(mm)

177
105
51

# CCpilot V510 NEXT GENERATION IMX8X BASED DISPLAY

The **CCpilot V510** is a 5" display computer based on an i.MX 8DualXPlus application processor with a powerful integrated GPU to support premium HMI applications for instrumentation, video, control, automation, infotainment, and telematics.

The 5" high brightness, IPS-type screen, with optically bonded tempered glass, offers best-in-class contrast and viewing angles for superb visibility, and high scratch resistance without fogging.

For intuitive tactile interaction in difficult conditions without compromising screen space the CCpilot V510 features 8 softkeys and an optional multi-touch PCAP touch screen.

Interfaces include Ethernet, CAN, high-speed USB, and optional Bluetooth and Wi-Fi for wireless connectivity.

The CCpilot V510 is available with LinX, our open and modular software platform. It includes firmware and OS support, prepackaged application toolchains for Qt and CODESYS, and application modules for commonly required functionality; including fast boot, vision systems and connectivity.

System designers can choose the level, configuration, and development tools that fit their needs and can therefore work with, not against, the expertise and resources they already have.

With the open platform approach, customers can base their solution on a robust and secure base while keeping the flexibility to use in-house or 3rd party development resources.

With its vast software capabilities and state-of-the-art hardware, the CCpilot V510 is a future-ready platform for machine intelligence.

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# CCpilot V510 PRODUCT SPECIFICATIONS

## COMPUTING CORE

| | |
|---|---|
| OVERVIEW | ARM dual core CPU with integrated GPU & Co-processor designed to meet automotive requirements and reliability. |
| CPU | i.MX 8DualXPlus, (2 x Cortex A35 @ 1.2 GHz) |
| GPU | Vivante GC7000lite for hardware acceleration of 2D, 3D & vector graphics, 1600 Mpixels/s and 52 GFLOP. |
| STORAGE | 4 GB eMMC in robust pseudoSLC mode |
| RAM | 1 GB 32 bit LPDDR4 @ 1200MHz |

## DISPLAY

| | |
|---|---|
| TYPE | IPS Type with >88 degree viewing angles |
| COVER LENS | Tempered glass with AG coating |
| OPTICAL BONDING | Yes. IPS screen and cover lens optically bonded to achieve sunlight readability. |
| SIZE AND RESOLUTION | 5" WVGA, 800x480 pixels |
| COLOR DEPTH | 24 bit |
| CONTRAST RATIO* | 1000:1 |
| BRIGHTNESS* | 800 cd/m² |
| DIMMING | Yes, in steps, 1-100% |

## HMI

| | |
|---|---|
| TOUCH SCREEN | Option for PCAP with up to 10-point multitouch. Calibrated to support interaction with gloves and is in-sensitive to water drops from rain etc. Sensitivity is also adjustable based on operating conditions and application. |
| SOFT KEYS | 8 freely configurable buttons with dimmable and individual On/Off controlled LED:s |
| BUZZER | Yes, configurable frequency and volume. |
| STATUS LED | Dimmable RGB LED |
| AMBIENT LIGHT SENSOR | Yes, enabling automatic dimming |

## INTERFACES

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|---|---|
| CAN | 2 x CAN ports, physical layer ISO 11898 2.0B. Configurable bit rate. CAN/FD support |
| USB | 1 x USB 2.0 high speed |
| ETHERNET | 1 x 10/100Base-T |
| WIRELESS | Option to add Wi-Fi and Bluetooth® (version 5). |
| POWER SUPPLY | 9-36 VDC. CPU and communication operational down to 6 VDC |
| KEY SWITCH | 1 Key switch input, for start-up/suspend/resume/shutdown |
| I/O | 2 configurable inputs, 2 configurable high side outputs |

## MECHANICAL

| | |
|---|---|
| HOUSING MATERIAL | Valox 357x |
| INSTALLATION | Panel mounted or 3 point RAM mount |
| CONNECTORS | Deutsch DTM06-12SA + SB multipin connectors for Power, Ethernet, CAN, USB and I/O |
| DIMENSIONS (mm) | 177W x 105H x 51D |
| WEIGHT (kg) | 0.455 |

## ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| IP CLASS | IP65, IP66 and IP67 |
| EMC CONFORMITY | 2014/30/EU, ISO 14982:2009, ISO 13766-1:2018, EN12895:2015, EN ISO 13766-2:2018 |
| VIBRATIONS | IEC 60068-2-64. Random, 0.02g²/Hz 5-2000Hz 3x3h |
| SHOCK | IEC 60068-2-27.±25g /6ms±3 x3, 15000 total shocks |
| TEMPERATURE RANGE (°C) | Operating: -30 to +70, Storage: -40 to +85 |

## OPERATING SYSTEM

| | |
|---|---|
| SYSTEM | CCLinux, custom Yocto based Linux system |
| KERNEL | 5.15 (Long Term Support) or newer |
| BSP | Yocto 4.0 (Kirkstone) or newer |
| COMPUTING AND GRAPHICS APIs | Support for advanced UX and computing tasks: OpenGL ES 3.1, Vulkan, OpenCL 1.2, OpenVG 1.1 |
| BOOTUP TIME | Optimizable, with cold boot down to ~3sec |

## SOFTWARE FRAMEWORKS & TOOLS

| | |
|---|---|
| DEVELOPMENT ENVIRONMENT | Virtual machine or Native Linux. |
| PROGRAMMING | Supported languages include C++, C, QML, JavaScript, Python, HTML5, IEC61131-3. |
| GCC COMPILER | aarch64-poky-linux-GCC 8.3.0 C++17 or newer |
| UI FRAMEWORKS | Qt Open Source and optional Qt Commercial. Support for Web frameworks. |
| WINDOWING | Weston, Qt Wayland and direct EGLFS |

**APPLICATION PLATFORM**
LinX Software Suite, open and modular platform based on Qt, common for all CCpilot products. Examples of modules and components listed below.

| | |
|---|---|
| GUI DESIGN | UX Designer, a pre-built virtual machine with Qt Creator, compilers, libraries, graphical components and templates. |
| CAN NETWORKING | Fieldbus Access, easy configuration of J1939 and CANopen networks. |
| REMOTE APPLICATION ACCESS | VNC server and client, web browser and server. |
| SOFT PLC | CODESYS 3.5 |
| DIGITAL VIDEO | Ready-made solution for displaying digital camera streams over Ethernet. RTP, MPEG4, MJPEG, H.264 (4Kp30) and H.265. |

## PLATFORM SUPPORT

Below you find specifications of features for which the product platform has inherent hardware support. These are not currently available in the standard product specified above but may be added over time in the generic evolution of the product, or added for a specific, larger customer program.

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|---|---|
| CAN FD | BSP/SDK can be developed on request. |
| TOUCH SCREEN SENSITIVITY | Option to have touch controller calibrated for special use cases. |
| SECURITY | RSA/AES, elliptic-curve cryptography, key storage, secure boot-up, signed applications, docker. Hardware level virtualization for multi OS systems. |
| Qt AUTOMOTIVE | Supports Qt Automotive, featuring e.g. safe rendering and IVI applications. |
| ANDROID | Supports Android |
| OS IN CO-PROCESSOR | Supports use of an RTOS in the integrated Cortex-M4F companion microcontroller (co-processor). |

* Typical values

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