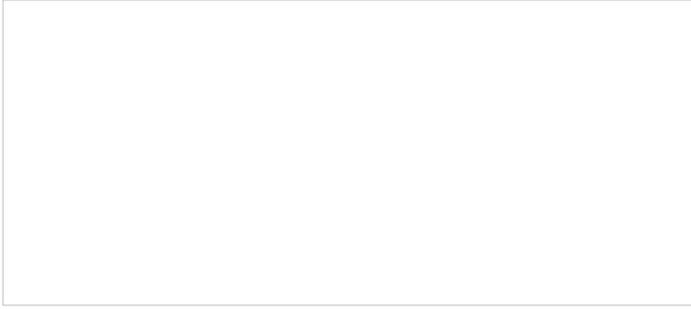


# HMI devices for commercial vehicles

The diesel-powered commercial vehicles increasingly are J1939-based networks are used for power-train applications and CANopen networks are used for the body applications. In order to provide all necessary information to the operator on a single screen, the HMI devices needs two CAN interfaces. Sometimes, those dashboards feature other network interfaces, in particular USB, Ethernet, or Bluetooth.



SOME OF THESE HMIs provide additional programming functions according to IEC 61131-3. Sophisticated machines on wheels are increasingly equipped with programmable HMIs. They machine builders demand GUIs that supports advanced functions like vector graphics, alpha-blending, sweep navigation, etc. Many industrial vehicles of today are utilized only at a fraction of their potential. With more advanced HMI systems, operators are supported to operate the machine for higher utilization. And an attractive GUI with high usability gives a premium user experience that strengthens the vehicle brand.

**Crosscontrol** (Sweden) has launched two HMI product platforms for industrial vehicles; the Intel Atom-based CCpilot XM and the ARM11-based CCpilot XA. The products come with either resistive touch screen or the Projective Capacitive (PCAP) technology, which has contributed to making Smartphones successful. Screen sizes are 7, 10, 12, and 15 inch. Both products support multiple CAN interfaces, up to four video interfaces, USB, Ethernet and also optional wireless interfaces like WLAN and GPRS. They are programmable and a system developer can choose the tools of his preference for development on Linux or Windows. But they are also supplied with an open application software platform, where Codesys is used for CAN applications and Qt is used for the GUI. CrossControl has its roots in the forest harvesting business which has been early in adopting these ideas.

**Ifm** (Germany) has developed the PDM360 Dialog Module that provides a visual display of machine operations and system messages. The 7-inch color display (800 × 480 pixel) includes a 32-bit controller and four CAN interfaces that support CANopen and SAEJ 1939 protocols. Images and graphics can be displayed with a 18-bit color depth of 18 bits. Nine backlit function keys offer tactile feedback. The IP67-rated HMI comes in an aluminum housing and runs Codesys PLC software compliant to IEC 61131-3. The device operating in the range of 20 to +70°C provides 1 GiB of mass memory.

**Jetter** (Germany) offers the BTM012 human machine interface featuring a MicroSD card slot for data exchange or storage. The device with a 4,3-inch TFT display (480 × 272 pixel) comes with two CAN interfaces supporting J1939 and CANopen, one Ethernet, and one USB port as well four video interfaces. The CAN interfaces support bit-rates between 125 kbit/s and 1 Mbit/s. Each CAN port has two connectors (in/out). The IP65-rated HMI is designed for both day and night use due to the backlit keys and the light sensor, which automatically adapts the illumination of the display to the brightness of the surroundings. The temperature range is specified as -20 to +65 °C.

**RM Michaelides** (Germany) presents the RM Color 3000 series of displays (480 × 272 pixel) on a 4,3-inch screen. The device runs a Linux operating system and provides two CAN interfaces and one EIA 232 port. One model comes without keys and the other with a jog wheel, eleven keys, and four LEDs. Both versions feature graphical representation options, such as pointer instruments with rotary graphical pointers. The touch-screen devices have local I/Os, a video and an Ethernet interface. The IP65-rated displays support different CAN-based higher-layer protocols such as J1939 and CANopen.