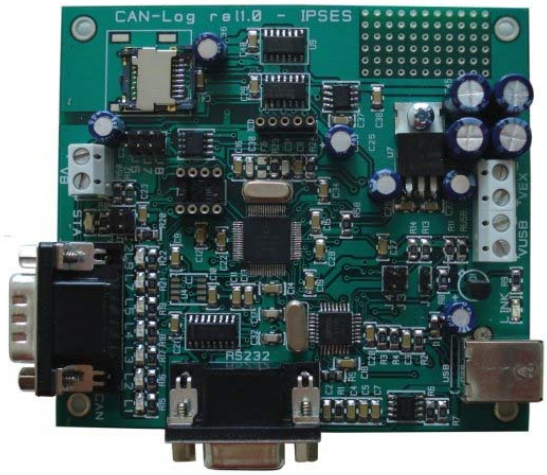
IPSES
scientific electronics

CAN LOG
USER MANUAL

Rel. 02.01.0001

(Hardware code: CAN LOG-SD, CAN LOG-F)



CONCEIVING
PLANNING
DEVELOPMENT
IN SCIENTIFIC
ELECTRONICS

This manual in English is the original version.

Printed in Italy

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WARNING!
ELECTRICAL DEVICES COULD DAMAGE EQUIPMENT OR PROPERTY OR CAUSE PERSONAL INJURY

This guide contains instructions and technical features of the CAN LOG.
Read with attention before attempting to install.
It is the responsibility of the technician to undertake all the safety rules provided by the law during the installation and the use of this device.
For any information which is not contained in this guide, please contact:

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REVISION HISTORY

Manual revision history

Revision/ Date	Change description	Author
01.01.0000 February 2011	Modified external power supply voltage, added USB connector description in picture 1a. Modified driver installation section.	Zancanato A.
01.00.0000 September 2010	First version Released	Zancanato A.
01.00.0001 January 2012	Minor changes	Mancuso C.
01.00.0002 June 2015	Update document layout	Bottaccioli M.
02.00.0000 January 2016	Second version Released	Bottaccioli M.
02.01.0000 March 2016	Introduced jumper J4 feature	Bottaccioli M.
02.01.0001 August, 2016	Added ISO 9001:20015 logo	Bottaccioli M.

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GENERAL FEATURES

CAN LOG is a device especially conceived (in both versions SD and Flash) to store all the messages received from a CAN bus on a board memory, SD or Flash, depending on the purchased model.
The card can work as stand-alone device on CAN bus. Its configuration is achieved either through USB (in this case the board is self-powered) or through RS232 interface. The card is available in two versions: CAN LOG-SD and CAN LOG-F
The CAN LOG-SD version can save a log file directly in text format on a MicroSD card formatted as FAT or FAT32. The log file must be read removing the SD card and using a Micro-SD card reader.

CAN LOG-F saves data on an internal memory that can be read with the software provided with CAN LOG-F board.

A driver for USB is provided with the card. Besides, a configuration software is also provided with: this software allows to control the board either through USB and RS232, allows to configure CAN working parameters (such as baud rate, frame format, etc...), and also to configure filters on messages to be received and stored.

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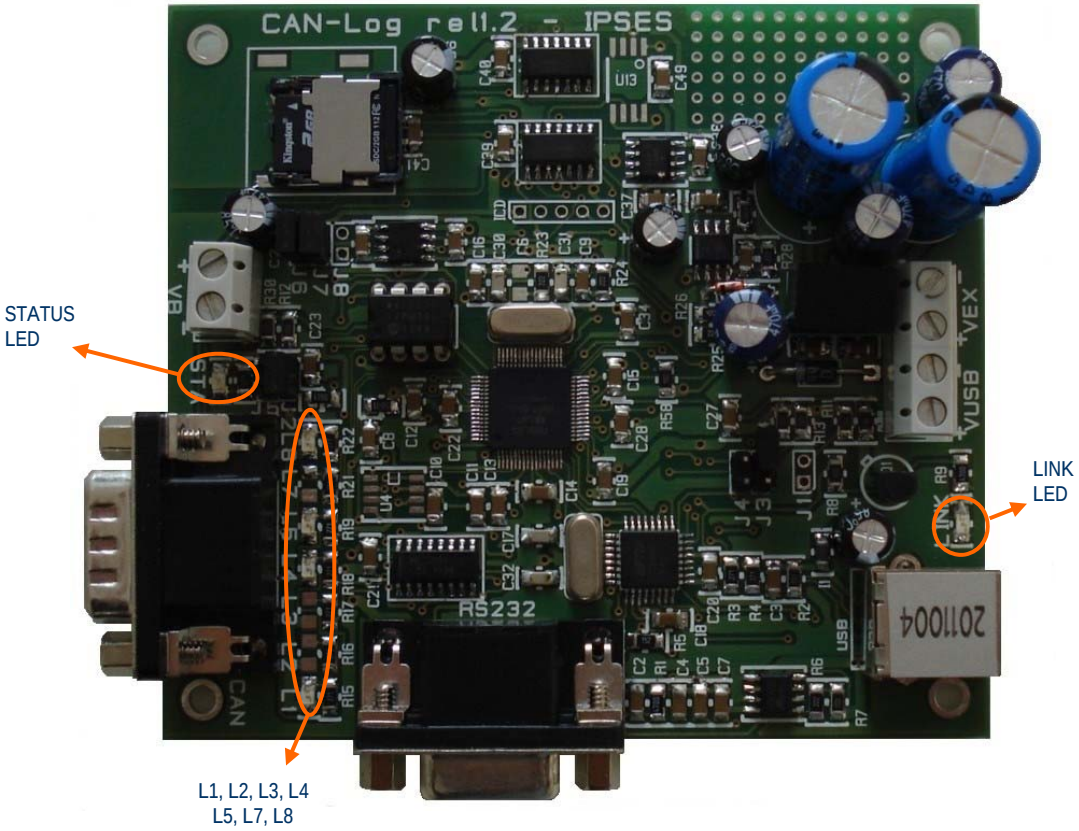
CARD DESCRIPTION

LEDs



Picture 1: CAN LOG board LED

Picture 1 shows LEDs' position:

LINK	Green LED: USB has been recognized and can communicate. Board is powered on by USB.
STATUS	Green LED: CAN enabled.
L1	Red LED: RS232 enabled (if it is off, USB is enabled).
L2	Not present.
L3	Not present.
L4	Red LED: device in stand-alone mode.
L5	Red LED: Memory full or error while saving.
L7	Red LED: firmware update mode (Only CAN LOG-F).
L8	Red flashing LED: transceiver CAN auto test in progress. Red LED: transceiver CAN initialization failed.

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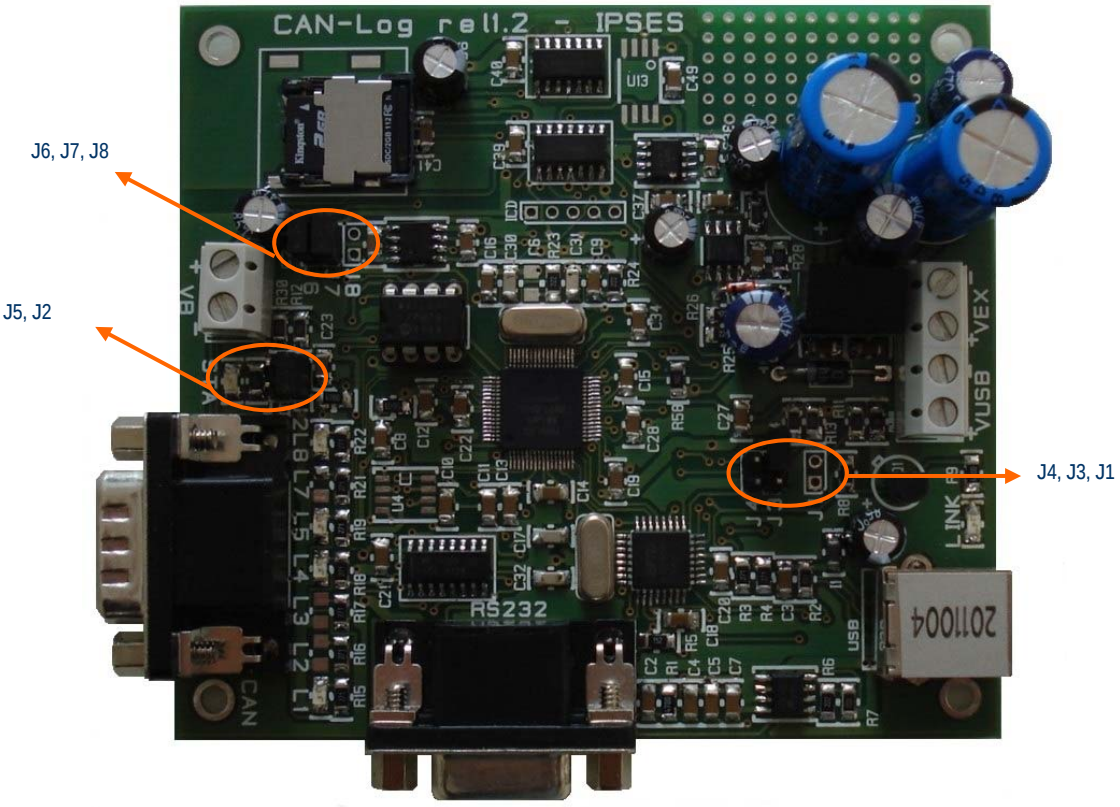
Jumpers



Picture 2: CAN LOG board jumpers

Jumpers are shown in picture 2.
Their function are explained below:

J1	If it is inserted before power on, it sets the device in firmware update mode (only for CAN LOG-F).
J2	If it is inserted it enables the CAN BUS terminate 10KΩ resistor (between CAN-H and CAN-L).
J3	If it is inserted before power on, it sets the device in stand-alone mode.
J4	If it is inserted it resets the file sequential number.
J5	Enables the CAN BUS terminate 120Ω resistor (between CAN-H and CAN-L).
J6	Connects positive reference of CAN (VB+) to the positive reference of the board (you must remove this jumper if you want to use VB connector).
J7	Connects negative reference of CAN (VB-) to the negative reference of the Board (you must remove this jumper if you want to use VB connector).
J8	Not present.

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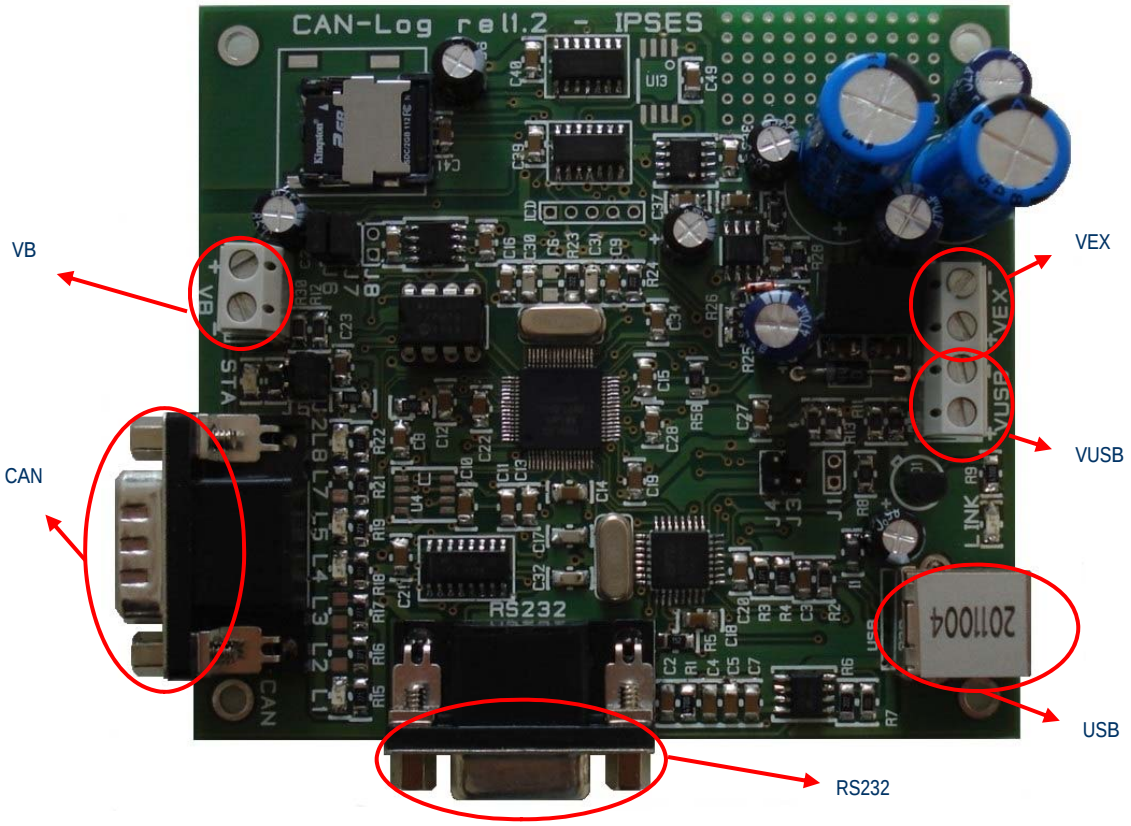
Connections



Picture 3: CAN LOG board connections

Board connections are shown in picture number 3:

USB	USB slot. By USB connection the CAN LOG card is powered on and linked to computer. If J6 and J7 jumpers are inserted, USB connection supplies CAN transceiver too. In case of USB power supply DO NOT USE the VEX connector to power supply the board and if J6 and J7 jumpers are inserted too, DO NOT USE the VB connector to power supply the CAN transceiver.
VUSB	+5V_{dc} output to power supply external devices.
VEX	Connector to power supply CAN LOG card to operate in RS232 or in stand-alone mode.
VB	Connector to power supply the CAN transceiver to use it in optocoupled mode, without J6 and J7 jumpers inserted. The electric voltage MUST BE +5V_{dc} DO NOT USE VB connector to power supply the CAN transceiver with J6 and/or J7 inserted. DO NOT USE VB connector to power supply the CAN transceiver if between pins number 3 and number 9 of the CAN connector there is an electric voltage (see page 11).

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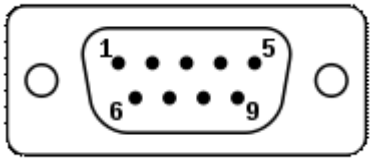
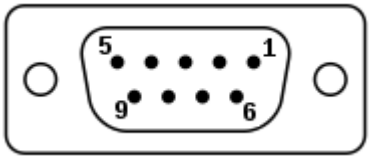
<table>
<tr><td>CAN</td><td>CAN connector:
 

<table><tr><th>PIN</th><th>Description</th></tr><tr><td>2</td><td>CAN-L</td></tr><tr><td>3</td><td>VB-</td></tr><tr><td>7</td><td>CAN-H</td></tr><tr><td>9</td><td>VB+</td></tr><tr><td>Chassis</td><td>VB-</td></tr></table></td></tr>
<tr><td>RS232</td><td>RS 232 connector:
 

<table><tr><th>PIN</th><th>Description</th></tr><tr><td>2</td><td>TX: Transmission PC pin (Receive pin board)</td></tr><tr><td>3</td><td>RX: Receive PC pin (Transmission pin board)</td></tr><tr><td>Chassis</td><td>VEX-</td></tr></table></td></tr>
</table>

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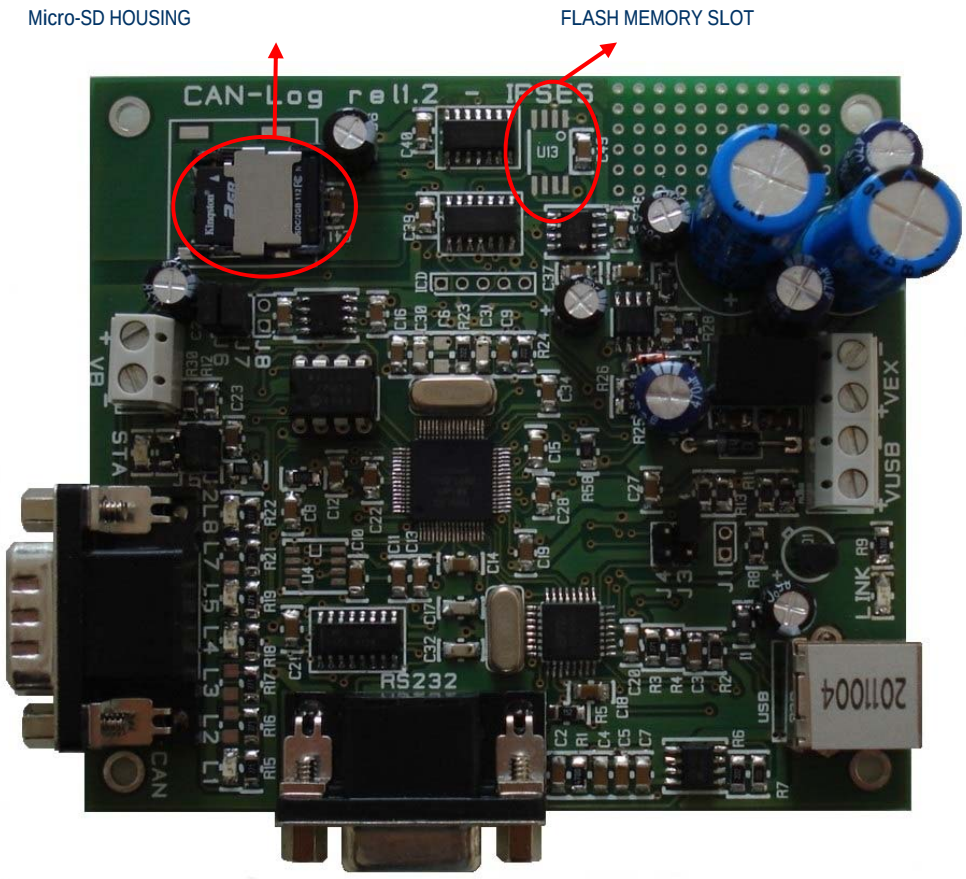
Data storage



Picture 4: CAN LOG data storage devices

There are two version of CAN LOG:

- CAN LOG-SD
- CAN LOG-F

The difference between the two versions is the way CAN data are stored.

CAN LOG-SD

In the CAN LOG-SD version there is a Micro-SD housing (picture 4).
CAN data are stored in Micro-SD.
The log file name is set by the CAN LOG software in *File Configuration* menu.
You can use any type of Micro-SD card, as long as formatted as FAT or FAT32.
When you turn on the card, it scans the directory structure. The startup time depends on the number of the files and the used space (approximately every 100 files it requires a second to power-up and every 1 GB it requires 6 seconds).

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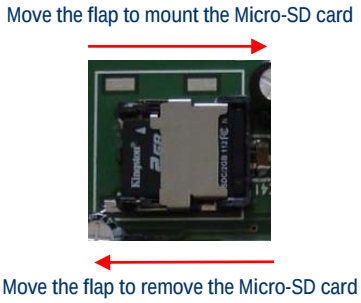
We tested CAN LOG card with memory up to 64GB.
Any character from CAN bus is a byte on Micro-SD.
WARNING: TO USE CAN LOG-SD, A Micro-SD CARD MUST BE PRESENT, EVEN IF YOU DON'T NEED TO SAVE DATA.

If there is no SD card mounted on CAN LOG-SD, the board doesn't work properly.

To read data from Micro-SD card you have to remove it and to use a card reader linked to a computer. The card reader IS NOT EQUIPPED. You cannot read data from CAN LOG-SD directly.

WARNING: to open Micro-SD housing press lightly and move the flap in the direction of the arrow, as shown in picture.



CAN LOG-F

CAN LOG-F is without the Micro-SD housing installed, but it comes with a flash memory, in the position shown in picture 4.
The CAN bus data are stored in the flash memory.
The amount of storage space of the flash memory is 1024 kbit. It allows to store from about 3500 frame (in case of frame with extended ID and if data package consists in 8 bytes) up to 12800 frame (in case of frame with base ID and if data package consists in 1 byte).

You can read data directly from CAN LOG-F board, whether it is linked to the computer by USB or RS232, using the supplied software.

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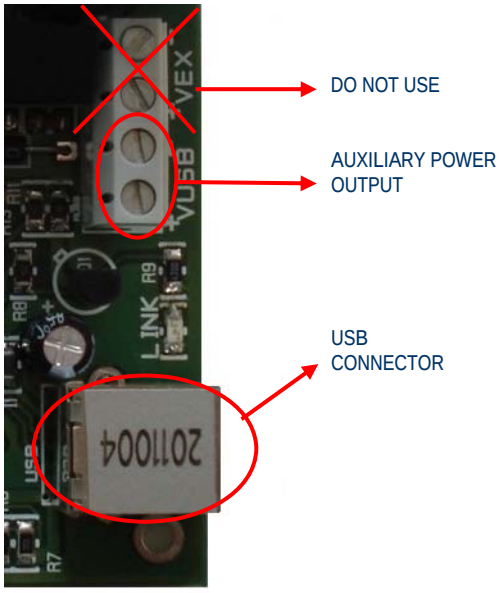
BOARD POWER SUPPLY AND CONNECTION

CAN LOG board can work in three modes:

- USB
- RS232
- STAND ALONE

USB mode

Board can be powered and linked to computer by USB connector, shown in picture 5.



Picture 5: CAN LOG USB connection

In USB mode the CAN LOG board is powered by USB connector.
DO NOT POWER the board by VEX connector.

WARNING: TO AVOID MULFUNCTIONS OR DAMEGES TO THE BOARD, DON'T CONNECT EXTERNAL POWER SUPPLY AND USB AT THE SAME TIME.

To link and operate the board you have to install USB driver (see DRIVER INSTALLATION at page 21).

During the USB connection it is possible to use VUSB connector to power supply external devices with $+5V_{dc}$ as auxiliary output electric voltage.

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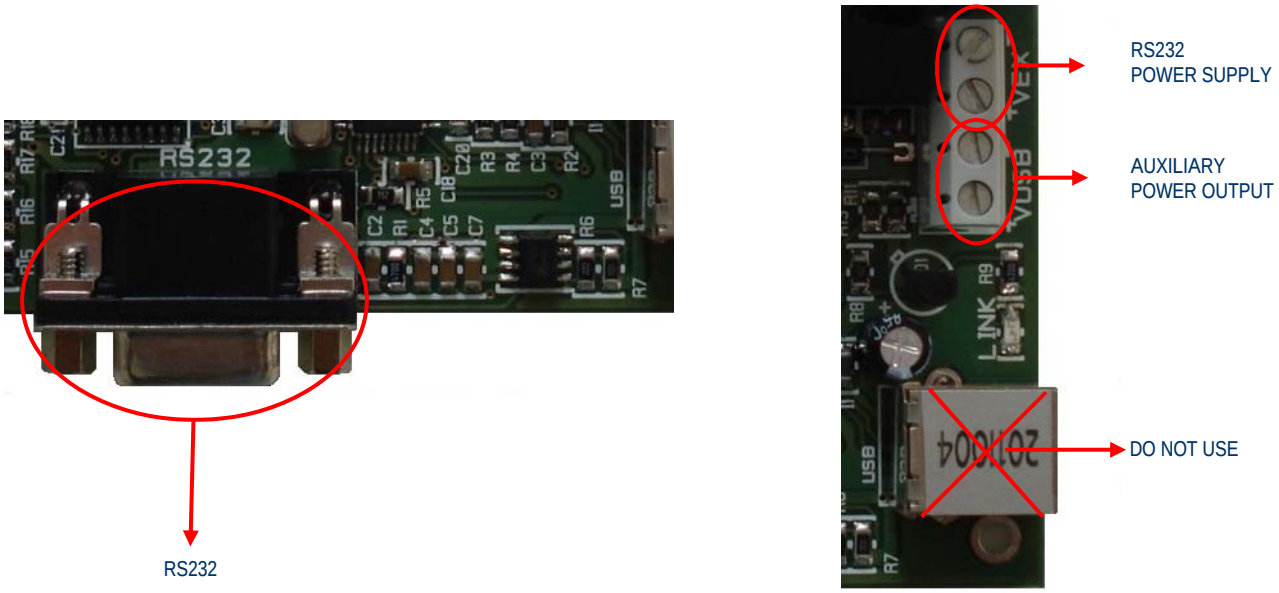
RS232 mode

CAN LOG board can be connected by RS232 interface.



Picture 6: CAN LOG RS232 connection

To allow the RS232 link you have to connect the RS232 cable (male connector) to the board's RS232 connector (see page 11 for pinout).
You must supply the board with a voltage between $9V_{dc}$ and $24V_{dc}$ using VEX connector.
DO NOT CONNECT USB connector to the board.

WARNING: TO AVOID MULFUNCTIONS OR DAMEGES TO THE BOARD, DON'T CONNECT EXTERNAL POWER SUPPLY AND USB AT THE SAME TIME.

When the CAN LOG is connected by RS232 it is possible to communicate with it using the supplied software (see page 25) after selecting the correct COM port number.

When the board is supplied by VEX connector, it is possible to use VSUB connector as auxiliary output to power external devices with $+5V_{dc}$ electric voltage.

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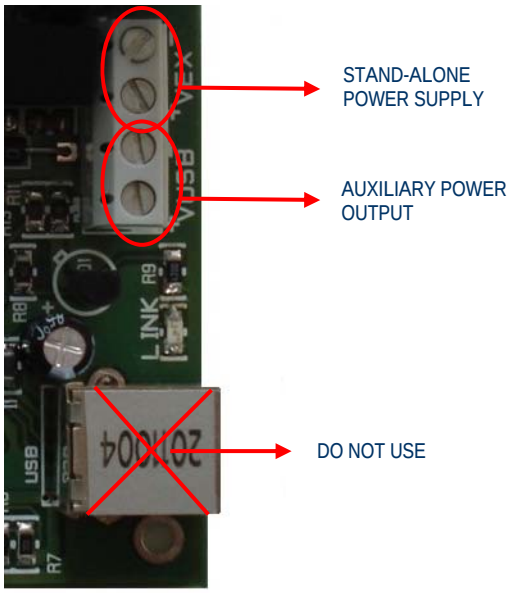
Stand-alone mode

In the stand-alone mode CAN LOG board can storage messages that pass on CAN BUS without connecting the board to the computer.



Picture 7: CAN LOG stand-alone connection

After configured the CAN BUS using software and inserted J3 jumper (see page 9 for details) to operate in stand-alone mode, you need to power on the CAN LOG board by VEX connector with a voltage between $9V_{dc}$ and $24V_{dc}$.

WARNING: BE SURE IT IS NOT CONNECTED A USB CABLE TO THE BOARD BEFORE SUPPLY CAN LOG BY VEX CONNECTOR.

WARNING: TO AVOID MULFUNCTIONS OR DAMEGES TO THE BOARD, DON'T CONNECT EXTERNAL POWER SUPPLY AND USB AT THE SAME TIME.

When the board is supplied by VEX connector, it is possible to use VSUB connector as auxiliary output to power external devices with $+5V_{dc}$ electric voltage.

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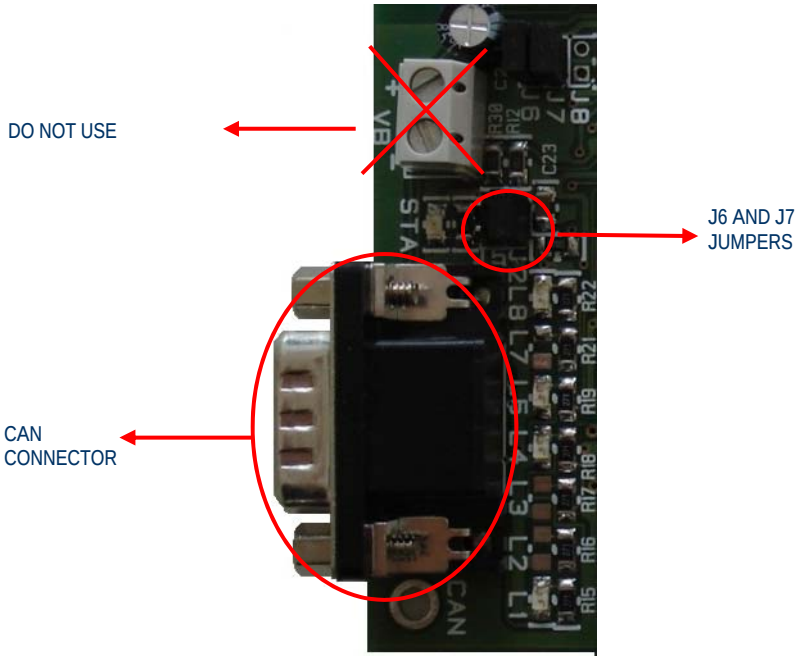
CAN BUS POWER SUPPLY

To use the CAN transceiver you have to power supply it.
There are three modes to power on the transceiver:

- Using power supply from the board (not- optocoupled)
- Using an external power supply through VB connector (optocoupled)
- Using an external power supply through CAN connector (optocoupled)

Integrated power supply

You can power supply the CAN transceiver using the electric voltage supplied by the voltage regulator on the board.



Picture 8: Integrated power supply of CAN bus

To use the electric power of the board to supply the can transceiver you have to insert J6 and J7 jumpers.
These jumpers must be always placed together. They disable the board optocoupling, linking the board operating voltage to the transceiver.

WARNING: DO NOT CONNECT AN EXTERNAL POWER SUPPLY TO VB CONNECTOR.

The VB connector, in the integrated power mode, can only be used as auxiliary power to power supply external devices with $5V_{dc}$, like VSUB connector.

WARNING: DO NOT CONNECT AN EXTERNAL POWER SUPPLY TO CAN CONNECTOR.

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In the integrated power mode, the devices connected on CAN BUS must not supply voltage to the CAN LOG board, therefore there must be no voltage between pin 3 and pin 9 of the CAN connector.

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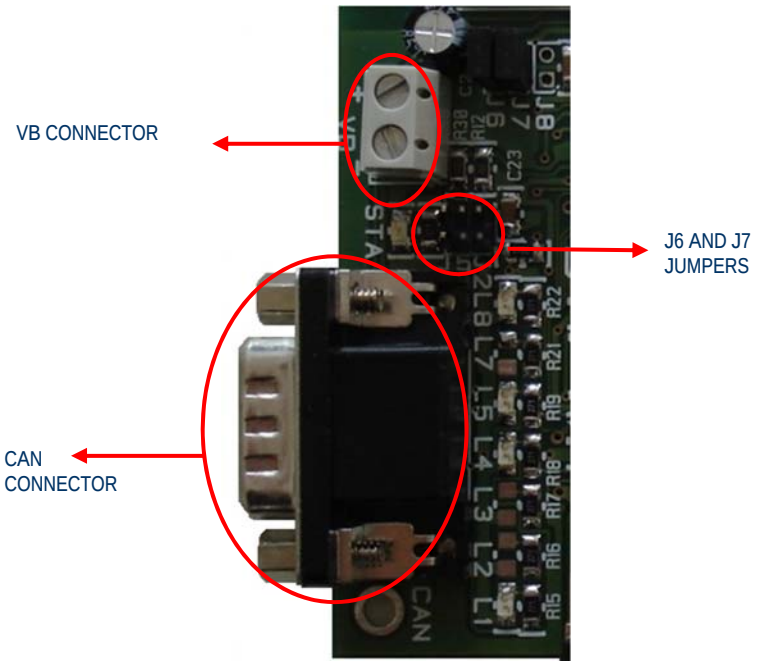
External power supply through VB connector

To insulate the board power supply from the CAN power supply you need to use the optocoupling feature on the CAN LOG board. In this way the CAN bus is galvanically insulated from the board power supply, avoiding any issue resulting from the difference of electric potential between board power supply and CAN bus.



Picture 9: VB power supply of CAN bus

To use the board optocoupling it is necessary to remove J6 and J7 jumpers.
When the power supply of the transceiver is insulated, you have to power it by VB connector suppling +5V_{dc} electric voltage.

WARNING: VB CONNECTOR MUST BE SUPPLIED WITH +5V_{DC} ELECTRIC VOLTAGE.

WARNING: DO NOT CONNECT AN EXTERNAL POWER SUPPLY TO VB CONNECTOR IF J6 AND J7 JUMPERS ARE INSERTED.

WARNING: DO NOT CONNECT AN EXTERNAL POWER SUPPLY TO CAN CONNECTOR.

If the CAN transceiver is supplied by VB connector, the devices connected on CAN BUS must not supply voltage to the CAN LOG board, therefore there must be no voltage between pin 3 and pin 9 of the CAN connector.

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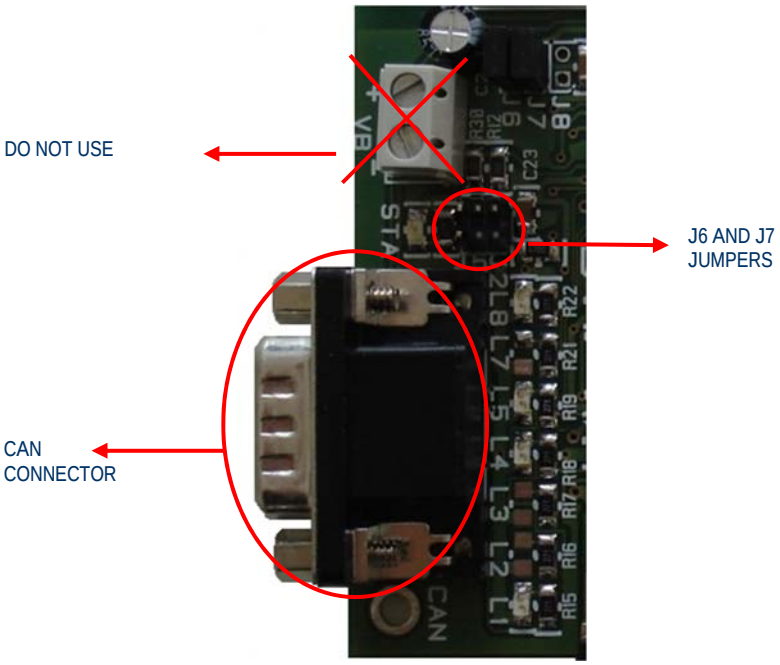
External power supply through CAN connector

There is another way to use the CAN transceiver exploiting the optocoupling feature of CAN LOG card. It consists in supply $+5V_{dc}$ to CAN transceiver directly from CAN connector using pin 3 and pin 9.



Picture 9: CAN power supply of CAN bus

To use the board optocoupling it is necessary to remove J6 and J7 jumpers.
When the power supply of the transceiver is insulated, you have to power it by CAN connector suppling $+5V_{dc}$ electric voltage between CAN connector's pin 3 and pin 9.

WARNING: CAN CONNECTOR MUST BE SUPPLED WITH $+5V_{DC}$ ELECTRIC VOLTAGE.

WARNING: DO NOT CONNECT AN EXTERNAL POWER SUPPLY TO CAN CONNECTOR IF J6 AND J7 JUMPERS ARE INSERTED.

WARNING: DO NOT CONNECT AN EXTERNAL POWER SUPPLY TO VB CONNECTOR.

If the CAN transceiver is supplied by CAN connector, the VB connector can **only** be used as auxiliary power to power supply external devices with $5V_{dc}$, like VSUB connector.

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DRIVER INSTALLATION

If you use only the RS232 interface, do not follow all the others indications contained in this chapter.

If you use the USB connection you need to install only the USB IPSES driver that is certified for the most recent Microsoft operating systems:

- Microsoft Windows 2000 family
- Microsoft Windows XP family, x86
- Microsoft Windows Server 2003 family, x86
- Microsoft Windows Server 2003 family, x64
- Microsoft Windows XP family, x64
- Microsoft Windows Vista family, x86
- Microsoft Windows Vista family, x64
- Microsoft Windows Server 2008 family, x86
- Microsoft Windows Server 2008 family, x64
- Microsoft Windows 7
- Microsoft Windows 7 x64
- Microsoft Windows Server 2008 Release 2 family, x64
- Microsoft Windows 8 and 8.1
- Microsoft Windows 8 and 8.1 x64
- Microsoft Windows 10
- Microsoft Windows 10 x64

If your PC has an internet connection, you should follow the automatic Windows Update procedure, otherwise follow the manual installation procedure from CD.

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Automatic Windows Update procedure

1) Connect the CAN Logger board to PC using a USB cable. *Windows* operating system will detect a new device, showing a message similar to:

2) In the following windows "found new hardware wizard" chose "Yes, this time only" and then "Next". Wait for a complete download of the driver and its installation.

3) After a window with the message "Found New Hardware. USB Serial Port" is displayed.

4) In the following windows "found new hardware wizard" chose "Yes, this time only" and then "Next". Wait for a complete download of the driver and its installation.

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Manual driver installation procedure

1) Connect the CAN Logger board to the PC using a USB cable. *Windows* operating system will detect a new device, showing the message:

2) In the following windows “found new hardware wizard” chose “No, not this time” and then “Next”.

3) Then choose “install from a list or specific location (Advanced)” and “Next”. Then Set the driver folder path on the CD.

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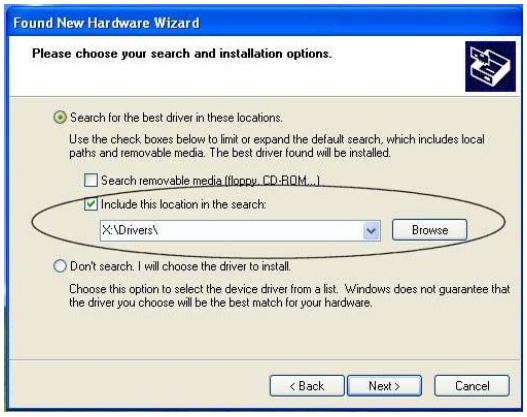
4) Select the “Drivers” folder from the supplied CD ROM.



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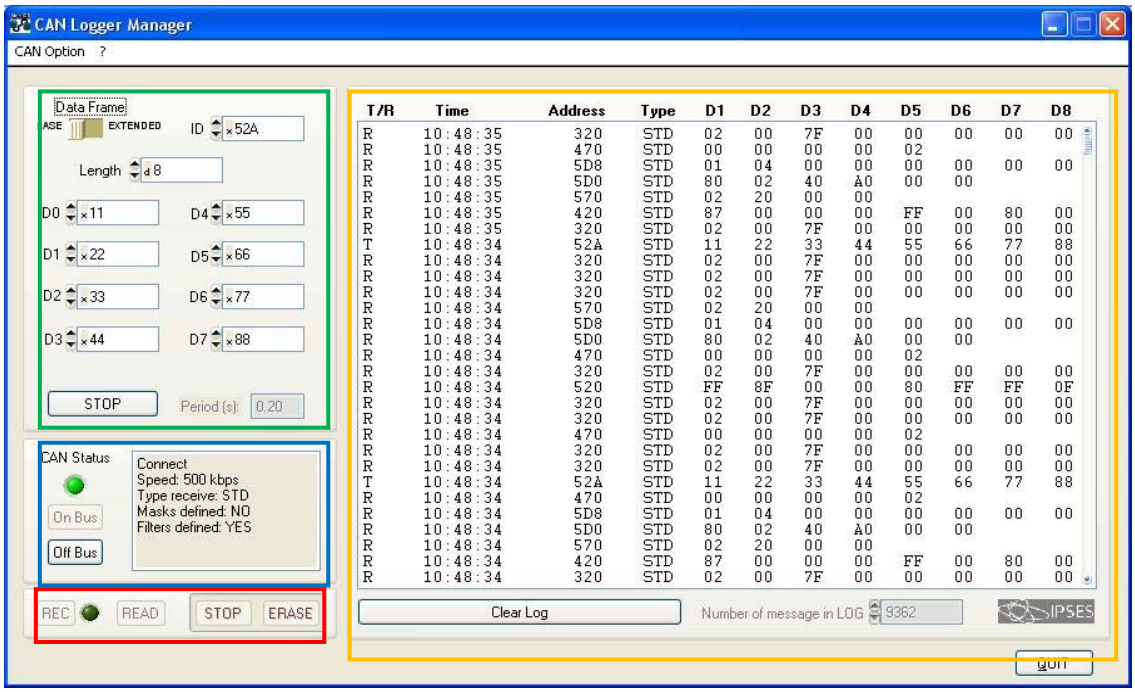
SOFTWARE

A CD with software is provided with the card. This software allows to manage CAN LOG main functions.

Main window description

In the picture below there is a snapshot of the software main window.



Picture 10: Main windows of the software.

The main window is divided in four zones which, in the picture above, are surrounded respectively in blue, yellow, green and red.

The blue surrounded zone includes commands to enable or to disable CAN interface using the available buttons. When CAN interface is enabled, the CAN Status LED turns green and CAN settings are shown.

If CAN interface is enabled, the device executes a BUS scan. CAN messages appear in the yellow surrounded zone. The number of messages shown in the text box can be changed using the *indicator number* which is in the lower part of the window (the maximum number of messages viewable is 60000). The CAN log can be saved as ASCII file choosing *Save CAN log* from *CAN Option* menu.

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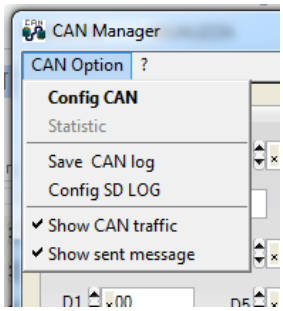

Figura 11: CAN Option menu.

The device can send messages in the following modes all customizable by the user: standard or extended, single or periodic.
The green surrounded zone allows the user to insert: CAN address, message length and data to be sent. To send a single message, set the period at zero; in case of periodic messages, set the period value.

You can manage the recording function using buttons in red surrounded zone. With REC button you can start recording CAN messages on memory. The record operation can be stopped at any time using the STOP button.
During recording, the view window (the surrounded yellow one) shows that CAN LOG card is recording. No message from CAN bus is shown.

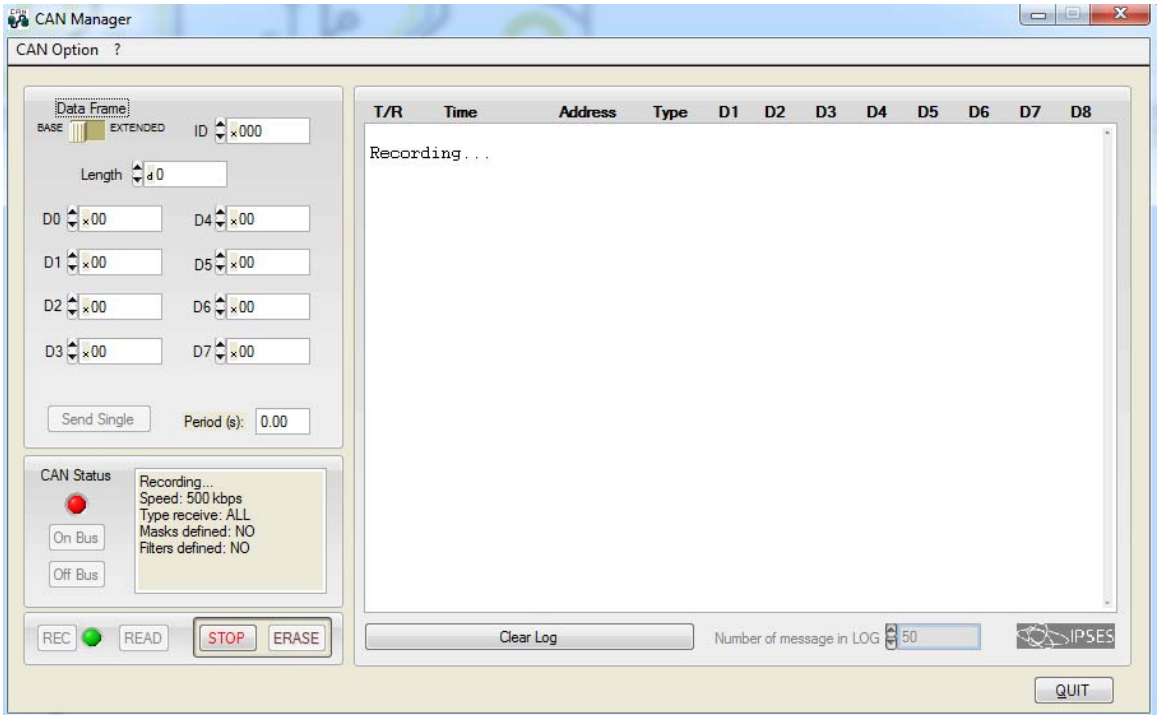

Figura 12: Recording

In CAN LOG-F you can read CAN message stored using the *READ button.* To erase the flash memory you have to use the *ERASE* button.

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In the CAN LOG-SD version *READ* button and *ERASE* button don't work. The only way to read, erase or format the SD card is to use an external card reader linked to a computer.

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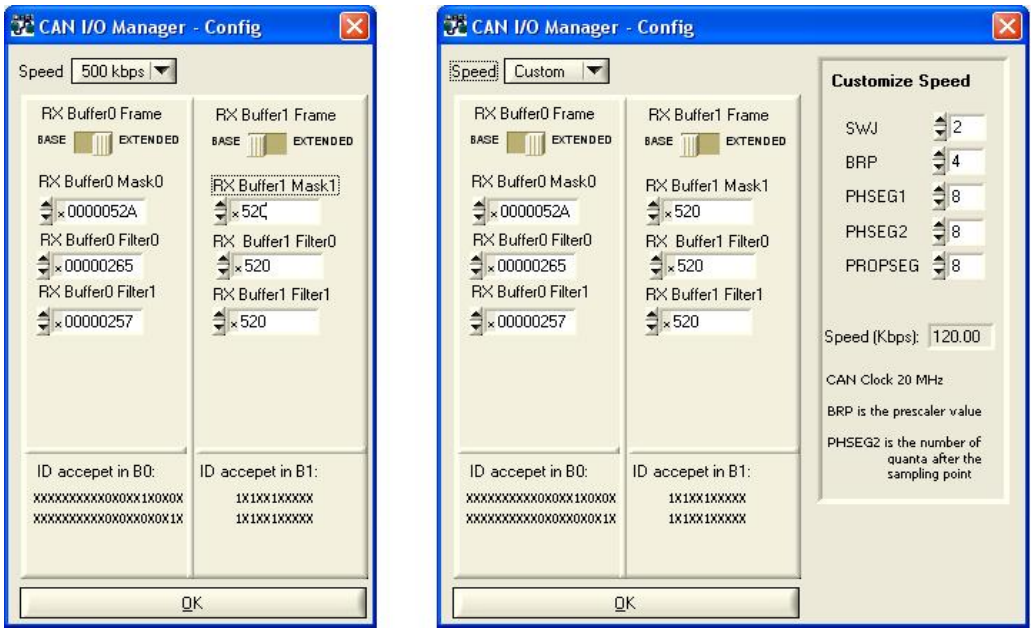
Configuration panel description

Before using CAN interface, the device must be configured.
The configuration is made through the *Config* panel (Picture 13). To enable it, select *Config CAN* from *CAN Option* menu (Picture 11 at page 26).



Picture 13: *Config* panel.

Configuration panel allows to set: speed, masks and filters.

By the drop down menu *Speed* is possible to choose the speed of CAN bus. Speed can be chosen among those already calculated or can be customize. In custom mode the new panel *Customize Speed* is opened. In this panel registers values must be set.
CAN LOG board is set with 500 kbps speed by default and filters and masks are disabled.

RX Buffer0 Frame and *RX Buffer1 Frame* panels allow to set masks and filters for CAN bus data filtering.
It is possible to apply up to two masks with two filters each on IDs, coded in base or extended mode.
In *RX Buffer0 Mask0* and *RX Buffer1 Mask1* you can set one or two independent masks to select bits to be considered for the application of filters.
By setting *RX Buffer0 Filter0, RX Buffer0 Filter1*, *RX Buffer1 Filter 0* and *RX Buffer1 Filter1*, it is possible to apply up to four filters (two on mask 0 and two on mask 1) on bits selected by each mask.

Warning: CAN LOG board considers for each mask both filters with the OR logical operator (it's enough that a message ID complies with one filter to be considered). If you want to apply only one filter you have to set the second filter like the first one.

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Masks and filters must be written in hexadecimal format.

Filters can be used to choose IDs that will be received. It isn't possible to use filters to choose IDs to be discarded.

In the bottom of the panel each filter applied to his mask is represented in binary format. X symbolizes a discarded bit, instead 0 and 1 are values that the ID must have to be considered or not.

Picture 13 examples:

	RX Buffer0 Frame	Approved ID
ID type	*EXTENDED*	
Mask	0 0000 0000 0000 0000 0101 0010 1010	
Filter0	0 0000 0000 0000 0000 0010 0110 0101	XXXXXXXXXXXXXXXXX0X0XX1X0X0X
Filter1	0 0000 0000 0000 0000 0010 0101 0111	XXXXXXXXXXXXXXXXX0X0XX0X0X1X

In this example, ID values 0x1FFFF8E4 (1 1111 1111 1111 1111 1000 1110 0100 in binary format) and 0x00000007 (0 0000 0000 0000 0000 0000 0000 0111 in binary format) are approved because comply respectively with the first and the second filter.
ID value 0x00000400 (0 0000 0000 0000 0000 0100 0000 0000 in binary format) isn't considered because the 11th bit complies with none of the filters.

	RX Buffer1 Frame	Approved ID
ID type	*BASE*	
Mask	101 0010 0000	
Filter0	101 0010 0000	1X1XX1XXXXX
Filter1	101 0010 0000	1X1XX1XXXXX

ID value 0x7FF (111 1111 1111 in binary format) is approved because complies with both filter (in this case the two filter are the same because they must be considered like one).
ID value 0x064 (000 0100 0000) isn't considered because the 7th bit doesn't comply with filters.

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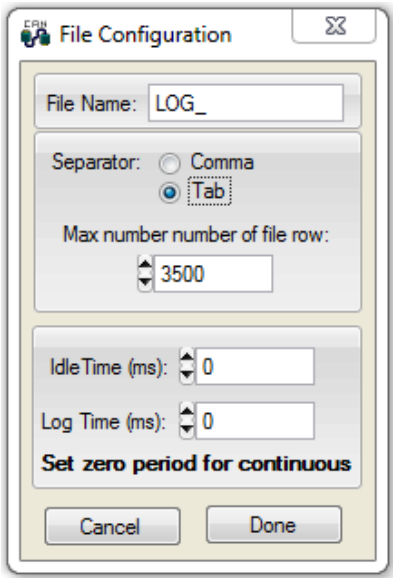
File log configuration

By select *Save CAN Log* in the drop down menu *CAN Option* (picture 11 at page 26) it is possible to modify the parameters which the CAN LOG-SD board will storage data with (these parameters are valid only for the SD version, they won't be considered in CAN LOG-F version).



Picture 14: File log configuration panel.

Using this menu it is possible to set the log file name, the separator character (comma or tab) and the maximum number of records in a file (this number cannot be greater than 60000 rows).

The file name will consist of the name set in the *File Name* text box followed by the underscore (_) and by a sequential number of 3 digits.
The first file that CAN LOG board will save after it is turned on will consist of the name set in the *File Name* text box followed by _000.
The value of the sequential number will increase by one when a new file will be created. The CAN LOG board will create a new file when the *Max number of file row* set in the box is reached (the maximum number of file rows cannot be greater than 60000 rows).

If J4 jumper is inserted, the sequential number counter is reset any time the board is turned on, therefore any time the board is turned on in stand-alone mode, it will save a file with the number _000, followed by _001, _002 and so on. If files already exist, they will be overwritten.
If J4 jumper is not inserted, when the board is restarted it will save a file with a sequence number that continues from that of the last file saved

Using CAN LOG board is possible to create log files sampled in different time windows.
The *Log Time* box allows to set the time window length in milliseconds (from 0 to 5000).
The *Idle Time* box allows to set the time between time windows (from 0 to 60000).
If *Log Time* and *Idle Time* are set on 0, CAN LOG board saves a continuous log file.

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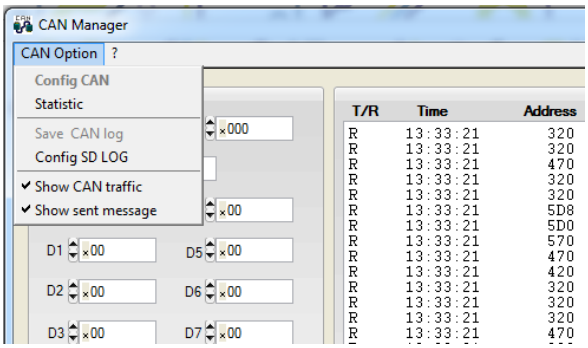
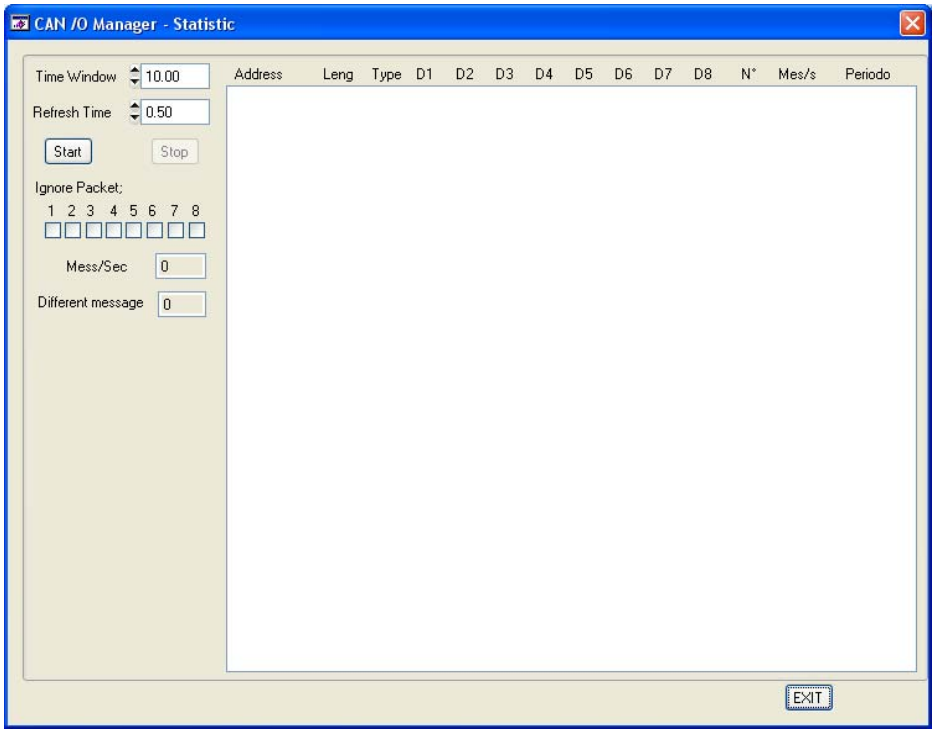
Statistic Window Description

The software can find the period of different CAN messages on the BUS. This feature is available selecting *Statistic* in *CAN Option* menu when CAN interface is enabled.



Picture 15: CAN Option drop down menu with CAN interface enabled



Picture 16: Statistic window.

The user can customize the watching time window, the refresh period and he can filter one or more bytes from the CAN message.

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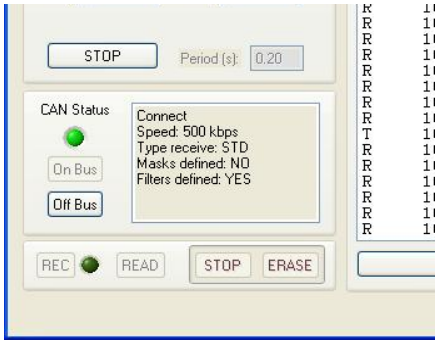
Stand-alone mode

CAN LOG can record CAN messages without a PC connection.

First of all the board must be configured:

1- Connect CAN LOG to a PC through USB or RS232 (page 14 and 15).
2- Start the *Software* and configure CAN interface from *CAN Option >> Config CAN* (set speed and, eventually, mask and filters like shown at page 28).
3- Come back to main window and press the *On Bus* button waiting for the led becoming green.



Picture 17: CAN enabled with settings

4- Erase the memory using *ERASE* button (only for CAN LOG-F version).
5- Exit from software and be careful to answer YES when the pop up ask you *"Load new CAN stand-alone parameter?"*
6- Disconnect board from PC and Turn off the board (in case of RS232 connection).

Now CAN LOG is configured for using it in stand-alone mode. To use it, follow the instructions listed below:

1- Insert J3 jumper.
2- Power on the board through the VEXT connector (USB connector must be free) like explained at page 16.
3- Check the *LED 4* is on.
4- Connect CAN LOG to the CAN bus.

The board now records the CAN messages, to stop it, simply disconnect CAN bus or power off the board.
The memory full or error condition is indicated by LED 5, in this condition the device stops any recording operation.

To read stored data with software, act as follow (only CAN LOG-F version):

1- Remove the J3 jumper.
2- Connect CAN LOG to a PC through USB (VEXT connector must be free)
3- Start software
4- Use READ button

To read data stored on the Micro-SD card (only CAN LOG-SD version) you must remove the Micro-SD card and read it using a Micro-SD card reader linked to a computer.

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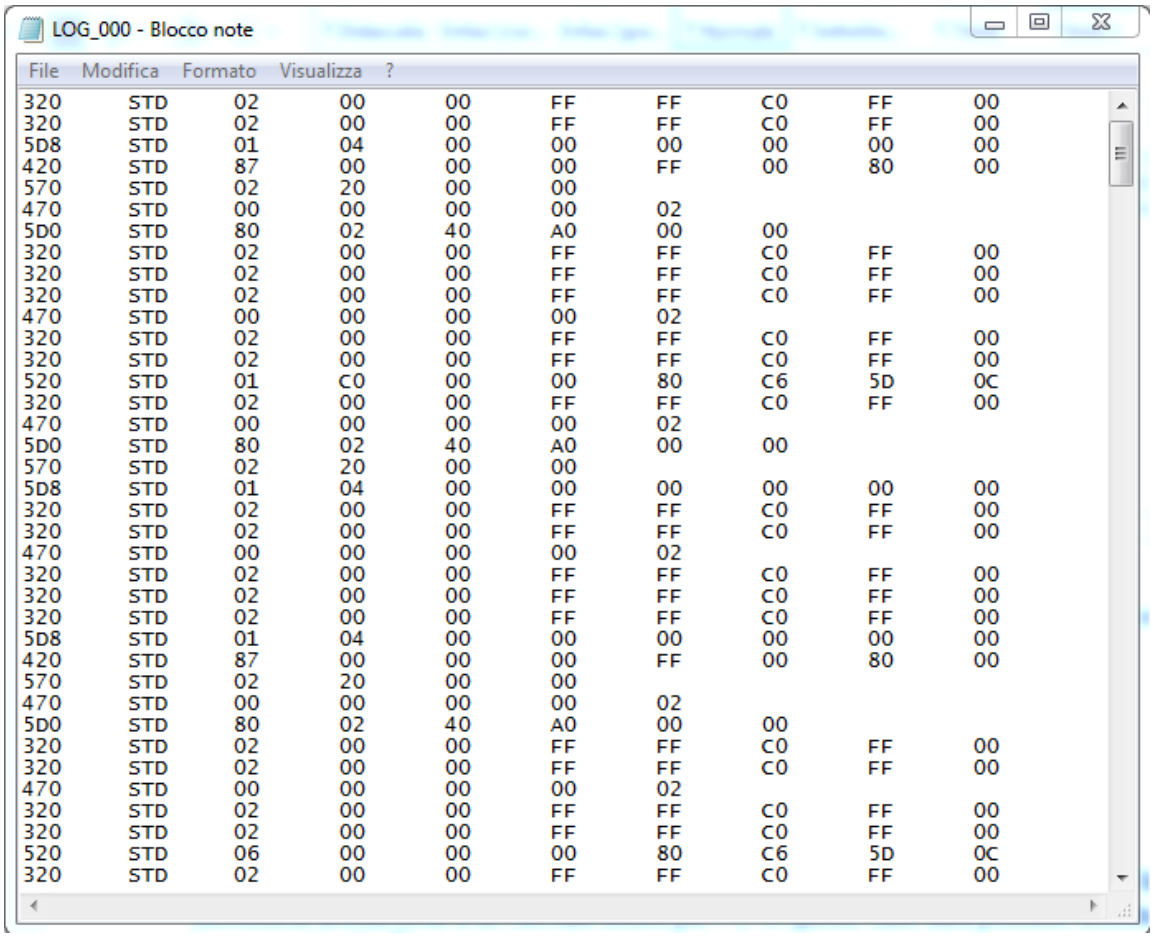
The log file will have the following formats:

ADDRESS<TAB>TYPE<TAB>D1<TAB>D2<TAB>D3<TAB>D4<TAB>D5<TAB>D6<TAB>D7<TAB>D8

or

ADDRESS<,>TYPE<,>D1<,>D2<,>D3<,>D4<,>D5<,>D6<,>D7<,>D8

ADDRESS is the address of CAN message (ID's message), TYPE is the message type (standard or extended) and Dn (with n from 1 to 8) is CAN data.



Picture 18: Log file

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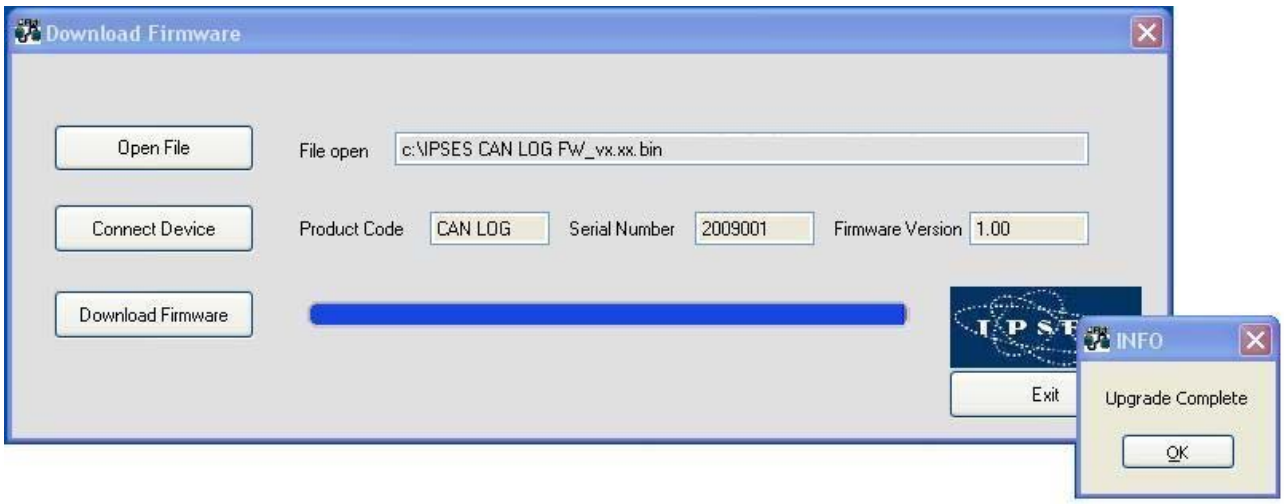
Firmware upgrade functionality

(CAN LOG-F version only)

CAN LOG-F is provided with Boot Loading feature for firmware update by USB.
To set the board in firmware upgrade mode, insert J1 jumper, connect the device using USB and check the L7 LED is ON, then execute the Software. The software automatically loads the correct interface as shown in picture 19.

It is not possible to update firmware using RS232 or CAN connectors.



Picture 19: Firmware upgrade software start-up.

To download a new firmware, open the new firmware file using *Open File* button, then activate connection choosing *Connect Device* button (if the connection is disabled the LED is off), then press *Download Firmware* and wait for the pop-up message (fail or pass).

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PRODUCT CODE

Code	Description
CAN LOG-SD	CAN Logger card with SD socked
CAN LOG-F	CAN Logger card with 1024 kbit
MicroSD4G	4GB MicroSD memory card
RS232-DB9	RS232 cable with DB9 female connector
USB-A-B	USB cable to connect USB cards
USB-A-B-ill	USB cable with light end to connect USB cards

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TECHNICAL FEATURES

Power supply:	*USB configuration mode*: self-powered through USB *RS232 configuration mode*: 9-24 V_{DC} *Stand-alone mode*: 9-24 V_{DC}
Consumption:	About 70mA @7V and 40/50mA @>=12V with external power supply. When the card works with the USB interface, consumption is about 70/80mA
Working temperature: Storage temperature:	From 0°C up to +60°C From -40°C up to +85°C
Interface toward PC:	USB port type B, compatible with USB2.0, and RS232
Card dimensions:	90 x 100 mm (3.55 x 3.94 inches). Maximum height 29mm Distance of the center of the holes to fix the board in the long side is 90 mm, in the short side 80 mm. The diameter of the holes is 3 mm.
CAN interface:	Compatible with standard *CAN 2.0B Active Specification* ISO 11898-2 physical layer compliance Programmable *Baud rate* (up to 1MB/s) Programmable reception filters (available for *extended* and *standard frame*) Card insulation (selectable) $>10^{14}\ \Omega$ Maximum applicable voltage (CAN-board): $150V_{RMS}$ Transceiver power supply: $5V_{DC}$
Memory (Only CAN Logger-Flash):	Size: 1024 kbit (from 3500 up to 12800 frames) Reliability: 1M Erase/Write cycles
MicroSD Card (Only CAN LOG-SD):	Slot MicroSD Card on board File System FAT or FAT32 (Windows compatible)

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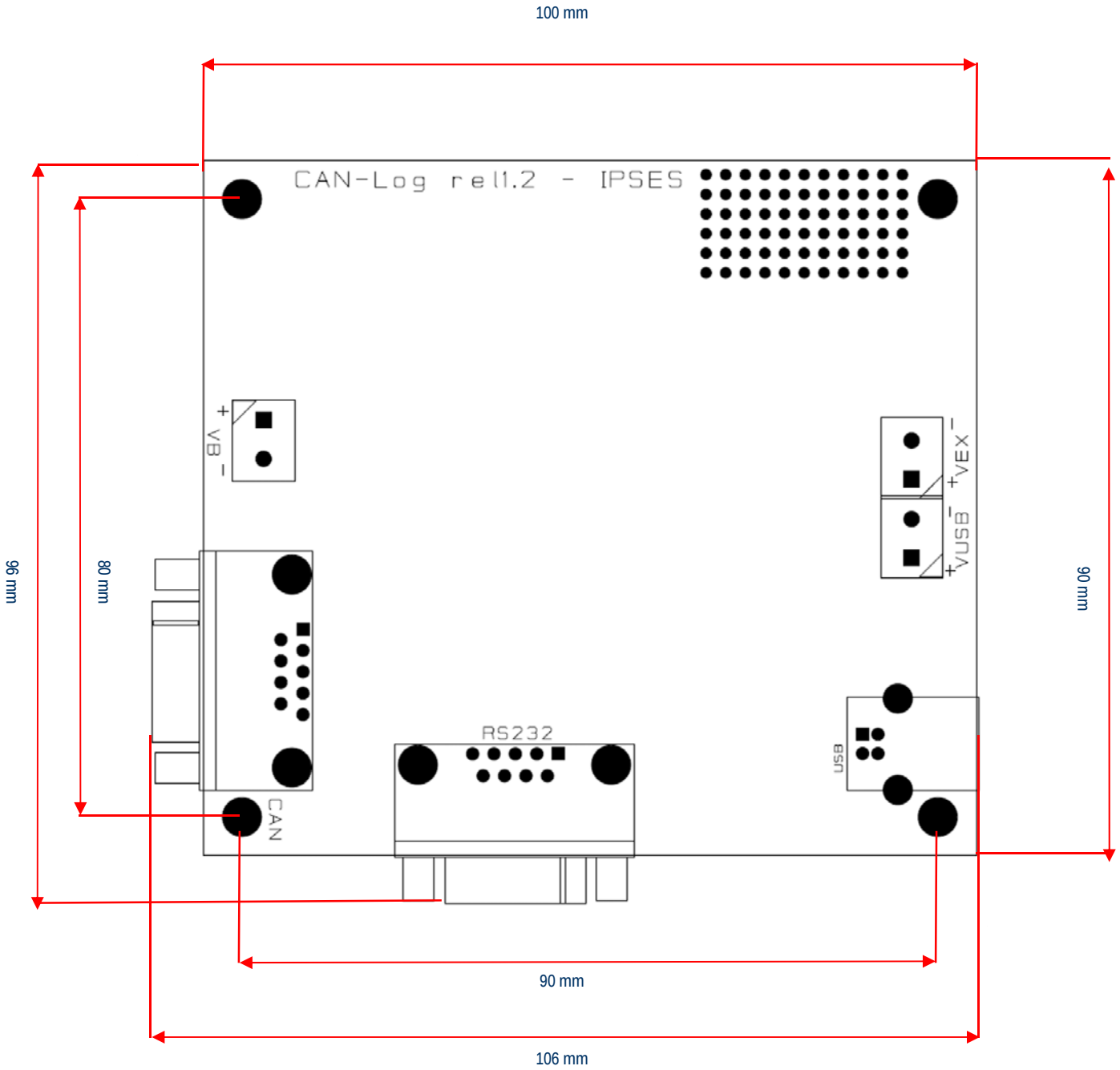
TECHNICAL DRAWING



Maximum height 29mm

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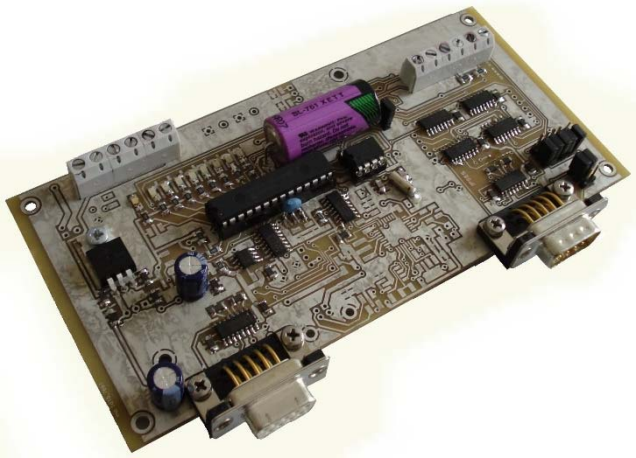
OTHER AVAILABLE VERSIONS

CAN Sniffer: Data sniffer for CAN bus with USB and RS232 interfaces

CAN Sniffer is a control unit which can be interfaced and monitoring a CAN bus by USB (in this case the card is self-powered) or by RS232 interfaces.
Easy to use and to configure, thanks to the provided *software*.
CAN Sniffer can be immediately used with any CAN BUS, thanks its fully configurability.
The board is small and practise, size is 100 x 70 mm (3.94 x 2.76 inches), so to be easily integrated in several systems.

SerialLogger: RS232 interface standalone system for storing frames

SerialLogger is a board which can monitor, ask (with programmable frame) and store data by a simple RS232 serial interface.
SerialLogger is a simple device to use (also thanks to its provided Windows software) and it is the most efficient answer for monitoring and storing data. Once set, board is totally independent, it does not need PC connection to get and monitor data; moreover, a real-time clock is present in the system which allows to store time and date of each frame.



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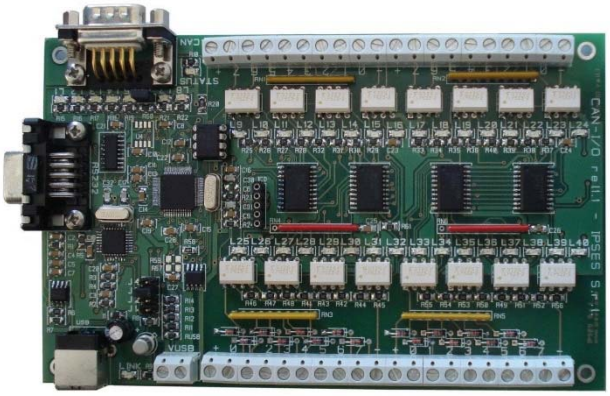
CAN-I/O: Input/output Card with 16 inputs and 16 outputs with CAN,USB and RS232 interface



CAN I/O is a card to manage sixteen optocoupled inputs and sixteen outputs that be able to operate on a CAN BUS without PC. Easy to use and configure, thanks to the provided *software*, CAN-I/O is the right answer to the need to acquire and drive digital signals through existing field.

CAN I/O can be directly connected to PLC, to input devices from operator and to other I/O systems.

Each input and output status can be read by a field bus at any moment, besides it is shown directly on the board thanks to LEDs fixed on.

Beside, an integrated temperature sensor allows to know in real time the temperature of the system CAN I/O is placed in.

CAN I/O is easy to use and configure and can be use immediately with whatever CAN BUS, because it is completely configurable (High-speed / Low-speed, Baudrate, Address, Commands).

The board size is the standard *European Format Card* so that it can be easily integrated in several systems. Besides, CAN I/O has its inputs and outputs galvanically isolated to protect from electromagnetic disturbances and ground loops, improving its reliability and quality.

Is however possible develop a specific software for specific application using Telnet connection, through which is possible send all controls commands.

An integrated temperature sensor allows to know in real time the temperature of the system Web-IO is placed in.

For further details, please consult our website: *http://www.ipses.com.*

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Our pool consists of highly competent professionals whose experience in this field is extremely strong. Thanks to constant updating and technical development, IPSES is a leading company, combining the dynamism of a young group into the competence and reliability of a qualified staff.

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SUPPORT INFORMATION

The customer is at liberty to contact the relevant engineer at IPSES S.r.l. directly.

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PROBLEM REPORT

The next page is a standard template used for reporting system problems. It can be copied and send as a fax. Alternative bugs may be reported by emails, in this case please insure that the mail contains similar information listed in the *Engineering Problem Report* form.

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ENGINEERING PROBLEM REPORT

Problem describer

Name			**IPSES s.r.l.** **Via Suor Lazzarotto, 10** **Cesate (MI)** **Italy** **Fax (+39) 02 700403170** **e-mail *support@ipses.com***
Company			
Date	Tel.	Fax	

Product

Name	Version	Serial No.

Report Type (bug, change request or technical problem)

Major bug	☐	Urgency:	
Minor bug	☐	High	☐
Change request	☐	Medium	☐
Technical problem	☐	Low	☐

Problem Description

Reproduction of Problem

IPSES s.r.l. Action notes

Received by	Date	Report No.	Action

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(Product code CAN LOG-SD, CAN LOG-F Rel. 02.01.0001)

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