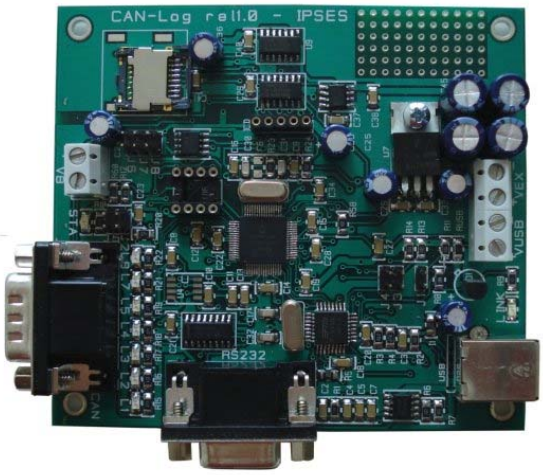
IPSES
scientific electronics

CAN Logger
USER MANUAL

Rel. 01.00.0002
(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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ELECTRICAL DEVICES COULD DAMAGE EQUIPMENT OR PROPERTY OR CAUSE PERSONAL INJURY

This guide contains instructions and technical features of the CAN Logger.
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.

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GENERAL FEATURES

CAN Logger 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 models: CAN Logger-SD and CAN Logger Flash.
The CAN Logger-SD model can save a log file directly in text format on a MicroSD card formatted as FAT32, while CAN Logger Flash uses an inner flash memory that can be read with the software provided with.
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 baudrate, high and low speed, etc...), and also to configure filters on messages to be received and stored.

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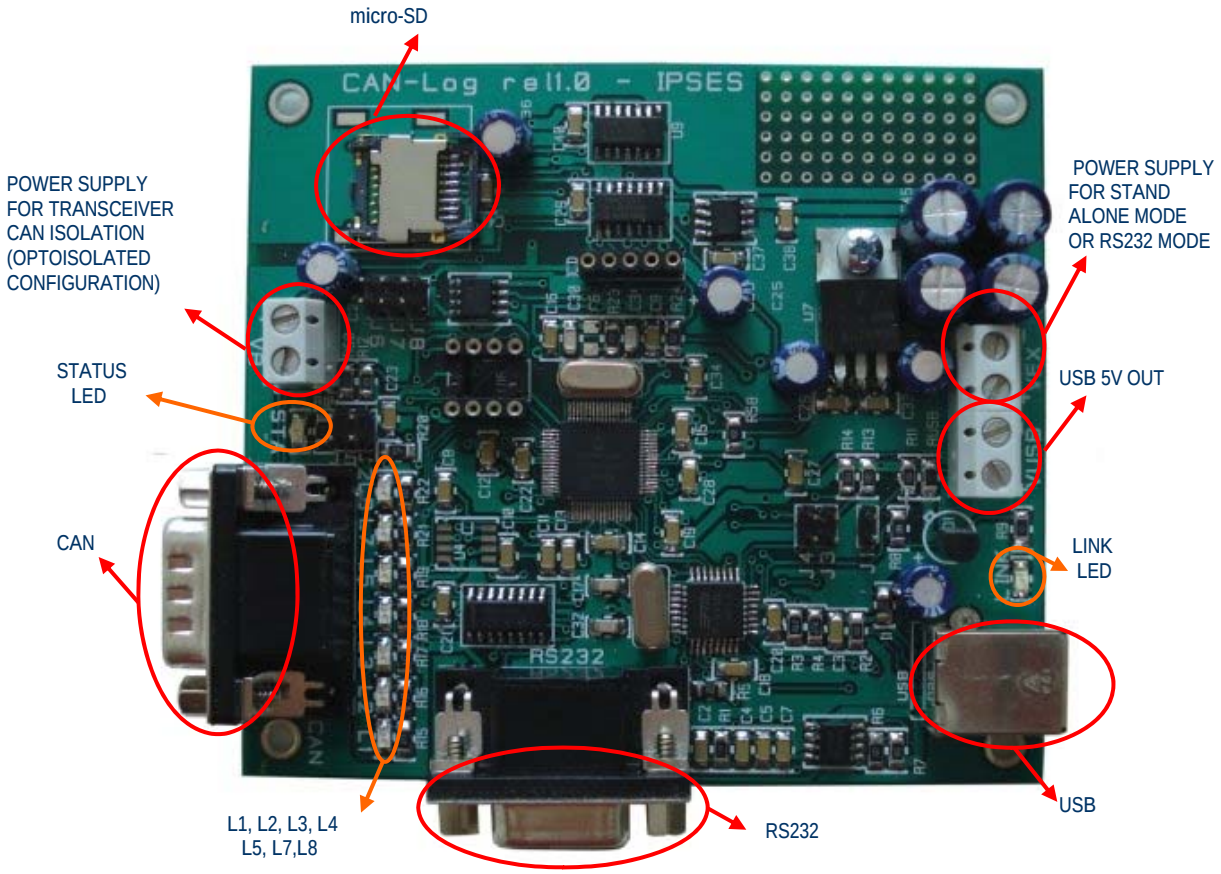
CARD DESCRIPTION

CAN Logger card is shown in the pictures below. CAN, USB, RS232, external supply connectors, MicroSD connector (only for CAN Logger SD) and LED are also shown.

ATTENTION: IN ORDER TO PRECLUDE MALFUNCTIONING OR DAMAGE DO NOT CONNECT EXTERNAL POWER SUPPLY AND USB AT THE SAME TIME

ATTENTION: TO USE CAN LOGGER BOARD microSD CARD MUST BE INSERTED



Picture 1a: CAN LOG card, LED and interfaces

The LEDs are (Picture 1a):

LINK	Green LED: USB has been recognized and can communicate
STATUS	Green LED: CAN enabled
L1	Red LED: RS232 enabled (if it is off ,USB is enabled)
L2	Red LED: reserved
L3	Red LED: reserved
L4	Red LED: Device in standalone mode
L5	Red LED: Memory full or error while saving

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L7	Red LED: firmware update mode (Only CAN Logger-Flash)
L8	Red LED: checking transceiver CAN

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STATUS LEDS

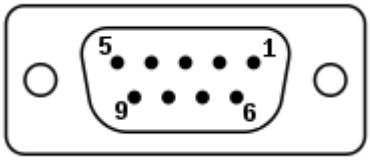
LED STATUS	Status description
OFF	CAN in SLEEP mode
ON	CAN enable

LED L4	Descrizione Stato
OFF	CAN Logger in communication and configuration mode with PC
ON	CAN Logger in standalone mode

LED L5	Descrizione Stato
OFF	Recording memory NOT full
ON	Recording memory full or error while saving

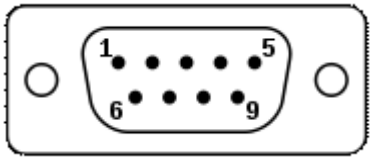
LED L8	Status description
OFF	Device ready for use
BLINKING	transceiver CAN check-up
ON	transceiver CAN lacking or damaged

RS232 PINOUT



PIN	Descrizione
2	TX: Transmission PC pin (Receive pin board)
3	RX: Receive PC pin (Transmission pin board)
Chassis	VEX-

CAN PINOUT



PIN	Descrizione
2	CAN-L
3	VB-
7	CAN-H
9	VB+
Chassis	VB-

VB+ and VB- are the CAN transceiver power supply terminals connector (when device is configured as optoisolated) or 5 V_{DC} supplied from board (when device is not configured as optoisolated).
For further information, see Optoisolated mode on chapter “CAN BUS CONNECTION”.

ATTENTION : VB CONNECTOR SUPPORT ONLY 5V POWER SUPPLY .

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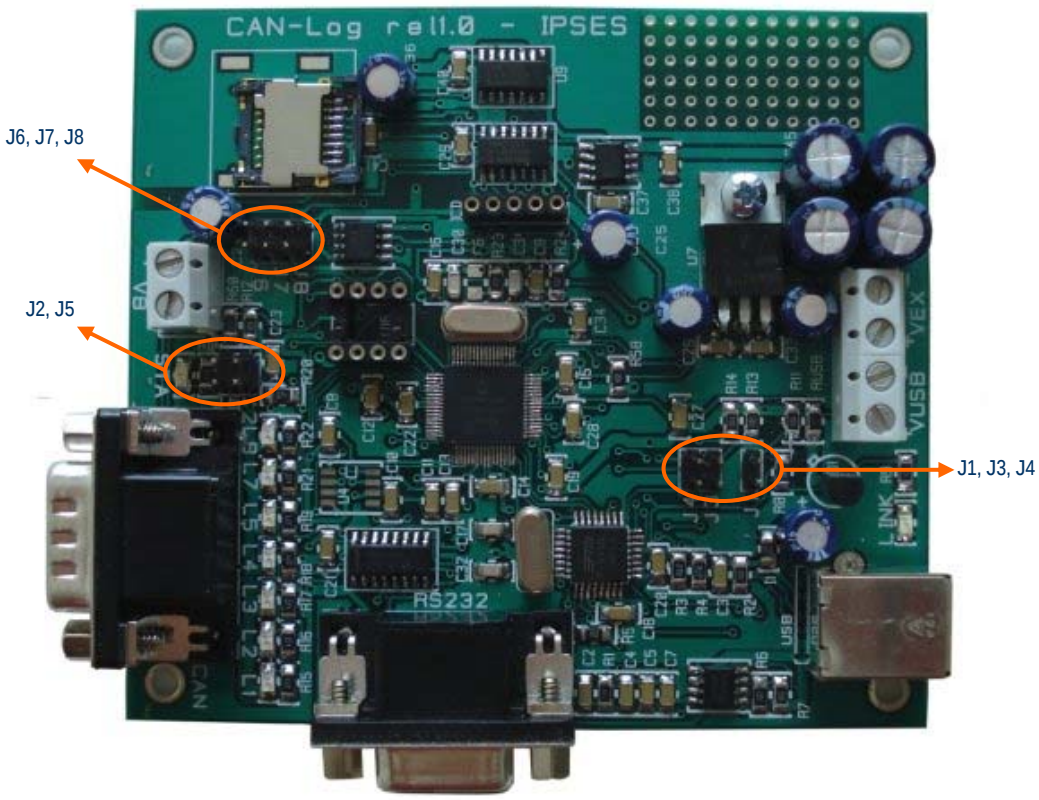

Picture 1b: CAN LOG card, jumpers

The Jumpers are (Picture 1b):

J1	If inserted before start up, it sets the device in firmware update mode (only for CAN Logger Flash)
J2	If inserted, it enables the CAN BUS terminate 10KΩ resistor (between CAN-H and CAN-L)
J3	If inserted before start up, it sets the device in stand-alone mode
J4	Reserved
J5	If inserted, it 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)

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CAN BUS CONNECTION

CAN Logger allows a galvanic isolation between CAN bus and board, in order to preclude any problems that may happen using different potentials references between CAN interface and board power supply and reducing electromagnetic noise.
If you want to use galvanic isolation configuration, follow the instructions listed below:

1. remove jumpers J6 and J7
2. connect a $5V_{DC}$ power supply to VB connector
3. connect the device to the CAN bus

ATTENTION : IN ORDER TO PRECLUDE MALFUNCTIONING OR DAMAGE DO NOT CONNECT VB POWER SUPPLY WITH J6 E J7 JUMPERS INSERTED.

ATTENTION : VB CONNECTOR SUPPORT ONLY 5V POWER SUPPLY .

If you do not want to use galvanic isolation configuration, simply insert J6 and J7 jumpers without using VB connector.

Note: if J6 and J7 jumpers are not inserted and VB connector is not connected, CAN interface is not powered and the board CAN does not work.
Either J6 and J7 jumper (CAN without isolation) have to be inserted or VB connector (CAN with isolation) have to be connected.

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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
- Windows Server 2008 family, x86
- Windows Server 2008 family, x64

–Windows 7

- Windows 7 x64
- Windows Server 2008 Release 2 family, 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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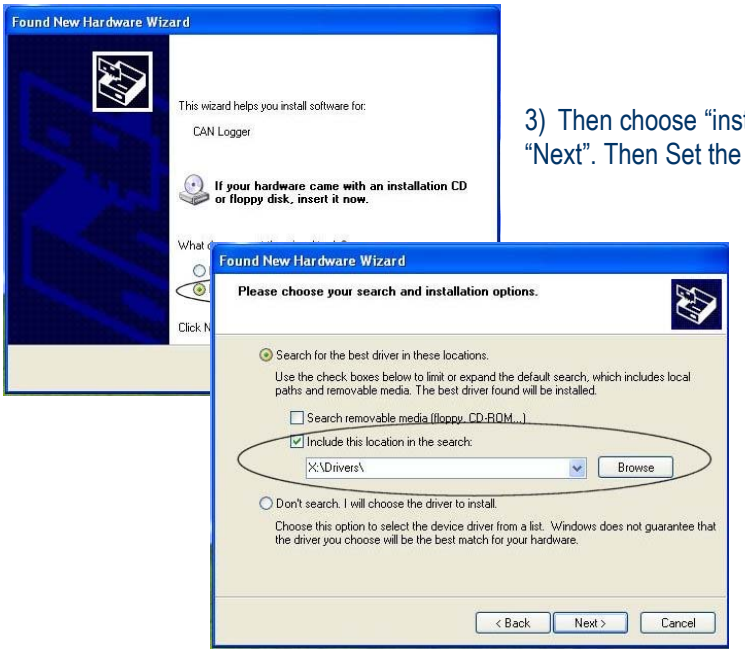
Manual driver installation procedure

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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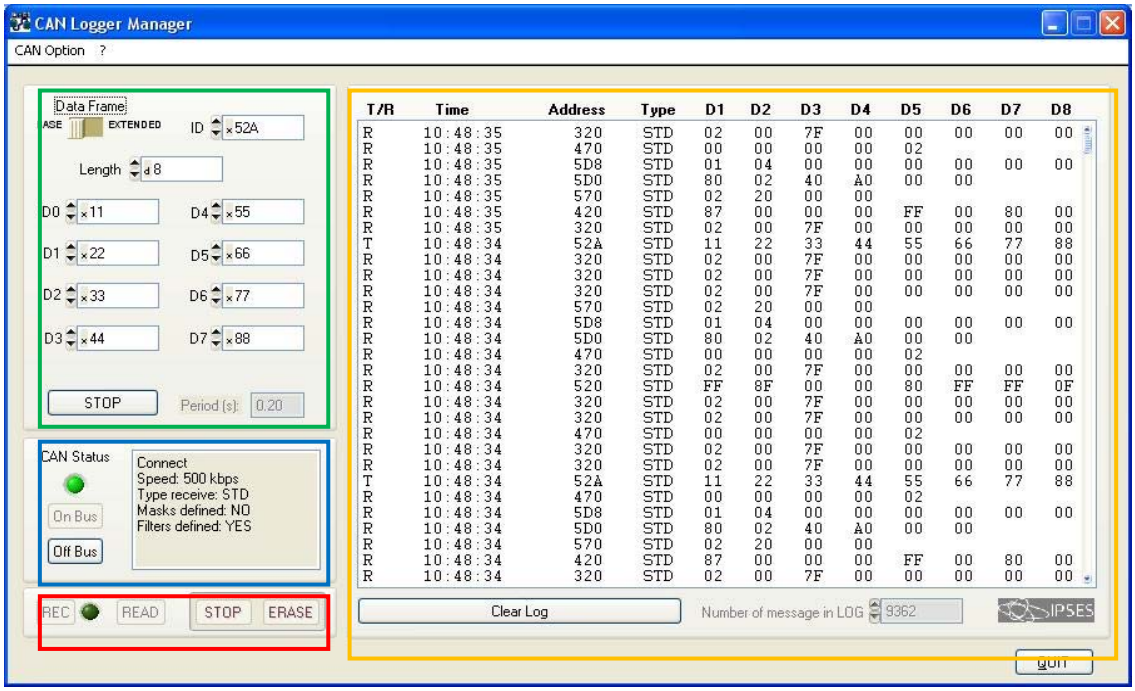
SOFTWARE

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

ATTENTION: TO USE CAN LOGGER BOARD microSD CARD MUST BE INSERTED

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



Picture 4: 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 CAN log can be saved as ASCII file choosing *Save CAN log* from *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.

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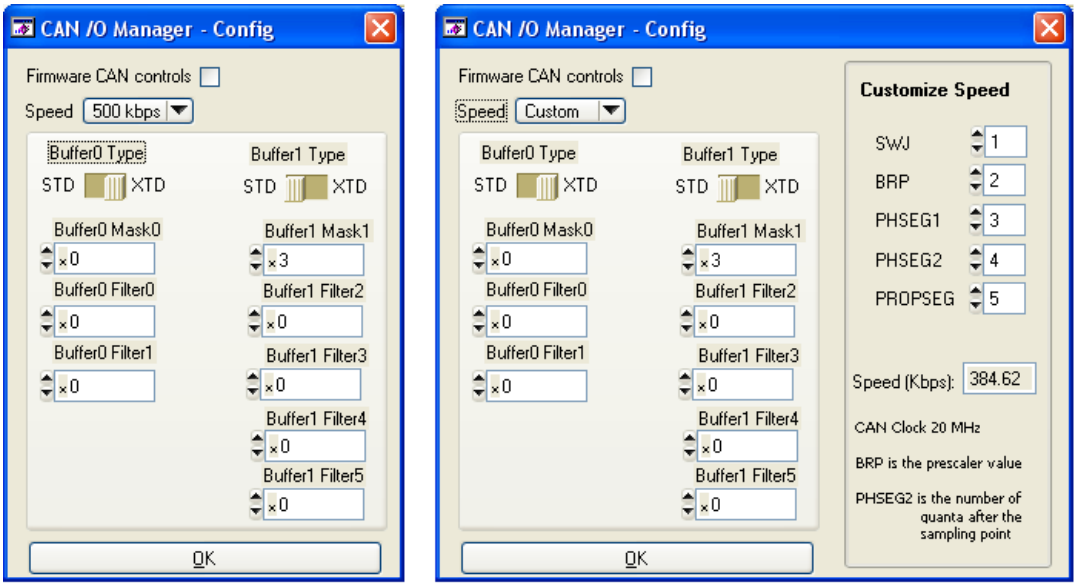
You can manage the recording memory using buttons in red surrounded zone. With REC button you can start recording CAN messages. The record operation can be stopped at any moment using the STOP button. For reading memory, use READ button and for erasing it, use ERASE button.

Config Panel description

Before using CAN interface, the device must be configured. The configuration is made through the Config panel (Picture 5). To enable it, select *Config CAN* from *CAN Option* menu.



Picture 5: Config Panel.

Configuration panel allows to set: speed (the user can change manually the registers or he can choose a pre-calculate speed), mask, filters and activation of CAN Commands.

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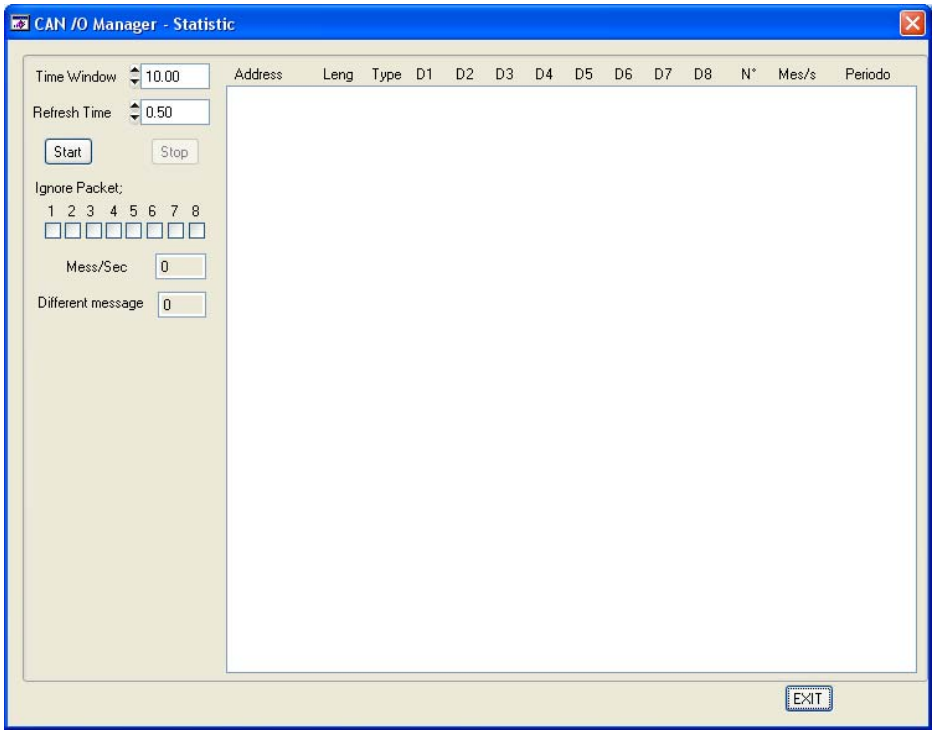
Statistic Window Description

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



Picture 7: 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 Logger can record CAN messages without a PC connection. To use this feature, follow the procedure listed below:

1- connect CAN Logger to a PC through USB or RS232
2- start the *Software* and configure CAN interface from *CAN Option >> Config CAN* (set speed and, eventually, mask and filters).
3- come back to main window and push the On Bus button waiting for the led becoming green.
4- erase the memory using ERASE button
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 Logger is configured for using it in stand-alone mode. To use it, follow the instructions listed below:

1- insert the *jumper* J3
2- power up the board through the VEXT connector (USB connector must be free)
3- check the *Led* L4 is ON
4- Connect CAN Logger on CAN bus
5- When you finish disconnect board from CAN and Turn OFF the board (disconnect VEXT connector)

The board now records the CAN messages, to stop it, simply disconnect CAN bus or power down the board.
The memory full or error condition is indicated by *LED* L5, in this condition the device stops any recording operation.

To read recorded data with software, act as follow (only in USB mode):

1- remove the *jumper* J3
2- connect CAN Logger to a PC through USB (VEXT connector must be free)
3- start software
4- use READ button

With CAN Logger–SD model you can also remove the micro-SD and read the text file stored in through a common Micro-SD card adapter for PC.

The file will have the following format:

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

Where ADDRESS is the address of CAN message, TYPE is the message type (standard or extended) and Dn (with n from 1 to 8) are the data contained in the message.

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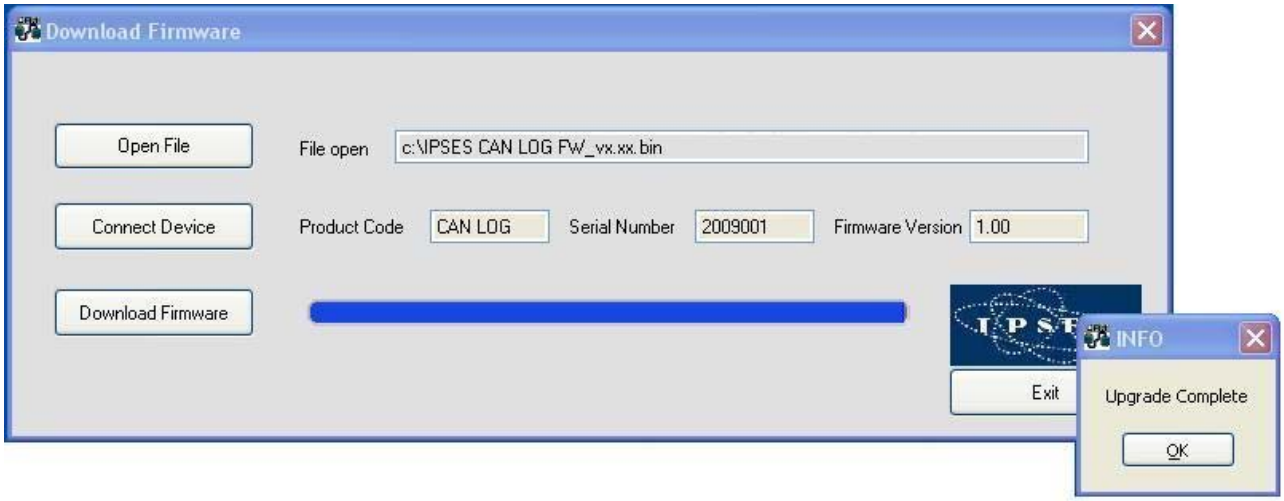
FIRMWARE UPGRADE FUNCTIONALITY

(only for CAN Logger-Flash model)

CAN Logger is provided with a Boot Loading for firmware update by USB. To set the unit in firmware upgrade mode, select jumper J1, connect the device using USB and check the led L7 is ON, then execute the Software. The software automatically loads the correct interface as shown in picture 8.
Firmware upgrading is not possible through RS232 or CAN.



Picture 8: Firmware upgrade software start-up.

To download a new firmware, open the new firmware file pushing *Open File* button, then activate connection choosing *Connect Device* button (if the connection is disabled the LED stays off), then push *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
MICRO-SD	2GB MicroSD memory card
USB-A-B	USB cable to connect USB cards
USB-A-B-ill	USB cable with light end to connect USB cards

TECHNICAL FEATURES

Power supply: *USB configuration mode*: self powered through USB
RS232 configuration mode: 7-24 V_{DC}
Stand alone mode: 7-24 V_{DC}

Working temperature: from 0°C up to +60°C
Storage temperature: from -40°C up to +85°C
Consumption: about 70mA @7V and 40/50mA @>=12V in standby mode (so using the RS232 interface). When the card works with the USB interface, consumption is about 70/80mA

Interface toward PC: 1 USB port type B, compatible with USB2.0, and RS232

Card dimensions: 90 x 100 mm (3.55 x 3.94 inches). Maximum high 29mm
Distance of the centre 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 Specifcation*
- Configurable *High-speed* o *Low-speed*
- Programmable *Baudrate* (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 (up to 9000 messages)
Reliability: 1M Erase/Write cycles

MicroSD Card (Only CAN Logger-SD):
Slot MicroSD Card on board
File System FAT32 (Windows compatible)
ATTENTION: to open Micro-SD socket, push gently toward the bottom and move the socket according the labeled arrow on it.

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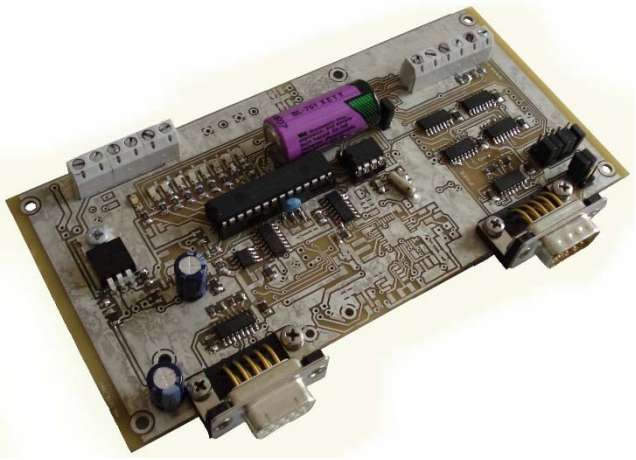
OTHER AVAILABLE VERSIONS

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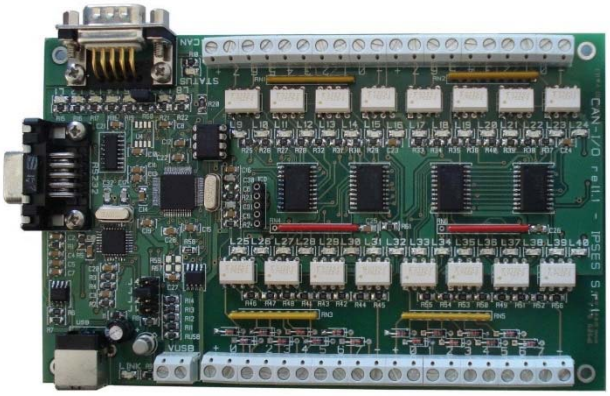
CAN-I/O: Input/output Card with 16 inputs and 16 outputs with CAN,USB and RS232 interface



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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SUPPORT INFORMATION

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

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Email	:	support@ipses.com

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. 01.00.0002)

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