monitor EFL-5502HUI is a high performance TFT LCD monitor providing high quality image from the analog VGA and HDMI inputs. This monitor supports wide range signal input from VGA to WUXGA resolution at vertical refresh rate of 60 Hz. It includes integrated signal processing unit, named LSP(LCD Signal Processor), which had all electronic function for user application. It is designed for industrial use with Auto power on, up scaling performance adequate for low-resolution application and enhanced design margin for reliability.

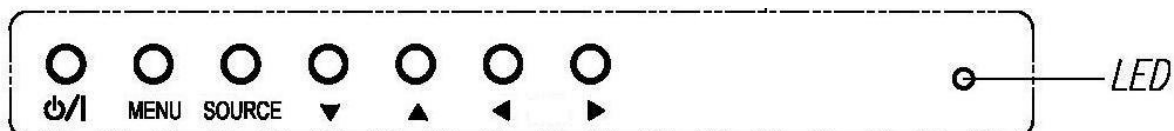
### 1-2. Quick reference table of Characteristics

|            |                          |                                                                                                          |
|------------|--------------------------|----------------------------------------------------------------------------------------------------------|
| Panel      | Size                     | 55" Diagonal                                                                                             |
|            | Active Display Area      | 1209.6 x 680.4mm                                                                                         |
|            | Type No.                 | AUO, P550HVN02                                                                                           |
|            | Number of Pixels         | 1920 (H) x 1080 (V)                                                                                      |
|            | Pixel Arrangement        | RGB Vertical Stripe                                                                                      |
|            | Pixel Pitch              | 0.63 mm x 0.63 mm                                                                                        |
|            | Color Depth              | 16.7M True Color                                                                                         |
|            | Surface Treatments       | Hard Coating (3H), Anti-Glare(Haze 11%)                                                                  |
|            | Viewing Angle<br>(CR≥10) | Horizontal :   Θ L   89degrees<br>Θ L   89degrees<br>Vertical :       Θ L   89degrees<br>Θ L   89degrees |
|            | Contrast Ratio           | Typ. 4000 : 1                                                                                            |
|            | Response Time            | Tr+Tf : 6.5ms                                                                                            |
|            | Average Brightness       | Typ. 450 cd/ m <sup>2</sup>                                                                              |
|            | Frame Rate               | Typ. 60Hz                                                                                                |
|            | Panel Dimension          | 1235.6 x 706.4 x 25.5 mm                                                                                 |
|            | CCFT                     | LEDs                                                                                                     |
| Resolution | Prime                    | 1920 x 1080 @ 60 Hz                                                                                      |

|                                      |                        |                                                                                                                                                                            |
|--------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      | Standard               | 720x400 @70 Hz,<br>640x480 @60 Hz<br>800x600 @56/60 Hz,<br>1024x768 @60 Hz<br>1280x768 @60 Hz,<br>1360x768 @60 Hz<br>1280x1024 @60Hz,<br>1440x900@60Hz<br>1680x1050 @ 60Hz |
| Input Signal                         | VGA (Video / Sync)     | RGB Analog (0.7Vp-p, 75ohms) / H/V Separate(TTL)                                                                                                                           |
|                                      | HDMI                   | TMDS link                                                                                                                                                                  |
| Sync                                 | Type                   | Separate H/V sync, Composite, SOG(Sync-On-Green)                                                                                                                           |
|                                      | Level                  | TTL level (V high $\geq$ 2.0V, V low $\leq$ 0.8V)                                                                                                                          |
|                                      | Polarity               | Positive or Negative                                                                                                                                                       |
| Input Signal Interface               | VGA                    | 15pin D-Sub                                                                                                                                                                |
|                                      | HDMI 1/ HDMI 2         | 19Pin HDMI                                                                                                                                                                 |
| Power                                | Power Indicator        | ON $\rightarrow$ Green, OFF $\rightarrow$ Red                                                                                                                              |
|                                      | AC Input               | AC 90 ~ 264V @60/50Hz, Universal Power                                                                                                                                     |
|                                      | Max. power dissipation | 200Watts                                                                                                                                                                   |
| Regulation(Safety , Ergonomics, EMC) |                        | TBD                                                                                                                                                                        |
| Life time of Panel                   |                        | Min. 50,000 hrs                                                                                                                                                            |
| Environmental Conditions             | Operating              | Temperature : 0 to 50°C / Humidity : 20 to 90%                                                                                                                             |
|                                      | Storage                | Temperature : -20 to 60°C / Humidity : 5 to 90%                                                                                                                            |
| White Color Temperature              |                        | 10000°K : CIE $x=0.280\pm0.015$ / $y=0.290\pm0.015$                                                                                                                        |
| Demonstrated MTBF                    |                        | More than 50,000 hours                                                                                                                                                     |

## 2. USER CONTROL & OSD

### 2-1. Key Control Board



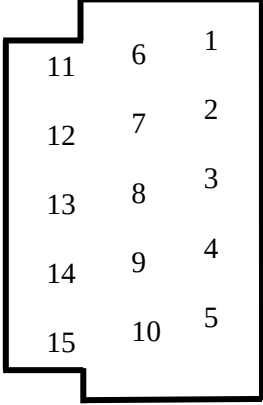
| SWITCH NAME | SWITCH FUNCTIONS                                                                      |
|-------------|---------------------------------------------------------------------------------------|
| MENU        | ▪ Displays the main on-screen menu.                                                   |
| SOURCE      | ▪ Selects the input source and confirms your choice                                   |
| ▼ and ▲     | ▪ Navigates through the on-screen menu.                                               |
| ◀ and ▶     | ▪ Also selects or adjusts items on the on-screen menu.                                |
| Power       | ▪ Indicates power status.<br>Red means the power is off, green means the power is on. |

## 2-2. OSD Control Functions

| CONTROL           | FUNCTION                                                                                                                                                                                                                                                  |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Auto Tracking     | Automatic screen adjustment process.<br><b>If there is any noise on the screen or screen shift, just press “SEL” button.</b><br><b>Since this monitor is equipped with “Auto Tracking” function, it will automatically configure the monitor setting.</b> |
| Brightness        | Adjust the brightness level of the Display                                                                                                                                                                                                                |
| Contrast          | Adjust the contrast level of the Display.                                                                                                                                                                                                                 |
| H position        | Adjust the position of the display horizontally.                                                                                                                                                                                                          |
| V position        | Adjust the position of the display vertically.                                                                                                                                                                                                            |
| Frequency         | Adjust the clock frequency of the display                                                                                                                                                                                                                 |
| Phase             | Adjust the clock phase of the display.                                                                                                                                                                                                                    |
| Language          | Select the OSD language                                                                                                                                                                                                                                   |
| Color Temp        | Change color temperatures Normal/Cool/User<br>Adjust the Red/ Green / Blue Gain in User mode.                                                                                                                                                             |
| Reset             | Restore the original setting value.                                                                                                                                                                                                                       |
| Self Test Pattern | To enter auto burn-in mode, press “Up” key first and then “Sel” key simultaneously for 3 seconds.<br>On this mode, Red – Green – Blue – White – Black test pattern will be displayed. Press Menu key for returning normal display mode.                   |

### 3. CONNECTOR PIN DESCRIPTIONS

#### 3-1. 15 Pin D-SUB Connector

| Shape and pin number                                                              | Pin | Description    | Pin | Description     |
|-----------------------------------------------------------------------------------|-----|----------------|-----|-----------------|
|  | 1   | Red            | 9   | No Connection   |
|                                                                                   | 2   | Green          | 10  | Ground - Sync   |
|                                                                                   | 3   | Blue           | 11  | No Connection   |
|                                                                                   | 4   | No Connection  | 12  | SDA             |
|                                                                                   | 5   | Ground         | 13  | Horizontal Sync |
|                                                                                   | 6   | Ground - Red   | 14  | Vertical Sync   |
|                                                                                   | 7   | Ground - Green | 15  | SCL             |
|                                                                                   | 8   | Ground - Blue  |     |                 |

#### 3-2. HDMI PIN Configuration

| Pin | Symbol            | Pin | Symbol            | Pin | Symbol         |
|-----|-------------------|-----|-------------------|-----|----------------|
| 1   | T.M.D.S. Data2+   | 8   | TDMS Data0 Shield | 15  | DDC Clock(SCL) |
| 2   | TDMS Data2 Shield | 9   | T.M.D.S. Data0-   | 16  | DDC Data(SDA)  |
| 3   | T.M.D.S. Data2-   | 10  | TDMS Clock+       | 17  | CEC/GND        |
| 4   | T.M.D.S. Data1+   | 11  | TDMS Clock Shield | 18  | +5V Power      |
| 5   | TDMS Data1 Shield | 12  | TDMS Clock-       | 19  | HPD            |
| 6   | T.M.D.S. Data1-   | 13  | CEC               |     |                |
| 7   | T.M.D.S. Data0+   | 14  | No Connection     |     |                |

### 4. STANDARD DISPLAY MODE

| No. | Mode  | Resolution  | Horizontal |          | Vertical  |          | Pixel clock |
|-----|-------|-------------|------------|----------|-----------|----------|-------------|
|     |       |             | Frequency  | Polarity | Frequency | Polarity |             |
| 1   | VGA   | 720 x 400   | 31.47 KHz  | N        | 70.0 Hz   | P        | 28.322 MHz  |
| 2   |       | 640 x 480   | 31.47 KHz  | N        | 60.0 Hz   | N        | 25.175 MHz  |
| 3   | SVGA  | 800 X 600   | 35.16 KHz  | N / P    | 56.3 Hz   | N / P    | 36.000 MHz  |
| 4   |       | 800 X 600   | 37.88 KHz  | P        | 60.3 Hz   | P        | 40.000 MHz  |
| 5   | XGA   | 1024 X 768  | 48.36 KHz  | N        | 60.0 Hz   | N        | 65.000 MHz  |
| 6   | WXGA  | 1280 X 768  | 47.7 KHz   | N        | 60.0 Hz   | P        | 80.152 MHz  |
| 7   |       | 1360 X 768  | 60.0 KHz   | N        | 60.0 Hz   | P        | 85.496 MHz  |
| 8   |       | 1366 X 768  | 60.2 KHz   | N        | 60.0 Hz   | P        | 85.496 MHz  |
| 9   |       | 1440 X 900  | 55.56 KHz  | N        | 60.0 Hz   | P        | 89.000 MHz  |
| 10  | SXGA  | 1280 X 1024 | 63.98 KHz  | P        | 60.0 Hz   | P        | 108.00 MHz  |
| 11  | WSXGA | 1680 X 1050 | 64.674KHz  | N/P      | 60.0Hz    | N/P      | 147 MHz     |
| 12  | WUXGA | 1920 X 1080 | 67.5KHz    | N/P      | 60.0Hz    | N/P      | 148.5MHz    |