

## Customized Car Display Unit

A new challenge for our developers recently was the development of a control unit for dash-board installation in an off-road vehicle.

The system needed to feature an on-board CANbus connection and to be able to meet all the requirements for rugged mobile applications.



Image 1: Installation in a dashboard

Due to the harsh environments and off-road environment, no rotating components were permitted.

Important, real-time information for the driver, such as engine speed, speed, tire pressure, etc. was to be displayed on demand.

To realize all of this, several different problems had to be solved:

Most importantly:

- vibration resistance
- extended temperature range
- daylight suitability
- dimmable display
- short boot-time
- an intelligent power supply for protecting battery
- water resistant and dust proof housing and connectors
- smallest dimensions

The solution was to base the design on the familiar **emPC-A400™** with extended temperature range, combined with a 5.7" TFT LCD display.

It was necessary to develop a custom-designed IP65 housing to meet these special requirements and dimensions, with suitable connectors for CAN bus and other I/O. Modifications were also needed in order to achieve the necessary vibration security. All chosen components had to have a working temperature range from -30°C up to +70°C.

The required display was to be readable in daylight as well as at night, therefore brightness was designed to be auto-adjusted via a CANbus-linked ambient sensor.

Since the control unit uses a conventional operating system, some fixed boot time is inevitable, and is minimized by system optimization down to about a 20s.

In some situations this is still not enough, so by modifying the power supply, the display unit can now boot and work directly after starting the car. The battery will not be discharged by this modification.

By connecting the display unit directly to the vehicle data bus, a customer can create different applications for the unit, such as:

- a Black Box, to store periodic data in internal NV-RAM
- a navigation system
- a display for a reversing camera, or for driving sensor or multimedia applications

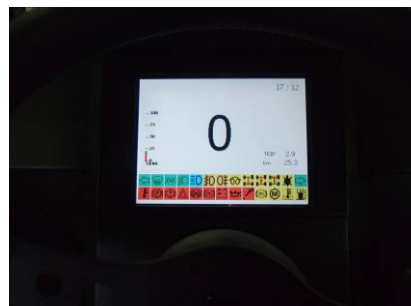


Image 2: Example of a display