Reg no. 2023/120267/07 VAT no. 4300318757

QUANTUM
Machine Intelligence

crosscontrol
making machines smarter, safer and more productive

CCpilot V510

NEXT GENERATION IMX8X BASED DISPLAY

About CCpilot V510

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.

+27 83 790 7969 bern@qmi.co.za 56 Detroit Street, Benoni

crosscontrol - 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

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 & 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

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 & RESOLUTION	5" WVGA, 800x480 pixels
COLOUR 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
STATUS LED	Dimmable RGB LED
BUZZER	Yes, configurable frequency and volume.
AMBIENT LIGHT SENSOR	Yes, enabling automatic dimming

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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 (G)	0.455

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 DESGIN	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.

INTERFACES	
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

ENVIROMENTAL 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

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.

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).

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