AVNET HMI10A Human Machine Interface Single Board Computer with Touchscreen User Guide

AVNET LOGO

KDP HMI 10
PCBA Usage Guide
Version 1.0, 8/2021

REVISION HISTORY
Initial Release based on internal specification

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INTRODUCTION / OVERVIEW

The KDP HMI 10 is a custom PCBA, based on a Quad-core Cortex-A53 with 1GB LPDDR2 DRAM for use as a human-machine interface (HMI) controller.
An HDMI-to-MIPI display circuit is added for display panel connection.
USB Hub provides 4 USB Type-A ports, touchscreen, along with custom cellular and camera connections.

SPECIFICATIONS

PROCESSING CORE
– 64-Bit, Quad-core ARM A53 SoC
– Heat sink for passive heat dissipation
– 1GB LPDDR2 DRAM
– WiFi/BT, 2.4GHZ, 802.11bgn
INPUT POWER
– Voltage: 12V +/- 10% DC Input
– Power: 12W minimum, 18W recommended
– Minimum recommended wattage includes:
– All onboard devices
– 2.2W for the display

– 2W for added peripheral devices installed onto the connectors

ENVIRONMENTAL

– Ambient Operating Temperature Range: -20°C to 70°C*, non-condensing humidity

– Storage Temperature Range: -40°C to 85°C, non-condensing humidity

***Note:** depending on processor workload, CPU throttling may occur above 50C ambient

DIMENSIONING & MOUNTING

– PCBA Dimensions: 146mm W x 75mm D x 20mm H (mating cables will require additional height and depth)

– Designed to mount to plate attached to the back of custom touchscreen display

BOOT IMAGE / STORAGE MEDIUM

– 16GB (minimum) eMMC onboard

LED INDICATORS

– Onboard Power / Activity LED

– PWR: Green LED indicates valid power

– ACT: Yellow flashing indicates disk activity by default, but configurable

– Onboard User LEDs

– Green

– Controlled from user code using GPIO (LED1 and LED2)

USB 2.0

A USB 2.0 High-Speed Hub provides seven (7) downstream connections. All downstream ports share a single USB 2.0 High-Speed connection back to the processor. This limits maximum shared bandwidth of all USB devices to ~250Mbit/s. All USB connections include ESD protection.

DISPLAY CONNECTION

The display connection consists of several separate circuits:

– HDMI-to-MIPI bridge chip provides the signaling for the display

– LED backlight driver with PWM brightness control

– USB touchscreen interface

– I2C interface for ambient light sensor (ALS) connection

REFERENCES

2.1. COMPLIANCE

FCC COMPLIANCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.

– Increase the separation between the equipment and receiver.

– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

– Consult the dealer or an experienced radio/TV technician for help.

ISED COMPLIANCE STATEMENT

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

RADIATION EXPOSURE STATEMENT

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

TRADEMARKS & NOTICES

NOTICES

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Documents / Resources

AVNET HMI10A Human Machine Interface Single Board Computer with Touchscreen [pdf] User Guide
HMI10A, 2AF62-HMI10A, 2AF62HMI10A, HMI10A Human Machine Interface Single Board Computer with Touchscreen, Human Machine Interface Single Board Computer with Touchscreen