



OVERVIEW

The **DCU-M** is a general-purpose and fully programmable controller designed to operate into automotive environments and suitable to be used in harsh conditions (wide temperature range, water, dust, vibrations, etc.).

The unit is able to read a wide range of analog and digital sensors and is capable of driving the actuators directly.

The system is based on an embedded multi-task real-time Operating System to ensure a real-time response.

The device is usually programmed with an appropriate standard control software in order to be used as slave unit in a CANOpen network; the identification over the CAN-bus can be defined by the wiring through two digital inputs made for this purpose.

The client is free to develop his own applications on the controller; in this case we will provide a complete software development kit, which includes:

- IDE (Integrated Development Environment) from Fujitsu microcontrollers, including the C compiler (free)
- Low level libraries for all the hardware resources
- Real Time O.S. library
- Sample programs

SPECIFICATIONS

- CPU Master: Fujitsu 16LX MB90F345 (16 bit, 24 MHz)
- CPU Slave (supervisor): Microchip PIC18F45J10
- Memory: 20 kByte SRAM, 512 kByte Flash (488 kByte available for the application software)
- EEPROM memory: 32 kByte with write protection, guaranteed for 1.000.000 writing cycles
- CAN-bus: 2 full CAN 2.0B (11 bit or 29 bit identifiers), with programmable baud-rate from 125 kbit/s to 1 Mbit/s, CANOpen protocol (optional: J1939, ISOBUS)
- Serial interfaces: 2 RS485s with programmable baud-rate from 1.2 to 115.2 kbit/s
- Over-voltage protection up to 32 Vdc (up to 200V for 10/1000µs pulses)

OUTPUTS

- 4 high-side PWM outputs 0..2A with current regulation (current measurement integrated in the output), self diagnosis and short circuit protection
- 7 high-side PWM outputs 2A, with self diagnosis and short circuit protection
- 16 high-side ON/OFF outputs with self diagnosis and short circuit protection
- 1 high-side ON/OFF output 2A with twin control (safety output), self diagnosis and short circuit protection
- 2 analog outputs, 10 bit resolution, programmable range (0..10V, 0..Vbatt), short circuit protection
- 5 Vdc (1A max.) regulated power supply output for external sensors

INPUTS

- 4 analog inputs, 10 bit resolution, programmable range (0..2mA, 0..20mA, 0..500mV, 0..5V)
- 2 current sources programmable for 1.3mA / 2.6mA
- 2 current sources programmable for 0..30mA
- 10 RPM inputs (2kHz) configurable for high/low-side operation; they can be used as digital ON/OFF inputs, too
- 10 digital ON/OFF inputs configurable for high/low-side operation
- ability to manage up to 4 incremental encoders

Remark: all I/O resources are configurable via software.

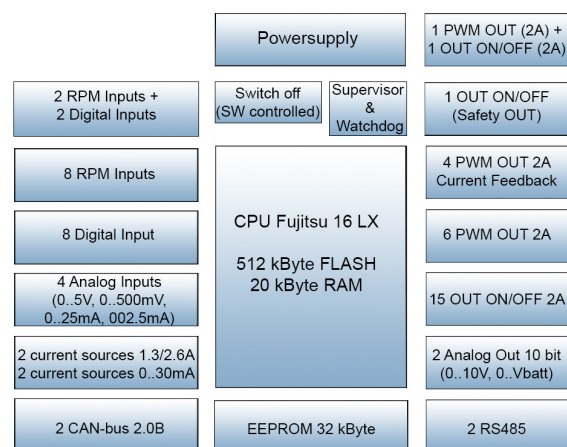
CERTIFICATIONS

- ECE/ONU 10/03: E3 10R-03 1156
- IP6K8 according to ISO20653:2013

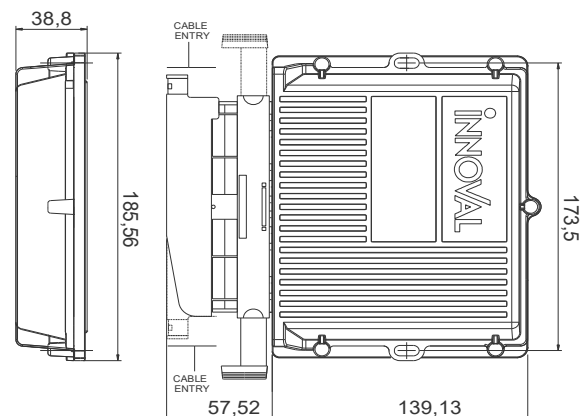
OPERATING CONDITIONS

- Supply voltage: 9 .. 32Vdc
- Maximum total output current: 20A
- Operating temperature range: -40 .. +70 °C
- Storage temperature range: -40 .. +85 °C
- Max. humidity level: 95% (without condensation)
- Protection grade: IP68 (with connector plugged)
- Weight: 720 g

BLOCK DIAGRAM



MECHANICAL DRAWING



Remark: cable exit is possible on both sides.