



Vision 3 Product Family

Rugged operator interfaces for off-highway machines



Key Benefits

- ✓ Brilliant 12.1" touchscreen display
- ✓ Excellent sunlight readability due to optical bonding and high brightness
- ✓ Simultaneous display of up to four camera streams
- ✓ CAN, ISOBUS, USB, and Ethernet (Standard or Automotive BroadR-Reach®) interfaces
- ✓ Integrated loudspeaker
- ✓ Fast boot-up time and sleep mode

TTControl's latest rugged operator interface generation Vision 3 has been developed to meet the needs of mobile machinery OEMs of today and of tomorrow. The requirements for a display applied to mobile machinery architectures used to be simple with technical requirements on a basic level. Today, more and more data from sensors (sensor fusion), actuators and cameras must be processed to control complex working tasks. Assisting the operator is becoming more important while in parallel machinery needs to operate more efficiently to increase productivity. Mobile machinery must get ready for (semi) autonomous operational processes and change the role of the machine operator from manual duties to supervisory tasks. This ongoing trend results in the need for higher bandwidths and more CPU calculation power.

Built for harsh environments

The Vision 3 family includes Vision 312 and the advanced derivative Vision 312Plus. Vision 3 is a robust display with 12.1-inch LCD screen and latest embedded electronics technology specifically designed for the requirements of the off-highway market. All displays developed by TTControl withstand dust and water ingress as well as extreme temperature and are resistant to shocks and vibrations. The environmental and electric testing has been done according to ISO 16750. The

recommended ambient operating temperature ranges from -30 °C to +70 °C.

High-performance and bandwidth

Considering basic applications as well as future market trends such as autonomous operations and the related need for high-performance hardware and higher bandwidth, the Vision 3 display family is available with a i.MX6 32 bit 800 MHz single core (Vision 312) or 1 GHz QuadPlus core (Vision 312Plus) processor reaching high computational performance. An advanced cooling concept ensures high CPU performance.



Application Fields

- Construction
- Agriculture
- Municipal

Ethernet for in-vehicle architectures

The Vision 3 display generation is equipped with all needed interfaces such as CAN, Standard Ethernet (100BASE-TX) or BroadR-Reach® (100BASE-T1), USB or ISOBUS, making the display suitable to be placed in the center of modern mobile machinery electronic architectures. The front-end of the device serves as the central interface between the machine and the operator and has been optimized for intuitive user interaction and high user experience (UX). The operator is faced with only relevant data displayed to him in order to prevent overexertion. This approach results in less stress for the operator, increasing safety and productivity. The Vision 3 features display of video streams, pdf-files or picture animations and a picture-in-picture functionality.

Flexibility in design and mounting

Thanks to its very compact design (306mm x 212mm x 34mm), the Vision 3 display perfectly fits into modern cabins. TTControl's new high-performance display generation can either be mounted in the cockpit dashboard itself (panel mounting) or through an arm elsewhere in the cabin and in portrait or landscape orientation. The display design is similar to modern tablets. Thanks to its high brightness and optical bonding, the display ensures optimal readability in any lighting condition. The surface can be operated with work gloves and is easy to clean.

	Vision 312	Vision 312Plus
System CPU	NXP i.MX6 application processor, 32bit ARM, 800 MHz, single core	NXP i.MX6 application processor, 32bit ARM, 1 GHz, QuadPlus core
Memory	4 GB eMMC Flash, 512 MB RAM	8 GB eMMC Flash, 2 GB RAM
Programming	Programmable with CODESYS® V3 with enhanced target visualization, including support for CANopen® master or C/C++	
Communication Interfaces	2 x CAN, 125 kbit/s up to 1 Mbit/s 1 x 100BASE-T1 (BroadR-Reach® Ethernet) 1 x USB 2.0 K15 for ignition input RGB Status LED 1 x RS-232 1 x integrated loudspeaker	4 x CAN (one ISOBUS compliant), 125 kbit/s up to 1 Mbit/s 1 x 100BASE-TX Ethernet 2 x USB 2.0 K15 for ignition input RGB Status LED 1 x RS-232 1 x integrated loudspeaker
Display	12.1" 16:10 aspect ratio 1280 (W) x 800 (H) pixel Projective capacitive touchscreen 500 cd /m ² type	12.1" 16:10 aspect ratio 1280 (W) x 800 (H) pixel Projective capacitive touchscreen 1000 cd /m ² type
Cameras	2 x video input for external composite video cameras	4 x video input for external composite video cameras (four simultaneous video streams)
Sensor and Actuation	Internal temperature sensors for ambient and CPU temperature	
	Ambient light sensor	
	I/O extension through CAN-connected I/O modules like HY-TTC 30	
Housing	IP65 front and back	
Mounting	Arm or panel mount Landscape or portrait orientation	



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