Kvaser USBcan Light User's Guide



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https://www.kvaser.com

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1 About this manual

This manual is intended for Kvaser USBcan Light users. This document contains a description of the hardware's properties and general instructions for connecting the device to a computer.

2 Introduction

This section will describe the functions and features of the Kvaser USBcan Light.

2.1 Welcome to Kvaser USBcan Light



Figure 1: Kvaser USBcan Light

Kvaser USBcan Light is a reliable low cost product. With a time stamp precision of 100 microseconds it handles transmission and reception of standard and extended CAN messages on the bus. It is compatible with applications that use Kvaser's CANlib.

This guide applies to Kvaser USBcan Light devices listed in Table 1.

Device	Product Number
Kvaser USBcan Light 2xHS	73-30130-00714-7

Table 1: Kvaser USBcan Light devices and their EAN numbers.

2.2 Major features

- USB CAN interface.
- Quick and easy plug-and-play installation.
- Supports both 11-bit (CAN 2.0A) and 29-bit (CAN 2.0B active) identifiers.
- 100% compatible with applications written for other Kvaser CAN hardware with Kvaser CANlib.
- High-speed CAN connection (compliant with ISO 11898-2), up to 1 Mbit/s.
- Fully compatible with J1939, CANopen, NMEA 2000® and DeviceNet.
- Supports simultaneous usage of multiple Kvaser interfaces.

2.3 Additional software and documentation

The Kvaser CANlib SDK includes everything you need in order to develop software applications interacting with Kvaser CAN and LIN hardware. The SDK contains full documentation and many sample programs, written in C, C++, C#, Delphi, Python and Visual Basic. Kvaser CAN and LIN hardware is built around the same common software API. Applications developed using one device type will run without modification on other device types.

The latest versions of documentation, software and drivers can be downloaded for free at www.kvaser.com/download.

3 Kvaser USBcan Light hardware

In this section you can read more about the CAN channels, power supply and LED indicators.

3.1 Hardware installation

For the Kvaser USBcan Light to communicate with the host computer, a compatible version of the Kvaser driver and firmware must be installed.

After the driver has been installed on the host computer, the firmware may then be downloaded and installed on the Kvaser USBcan Light.

The latest version of the driver and firmware can be downloaded from www.kvaser.com/download.

The driver is installed by running the file `kvaser_drivers_setup.exe`.

The Kvaser USBcan Light may be inserted in any free USB socket on the host computer. You do not need to switch the power off before inserting or removing the device.

For information on how to upgrade the firmware, see Section 4.4, Updating the firmware, on Page 10.

3.2 USB connector

The Kvaser USBcan Light has a standard USB type "A" connector.

3.3 CAN channels

The Kvaser USBcan Light has two CAN Hi-Speed channels with 9-pin D-SUB CAN connectors (see Figure 2). See Section 4.2, CAN connectors, on Page 9 for pinout information.



Figure 2: CAN connectors on Kvaser USBcan Light 2xHS

3.4 Power supply

The Kvaser USBcan Light is powered from the USB port.

3.5 LED Indicators

The Kvaser USBcan Light has three LEDs as shown in Figure 3. Their functions are shown in Table 2.



Figure 3: LEDs on the Kvaser USBcan Light.

LED	Function	Description
PWR (Green)	Power	Steady light when unit is powered and working.
	USB configuration	Blinking once every three seconds when something is wrong with the USB connection.
	Firmware	2 Hz flash if something is wrong with the firmware or configuration.
CAN 1 (Yellow)	CAN RxTx	Status for CAN channel 1.
CAN 2 (Yellow)	CAN RxTx	Status for CAN channel 2.

Table 2: LEDs on the Kvaser USBcan Light.

3.6 Troubleshooting

Use "Kvaser Device Guide" in the Control Panel to verify that the computer can communicate with the Kvaser USBcan Light. If the firmware version shown is all zeros, there are communication problems. If the LEDs are not flashing or do not light up at all, check the power supply.

4 Appendices

In this section you will find technical information about the Kvaser USBcan Light and its connectors.

4.1 Technical data

In Table 3 below you will find the Kvaser USBcan Light's technical specifications.

CAN Channels	2
CAN Transceivers	TJA1051T (Compliant with ISO 11898-2)
CAN Controller	Built into the processor
Galvanic isolation	Yes
CAN Bit Rate	40 kbit/s to 1 Mbit/s
Time stamp resolution	100 µs
Max message rate	8000 msg/s per channel
Error Frame Detection	Yes
Error Frame Generation	No
Silent mode	No
Kvaser t programming	No
Kvaser CANtegrity	No
Host interface	USB Hi-Speed
Host OS	Windows (7 or later), Linux.
Power consumption	Typical 132 mA
Hardware configuration	Done by software (Plug & Play).
Dimensions	50 x 170 x 20 mm for body incl. strain relief
Weight	165 g
Operating temperature	–20 °C to +70 °C
Storage temperature	–40 °C to +85 °C
Relative humidity	0 % to 85 % (non-condensing.)

Table 3: Technical Specifications.

4.2 CAN connectors

Kvaser USBcan Light devices that use the 9-pin D-SUB connector (see Figure 4 on Page 10) have the pinning described in Table 4 on Page 10.

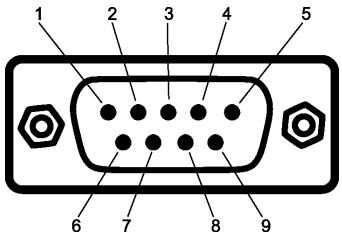

Figure 4: The D-SUB 9 connector pin numbers

D-SUB pin number	Function
1	Not connected
2	CAN_L
3	GND
4	Not connected
5	Shield
6	Not connected
7	CAN_H
8	Not connected
9	Not connected

Table 4: Configuration of the 9-pin D-SUB

4.3 CAN bus termination

Every CAN bus must be terminated with a 120 Ohm resistor at each end of the bus. The Kvaser USBcan Light does not contain any CAN bus termination, because their inclusion could cause severe disturbance in a system which is already correctly terminated.

For laboratory or testing use, the exact value of the termination resistors is not always critical. Sometimes a single terminator is sufficient. For production, proper termination is essential. If you see error frames on the bus, you should check the termination.



To save yourself a lot of trouble, always terminate the CAN bus properly.

4.4 Updating the firmware

For the Kvaser USBcan Light to communicate with the host computer, compatible versions of the Kvaser CANlib (including driver) and firmware must be installed.

The latest versions of firmware and drivers can be downloaded for free at www.kvaser.com/download.

Connect the Kvaser USBcan Light to your host computer with the USB cable. Start the update.exe application. A window opens where you should see the device listed if correctly connected to your host computer. Select the device to update and click the Next button. Read the Release Notes carefully.

Click on the Start Upgrade button to start programming. Programming takes approximately 30 s. The progress is displayed on the screen.

If you see any error messages, try to disconnect and reconnect the device, and then perform the operation again.

To verify that the firmware has been updated, open "Kvaser Device Guide" in Control Panel. Select "Kvaser USBcan Light" in the tree view to the left, and click on the channel. The firmware revision information appears in the right half of the window.

5 Safety Instructions

5.1 Intended Use

Kvaser interfaces are used to connect computer systems to CAN buses. The Kvaser USBcan Light is intended for connection to a computer via the USB port.

5.2 Usage Warning



WARNING FOR ALL USERS

WARNING! - YOUR USE OF THIS DEVICE MUST BE DONE WITH CAUTION AND A FULL UNDERSTANDING OF THE RISKS!

THIS WARNING IS PRESENTED TO INFORM YOU THAT THE OPERATION OF THIS DEVICE MAY BE DANGEROUS. YOUR ACTIONS CAN INFLUENCE THE BEHAVIOR OF A CAN-BASED DISTRIBUTED EMBEDDED SYSTEM, AND DEPENDING ON THE APPLICATION, THE CONSEQUENCES OF YOUR IMPROPER ACTIONS COULD CAUSE SERIOUS OPERATIONAL MALFUNCTION, LOSS OF INFORMATION, DAMAGE TO EQUIPMENT, AND PHYSICAL INJURY TO YOURSELF AND OTHERS. A POTENTIALLY HAZARDOUS OPERATING CONDITION IS PRESENT WHEN THE FOLLOWING TWO CONDITIONS ARE CONCURRENTLY TRUE: THE PRODUCT IS PHYSICALLY INTERCONNECTED TO A REAL DISTRIBUTED EMBEDDED SYSTEM; AND THE FUNCTIONS AND OPERATIONS OF THE REAL DISTRIBUTED EMBEDDED SYSTEM ARE CONTROLLABLE OR INFLUENCED BY THE USE OF THE CAN NETWORK. A POTENTIALLY HAZARDOUS OPERATING CONDITION MAY RESULT FROM THE ACTIVITY OR NON-ACTIVITY OF SOME DISTRIBUTED EMBEDDED SYSTEM FUNCTIONS AND OPERATIONS, WHICH MAY RESULT IN SERIOUS PHYSICAL HARM OR DEATH OR CAUSE DAMAGE TO EQUIPMENT, DEVICES, OR THE SURROUNDING ENVIRONMENT.

WITH THIS DEVICE, YOU MAY POTENTIALLY:

- CAUSE A CHANGE IN THE OPERATION OF THE SYSTEM, MODULE, DEVICE, CIRCUIT, OR OUTPUT.
- TURN ON OR ACTIVATE A MODULE, DEVICE, CIRCUIT, OUTPUT, OR FUNCTION.
- TURN OFF OR DEACTIVATE A MODULE, DEVICE, CIRCUIT, OUTPUT, OR FUNCTION.
- INHIBIT, TURN OFF, OR DEACTIVATE NORMAL OPERATION.
- MODIFY THE BEHAVIOR OF A DISTRIBUTED PRODUCT.
- ACTIVATE AN UNINTENDED OPERATION.
- PLACE THE SYSTEM, MODULE, DEVICE, CIRCUIT, OR OUTPUT INTO AN UNINTENDED MODE.

ONLY THOSE PERSONS WHO:
(A) ARE PROPERLY TRAINED AND QUALIFIED WITH RESPECT TO THE USE OF THE DEVICE,
(B) UNDERSTAND THE WARNINGS ABOVE, AND
(C) UNDERSTAND HOW THIS DEVICE INTERACTS WITH AND IMPACTS THE FUNCTION AND SAFETY OF OTHER PRODUCTS IN A DISTRIBUTED SYSTEM AND THE APPLICATION FOR WHICH THIS DEVICE WILL BE APPLIED, MAY USE THE DEVICE.

PLEASE NOTE THAT YOU CAN INTEGRATE THIS PRODUCT AS A SUBSYSTEM INTO HIGHER-LEVEL SYSTEMS. IN CASE YOU DO SO, KVASER AB HEREBY DECLARES THAT KVASER AB'S WARRANTY SHALL BE LIMITED TO THE CORRECTION OF DEFECTS, AND KVASER AB HEREBY EXPRESSLY DISCLAIMS ANY LIABILITY OVER AND ABOVE THE REFUNDING OF THE PRICE PAID FOR THIS DEVICE, SINCE KVASER AB DOES NOT HAVE ANY INFLUENCE ON THE IMPLEMENTATIONS OF THE HIGHER-LEVEL SYSTEM, WHICH MAY BE DEFECTIVE.

6 Disposal and Recycling Information



When this product reaches its end of life, please dispose of it according to your local environmental laws and guidelines.

For information about Kvaser's recycling programs, visit:
https://www.kvaser.com/en/kvaser/recycling-policy.html

7 Legal acknowledgements

7.1 EU Regulatory Compliance

KVASER **EU Declaration of Conformity (DoC)**

We

Company Name:	Kvaser AB	City:	Mölndal
Postal address:	Aminogatan 25	Telephone number:	+46 31 886344
Postcode:	431 53	E-mail address:	sales@kvaser.com

declare that the DoC is issued under our sole responsibility and belongs to the following product:

Product: Kvaser USBcan Light 2xHS

Object of the declaration (identification of apparatus allowing traceability):
Product: Kvaser USBcan Light 2xHS
Type: 73-30130-00714-7

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:
Electromagnetic Compatibility (EMC) Directive 2014/30/EU (Art. 6)

RoHS recast Directive 2011/65/EU (Art. 4.1)

The following harmonised standards and technical specifications have been applied
(title, date of standard/specification):

EN 55032 (2015 + A11:2020)

EN 55035 (2017 + A11:2020)

EN IEC 63000 (2018)

Signed for and on behalf of:

Mölndal	2025-01-10	
Place of issue	Date of issue	Kent Lennartsson, Research Manager

7.2 FCC Regulatory Compliance

KVASER

Federal Communications Commission (FCC) Compliance Information Statement

IDENTIFICATION OBJECT:
Product: Kvaser USBcan Light 2xHS
Type: 73-30130-00714-7

APPLICABLE COMPLIANCE STATEMENTS:
CFR Title 47 Part 15 §15.107, §15.109
This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.

RESPONSIBLE PARTY (IN USA) NAME:
Kvaser Inc.
23881 Via Fabricante, Suite 503
Mission Viejo, CA 92691

Internet contact: support@kvaser.com

7.3 Patents, Copyrights and Trademarks

All trademarks are the property of their respective owner. Windows is a registered trademark of Microsoft Corporation in the United States and other countries.

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DeviceNet is a trademark of Open DeviceNet Vendor Association, Inc.

NMEA 2000 is the registered trademark of the National Marine Electronics Association, Inc.

For information about Kvaser related CAN patents, see www.kvaser.com/patent.

8 Document Revision History

Version history for document UG_98159_usbcan_light:

Revision	Date	Changes
1.0	2014-04-23	Initial version.
1.1	2015-01-08	Minor update.
1.2	2015-08-11	Minor textual changes.
1.3	2016-02-04	Minor textual changes.
1.4	2017-01-09	Updated compliance text, added link to patents.
2.0	2017-08-25	Updated EU Declaration of Conformity.
2.1	2018-01-29	"Kvaser Device Guide" has replaced "Kvaser Hardware".
2.2	2018-05-07	Minor textual changes.
2.3	2018-08-28	Minor textual changes.
3.0	2018-10-15	Updated EU Regulatory Compliance.
4.0	2019-02-11	Windows Vista or later supported, minor textual changes.
4.1	2019-08-09	Url protocol updated.
4.2	2020-01-27	Added sdoc.
4.3	2020-08-19	Updated supported OS.
4.4	2022-04-01	Minor textual changes, added galvanic isolation info to Technical data table.
4.5	2023-02-13	Updated the Technical data table. Added section about intended use. Minor textual changes.
4.6	2024-03-15	Updated Kvaser logo.
4.7	2025-01-10	Updated EU Declaration of Conformity.