



## OVERVIEW

The MMI V2 unit is a programmable controller built to be both the master unit of a master-slave control system and the Man-Machine-Interface for industrial mobile machines. The aluminium front panel and the stainless-steel case ensure very good EMC compatibility, mechanical strength and environmental protection.

Main characteristics are:

- Compact design, customizable front panel
- Multiple communication interfaces (LTE, Ethernet)
- full IP67 case (not the front panel only), AMP-Seal connectors

The hardware is based on a dual-core ARM® Cortex®-A9 (2 x 800MHz) SOC, with advanced graphic capacity (handling of 2 independent displays, 3D accelerator OpenGL ES2.0). The main Controller is equipped with 1GByte DDR3 (64Bit, 400MHz) and 1GByte NAND Flash (High quality SLC chip). The Flash memory is expandable up to 64 Gbyte with two micro SD Card slots.

Additional to the main processor the system has a secondary micro-controller (ARM® Cortex®-M7, 480MHz) to control and monitor the power-supply and the I/O resources of the unit. The second CPU can be used as Real-time CPU (if Linux Embedded is required)

The MMI V2 has a wide range of communication interfaces: USB 2.0, Ethernet, RS232/RS485, CAN-FD, CAN-Bus 2.0, I-Button(1-wire) And the following internal sensors: 3 axis accelerometer and 3 axis gyroscope. Furthermore the unit is equipped with an internal GPS and 4G/LTE Module.

## TECHNICAL SPECIFICATIONS

- CPU master: NXP i.MX6DL ( 2 x Cortex-A9 @ 800Mhz), Internal memory: 144 kByte RAM (OCRAM), 32i + 32d kByte L1 Cache, 512 kByte L2 Cache
- External memory:
  - Ram : 1 GByte DDR3, (2 / 4 GByte DDR3 optional)
  - NAND Flash : 1 Gbyte, (2 / 4 GByte optional)
  - 2 x Slot micro Sd-card (optional memory up to 2 x 32 GByte)
- Supervisor CPU: ST STM32H7x 480 MHz (ARM Cortex-M7™) Memory: 128 kByte internal Flash, 564 kByte RAM), optional up to 32 MByte of External Flas)
- 8" 800x600 TFT sunlight-readable display
- 3 axis accelerometer
- 3 axis gyroscope
- 2x Micro SD-CARD slot with SDHC support
- miniPCle slot for LTE/4G with micro SIM-Holder
- M.2 slot (**optional**)
- GPS module

## OUTPUTS

- 2 PWM high-side (4A max.) outputs, with self diagnosis and short circuit protection
- 2 programmable current sources (0.20mA) for the direct handling of resistive sensors (PT100, PTC, NTC, etc.)
- 5Vdc (1A max.) regulated power supply output for external sensors
- HDMI Output (**optional**)

## INPUTS

- 2 video (PAL/NTSC/SECAM) camera inputs (only one camera at a time handled)
- 6 programmable analog inputs (0..5V, 0..25mA, 0..500mV and 0..2,5mA) with 16 bit resolution (4096 steps)
- 8 digital Inputs configurable via software as high-active or low-active; all inputs are usable as RPM/Frequency inputs (up to 2KHz)
- Keyboard up to 25 keys (5x5 matrix)

## CONNECTIVITY

- 1 RS422/RS485 (configurable) serial interface with galvanic isolation
- 3 RS232 serial interfaces (1x RX/TX and RTS/CRS, 2x only RX/TX)
- 1 USB Host 2.0 port
- 1 USB Device 2.0 port
- 1 Ethernet 10/100 Mbit
- 1 I-Button (1-Wire) interface (for operator identification and login)
- 3 CAN-FD/CAN-bus full 2.0B, programmable baud-rate from 125Kbit/s to 1Mbit/s, CANOpen and J1939 protocols (optional: ISOBUS)

## OPERATING CONDITIONS

- Supply voltage: 9 .. 32Vdc
- Operating temperature range: -30 .. +70 °C
- Storage temperature range: -40 .. +85 °C
- Max. humidity level: 95% (without condensation)
- Protection grade: IP67 (with connector plugged)
- Weight: 1300 g

## CERTIFICATIONS

- UNECE 10R06

## BLOCK DIAGRAM

