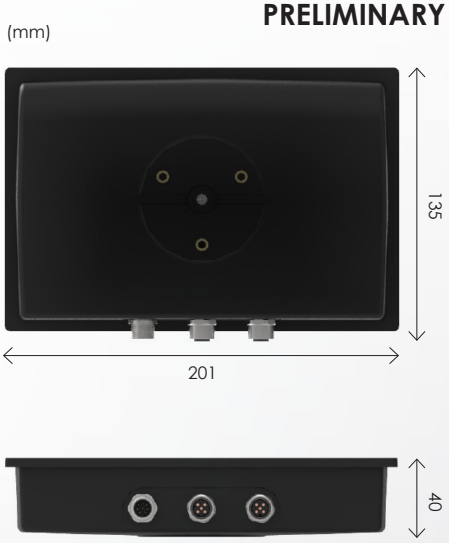
PRELIMINARY



CCpilot V700 NEXT GENERATION IMX8X BASED DISPLAY

The **CCpilot V700** is designed to address challenges created by the rapid increases in software content in modern mobile machines. Systems for improved productivity, reduced environmental impact, safety and security are software intensive. And the performance of graphical user interfaces is a key success factor for how the machine system is perceived. To efficiently realize these types of solutions, it is critical to use a platform that supports capable software frameworks and toolchains.

The V700 is based on an i.MX 8DualXPlus processor which features a very powerful GPU that can deliver triple the framerate of displays using earlier generation of cores, e.g. iMX 6. The V700 leverages the next generation of graphics APIs and frameworks, making it possible to realize advanced systems in a lean way. The GPU and software layers of the V700 support Vulkan, enabling the advantages of the new graphics backend of QT 6, which is expected to be released in Q4 2020.

The CCpilot V700 offers support for rapidly emerging technologies like multiple digital camera streams, stream stitching to create panoramic views, object detection and classification as well as speech recognition. With its vast software capabilities and state-of-the art hardware, the CCpilot V700 is a future ready platform for machine intelligence.

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CCpilot V700 PRODUCT SPECIFICATIONS

COMPUTING CORE	
OVERVIEW	i.MX 8DualXPlus, dual core CPU, integrated GPU & Co-processor.
CPU	2 x Cortex A35 @ 1GHz
GPU	Vivante GC7000lite high performance graphics processing unit for 3D, 2D & vector graphics. With 1600 Mpixels/s and 52 GFLOP it delivers 2-3X the performance compared to the IMX6's Vivante GC2000.
STORAGE	4 GB enhanced mode eMMC pseudoSLC
RAM	1 GB 32 but LPDDR4 @ 1200GHz

DISPLAY	
TYPE	IPS 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	7" WVGA, 800x480 pixels
COLOR DEPTH	24 bit
CONTRAST RATIO*	1000:1
BRIGHTNESS*	800 cd/m²
DIMMING	Yes, in steps, 1-100%
AMBIENT LIGHT SENSOR	Yes, enabling automatic dimming

HMI	
TOUCH SCREEN	Projective Capacitive (PCAP) with 2-point multi-touch.
STATUS LED	RGB LED
BUZZER	Yes, with configurable tone and volume.

INTERFACES	
CAN	2 x CAN ports, physical layer ISO 11898 2.0B. Configurable bit rate.
USB	1 x USB 2.0 high speed
ETHERNET	1 x Ethernet. 10/100 Base-T
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

MECHANICAL	
HOUSING MATERIAL	Valox 357x
INSTALLATION	Panel mounted or 3 point RAM mount
CONNECTORS	8 pin DIN M12 for power and CAN ports 4 pin DIN M12 for Ethernet 5 pin DIN M12 for USB
DIMENSIONS W x H x D (mm)	201 x 135 x 40
WEIGHT (kg)	0,65

ENVIRONMENTAL SPECIFICATIONS	
IP CLASS	IP65 and IP66
EMC CONFORMITY	2014/30/EU, ISO 14982:2009, ISO 13766-1:2018, EN12895:2015
VIBRATIONS	IEC 60068-2-64. Random, 0.02g²/Hz 5-2000Hz 3x3h
SHOCK	IEC 60068-2-27. ±5g /11ms ±3 x3, 18 total shocks
TEMPERATURE RANGE (°C)	Operating: -30 to +70 Storage: -40 to +80

OPERATING SYSTEM	
SYSTEM	Custom Linux system based on Yocto 2.6+
KERNEL	4.9+
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 with EGLFS: 6-7 sec, with Weston: 8-9 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 5.12+ Open Source. Will support Qt 6, expected Q4 2020. Qt Commercial is optional, enables closing access to the system. Support for Web frameworks.
WINDOWING	Weston, Qt Wayland. Direct EGLFS if windowing is not required.

APPLICATION PLATFORM
LinX Software Suite, open and modular platform based on Qt, common for all CCpilot display 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 and Guidance.
TELEMATICS	Enterprise Connect, including configurable soft telematics controller and backend web solution.
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 customer request.
TOUCH SCREEN SENSITIVITY	Option to have touch controller calibrated for special use cases, e.g. interaction with thick gloves, in-sensitive to water drops etc.
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
OS IN CO-PROCESSOR	Supports use of an RTOS in the integrated Cortex-M4F companion microcontroller (co-processor).
WIRELESS	Possibility to integrate Bluetooth®chip, version 5.

* Typical values

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