(mm)

166

267

57
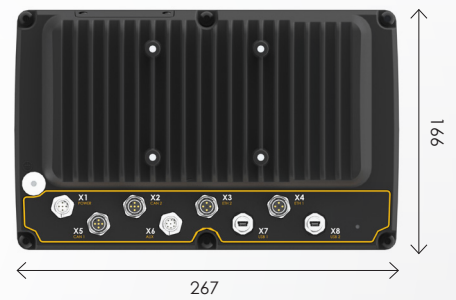
CCpilot X900 POWERFUL DISPLAY COMPUTER WITH INTEL ATOM QUAD CORE

The **CCpilot X900** is designed to address challenges created by the rapid increases in the requirements of software content in modern mobile machines. Systems for improved productivity, reduced environmental impact, safety and security are software intensive. 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 X900 is based on an industrial grade quad core Intel processor which features a very powerful integrated GPU. The CCpilot X900 leverages current and next generation graphics APIs and frameworks, making it possible to realize and support advanced systems. The GPU and software layers support Vulkan, enabling the advantages of the new graphics backend of Qt 6, which is expected to be released in Q4 2020. The platform utilises accessible CFAST storage for in-field expandability and storage upgrades. Based on powerful PC architecture the CCpilot X900 enables advanced support tools, HMI solutions, business logics, guidance and control, all in one display computer solution.

The CCpilot X900's Atom based SoC is designed to support video analytics and the platform supports rapidly emerging technologies like multiple digital camera streams, stream stitching to create panoramic views, object recognition and classification.

The X900 offers these high-end computing capabilities in a ruggedsised and highly reliable product design that withstands the environmental loads associated with industrial vehicle applications. **Turn for technical specifications »**

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CCpilot X900 PRODUCT SPECIFICATIONS

COMPUTING CORE

OVERVIEW	Intel quad core CPU, iGPU & coprocessor.
CPU	Intel Atom® 64 bit x5-E3940 CPU, 4 x 1.60 GHz.
GPU	Intel® HD Graphic 500 (9th gen, Apollo Lake) integrated processor unit, with 400MHz Base Frequency. 144Gflops (FP32). 1.500 GPixel/s Supports advanced Graphics and computing APIs.
STORAGE	8 GB CFast MLC (upgradeable)
RAM	4 GB DDR3L

DISPLAY

TYPE	TFT with LED backlight.
COVER LENS	Tempered glass with AG coating.
OPTICAL BONDING	Yes. Screen & cover lens optically bonded to improve sunlight readability and prevent fogging.
SIZE AND RESOLUTION	9" 15:9 WXGA resolution, 1280 x 768 pixels
COLOR DEPTH	24 bit
CONTRAST RATIO*	1000:1
BRIGHTNESS*	720 cd/m²
DIMMING	Yes, automatically controlled through the ambient light sensor or manually in steps, 1-100%.
AMBIENT LIGHT SENSOR	Yes

HMI

TOUCH SCREEN	Projective Capacitive (PCAP) with 2-point multi-touch.
STATUS LED	RGB LED
SOUND	Yes. Configurable high quality front facing speaker (95 dBA) for alarms and notifications, sound files and music streaming.
SOFT KEYS	3 configurable buttons on the front of the display.

INTERFACES

CAN	2 x CAN-FD ports, physical layer ISO 11898 2.0B. SAE J2284-1 to SAE J2284-5, Configurable bit rate. CAN and CAN-FD modes are supported.
USB	2 x USB 2.0 high speed
ETHERNET	2 x Ethernet. 10/100 Base-T
SERIAL	1 x RS232
AUDIO	1 x Line Out
POWER SUPPLY	12 or 24 VDC Nominal Voltage. Voltage range 10-34 VDC. CPU and communication operational down to 6 VDC.
KEY SWITCH	1 Key switch input, for start-up/suspend/resume/shutdown.

MECHANICAL

HOUSING MATERIAL	Aluminium
INSTALLATION	Panel mounted or VESA 75 bracket.
CONNECTORS	3 x 5 pin DIN M12 for power and CAN ports 2 x 4 pin DIN M12 for Ethernet 2 x M12 microUSB 1 x 8 pin DIN M12 Auxiliary connection and serial port
DIMENSIONS, WxHxD (mm)	267 x 166 x 57
WEIGHT (g)	2,700

ENVIRONMENTAL SPECIFICATION

IP CLASS	IP65
EMC CONFORMITY	CE certified for Earth Moving equipment, Agriculture and Forestry equipment.
VIBRATIONS	IEC 60068-2-6 Sinussoldal, IEC 60068-2-64 Random.
SHOCK	IEC 60068-2-27. 30g/6ms
TEMPERATURE RANGE (°C)	Operating: -25 to +70 Storage: -30 to +80

OPERATING SYSTEM

SYSTEM	Custom Linux system based on Yocto 2.6+.
KERNEL	4.14.68
BSP	Available to create a custom Linux image.
COMPUTING AND GRAPHICS APIs	Advanced UX and computing tasks supported by the SoC: OpenGL 4.6, Vulkan 1.1.97, DirectX 12, OpenCL 2.1, Shader Model 6.4, OpenVG 1.1.

SOFTWARE FRAMEWORKS & TOOLS

DEVELOPMENT ENVIRONMENT	Virtual machine, Native Linux or Windows (for supported devices).
PROGRAMMING	Supported languages include C++, C, QML, JavaScript, Python, HTML5, IEC61131-3.
GCC COMPILER	Version 7.3.0, supports C++17 standard.
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.
TELEMATICS	Enterprise Connect, including configurable soft telematics controller and backend web solution. 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.

TOUCH SCREEN SENSITIVITY	Option to have touch controller calibrated for special use cases.
STORAGE	Supports SLC memory for added reliability.
SECURITY	RSA/AES, elliptic-curve cryptography, key storage, secure boot-up, signed applications, docker, virtualisation.
OS	Win10 image and associated BSP/SDK. Desktop Linux distributions.
QT AUTOMOTIVE	Supports Qt Automotive, with IVI applications.
DISPLAY	Device hardware can support additional monitors for multi display solutions.

* Typical values

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