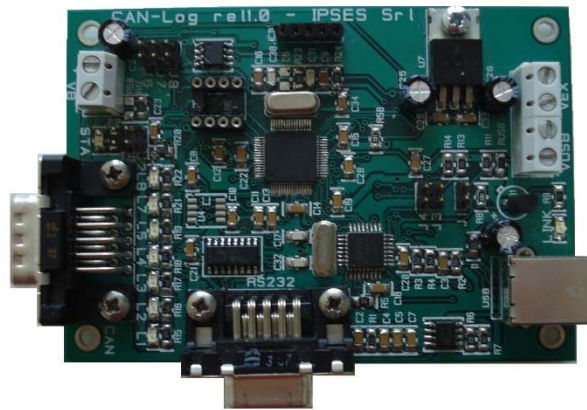


CAN Sniffer
USER MANUAL

Rel. 01.00.0003

(Hardware code: CAN SNIFFER)



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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 Sniffer card.

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
01.00.0000 October 2010	First version Released	Zancanato A.
01.00.0001 June, 2015	Update document layout	Bottaccioli M.
01.00.0002 February, 2016	Update Windows compatibility	Bottaccioli M.
01.00.0003 August, 2016	Added ISO 9001:20015 logo	Bottaccioli M.

GENERAL FEATURES



CAN Sniffer is a easy-to-use device allowing to monitor a CAN bus on which it is interfaced through USB (in this case the card is self powered) or RS232 port.

CAN Sniffer shows all the CAN messages present on the bus or can display only messages filtered by the user by the customizable parameters. It can work both with standard and extended frames.

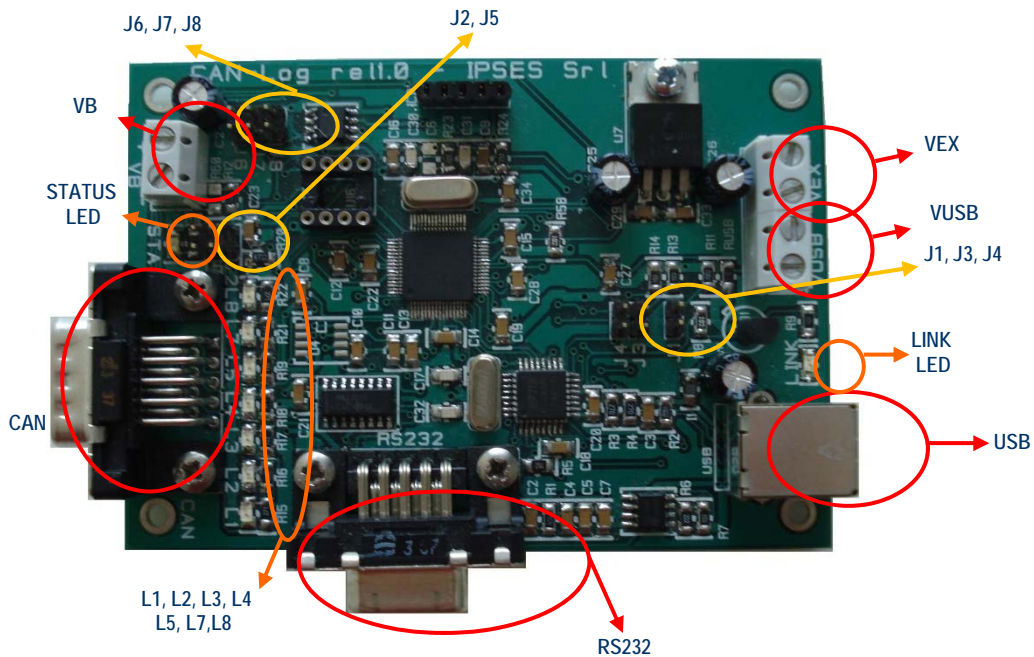
CAN Sniffer card is also able to send CAN messages, customizable by user, in single or periodic mode.

A driver to 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 interface and allows to configure CAN working parameters such as baudrate, high and low speed.

CARD DESCRIPTION

CAN Sniffer card is shown in the pictures below. CAN, USB, RS232, external supply connectors, LEDs and configuration jumpers are also shown

ATTENTION: IN ORDER TO PRECLUDE MALFUNCTIONING OR DAMAGE CAREFULLY READ THE POWER SUPPLY SECTION AND FOLLOW ITS INSTRUCTIONS BEFORE CONNECTING THE DEVICE



Picture 1: CAN Sniffer card: jumper, LEDs and interfaces

The Jumpers are (Picture 1):

J1	If inserted before THE start up, it sets the device in firmware update mode
J2	If inserted, it enables the CAN BUS terminate 10K Ω resistor (between CAN-H and CAN-L)
J4	Reserved
J5	If inserted, it enables the CAN BUS terminate 120 Ω 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)

The LEDs are (Picture 1):

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
L7	Red LED: firmware update mode
L8	Red LED: checking transceiver CAN

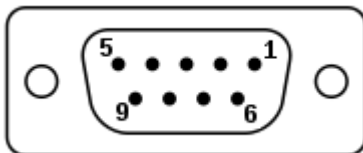
STATUS LEDES

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

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

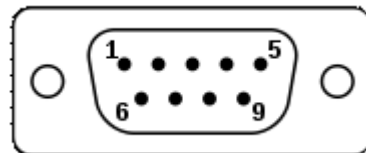
Here below there is the description of pinouts of RS232 and CAN connectors. RS232 connector is a DB9 female, while CAN connector is a DB9 male

RS232 PINOUT



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

CAN PINOUT



PIN	Description
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 optoisolated) or 5 V_{DC} supplied from board (when device is not optoisolated).

Other information on Optoisolated mode on following chapter "CAN BUS CONNECTION".

CAN BUS CONNECTION

CAN Sniffer allows a galvanic optoisolation between CAN bus and board in order to reduced electromagnetic noise and to preclude any problems that may happen using different potentials references between CAN and board power supply.

If you want to use galvanic optoisolation configuration, act as follow:

1. remove jumpers J6 and J7
2. power supply the board at 5VDC connecting a supplier to VB connector
3. connect the device to CAN bus

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

If you do not want to use galvanic optoisolation 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 not work.

Finally you have always to insert either J6 and J7 jumper (CAN without isolation) or connect VB connector (CAN with isolation).

POWER SUPPLY

To power supply CAN Sniffer when it is in optoisolate mode (see the relevant previous chapter), use the VB connector with a supplier at 5V stabilized.

For use this option, it is necessary to remove jumpers J6 and J7 and use VB connector to power supply the CAN transceiver.

ATTENTION: DO NOT CONNECT VB WITH BOTH JUMPERS J6 AND J7 INSERTED

Depending on which type of communication to PC you select (USB or RS232) there are different modes for power supply the board:

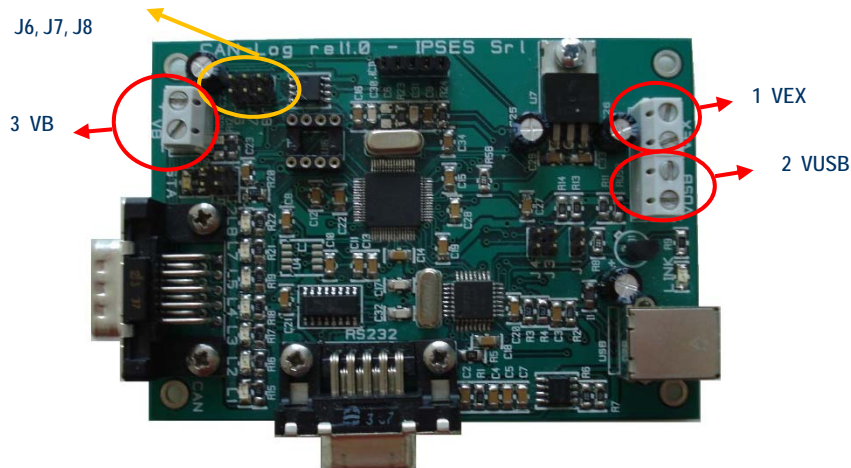
USB usage: the device is self powered through USB (never connect VEX in this mode) and VUSB connector (see picture 2 below) can be used as an output at 5V stabilized for power supply other external devices (VUSB can drive a maximum current load of 100mA).

ATTENTION: NEVER USE VEX OR VUSB INPUT FOR POWER SUPPLY THE LOGGER IN USB MODE

RS232 usage: the device needs external power supply: to connect a supplier you can use either VUSB connector, for an input voltage at 5V stabilized, or VEX connector for an input voltage between 7,5V and 30V not stabilized.

In case you chose to use VEX, VUSB can be used as output 5V stabilized for power supply external devices (VUSB can drive a maximum current load of 100mA).

ATTENTION: NEVER USE VEX AND VUSB SIMULTANEOUSLY TO POWER SUPPLY INPUTS



Picture 2: CAN Sniffer card: connectors for power supply

DRIVER INSTALLATION

We recommend to execute the automatic software installation from CD before connecting the device to PC. By this way software and USB driver are both installed and the PC automatically identifies the device when you connect it.

If you use the recommend automatic software installation from CD you do not need to follow others indications contained in this chapter.

If you do not use the recommend automatic software installation from CD and you want to connect CAN Sniffer to your PC you have to install only the USB IPSES driver, 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 have an internet connection you should follow the automatic Windows Update procedure, otherwise you have to follow the manual installation procedure from CD.

Automatic Windows Update procedure

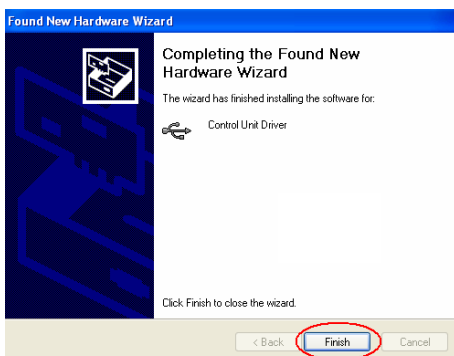
- 1) Connect the CAN Sniffer board to the PC using a USB cable. *Windows* operating system will detect a new device, showing the message:



- 2) In the following windows "found new hardware wizard" chose "Yes, this time only" and then "Next".



- 3) then choose "Install the software automatically.(Recommended)" and then "Next".



- 4) Installation is completed when the windows on the left is displayed. Choose "Finish" to exit.



- 5) After the installation of the new device, a window with the message "Found New Hardware. USB Serial Port" is displayed. Follow again the instructions from step 2) to step 5).

Manual driver installation procedure

- 1) Connect the CAN Sniffer 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". Set the driver folder path on the CD.





4) Installation is completed when the windows on the left is displayed. Choose “Finish” to exit.

5) After the installation of the new device, a window with the message “Found New Hardware. USB Serial Port” is displayed. Follow again the instructions from step 2) to step 5).

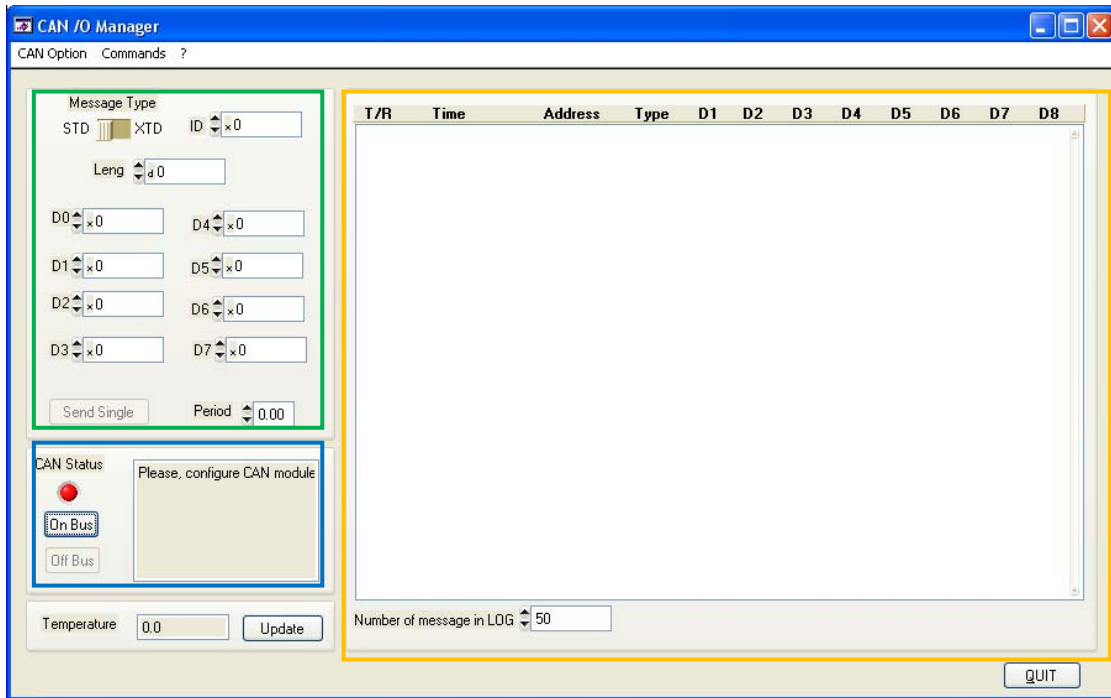


SOFTWARE

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

Main window description

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



Picture 3: Main windows of the software.

The main windows is divided in three zones which, in the picture above, are surrounded respectively in blue, yellow and green.

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

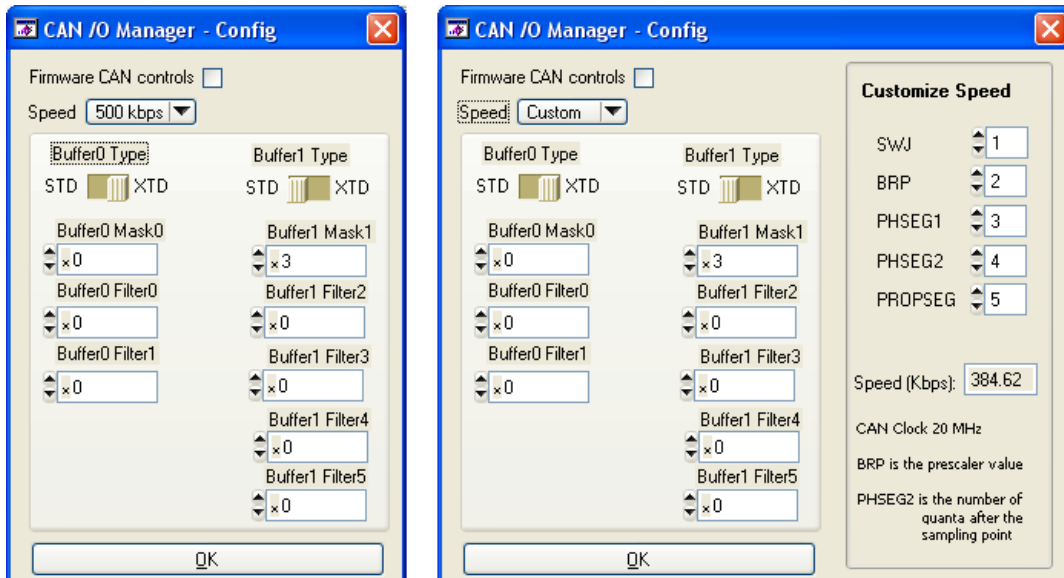
If CAN interface is enabled, the device executes a BUS scan. CAN messages appear in the yellow surrounded zone. The number of messages shown in the text box can be changed using the *indicator number* which is in the lower part of the window. The CAN log can be saved as ASCII file choosing *Save CAN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

Config Panel description

Before using CAN interface, the device must be configured. The configuration is made through the Config panel (Picture 4). To enable it, select *Config CAN* from *CAN Option* menu.

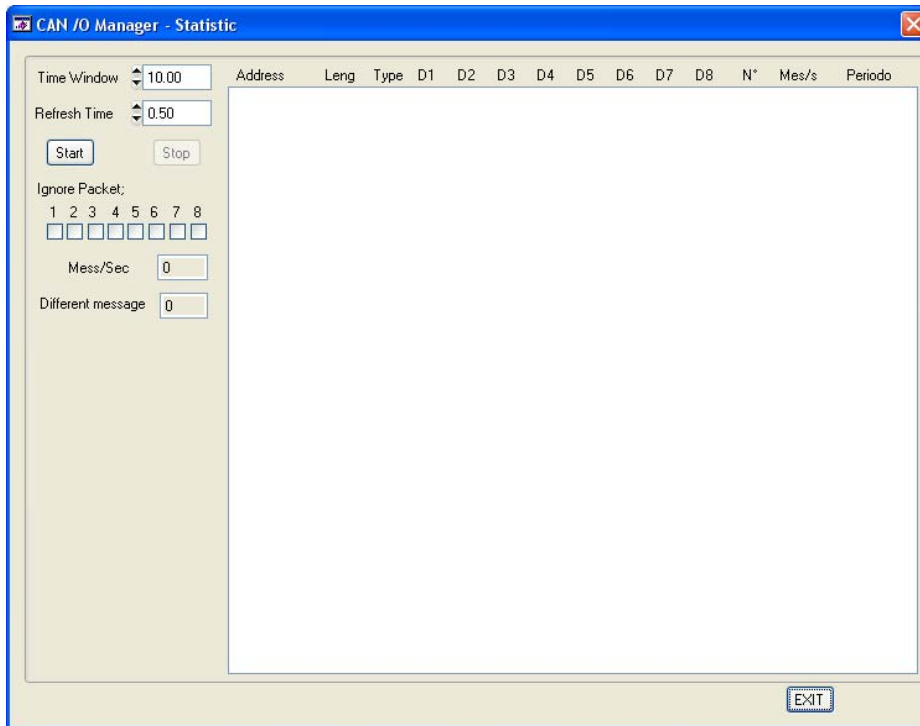


Picture 4: Config Panel.

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

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.



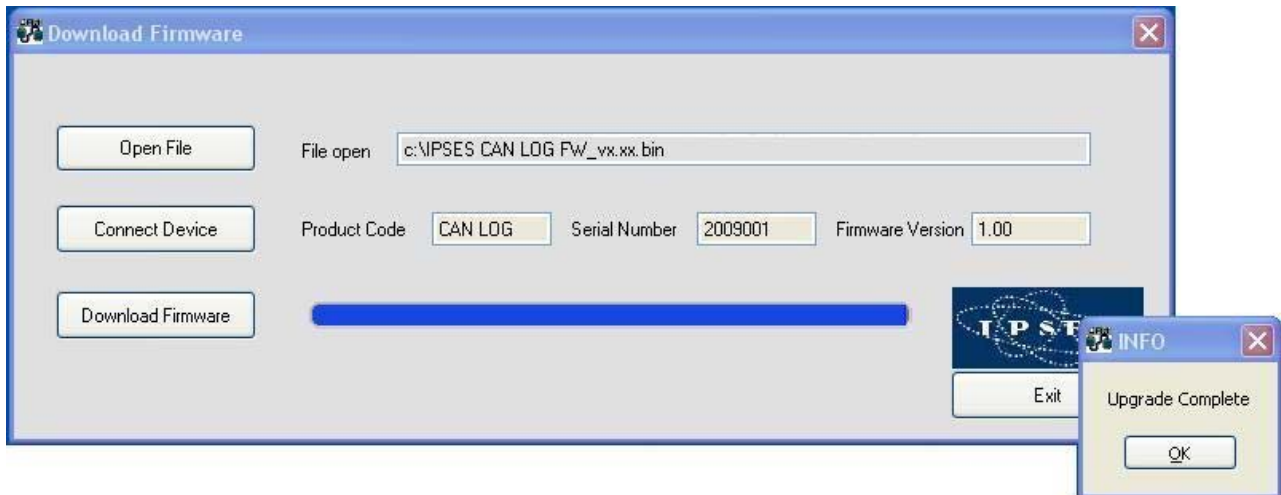
Picture 5: Statistic Window.

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

FIRMWARE UPGRADE FUNCTIONALITY

CAN Sniffer 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 interface, check the led L7 is ON, then execute the Software. Software automatically will load the correct interface as shown in picture 6.

Firmware upgrading is not possible through RS232 or CAN.



Picture 6: 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).

PRODUCT CODE

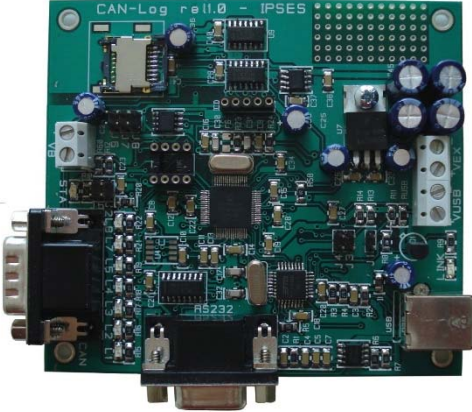
Code	Description
CAN SNIFFER	CAN SNIFFER control card
RS232-DB9	RS232 cable with DB9 female connector
USB-A-B	USB cable to connect USB cards
USB-A-B-ill	USB cable with light end to connect USB cards

TECHNICAL FEATURES

Power supply:	<i>USB mode:</i> self-powered through USB <i>RS232 mode:</i> 7.5-30 V _{DC}
Working temperature:	From 0°C up to +60°C
Storage temperature:	From -40°C up to +85°C
Interface toward PC:	USB port type B, compatible with USB2.0 and RS232
Card dimensions:	160 100 x 70 mm (3,94 x 2,76 inch)
CAN interface:	Compatible with standard <i>CAN 2.0B Active Specification</i> Configurable <i>High-speed</i> o <i>Low-speed</i> Programmable <i>Baudrate</i> (up to 1MB/s) Programmable reception filters (available for <i>extended</i> and <i>standard frame</i>) Card insulation (selectable) >10 ¹⁴ Ω Maximum applicable voltage (CAN-board): 150V _{RMS} Transceiver power supply: 5V _{DC}

OTHER AVAILABLE VERSIONS

CAN Logger: Data Logger for bus CAN with USB and RS232 interface, equipped with SD card.



CAN Logger is a control unit which allows to filter and to memorize all CAN frames of the bus on which is connected on without a simultaneously PC connection. Anyway the system can also be directly interfaced to PC through USB or RS232 interfaces.

The unit is easy to use and to configure, thanks to the provided *software* for Windows XP, Vista and 7.

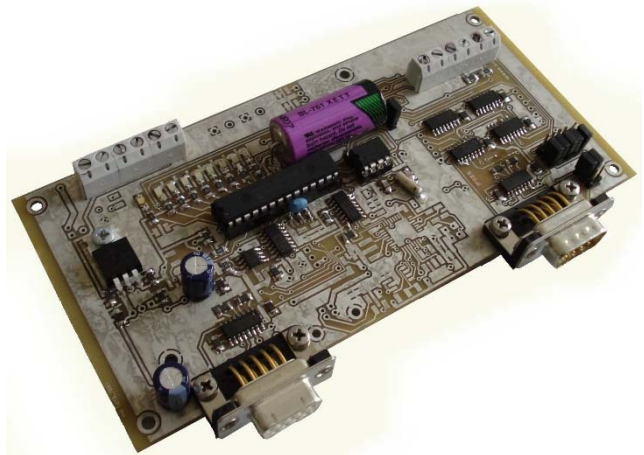
CAN Logger is available in two versions (CAN Logger-Flash e CAN Logger-SD) depending on the memory used:

- CAN Logger-Flash can record up to 9000 can messages on a on-board flash memory readable with the provide software.
- CAN Logger-SD allows to record messages form CAN bus directly on a Micro-SD card: that SD card can be read from any card reader or connecting the logger directly to a PC by the provide software.

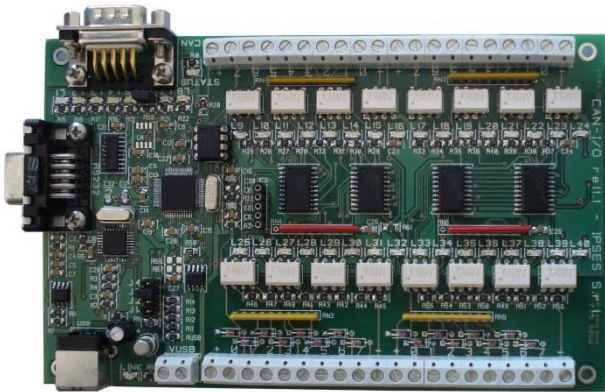
SerialLogger: RS232 interface standalone system for storing frames

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 to monitor and store data. Board is totally independent once set, 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.



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-I/O is placed in.

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

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SUPPORT INFORMATION

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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.

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.	

Product

Name	Version	Serial No.
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Report Type (bug, change request or technical problem)

Major bug	<input type="checkbox"/>	Urgency:	
Minor bug	<input type="checkbox"/>	High	<input type="checkbox"/>
Change request	<input type="checkbox"/>	Medium	<input type="checkbox"/>
Technical problem	<input type="checkbox"/>	Low	<input type="checkbox"/>

Problem Description

Reproduction of Problem

IPSES s.r.l. Action notes

Received by	Date	Report No.	Action
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(Product code CAN SNIFFER Rel. 01.00.0003)

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