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 with much higher graphics performance than earlier generations of ARM processors. Compared to iMX6-based displays it offers 3 times higher frame rate. The high brightness and contrast screen has Wide XGA resolution and uses IPS technology for wide viewing angles and color accuracy. It comes with a multi-touch PCAP touch screen for intuitive user interaction also with gloves. The screen assembly is optically bonded, reducing reflections and making the display easy to read also in direct sunlight.

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, enabling 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 V1200 product platform has inherent support for a number of optional features. For example it features a mini-PCIe module slot which can be used for integrating an AI/MLaccelerator module or an extra storage card to boost performance and 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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making machines smart, safe and productive

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	8 GB, enhanced mode eMMC pseudoSLC.
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 volume and frequency.

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	12/24 VDC nominal, range 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	Nylon, 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)	< 1580 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, Vulkan, OpenCL, OpenVG.
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 multiple digital camera streams over Ethernet. RTP, MPEG4, MJPEG, H.264 (4Kp30) and H.265. Support for controlling camera settings like resolution and frame rate.

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.
LARGER STORAGE	Expandable up to 32 GB enhanced mode eMMC pseudoSLC. Possible to increase storage even more through Mini-PCIe card (see below).
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.
QT AUTOMOTIVE	Supports Qt Automotive, featuring e.g. safe rendering and IVI applications.
ANDROID	Supports Android
EXPANSION CARDS & MODULES	Mini-PCIe boards and modules can be added for extending functionality and performance. E.g. AI/ML accelerator modules, radio and connectivity modules, storage cards.
OS IN CO-PROCESSOR	Supports use of an RTOS in the integrated CortexM4F companion microcontroller (co-processor). For implementation of real-time critical and safety functionality.
KEY SWITCH	Support for a second key switch for pre-ignition.

* Typical values

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