

## Vision Product Family

*Mobile Operator Terminals and Display Control*



TTControl's Vision product family offers automotive and off-highway customers both fully integrated operator terminals and a flexible platform for creating customer-specific human-machine interfaces. These robust products can be mounted either inside or outside a vehicle's cockpit.



### Customers Can Choose

Realizing the different needs in different applications, TTControl has expanded its portfolio of HMI products accordingly. While for some customers it is sufficient to have a reliable operator terminal that displays key machine data, others want to be able to build smart operator interfaces that clearly differentiate a vehicle from a competitor's. These terminals act as the master within a sophisticated, networked control system, giving the operator the most ergonomic control over a maximum number of functions.

### KEY FEATURES/BENEFITS

- Transparency and 3D effects on high-resolution screens, picture-in-picture with overlay, best-in-class boot-up time
- Drive one or two digital displays with up to 640 x 480 pixels with external display controller
- Video adapter card (VAC) allows the use of different LCD types and sizes
- Support of CANopen
- Programming and debugging facilitated by CoDeSys®
- Attach up to 3 safety cameras

### Modular Architecture

The unique design of the well-proven Vision display controllers allows the physical separation of control unit and actual display. Optionally, a second display can be added, allowing the user to have, for example, one display in the cabin and one on the outside of the vehicle. This modularity offers benefits as far as the required space is concerned, but the thermal behavior is improved as well, and the management of vehicle variants and the cable assembly are simplified.

## Flexibility in Design and Development

All members of the product family enable the fast and therefore cost-effective development of graphical human-machine interfaces - in particular using the CoDeSys IDE. The included graphic libraries are being continuously expanded and contain standard elements such as bar charts and menu blocks that can easily be integrated. Also, Unicode fonts are supported, which allows the creation of multi-language interfaces. In addition, the new platform offers you standard setting advanced features like the display of videos and PDF documents.

All units feature built-in CANopen functionality, which makes it easy to create smart networks containing I/O modules or ECUs from different suppliers.

## Built for Harsh Environments

The Vision products are part of a complete and compatible product family and are protected by very robust housings against electromagnetic disturbance and mechanical stress. The recommended ambient operating temperature ranges from -30°C to +60 or +70°C. The ingress protection degree extends from IP65 to IP6K9K.

## Related Products

- Monitor 6.5
- HY-eVision 3.5M (configurable device)
- Keyboards and panels (LIN/CAN)
- Remote assistance software
- Log & Load memory device
- I/O modules from HY-TTC 20X to HY-TTC 48X
- HY-TTC 50 and HY-TTC 200 ECU families

	HY-Vision/HY-Vision <sup>Plus</sup>	HY-eVision 10.4	HY-eVision <sup>2</sup> 7	HY-eVision <sup>2</sup> 10.4
<b>System CPU + Memory</b>	32-bit Freescale MPC823e, 66 MHz, 8/64 MB flash, 16/64 MB RAM, real-time clock with battery back-up	See left column	Freescale 32-bit Multimedia Processor based on ARM Cortex A8, <b>800 MHz, 3D hardware acceleration, 512Mbit Flash, 256 Mbit RAM</b> , real-time clock with internal battery	
	2 serial EEPROM 32 kB over I <sup>2</sup> C (+ 1 x 32 kB EEPROM or 8 kB FRAM opt.)	See left column	1 internal <b>SD-card</b> slot for memory extension (optional for HY-eVision <sup>2</sup> 7)	
<b>Programming</b>	C and CoDeSys 2.3	See left column	C, <b>CoDeSys 3 with dedicated target visualization</b>	
<b>Communication Interfaces</b>	2 CAN (up to 1 Mbit/s)	See left column	2 CAN	<b>4 CAN</b>
	1 LIN (up to 19.2 kB/s) 1 RS-232 modem 1 RS-232 (mainly for debugging) 2 RS-485 with 115 kb/s or 1 RS-232 and 1 x RS-485 1 Ethernet (10 Mbit/s) 1-Wire interface, for iButton	1 LIN 1 RS-232 modem 1 RS-232 (mainly used for debugging) 1 RS-485 1 Ethernet (10 Mbit/s) 7 soft keys/3 hard keys	1 RS-232 <b>1 USB 2.0 OTG</b> 1 Ethernet (100 Mbit/s) K15 for ignition input 2 x 5 soft keys Optional GPS/GSM module	1 RS-232 <b>1 USB 2.0 OTG</b> 1 Ethernet (100 Mbit/s) K15 for ignition input 7 soft keys/3 hard keys 2 programmable LEDs Optional GPS/GSM module
<b>Display</b>	Separate 4-channel and 1-channel LVDS interfaces for one or two separate TTControl Monitors 6.5 or customer-specific solutions	Built-in 10.4" display, 640 x 480 pixel, with touch screen operation	Built-in 7" display, <b>800 x 480 pixel</b>	Built-in 10.4" display, <b>1024 x 768 pixel</b> , with touch screen operation
<b>Cameras</b>	Up to 3 external cameras	Up to 2 cameras through built-in circular DIN connectors	2 video inputs for external composite video cameras; HY-eVision <sup>2</sup> 10.4 only: built-in circular DIN connectors for these	
<b>Sensors and Actuation</b>	External and onboard temperature sensor	See left	External and onboard temperature sensor, <b>external ambient light sensor</b>	
	<b>26 digital in</b> (active low or high) + <b>24 high-side digital out 2A (HY-Vision<sup>Plus</sup> only)</b>	Through CAN-connected I/O modules like HY-TTC 36X	Through CAN-connected I/O modules like HY-TTC 36X	

## TTControl Contact Information

Italy, Brixen  
Tel.: +39 0472 26 80-11  
E-mail: products@ttcontrol.com

Austria, Vienna  
Tel.: +43 1 585 34 34-0  
E-mail: products@ttcontrol.com

[www.ttcontrol.com](http://www.ttcontrol.com)