PRELIMINARY

CCpilot V1200 I.MX 8 BASED DISPLAY COMPUTER FOR INDUSTRIAL VEHICLES

The **CCpilot V1200** is a 12.1" display computer featuring an i.MX 8QuadXPlus application processor. It comes with a very powerful GPU that offers triple the framerate of the last generation of industrial ARM cores. The hardware accelerated graphics also enables smooth rendering of multiple digital camera streams simultaneously as well as 3D graphics.

The WXGA, high-brightness, IPS, optically bonded, PCAP, touch screen provides very wide viewing angles and sunlight readability. Wired interfaces include up to 4 CAN ports, Gigabit Ethernet & USB 2.0. It also features a USB-C connector with USB 3.0 for peripherals. Built-in Wifi & Bluetooth are optional, supporting software updates over the air, smartphone integration and other wireless features.

The CCpilot V1200 comes with a Yocto-based Linux OS which leverages the next generation of graphics APIs and frameworks, making it possible to realize advanced and super responsive GUIs. Cold boot time of less than 5 seconds can be achieved.

Our open and modular platform supports many options for application development, including Qt, HTML5 & CODESYS. And like all CrossControl display products, it comes with LinX Software Suite - a set of libraries and software components that help speed up application development.

The new iMX8-based platform has inherent support to enable optional features. For example, the mini-PCIe slot in the V1000 and V1200 can be used to integrate an AI accelerator chip or add extra storage to boost performance or extend capabilities.

With its vast software capabilities and state of-the art hardware, the CCpilot V1200 is a future ready platform for machine intelligence.

Turn for technical specifications »

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CCpilot V1200 PRODUCT SPECIFICATIONS

COMPUTING CORE	
OVERVIEW	i.MX 8QuadXPlus, quad core CPU, integrated GPU & M4 Co-processor.
CPU	4 x Cortex A35 @ 1GHz
GPU	Vivante GC7000lite high performance graphics processing unit.
STORAGE	4 GB, enhanced mode eMMC pseudoSLC. Expandable up to 32 GB
RAM	2 GB 32 bit LPDDR4 @ 1200GHz

DISPLAY	
TYPE	IPS with >88° viewing angles in all directions
COVER LENS	Tempered glass with AG coating
OPTICAL BONDING	Display, touch screen and cover lens optically bonded to achieve sunlight readability.
SIZE AND RESOLUTION	12.1" WXGA, 1280x800 pixels
COLOR DEPTH	24 bit, 16 million
CONTRAST RATIO*	1000:1
BRIGHTNESS*	1320 cd/m²
DIMMING	Yes, in steps, 1-100%
AMBIENT LIGHT SENSOR	Yes, enabling automatic dimming

HMI	
TOUCH SCREEN	Projective Capacitive with up to 10-point multitouch. Calibrated to support interaction with gloves or be in-sensitive to water drops.
STATUS LED	RGB LED
BUZZER	Yes, with configurable tone and volume.

INTERFACES	
CAN	2 ports, physical layer ISO 11898 2:2016. Configurable bit rate. CAN FD compliant. 2 additional ports optional.
USB	USB 1 x USB 2.0 high speed, 1 x USB 3.0 super speed
ETHERNET	1 x 1GB Ethernet
WIFI	Optional. 802.11ac/a/b/g/n, dual-band 2.4/5 GHz
BLUETOOTH	Optional. Bluetooth 5.0.
POWER SUPPLY	9-36 VDC. Power on from 4.5 Volt over DC.
KEY SWITCH	1 Key switch input, for start-up/suspend/resume/ shutdown.

MECHANICAL	
HOUSING MATERIAL	Valox 357x
INSTALLATION	Panel mounted or 4 point VESA 75 mount
CONNECTORS	3 x DIN M12 for Power & CAN, Ethernet and USB 2.0 1 x USB-C for USB 3.0 interface. Optional: 1 x DIN M12 for 2 additional CAN
DIMENSIONS (mm)	316 x 222 x 41
WEIGHT (g)	< 1200 g

ENVIRONMENTAL SPECIFICATIONS	
IP CLASS	IP65, IP66, and IP67
EMC CONFORMITY	2014/30/EU, ISO 14982:2009, ISO 13766-1:2018, ISO 13766-2:2018, ISO 11783-5:2019 (2ms interrupts with a capacitor)
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 +80

OPERATING SYSTEM	
SYSTEM	Custom Linux system based on Yocto 3.0+
KERNEL	5.4 (Long Term Support)
BSP	Available to create a custom Linux image
COMPUTING AND GRAPHICS APIs	Support for advanced UX and computing tasks: OpenGL ES 3.1, Vulkan, OpenCL 1.2, OpenVG 1.1
BOOTUP TIME	Configurable. Cold boot 4-7 sec

SOFTWARE FRAMEWORKS & TOOLS	
DEVELOPMENT ENVIRONMENT	Virtual machine or Native Linux.
PROGRAMMING	Supported languages include C++, C, QML, JavaScript, Python, HTML5, IEC61131-3.
GCC COMPILER	GCC C++17 or newer
UI FRAMEWORKS	Qt 5.15+ Open Source. Will support Qt 6. Qt Commercial is optional, enables closing access to the system. Support for Web frameworks.
WINDOWING	Weston, Qt Wayland. X Wayland. Direct EGLFS is available if windowing is not required.

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.
ISOBUS	Universal Terminal, Task Controller.
SMART DEVICE INTEGRATION	Smart Connect, framework for building apps and integrating smart phones and tablets (Service tool, secondary HMI).
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.

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.
SAFETY	Safety supervision software can be implemented in Cortex-M4F co-processor, e.g. for supervision of displayed GUI content like a soft tell-tale. Platform supports up to ASIL-B & SIL2.
QT AUTOMOTIVE	Supports Qt Automotive, featuring e.g. safe rendering and IVI applications.
ANDROID	Supports Android
EXPANSION CARDS	Supports Mini-PCIe formats, for example for an AI/ML accelerator.
OS IN CO-PROCESSOR	Supports use of an RTOS in the integrated CortexM4F companion microcontroller (co processor).
KEY SWITCH	Support for a second key switch for pre-ignition.

* Typical values

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Sales contact: sales@crosscontrol.com | **General**: info@crosscontrol.com | www.crosscontrol.com