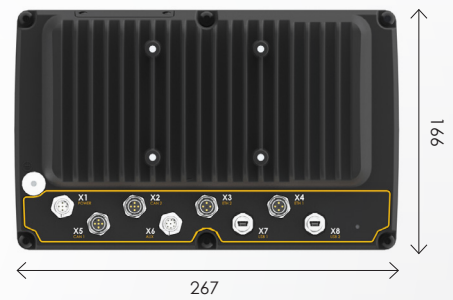




(mm)



# 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 ruggedised and highly reliable product design that withstands the environmental loads associated with industrial vehicle applications. **Turn for technical specifications »**

# CCpilot X900 PRODUCT SPECIFICATIONS

COMPUTING CORE	
<b>OVERVIEW</b>	Intel quad core CPU, iGPU & coprocessor.
<b>CPU</b>	Intel Atom® 64 bit x5-E3940 CPU, 4 x 1.60 GHz.
<b>GPU</b>	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.
<b>STORAGE</b>	8 GB CFast MLC (upgradeable)
<b>RAM</b>	4 GB DDR3L

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

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

INTERFACES	
<b>CAN</b>	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.
<b>USB</b>	2 x USB 2.0 high speed
<b>ETHERNET</b>	2 x Ethernet. 10/100 Base-T
<b>SERIAL</b>	1 x RS232
<b>AUDIO</b>	1 x Line Out
<b>POWER SUPPLY</b>	12 or 24 VDC Nominal Voltage. Voltage range 10-34 VDC. CPU and communication operational down to 6 VDC.
<b>KEY SWITCH</b>	1 Key switch input, for start-up/suspend/resume/shutdown.

MECHANICAL	
<b>HOUSING MATERIAL</b>	Aluminium
<b>INSTALLATION</b>	Panel mounted or VESA 75 bracket.
<b>CONNECTORS</b>	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
<b>DIMENSIONS, WxHxD (mm)</b>	267 x 166 x 57
<b>WEIGHT (g)</b>	2,700

ENVIRONMENTAL SPECIFICATION	
<b>IP CLASS</b>	IP65
<b>EMC CONFORMITY</b>	CE certified for Earth Moving equipment, Agriculture and Forestry equipment.

<b>VIBRATIONS</b>	IEC 60068-2-6 Sinusoidal, IEC 60068-2-64 Random.
<b>SHOCK</b>	IEC 60068-2-27. 30g/6ms
<b>TEMPERATURE RANGE (°C)</b>	Operating: -25 to +70 Storage: -30 to +80

OPERATING SYSTEM	
<b>SYSTEM</b>	Custom Linux system based on Yocto 2.6+.
<b>KERNEL</b>	4.14.68
<b>BSP</b>	Available to create a custom Linux image.
<b>COMPUTING AND GRAPHICS APIs</b>	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	
<b>DEVELOPMENT ENVIRONMENT</b>	Virtual machine, Native Linux or Windows (for supported devices).
<b>PROGRAMMING</b>	Supported languages include C++, C, QML, JavaScript, Python, HTML5, IEC61131-3.
<b>GCC COMPILER</b>	Version 7.3.0, supports C++17 standard.
<b>UI FRAMEWORKS</b>	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.
<b>WINDOWING</b>	Weston, Qt Wayland. Direct EGLFS if windowing is not required.
<b>APPLICATION PLATFORM</b>	LinX Software Suite, open and modular platform based on Qt, common for all CCpilot display products. Examples of modules and components listed below.
<b>GUI DESIGN</b>	UX Designer, a pre-built virtual machine with Qt Creator, compilers, libraries, graphical components and templates.
<b>CAN NETWORKING</b>	Fieldbus Access, easy configuration of J1939 and CANopen networks. Enterprise Connect, including configurable soft telematics controller and backend web solution.
<b>TELEMATICS</b>	Smart Connect, framework for building apps and integrating smart phones and tablets (Service tool, secondary HMI).
<b>REMOTE APPLICATION ACCESS</b>	VNC server and client, web browser and server.
<b>SOFT PLC</b>	CODESYS 3.5
<b>DIGITAL VIDEO</b>	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.	
<b>TOUCH SCREEN SENSITIVITY</b>	Option to have touch controller calibrated for special use cases.
<b>STORAGE</b>	Supports SLC memory for added reliability.
<b>SECURITY</b>	RSA/AES, elliptic-curve cryptography, key storage, secure boot-up, signed applications, docker, virtualisation.
<b>OS</b>	Win10 image and associated BSP/SDK. Desktop Linux distributions.
<b>QT AUTOMOTIVE</b>	Supports Qt Automotive, with IVI applications.
<b>DISPLAY</b>	Device hardware can support additional monitors for multi display solutions.

\* Typical values

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