



Didactics Multiplexed Vehicle

INTRODUCTION

The device VMD (Didactics Multiplexed Vehicle) allows the study of the local network CAN :

- Industrial Local Network CAN (Controller Area Network) with wheel order of an automotive (order lights and windshield wiper),
- Web Server embarked.

The vehicle is available in two items :

- **VMD001B-A** : fit out model, study of the signposting
- **VMD001C-A** : full fit out model, signposting, + speed servo system on DC engine, Web Server embarked, study of real time kernel.

AREAS OF APPLICATION :

- ◆ Professional Training Schools, Technical Colleges, Higher level Schools
- ◆ Universities.

COMPOSITION :

The **VMD001B-A** is a self-contained device constituted by a PVC thermoformed support representing an automotive vehicle. The processor board 16/32 bits EID210000 (compare with corresponding documentation) and an other board with graphic display and keyboard constitute the trip computer and the Man Machine Interface of the vehicle.

An industrial board (commercialising by ATON SYSTEME) do the CAN interface, it allows the communication with:

- An acquisition board 8 ON/OFF inputs and its light control unit ,
- Four boards by 4 digital outputs each with their optical blocs corresponding (2 front light clusters diplights/driving lights/sidelights, 2 rear clusters sidelights/brake light/blinkers) and a horn,

The entirety is delivered with the software pack éditeur, cross assembler debugger, cross compiler C and C++ and some full and progressive practicals works manuals. The sources files SRC, C et C++ are supply with the setup CDROM.

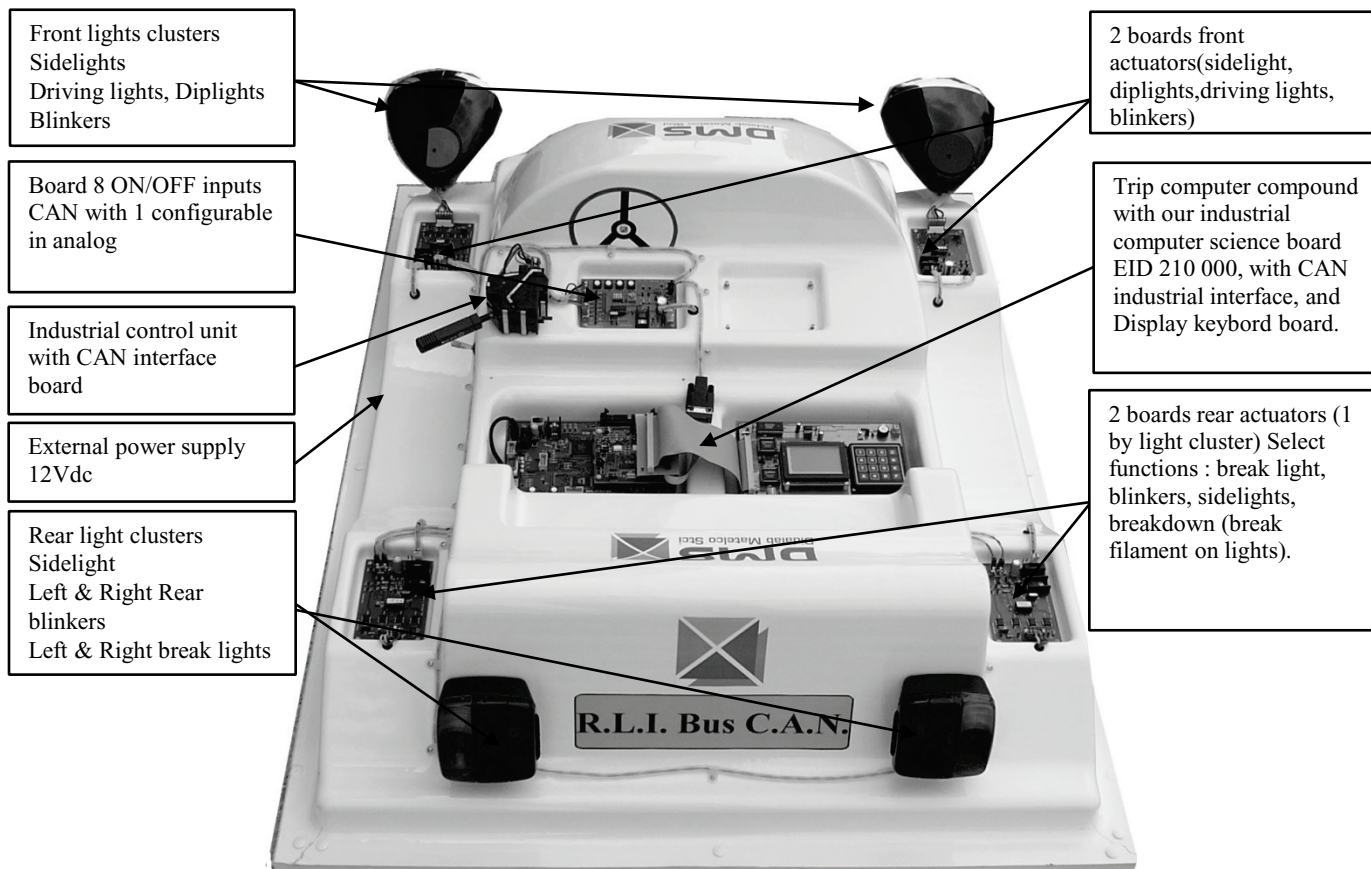
The **VMD001C-A** include all the functions from the **VMD001B**, it is enriched by a windshield and its wiper which allow to do supplementary practicals works:

- Order and speed servo system on engine by CAN.
- Reading of analog signal,
- Making of a Web Server embarked,
- To make use of réal time kernel on target device.

VMD001B-A, Didactics Multiplexed Vehicle, Basic Version

The VMD01B is a basic self-contained device, it allow to do some praticals works on the Industrial Local Networks as Control Area Network in languages C and C++ and also to learn basic UML analysis.

The details of the technicals specifications of the entire digitals boards industrial which fit out the VMD are describe in the documentation « **32 BITS MICROCONTROLLER BASED SYSTEM EID-210** »



Reference which compound the basic pack VMD001B-A

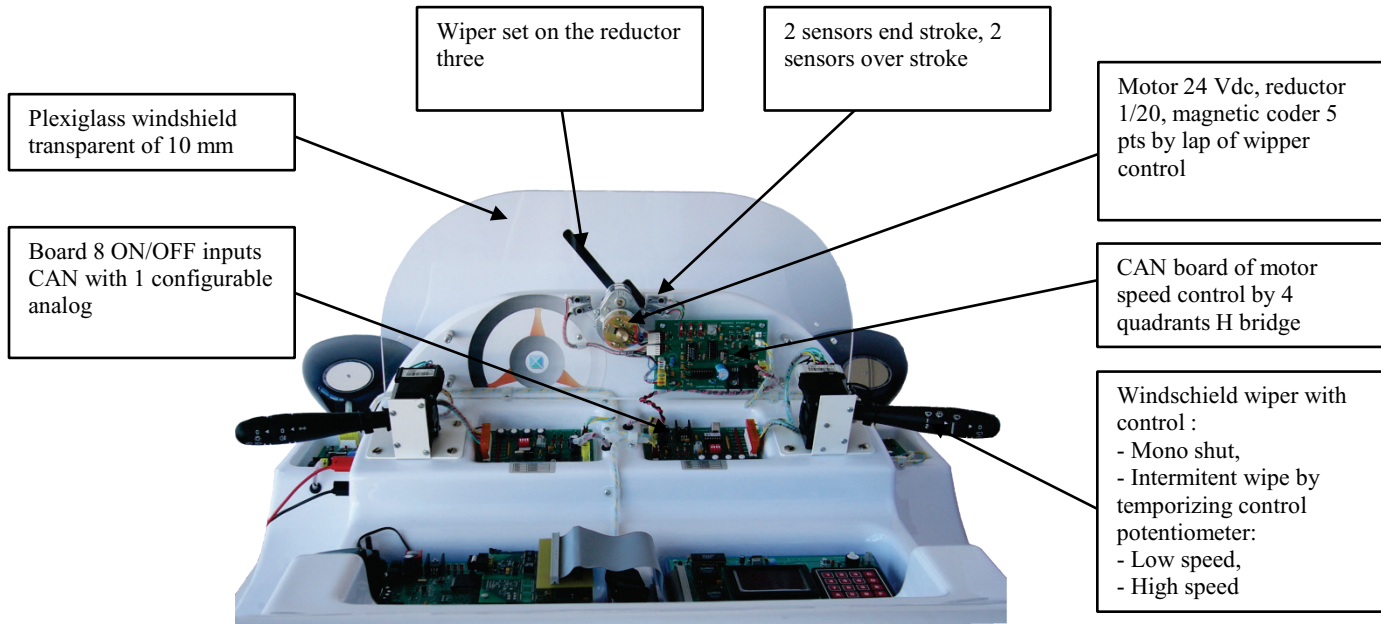
Reference	Designation	Qtes
EID210000	Study board on the 32 bits microcontrôler 68332 (CPU32) rated at 16,7 Mhz,USB port, RS232, PC104 bus, // port 24 bits, 6 I & 4 O A/D, with éditor, cross assembler linker, débbugger, technical manuel.	1
EID001000	Input Output Simulator, with 40 points ply	1
EGD00006	USB lead	1
EGD00001	Power supply 8 VAC, 2 A	1
EID210040	Pratical Work Manuals for the EID210000 board	1
EID211040	Pratical Work Manuals for the EID210000 board with applications on the Input/Output board EID 001000	1
EID211060	UML Pratical Work Manual & OBJET programming on EID210000 board and I/O board EID 001000	1
EID210100	Developing environment, GNU C/C++ cross compiler , GDB monoposte applied to EID210000	1
EID004000	CAN bus board on PC 104	1
EID005000	Display Keyboard board 16 keys, ASCII readout 7 x 16 characters and/or graphical 128x64 monochrome,with ply PC104	1
EID215040	Pratical Work Manuals for the EID210000 board with applications on Display Keyboard board EID 005000	1
EID050000	8 ON/OFF Inputs and 8 ON/OFF Outputs CAN Module (and 1 paramettable in analog input) with wires supply bus	1
EID051000	4 ON/OFF Inputs and 4 ON/OFF Outputs I/O CAN Module with wires supply bus and CAN	4
EID050040	Pratical Work Manuals (can bus) in C language applied to EID210	1
EID055000	Support représentant an automotive vehicle scale 1/4, equiped	1
EID054000	Reals componants set : 1 light control unit, 2 front light clusters 30W sidelight, diplights,driving lights, 2 blinkers 2 rear break light, blinkers, sidelights, horn, each modules whith them wires	1
EGD00004	Ventilated Power Supply 13.5 Vdc 20 A	1

VMD001C-A, Didactics Multiplexed Vehicle Full Version

The VMD001C allow to realize some practicals works more elaborate than the VMD001B.

It's made up of : real time kernel, embarked server Web board and an order device of motor speed control of windshield wiper.

For example, many control methodes of the windshield wiper's motor are handled in practicals works, reading of the end strokes by scanning or interruption. Make of Web server embarked with memo from the light clusters state on the Web page. Display prominently & valuation of the real time kernel performance.



Reference which compound the full pack VMD001C-A

Reference	Designation	Qty
VMD001B-A	The basic pack Didactics Multiplexed Vehicle in addition with the references following:	1
EID003000	PC104 study board of the Ethernet network 10 Mbits, with TCP/IP stake, sockets, Web server, SPI bus, I2C.	1
EID053000	Motor servo-control CAN bust, motor/coder, support, wires CAN bus & supply, 1 windshield wiper control unit	1
EID210200	Real time Kernel MTR86 (monoposte version)	1
EID050000	8 ON/OFF Inputs and 8 ON/OFF Outputs CAN Module (and 1 parametrable in analog input) with wires supply bus	1
EID003040	Pratical Work Manuals applied the embarked server Web board EID003000	1
EID050240	Pratical Work Manuals Real time Kernel applied to the CAN network	1

EID210041/ EID210040 Teacher Manual of practical works on EID 210 000 board, approached subjects :

- TP 0 : Discovery and implementation of the program pack
- TP 1 : Writing in a RAM area
- TP 2 : Diode control of the micro-controller “QS” port
- TP 3 : Carrying out of an “ECHO” mode from the terminal
- TP 4 : Give the value of a register specified by the user
- TP 5 : Writing or reading to a specified address

EID211041/ EID211040 Teacher Manual of practical works on EID 210 000 board with “Inputs/Outputs Simultaneous” Module, approached subjects :

- TP 1 : Sequential shift device with LEDs onto port A
- TP 2 : Recovery of 8 bits input port onto 8 bits output port.
- TP 3 : Control of 7 segments display
- TP 4 : Display of potentiometer position

EID050041/ EID050040 Teacher Manual of practical works on VMD system :

- TP 0 : Bidirectional parallel and serial port programming
- TP 1 : Internal and external interrupt managing
- TP 2 : Hierarchical programs
- TP 3 : Realisation, validation and integration of software functions by different teams
- TP 4 : Realisation of low level functions to driving CAN EID 004 000 board (SJA1000 Philips)
- TP 5 : Realisation of a monitor allowing CAN Network frame transmission and reception
- TP 6 : Realisation of a GRAFCET diagram steps/transitions
- TP 7 : Control of a ON/OFF module through CAN bus
- TP 8 : Realisation of Man Machine Interface
- TP 9 : Control of DC machine in PWM process, evaluation of reel time constraint in speed regulation
- TP 10 : Realisation of interface Web page server, setting a TCP/IP stack on a process board

EID050061 /EID050060Teacher Manual of practical works UML C++ analysis on VMD :

- TP 1 : Control lights on VMD
- TP 2 : Reading the state of light commodo
- TP 3 : Check up a bloc optic unit

EID215041 / EID215040Teacher Manual of practical works on Display Keyboard Board :

- TP 1 : Writing a word in graphics display
- TP 2 : Writing a group of words in graphics display
- TP 3 : Reading of matrix keyboard in polling mode ,
- TP 4 : Detection of key activation,
- TP 5 : Realisation of lines, circles et curves on LCD in graphic mode,
- TP 6 : Drawing a animated clock on LCD.