96Boards TV Platform

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IMPORTANT INFORMATION

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The 96Boards TV Platform is a hardware specification addressing the requirements from the Linaro Digital Home Group (LHG), based on the common baseline for multiple segment groups known as the 96Boards Enterprise Edition (EE) Specification.

The specification describes requirements and recommendations for a 96Boards Compliant hardware to be used for Digital Home applications including Digital TV and Set Top Boxes.
96Boards TV Platform

Hardware
The TV Platform version shall implement the Standard EE footprint version (160 x 120mm)

DRAM
It is recommended that a minimum of 2GB of DRAM is provided for boards that support UHD video. SO-DIMM sockets may be implemented but are not recommended.

Flash Storage
A minimum of 8GB of flash storage shall be provided on the TV version. It is expected that this will be implemented as eMMC memory. It is recommended that this storage is separate from the 96Boards EE Boot ROM requirement. However, the designer may use the eMMC for boot ROM and flash storage subject to SoC support.

WiFi/Bluetooth LE
WiFi shall be provided on the TV version. The minimum implementation shall be 802.11 g/n at 2.4GHz. It is recommended that 802.11ac is also supported. Bluetooth may be provided. If provided, Bluetooth 4.0 Low Energy shall be the minimum supported version.

Display
Output
A minimum of one HDMI output interface shall be provided on a full size (Type A) connector at the location specified in this specification. The minimum support shall be HDMI 1.4 with HDCP 2.0. For high end 4K/UHD implementations HDMI 2.0 and HDCP 2.2 or higher is recommended. Audio shall be provided in at least the minimum format required for the HDMI version used.

Input
One or more HDMI input interfaces may be provided. If HDMI inputs are provided the same specifications apply as for Output HDMI above.

Other
Additional video connectivity may be offered (composite/CVBS, S-Video, YCbCr, Component, VGA etc.)
**Ethernet**

The on-board RJ45 port **shall** be implemented as a system Ethernet port. It is **recommended** that this port shall operate at a minimum speed of 100Mbit/sec.

**Audio**

HDMI audio **shall** be supported as specified above. Additional audio facilities such as stereo I/O jack and S/PDIF **may** be provided at the designer’s option.

**LEDs**

A WiFi activity LED **shall** be placed at the location specified in this specification. The LED **shall** be 0603 SMD Yellow.

If Bluetooth is supported then a Bluetooth activity LED **shall** be placed at the location specified in this specification. The LED **shall** be 0603 SMD Blue.

**Low Speed Expansion Connector**

A 96Boards low speed expansion connector **shall** be implemented in the specified location on the Standard EE version. A 40 pin low profile female 2mm receptacle (20x2) 4.5mm height is specified. The mating connector will provide a board to board separation of at least 7mm.

We re-use the CE LS connector with the benefits: compatibility with CE, EE and other specification mezzanines.

**Additional Functionality**

Boards that comply to the 96Boards TV Platform specification may provide additional functions provided that all mandatory functionality is available. For instance, User Input and Security Interface are two example optional features that can be added by the designer.

**User Input**

An Infrared (IR) detector **may** be provided. If implemented the detector **shall** be placed at the location specified in this specification.

**Security Interface**

A SmartCard interface that is ISO/IEC 7816 compliant **may** be provided on the board. If it is provided it is **recommended** that it be placed in the location specified on the drawing below. Alternatively, SmartCard feature **may** be implemented as an off-board module via an onboard 12 pin connector (2.0mm pitch). If present, this **shall** be implemented at the same location as the on-board SmartCard.

**Tuner Interface**

A Tuner interface may be **provided** as optional feature. If present, one of the below two
options for connectors are **recommended** at the **specified** location of the board:

- 24-pin (12x2) for Single Parallel or Dual Serial Transport Stream (TS)

OR

- 42-pin (21x2) for Dual Parallel TS or four Serial Transport Stream (TS)
Variances from 96Boards Enterprise Edition Specification

Given the specific requirements of the TV Platform version of the 96Boards community board the following variances to the 96Boards EE specification are permitted for a TV platform version:

**Power Connection**

The EE specification provides for a low cost external 12V 8A power supply using a standard barrel jack for boards that consume up to 90W of power. It also requires a high power standard 4 pin DIN connector to supply up to 180W of power for enterprise SoCs. Board designers who implement the PCIe interface should be aware that a PCIe card can draw up to 25W of power.

At the board designer's discretion a TV platform version may omit the high power 4 pin DIN connector if the board design is such that a maximum of 90W will be drawn from the barrel jack connector. The barrel jack connector shall always be implemented.

**Boot ROM**

The EE specification requires a minimum of 64MB of bootable flash memory to be implemented. The TV Platform specification requires a minimum of 8GB of flash storage. If this storage is bootable then the EE specification is met.

If the TV platform board designer wishes to implement a separate boot ROM then the size is at the discretion of the designer, and may be less than 64MB whether or not the flash storage is bootable. In considering the boot ROM size requirements, designers should note that a separate boot ROM may be used for SoC-dependent binary code blobs as well as the boot software itself.

**Ethernet Connector**

The EE specification requires that the Ethernet RJ45 connector be located in the specified location on the front.

For TV platform, this connector is still recommended to be in the specified location on the front. However, at the board designer's discretion, the Ethernet RJ45 connector may be located within the Optional area instead (so all connections are accessible on the back panel).
M2.5, 2.5Ø hole, 5.0Ø keepout, x6
Corner hole centers 4.0mm from edges

Optional area for board designer to locate additional I/O connectors (e.g. HDMI, S/PDIF, SATA, AV etc.) as required by board design/functionality.

Recommended location for Smart Card connector if implemented (board underside)

Optional area for TV tuner board connector

General Top component area
Top component keep out area
Top component max height = 6.5mm
Optional Components
## Change History

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