Kvaser Edge WL830S User's Guide



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https://www.kvaser.com

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We believe that the information contained herein was accurate in all respects at the time of printing. Kvaser AB cannot, however, assume any responsibility for errors or omissions in this text. Also note that the information in this document is subject to change without notice and should not be construed as a commitment by Kvaser AB.

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1 About this manual

This manual is intended for Kvaser Edge WL830S users. This document contains a description of the hardware's properties.

2 Introduction

This section will describe the functions and features of the Kvaser Edge WL830S.

2.1 Welcome to Kvaser Edge WL830S



Figure 1: Kvaser Edge WL830S

Kvaser Edge WL830S is a powerful, ruggedized, and compact data logger and computer with galvanically isolated channels. It is designed for use in data logging and processing missions at the edge.

This guide applies to Kvaser Edge WL830S devices using at least the Kvaser Edge OS (KEOS) version listed in Table 1. For minimum compatible KEOS version of Kvaser Edge WL830S see Table 2 on Page 12. For more information about KEOS, please refer to https://kvaser.com/keos/.

Device	Product Number	KEOS version
Kvaser Edge WL830S	73-30130-01738-2	TBD

Table 1: KEOS version needed to support all functionality present in this guide.

2.2 Major features

- Running the scalable and secure system platform Kvaser Edge OS (KEOS) for a remote and flexible user environment.
- Designed for effortless execution of data logging and processing missions at the edge.
- Powerful embedded ARM-based Linux computer with ”Secure Element”, NXP SE051C2 faciliating CRA compliance with target software applications.
- Cellular connectivity for supporting 5G world wide.
- Eight fully featured, time-synchronized, individually galvanically isolated CAN-FD channels utilizing Kvaser CAN-IP implemented in FPGA.
- WiFi6 and Gigabit Ethernet Interface enables remote connectivity.
- Ruggedized housing with IP67 ingress protection.
- Wired interfaces for durable flexible connections.
- Integrated positioning and inertial measurement units.
- Galvanic Isolated GPIO interfaces enables trigger-based logging.
- Separate galvanic isolated power supply with support of activiation by ignition signal.
- High-capacity battery ensures safe shutdown and supports intermediate operation.
- Multi-GNSS (Global Navigation Satellite System) support (GPS, Galileo, GLONASS) for enhanced positioning accuracy and reliability.

3 Kvaser Edge WL830S hardware

In this section you can read more about the User Interface, activation signal, digital I/O, GPS connection, IMU and CAN channels of Kvaser Edge WL830S.

3.1 Hardware installation

The Kvaser Edge WL830S may be mounted using M4 screws. Either secure the device with four screws through the two long sides of the housing, see Figure 2 and Figure 3 on Page 8, or use two screws on the back to mount it on a wall, see Figure 4 on Page 8 and Figure 5 on Page 9.

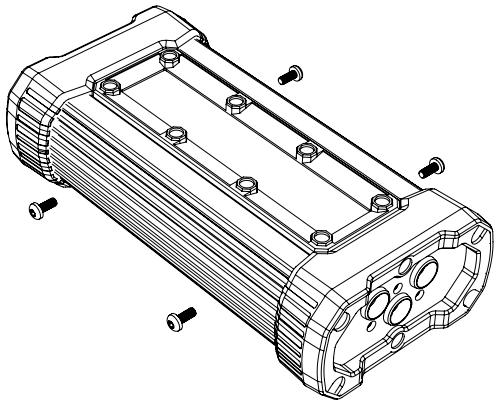


Figure 2: Mounting on the sides of the Kvaser Edge WL830S.

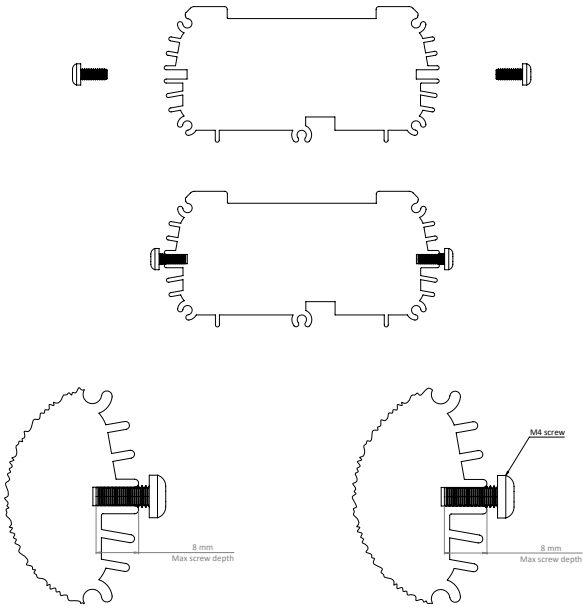


Figure 3: Mounting on the sides of the Kvaser Edge WL830S, as seen from the edge.

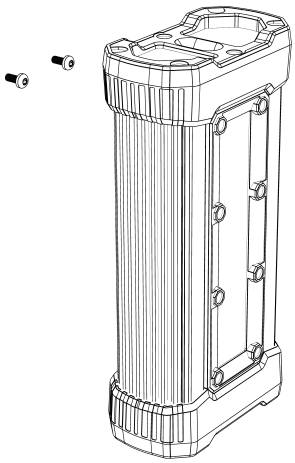


Figure 4: Mounting on the back of the Kvaser Edge WL830S.

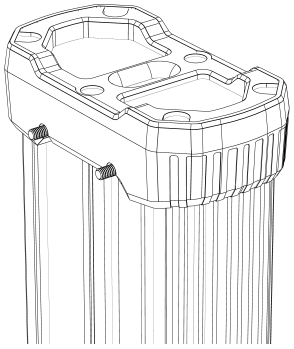


Figure 5: Mounting on the back of the Kvaser Edge WL830S, as seen when mounted on a wall.

3.2 USB connection

When connecting the Kvaser Edge WL830S to a computer via USB, it is recommended to limit the extension cable to maximum 1.0 m for optimal signal integrity and margin. Use only high-quality, fully compliant USB Type-C cables rated for USB 3.2 Gen 1 or higher. Avoid low-quality or uncertified cables, as excess insertion loss and impedance discontinuities may degrade performance.

3.3 Ethernet connection

The Kvaser Edge WL830S has two Ethernet ports with RJ45 connectors.

3.4 Cellular connectivity

The Kvaser Edge WL830S has one FAKRA connector for cellular connectivity, supporting 5G world wide.

3.5 User interface

The Kvaser Edge WL830S has thirteen LEDs and two buttons. One LED is used for indicating power, the other LEDs and buttons are user managed. For more information about the LED indicators and buttons, please refer to https://kvaser.com/keos-webhelp/latest/hw_spec/.

3.6 Activation signal

The activation signal enables the primary DC/DC converter. When this signal is low, the unit will remain off even if the power supply is present. Once KEOS has fully booted, the activation signal can be disconnected from the DC/DC converter.

In this state, the activation signal no longer affects the power supply. For more info about KEOS, please refer to https://kvaser.com/keos-webhelp/latest/.

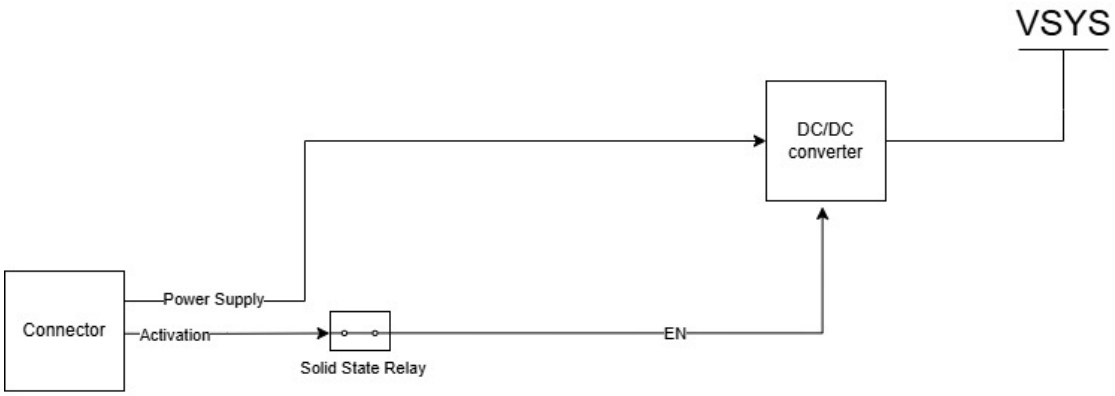


Figure 6: Activation signal on the Kvaser Edge WL830S.

3.7 Digital I/O

The Kvaser Edge WL830S provides an isolated external trigger output with a voltage range of 0 V to 5 V. It can sink up to 50 mA and includes built-in short-circuit protection. The output is protected against short circuits to both ground and 24 V.

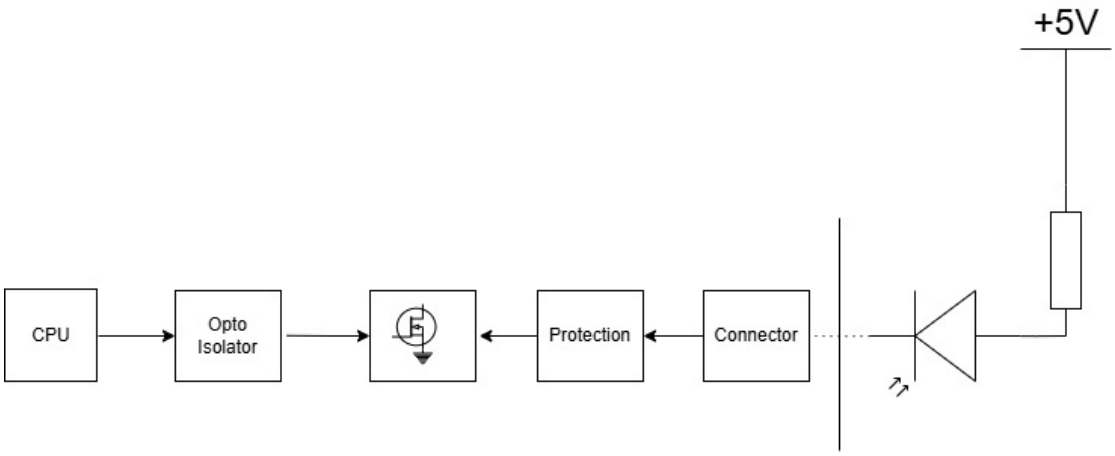


Figure 7: External trigger output on the Kvaser Edge WL830S.

The Kvaser Edge WL830S features two isolated trigger inputs.

- When configured for a falling edge, the trigger is activated when the external trigger input is connected to ground.
- When configured for a rising edge, the trigger is activated when the external trigger input is disconnected from ground.

The input voltage range is 0 V to 5 V, and both inputs are protected against short circuits to 24 V.

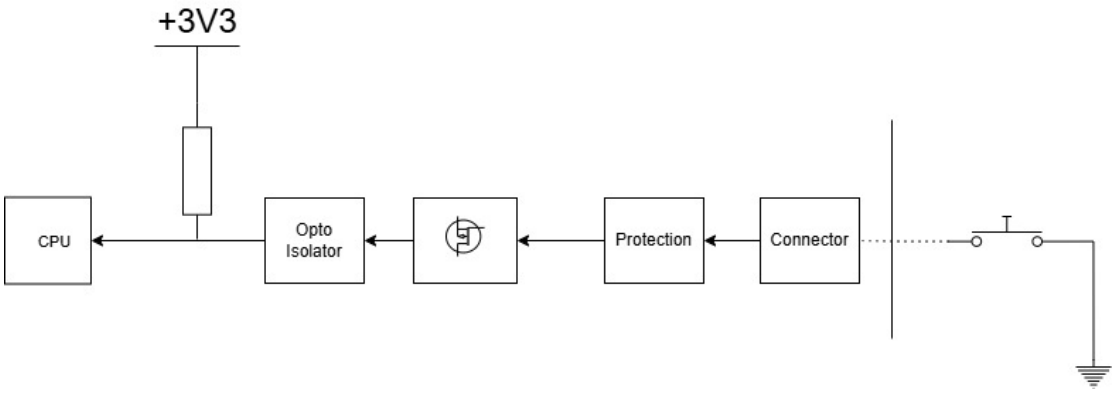


Figure 8: Trigger inputs on the Kvaser Edge WL830S.

3.8 GPS connection

The Kvaser Edge WL830S uses an external active antenna, connected via a Fakra connector. The antenna is powered through the RF pin.

Antenna Specifications:

- Female Fakra SMD socket connector (Code C)
- DC power input: 3.2 V
- Cable impedance: 50 Ω
- Gain: approximately 15 dB to 20 dB
- Supports L1/L5 frequency bands

3.9 IMU

The Kvaser Edge WL830S contains a 6-axis IMU (Inertial Measurement Unit) with an accelerometer and a gyroscope.

Available sampling frequencies for the accelerometer are 12.5, 26, 52, 104, 208, 416 and 833 Hz.

Available sampling frequencies for the gyroscope are 12.5, 26, 52, 104, 208, 416 and 833 Hz.

3.10 Updating KEOS

For information about how to update KEOS for Kvaser Edge WL830S, please refer to https://kvaser.com/keos-webhelp/latest/.

The absolute minimum KEOS version needed in order to use Kvaser Edge WL830S are listed in Table 2 on Page 12.

Device	Min. KEOS version
Kvaser Edge WL830S	TBD

Table 2: Minimum compatible KEOS version of Kvaser Edge WL830S.

3.11 Technical data

In Table 3 below you will find the Kvaser Edge WL830S's technical specifications.

Battery	Lithium-ion 18650
Battery capacity	10 Wh
Bluetooth	Supporting mode BLE 5.3
CAN	8 x CAN FD SIC Galvanic Isolated, HD26
CAN FD bitrate	Up to 8 Mbit/s
Ethernet	2x Gigabit Ethernet 1000BASE-T, RJ45 Socket
GPIO	4x Digital Input 2x Digital Output
Housing	Aluminum housing with plastic protective caps, approx. 200 x 110 x 58 mm, IP67
IMU *Acceleration sensitivity* *Angular rate sensitivity*	6-axis (accelerometer + gyroscope) *+-2g range 0.061 mg/LSB (Typical)* *+-125 dps range 4.375 mdps/LSB (Typical)*
Ingress Protection: Housing	IP67
Operating temperature	−40 °C to 50 °C Ambient. (If handheld use is not a requirement, the device can operate at ambient temperatures up to 70 °C.)
Operating system	Kvaser Edge OS (KEOS), a Linux-based OS
Positioning	Multi-GNSS (GPS, Galileo, GLONASS) with external active antenna via FAKRA connector (Key Code-C)
Power activiation	Galvanic Isolated
Power consumption	Up to 15 W in active mode. Standby mode, down to 200mW
Power Supply	9 - 36 V, DC Galvanic Isolated
Processor	Multicore processing Quad Cortex®-A53 up to 1.6 GHz with NPU, ARM Cortex M7
RAM	2GB LPDDR4
Regulatory Compliance	CE, FCC
Status display	12 Multicolor and user configurable LEDs, 1 Power LED and 2 user defined buttons
Storage	256 GB eMMC (embedded MultiMediaCard)
USB	USB 3.1 Host, Type-C (PD 400 mA)
Weight	TBD
WiFi	WiFi6 IEEE 802.11ax, Dual band, 2x2 MIMO (5GHz), Antenna Diversity, Integrated antennas
Relative humidity	0 % to 85 % (non-condensing.)
Cellular connectivity	Yes, 5G World wide

Table 3: Technical Specifications.

3.12 CAN Connectors

Kvaser Edge WL830S has two 26-pin HD D-SUB connector with four CAN channels each. Two Kvaser Edge Cable HD26-5xDB9

(https://kvaser.com/product/kvaser-edge-cable-hd26-5xdb9/) can be used to connect to the eight separate 9-pin D-SUB connectors representing each CAN channel and a fifth 9-pin D-SUB connector for power supply and trigger handling.

The pinouts for the 26-pin HD D-SUB connector are shown in Figure 9 and the pinout functions are described in Table 4.

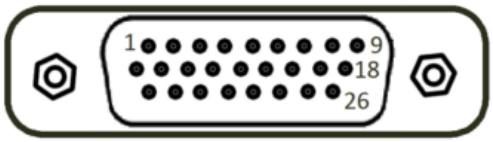


Figure 9: HD 26-pin D-SUB pinout.

HD D-SUB	Function
19	EXT_GND
1	TRIG IN 1
11	TRIG IN 2
6	TRIG OUT
8	ACTIVATION
10	EXT_POW
20	GND 1
2	CANL 1
12	CANH 1
21	GND 2
3	CANL 2
13	CANH 2
22	GND 3
4	CANL 3
14	CANH 3
23	GND 4
5	CANL 4
15	CANH 4
16	RESERVED
Shell	SHIELD

Table 4: Pin configuration of the 26-pin HD D-SUB

3.13 CAN bus termination

Every CAN bus must be terminated with a 120 Ohm resistor at each end of the bus. The Kvaser Edge WL830S 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 Troubleshooting

Please refer to https://kvaser.com/keos-webhelp/latest/ for troubleshooting information.

5 Safety Instructions

5.1 Intended Use

The Kvaser Edge WL830S is a laboratory equipment used to connect a computer system to CAN buses. It is intended for connection to a computer via the USB port, Ethernet port, cellular connectivity (5G world wide) or via WiFi.

5.2 Usage Warning



CAUTION: THE SURFACE OF THIS DEVICE MAY BECOME HOT IF IT IS EXPOSED TO FOR EXAMPLE RADIATION FROM THE SUN.



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.



THIS PRODUCT CONTAINS A RECHARGEABLE LI-ION BATTERY THAT MUST BE DISPOSED OF PROPERLY. IT MAY EXPLODE IF DAMAGED OR DISPOSED OF IN FIRE. DO NOT SHORT CIRCUIT.



THE OPERATING TEMPERATURE IS SET BY THE PRIMARY INTENDED USE CASE, AS LABORATORY EQUIPMENT WHERE THE OPERATING MODE CAN BE HANDHELD THE OPERATING TEMPERATURE IS –40 °C TO 50 °C AMBIENT. IF HANDHELD USE CAN BE EXCLUDED, THE HIGHER OPERATING TEMPERATURE CAN BE UP TO 70 °C.

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.

Dispose of batteries 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 Edge WL830S

Object of the declaration (identification of apparatus allowing traceability):
Product: Kvaser Edge WL830S
Type: 73-30130-01738-2

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:
Radio Equipment Directive (RED) 2014/53/EU (Art. 3.1a, 3.1b and 3.2)

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 301 489-1 (2019-11 (2.2.3))
EN 301 489-17 (2024-09 (3.3.1))
EN 55035 (2017 + A11:2020)
EN 61326-1 (2021)
EN 303 446-2 (2019)
EN 61010-1 (2010 + A1:2019)
ISO 7637-2 (2011)
EN IEC 63000 (2018)

Signed for and on behalf of:

Mölndal	2026-09-03	Martin Sventén, CEO
Place of issue	Date of issue	

7.2 FCC Regulatory Compliance

KVASER

Federal Communications Commission (FCC) Compliance Information Statement

IDENTIFICATION OBJECT:
Product: Kvaser Edge WL830S
Type: 73-30130-01738-2

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.
41650 Gardenbrook Road, Suite 130
Novi, MI 48375

Internet contact: support@kvaser.com

7.3 Patents, Copyrights and Trademarks

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Adobe, the Adobe logo, and Reader are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

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.

The products described in this document are protected by U.S. patent 5,696,911.

8 Document Revision History

Version history for document UG_98417_kvaser_edge_wl830s:

Revision	Date	Changes
1.0	2025-09-22	Initial version.
2.0	2026-09-04	Major content update.