VECTOR GL3400 Data Logger Instruction Manual

GL3400 Data Logger
Manual
Version 1.1

Contents

GL3400 Data Logger

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Introduction

In this chapter you find the following information:
1.1 About this User Manual
Conventions
In the two following charts you will find the conventions used in the user manual regarding utilized spellings and symbols.

Style	Utilization
bold	Blocks, surface elements, window- and dialog names of the soft- ware. Accentuation of warnings and advices. **[OK]** Push buttons in brackets **File Save** Notation for menus and menu entries
Source Code	File name and source code.
Hyperlink	Hyperlinks and references.
<CTRL>+<S>	Notation for shortcuts.

Symbol	Utilization
	This symbol calls your attention to warnings.
	Here you can obtain supplemental information.
	Here you can find additional information.
	Here is an example that has been prepared for you.
	Step-by-step instructions provide assistance at these points.
	Instructions on editing files are found at these points.
	This symbol warns you not to edit the specified file.

1.1.1 Warranty

Restriction of warranty

We reserve the right to change the contents of the documentation and the software without notice. Vector Informatics GmbH assumes no liability for correct contents or damages which are resulted from the usage of the documentation. We are grateful for references to mistakes or for suggestions for improvement to be able to offer you even more efficient products in the future.

1.1.2 Registered Trademarks

Registered trademarks

All trademarks mentioned in this documentation and if necessary third party registered are absolutely subject to the conditions of each valid label right and the rights of particular registered proprietor. All trademarks, trade names or company names are or can be trademarks or registered trademarks of their particular proprietors. All rights which are not expressly allowed are reserved. If an explicit label of trademarks, which are used in this documentation, fails, should not mean that a name is free of third party rights.

► Windows, Windows 7, Windows 8.1, Windows 10, Windows 11 are trademarks of the Microsoft Corporation.

1.2 Important Notes

1.2.1 Safety Instructions and Hazard Warnings

 **Caution!**

In order to avoid personal injuries and damage to property, you have to read and understand the following safety instructions and hazard warnings prior to installation and use of the loggers. Keep this documentation (manual) always near the logger.

1.2.1.1 Proper Use and Intended Purpose

Caution!

The loggers are measuring devices which are used in the automotive and commercial vehicles industries. The loggers are designed for gathering and recording data of the bus communication, for analyzing and possibly controlling electronic control units. This includes, inter alia, bus systems like CAN, LIN, MOST and Flex Ray.

The loggers may only be operated in a closed state. In particular, printed circuits must not be visible. The loggers may only be operated according to the instructions and descriptions of this manual. Only suitable accessories should be used, such as the original Vector accessories or accessories approved by Vector.

The loggers are exclusively designed for use by skilled personnel as its operation may result in serious personal injuries and damage to property. Therefore, only those persons may operate the loggers who (i) have understood

the possible effects of the actions which may be caused by the loggers; (ii) are specifically trained in the handling with the loggers, bus systems and the system intended to be influenced; and (iii) have sufficient experience in using the loggers safely. The logger specific information can be acquired via the specific manuals as well as from the Vector Knowledgebase at www.vector.com. Please consult the Vector Knowledgebase for updated information prior to the operation of the loggers. The knowledge necessary for the bus systems used, can be acquired in
workshops and internal or external seminars offered by Vector.

1.2.1.2 Hazards

Caution!

The loggers may control and/or otherwise influence the behavior of electronic control units. Serious hazards for life, body and property may arise, in particular, without limitation, by interventions in safety relevant systems (e.g. by deactivating or otherwise manipulating the engine management, steering, airbag and/or braking system) and/or if the loggers are operated in public areas (e.g. public traffic). Therefore, you must always ensure that the loggers are used in a safe manner. This includes, inter alia, the ability to put the system in which the loggers are used into a safe state at any time (e.g. by „emergency shutdown“), in particular, without limitation, in the event of errors or hazards.

Comply with all safety standards and public regulations which are relevant for the operation of the system. Before you operate the system in public areas, it should be tested on a site which is not accessible to the public and specifically prepared for performing test drives in order to reduce hazards.

1.2.2 Disclaimer

Caution!

Claims based on defects and liability claims against Vector are excluded to the extent damages or errors are caused by improper use of the loggers or use not according to its intended purpose. The same applies to damages or errors arising from insufficient training or lack of experience of personnel using the loggers.

1.2.3 Disposal of Vector Hardware

Please handle old devices responsibly and observe the environmental laws applicable in your country. Please dispose of the Vector hardware only at the designated places and not with the household waste.

Within the European Community, the Directive on Waste Electrical and Electronic Equipment (WEEE Directive) and the Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS Directive) apply.

For Germany and other EU countries, we offer free take-back of old Vector hardware. Please carefully check the Vector hardware to be disposed of before shipping.

Please remove all items that are not part of the original scope of delivery, e.g. storage media. The Vector hardware must also be free of licenses and must no longer contain any personal data. Vector does not perform any checks in this regard. Once the hardware has been shipped, it cannot be returned to you. By shipping the hardware to us, you have relinquished your rights to the hardware.

Before shipping, please register your old device via: https://www.vector.com/int/en/support-downloads/return-registration-for-the-disposal-of-vector-hardware/

GL3400 Logger

In this chapter you find the following information:

2.1 General Information

2.1.1 Scope of delivery

Included

- 1x GL3400 logger
- 1x Power supply socket with hoods and contacts
- 1x D-SUB plug set (2x 25 pin, 1x 50-pin)
- 1x Hard disk cartridge
- 1x Switch Box E2T2L (2 pushbuttons, 2 LEDs)
- 1x USB cable
- 1x DVD

– Vector Logger Suite
– Vector Logging Exporter

– G.i.N. Configuration Program
– Base version of Multi-Logger ML Server
– Manuals

2.1.2 Optional Accessories

Optional hardware and software

- ► LTE Router RV50X (external module)
- ► SSD (must be ordered from Vector)
- ► Disc Reader for fast readout of logging data from an SSD
- ► CCP/XCP license for CAN and Ethernet
- ► Online Transfer License for data transmission to ML Server
- ► License for Host CAM/F44 (logger-based or camera-based)
- ► vlogger Cloud as easy-to-use infrastructure for logging data in the cloud

Reference

 Information on available accessories can be found in the appendix in section Accessories on page 35.

2.2 Note for GL3000 Family Users

 **Caution!**

The GL3400 has the familiar D-SUB connectors for connecting CAN, LIN, analog and digital inputs. In contrast to the older GL3000 loggers, the power supply and KL15 are connected via the new power connector. Due to the additional connector as well as additional LIN channels and serial interfaces, there are occasionally different pin assignments.

If you want to use an existing GL3000 / GL3100 / GL3200 cable for the GL3400, please note that you may only connect the existing cable for the main connector
(D-SUB50) to the GL3400 under the following conditions:

- ► Pin 16 must not be connected to voltage (ignition/KL15).
- ► Pin 17 must not be connected to K-Line

Ignoring the different pin assignments may result in a defective GL3400.
The following table describes the different pin assignments of the main connector.
When using an existing GL3000 / GL3100 / GL3200 cable on the GL3400, unused connections must be disconnected.

Pin	GL3400	GL3000 Family
16	UART1 Tx	KL15
17	UART1 Rx	K-Line
22…29	Not applicable	CANx Vat, Can GND
47	LIN 6	CAN 9 High
48	LIN 6 Vbatt	CAN 9 Low
49	UART4 Tx	UART2 Tx
50	UART4 Rx	UART2 Rx

2.3 Overview

CAN FD/LIN data logger

The GL3400 is a data logger that logs communication of CAN, CAN FD, LIN channels as well as analog measurement values. The data is stored on a Solid State Disk(SSD).
The configuration of the logger is done with the Vector Logger Suite or the G.i.N.
Configuration Program. The installation is described in section Vector Logger Suite on page 31.

Figure 1: GL3400

Main features

The logger offers the following main features:

- 8x CAN FD channel
- 6x LIN channel
- 4x digital input
- 4x digital output
- 6x analog input
- 4x programmable key
- 1x OLED display
- 5x programmable LED
- 1x USB host connector
- 1x USB device connector
- 5x 1 Grit Ethernet, including managed switch for connecting external devices

2.4 Front Side

Device connectors

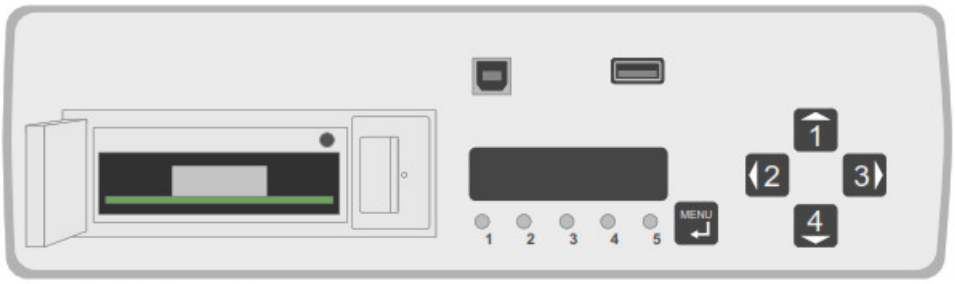


Figure 2: GL3400 front side

- Slot for removable SSD

The logger supports a removable SSD (512 GB or 1 TB, 2.5 inch SATA Solid State Disk) which is available as Vector accessory. The SSD is fixed on a cartridge. The SSD slot is located behind the front flap which can be unlocked and opened. For read out, an eSATAp port at the computer and an optional eSATAp connection cable are required. If no eSATAp port is available, you can use an USB-eSATAp adapter. The SSD can also be read out via logger's USB con- nector or via the Disc Reader which is available as accessory (high data rates).

Note

While the logger is switched on, the SSD must not be removed until the LED behind the flap is off. While the LED is red, it is not allowed to remove the SSD as the logger closes the log files and shuts down the operating system properly during this time.

Note

The SSD has to be FAT32 or exFAT formatted. exFAT is recommend as it is optimized for SSDs.

For a proper use of the SSD with exFAT format in the logger, it must be formatted with the Vector Logger Suite. After formatting, the SSD has the volume label “GINLOGHDDEX”. Please do not change the volume label, otherwise the SSD will not be recognized by the logger.
The total storage capacity of an exFAT formatted SSD is reduced to 90 %. The remaining 10 % are used for optimization of the write performance.
Please note that the exFAT formatted SSD cannot be used in the other loggers of the GL3000/GL4000 family.
In case of FAT32 format, the maximum cluster size of 64 Kbyte is recommended for optimum speed. When formatting manually, the volume label must be set to “GINLOGHDD”, otherwise the SSD will not be recognized by the logger.

► USB 1 (type B)

Use this connector to read out the inserted SSD or to write a new configuration via the computer. Therefore, the logger will be switched to USB mode. To switch into the USB mode, the logger must be connected to an external voltage supply.
The USB connection is not sufficient.
In Windows, the logger is shown as a USB drive (similar to USB hard disks). The Vector Logger Suite identifies the logger as device and displays additional information in Device Information.

Step by Step Procedure

If the logger is in logging mode, connect the logger with the computer as follows:

1. Check if the logger is already in logging mode. The display shows Record and the LEDs lit as configured.
2. First, connect the USB cable to the computer (USB connector type A).
3. Then, connect the USB cable with the USB device connector (USB connector type B) at the front panel.
4. Wait until the display shows Stop Rec and USB Mode. The LEDs show a running light from the right to the left.

If logging data is still written to the SSD, the waiting time will be extended respectively.
If you connect the logger via USB before rebooting, the logger switches to USB mode after about 40 seconds.

Note

Do not remove the SSD while the logger is in USB mode!

Step by Step Procedure

Please proceed as follows to disconnect USB:

1. In the Vector Logger Suite, open the module Logging Data and eject the logger with the menu from . Disconnect the logger from USB.
2. Then, disconnect the USB cable from the logger.
3. The logger will switch off. During this time, the display shows Shutdown.
4. In case of remaining bus traffic on the CAN busses, the logger awakes immediately.

► USB 2 (type A)

Reserved. Do not use.

► Keypads 1…4

The keypads can be used to navigate through the menu or individually configured, for example as trigger.

► Keypad MENU

Use this keypad to open the main menu or to accept (enter) a menu selection.
More information on the keypad functions can be found in section Navigation on page 42.

► LED 1…5

These LEDs offer a visual feedback for active measurements and can be individually configured.

► Display

The logger features a 3 x 16 characters OLED display for messages. The display is freely programmable and can be used for any text output, e. g. capital and small letters, numbers or some special characters.
It is also used to display the menu and commands (e. g. Update Dispatcher). More information can be found in section Commands on page 42.

2.5 Back Side

Device connectors

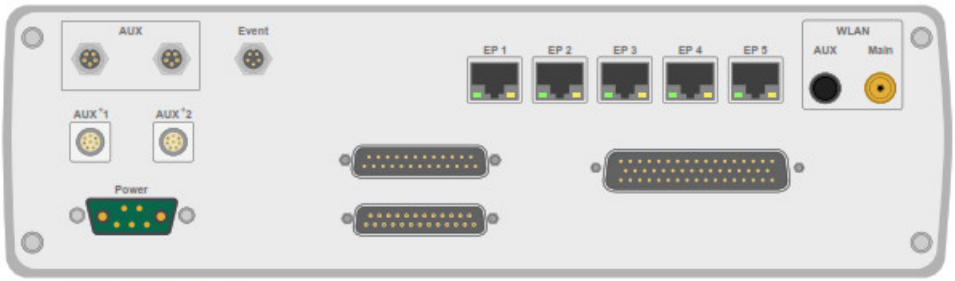


Figure 3: GL3400 back side

► AUX
The two 5-pin plug connections (Binder type 711) AUX are intended for the connection of the following logger accessories:
– LOGview (external display)
– Switch Box CAS1T3L (with one button, three LEDs and one sound)
– Switch Box CASM2T3L (with two buttons, three LEDs, one sound, and microphone for voice recording)
– VoCAN (for voice recording and output)
The pin assignment on the logger is as follows:

Pin	Description
1	+ 5 V
2	GND
3	CAN High
4	CAN Low
5	Vbat

Note
If additional devices are supplied through the AUX interface, the supply voltage of the logger must not exceed the supply voltage range of the connected additional device. High voltage will destroy the accessory.
The AUX connections are internally wired to CAN9 that is not accessible from the outside. This channel is always equipped with a high-speed transceiver without wake-up capability.
► Event
This connector is used for the Switch Box E2T2L, which is included in the scope of delivery. The buttons and the LEDs are freely programmable. The buttons can be used as manual trigger or event.

Figure 4: Switch Box E2T2

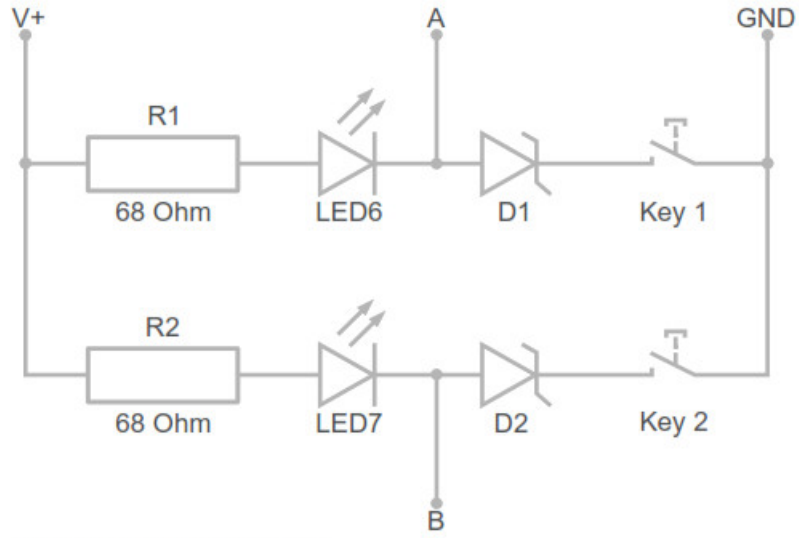


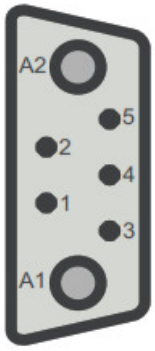
Figure 5: Switch Box E2T2L wiring

The pin assignment on the logger is as follows:

Pin	Description
1	Not connected
2	V+
3	A
4	B
5	GND

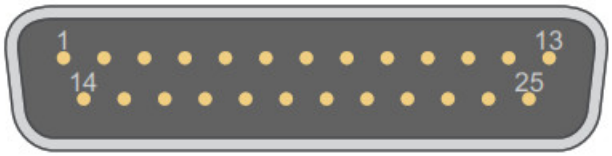
► **Ethernet EP1…EP5**
1 Gbit Ethernet ports to connect accessories like:
– Network cameras HostCAM and F44
– up to two VX modules
► **Power**
Power connector for voltage supply and KL15/ignition.

Pin	Name	Description
1	GND Sense	Reference ground for terminal 30 Sense.
2	KL30Sense	Measuring voltage for terminal 30 Sense.
3	KL15	Ignition, wakes the data logger, on clamp 15 (connected with Analog In 6).
4	–	Reserved.
5	–	Reserved.
A1	KL31 (GND)	Supplies the data logger, on terminal 31.
A2	KL30 (VCC)	Supplies the data logger, on terminal 30 (connected with Analog In 5).



The supplementary KL15 line (pin 3) can be used to wake up the data logger from sleep mode, in the same way a CAN message wakes up a wake-up capable transceiver on a bus.
If the data logger is powered via terminal 30 (VCC), KL15 can be connected to clamp 15 so the device is woken up immediately after switching on the ignition even if there is no activity on the wake-up-capable buses or if such buses are not yet connected. The applied voltage on this line can be queried using Analog In 6. When using longer cables to connect the data logger, the voltage drops off on the Terminal 30 and the GND line due to the operating current. As a result, a lower voltage than the actual wiring system voltage is measured with Analog In 5. To prevent this, the KL30Sense and GND Sense pins must be connected close to the wiring system voltage. Analog In 5 then measures the voltage at these pins.

Caution!
It is recommended to connect the logger to the same voltage supply (e. g. battery of the vehicle) as the vehicle or test equipment, respectively. If two different voltage supplies are used for the logger and the test equipment, the ground (GND) pins of the two voltage supplies must be connected.
► Analog inputs/UART2 (D-SUB25 male)
The pin assignment is as follows:

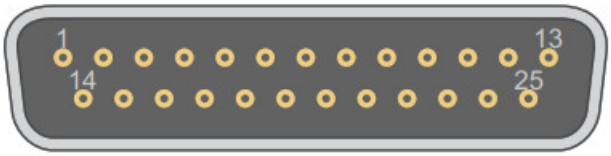


Pin	Assignment	Pin	Assignment
1	Analog In 7 +	14	Analog In 7 –
2	Analog In 8 +	15	Analog In 8 –
3	Analog In 9 +	16	Analog In 9 –
4	Analog In 10 +	17	Analog In 10 –
5	Analog In 11 +	18	Analog In 11 –
6	Analog In 12 +	19	Analog In 12 –
7	Analog In 13 +	20	Analog In 13 –
8	Analog In 14 +	21	Analog In 14 –
9	Reserved	22	Reserved
10	5 V (out)	23	UART2 Rx
11	UART2 Tx	24	Reserved
12	RS232LinuxTx	25	RS232LinuxRx
13	GND	–	–

Externally connected devices can be supplied with 5 V through pin 10. The voltage supply at this pin is switched off with a switch if the logger is in sleep mode or standby mode. This output can supply currents up to 1 A.
The Linux interface is not required in logging mode. It can be used for diagnosis of the data logger when specific errors occur. This requires a terminal or a computer with terminal emulation to be connected to this socket. The pin assignment for this connection is as follows:

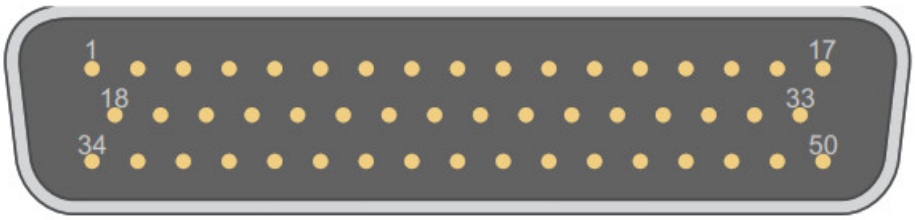
D-SUB9 (to computer) Pin	Assignment (Analog Plug)
2	RS232LinuxTx
3	RS232LinuxRx
5	GND

► Digital input/output (D-SUB25 female)
The pin assignment is as follows:



Pin	Assignment	Pin	Assignment
2	Digital Out 1	14	Digital In 1
3	Digital Out 2	15	Digital In 2
4	Digital Out 3	16	Digital In 3
5	Digital Out 4	17	Digital In 4
10	Reserved	23	Digital Out GND
11	Reserved	24	Digital Out GND
12	Reserved	–	–

A digital output can be used to operate e. g. external hardware.
The digital output pins use so-called low side switches, i. e., when an output is activated, it will be connected through to Digital Out GND. The load to be switched must therefore be connected between the respective Digital Out and the vehicle voltage.
The two Digital Out GND pins are connected to one another internally and are used to divert possible high currents that could flow in on the digital output.
For high currents, the ground Digital Out GND must be connected to the vehicle ground (GND at power plug).
► Main plug (D-SUB50 male)
The main plug offers several features. The pin assignment is as follows:



Pin	Assignment	Pin	Assignment
6	CAN 1 High	7	CAN 1 Low
8	CAN 2 High	9	CAN 2 Low
10	CAN 3 High	11	CAN 3 Low
12	CAN 4 High	13	CAN 4 Low
39	CAN 5 High	40	CAN 5 Low
41	CAN 6 High	42	CAN 6 Low
43	CAN 7 High	44	CAN 7 Low
45	CAN 8 High	46	CAN 8 Low

LIN 1…6

Pin	Assignment	Pin	Assignment
14	LIN 1	30	LIN 1 Vbatt
15	LIN 2	31	LIN 2 Vbatt
1	LIN 3	2	LIN 3 Vbatt
34	LIN 4	35	LIN 4 Vbatt
37	LIN 5	38	LIN 5 Vbatt
47	LIN 6	48	LIN 6 Vbatt

LIN frames can be recorded with the internal LIN channels. The sending of LIN frames is not supported on these channels. A LINprobe X is required for this purpose and is available as a logger accessory.
The LIN channels are supplied with maximum 12 V from the supply voltage of the data logger. If the reference voltage for a LIN channel is higher than 12 V, this voltage (e. g. 24 V) must be applied to the according LIN Vbat pins. In all other cases, the LIN Vbat pins are not connected. It is recommended to connect also GND as ground supply beside the LIN pins.

Analog input 1…4

Pin	Assignment	Pin	Assignment
18	Analog In 1	19	Analog In 2
20	Analog In 3	21	Analog In 4

GND

Pin	Assignment
3	GND Sense
4	GND
5	GND

The two GND pins 4/5 on the main plug and the GND pin on the analog plug are connected to one another internally. In case of increased current consumption and/or a small cable diameter, it is recommended connecting both pins.
If the cables to the logger are long, the voltage drops off on terminal KL30 line and the GND line due to the operating current. As a result, a minimally lower voltage than the actual wiring system voltage is measured with Analog In 5. To prevent this, the KL30Sense and GND Sense pins can be connected close to the wiring system voltage. Analog In 5 then measures the voltage at these pins.

UART 1, 3, 4

Pin	Assignment	Pin	Assignment
16	UART1 Tx	17	UART1 Rx
32	UART3 Tx	33	UART3 Rx
49	UART4 Tx	50	UART4 Rx

For recording and transmitting data, the serial interfaces of the logger can be used. The baud rate of the interface can be set. Received data can be stored as CAN messages. The serial interfaces cannot be used to load a configuration or to read out logging data.

Note

Please note that pins 16 and 17 of the GL3400 main connector have a different function than on the older GL3000 family. Ignoring the different pin assignments can lead to a defective device.

Pin	GL3400	GL3000 family
16	UART1 Tx	KL15
17	UART1 Rx	K-Line

2.6 Technical Data

CAN channels	8x CAN High-Speed/CAN FD – CAN: up to 1 Mbit/s – CAN FD: up to 5 Mbit/s – Wake-up capability
LIN channels	Max. 6 – Transceiver TJA1021 – Wake-up capability
Analog inputs	6x (single-ended) – Input 1…4: freely available – Input 5: connected with KL30 (VCC) (Pin A2 at power co nnector) – Input 6: connected with KL15 (Pin 3 at power connector) – Voltage range: 0 V … 32 V – Resolution input 1…4: 10 bit – Resolution input 5/6: 12 bit – Precision: 1 % ± 300 mV – Sampling rate: Max. 1 kHz – Type: Single-ended to GNDSense, uni- polar – Input resistance (to GND): 515.6 kOhm Reverse-polarity protection: None
Digital inputs	4x – Voltage range: 0 V … Vbat – Sampling rate: 1 kHz – Low level: < 2.3 V – High level: ≥ 3.1 V – State unwired input: Low (FALSE) – Input resistance: 100 kOhm
Digital outputs	4x – Voltage range: 0 V … Vbat – Load current: Max. 0.5 A (Short-circuit protection circuit: 0 V … 36 V) – Input resistance (on-resistance): 0.5 Ohm – Leakage current: 1 µA – Circuit time: 50 µs
USB	2.0
Ethernet	5x 1 Gbit interface
Extras	Real-time clock
Start-up time	Max. 40 ms
Battery	Lithium primary cell, CR 2/3 AA type Lithium primary cell, BR2 032 type
Power supply	7 V…50 V, typ. 12 V
Power consumption	Typ. 10.3 W @ 12 V Typ. 60 W @ 12 V (AUX+)
Current consumption	Operation: typ. 860 mA Sleep mode: < 2 mA Standby mode: 1 80 mA All data in each case with 12 V. At startup higher current consumption possible.

Temperature range	-40 °C…+70 °C
Dimensions (LxWxH)	Approx. 290 mm x 80 mm x 212 mm
Operating system requirements	Windows 10 (64 bit) Windows 11 (64 bit)

First Steps

In this chapter you find the following information:

3.1 Note for GL3000 Family Users

Note

Please be sure to observe the notes on cabling in section Note for GL3000 Family Users on page 13.

3.2 Switching the Logger On/Off

3.2.1 General Information

Logger start

After starting the logger, the full functionality is guaranteed. The following restrictions in the first few seconds are to be considered:

- ► No connection to the camera (HostCAM, F44)
- ► No mobile connection
- ► Saving to the SSD hard disk is not possible
- ► Monitoring mode with CANoe/CANalyzer not possible
- ► At most, two trigger events are possible for each ring buffer. After a second trigger event no further data can be recorded within this time, since copying from the triggered ring buffer to the SSD hard disk is not possible.
- ► For long time recording, the size of the ring buffer should be set to fit the recorded data.

3.2.2 Manual Switching

- ► The logger is switched on by applying the supply voltage.
- ► The logger is shut down and switched off by opening the front access panel.

After opening the front access panel, the display shows Door opened and then Stop Rec. During the following shutdown of the logger and the writing of the logging files from RAM to SSD, Shutdown is displayed. During all these steps a running light from right to left is displayed by the LEDs. If the display is off, the logger is shut down.

- ► The SSD can be removed after the red LED is off.
- ► Depending on the configuration, bus activity after the shutdown can wake up the logger immediately.

Note

The logger must not be switched off by disconnecting the voltage. By interrupting the voltage supply, files are closed and the operating system shuts down properly.

The logging data in the RAM gets lost.

3.2.3 Automatic Switching

Power management

For permanent use in vehicles, the loggers are permanently connected to the vehicle battery. Due to the sleep-/wake functionality, the logger will be switched on and off automatically by bus activity. This implements an effective power management with very quick start times without stressing the vehicle battery in idle times (e. g. during night).

Sleep mode

The logger can be configured to switch to sleep mode automatically if no CAN or LIN message was received within a defined time. This time can be defined in the configuration program (maximum 18,000 s = 5 hours). In sleep mode, LED2 flashes every 2 seconds. The sleep mode has a very low current consumption of less than 2 mA.

Wake-up

The logger wakes up from sleep mode:

- ► after reception of a CAN message
- ► after reception of a LIN message
- ► positive edge on the wake-up line (clamp 15)
- ► wake-up timer via real-time clock

After wake-up, messages will be recorded after maximum 40 Ms.

3.2.4 Behavior in Case of Power Failure

Power supply

In case of an unexpected power failure, the logger is able to close the file system of the SSD and shut down the operating system in an orderly manner. The logger has a short-term buffering of the supply for this purpose. However, this is not sufficient for saving the open ring buffers in the RAM.

If the power failure occurs too short after the logger start and therefore the buffer could not be fully charged, the orderly shutdown of the operating system is not guaranteed. In extreme case, this can cause damage to the operating system. The same applies to unstable power supply and frequent short-time power failures.

3.3 Vector Logger Suite

3.3.1 General Information

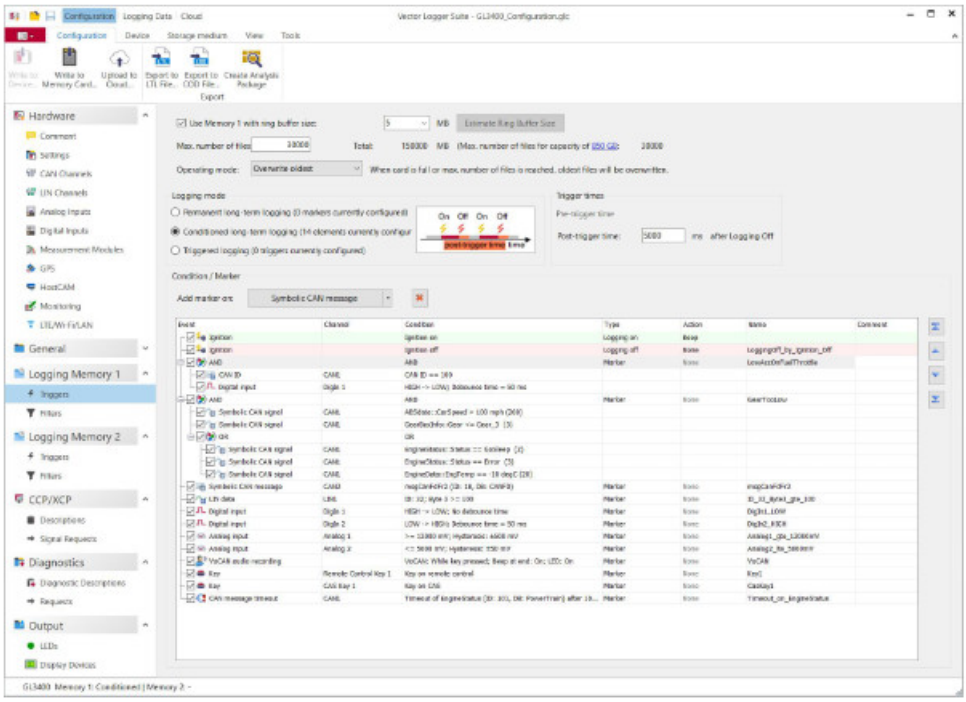
Overview

Vector Logger Suite enables the configuration of all loggers of the GL Logger family and offers a wide range of settings. You may set baud rates for CAN FD and LIN, define triggers and filters, set LEDs and manage logging files on the storage media.

Furthermore for the CAN bus diagnostics and CCP/XCP can be configured. For CCP/XCP the logger needs an installed license. For Seed & Key CANape is required. Vector Logger Suite also supports trigger and filter by symbolic names defined in CAN and LIN databases.

Main features are:

- ► Customizable filters for CAN FD and LIN messages
- ► Customizable triggers
- ► Support of CAN databases (DBC) and LIN databases (LDF)
- ► Support of AUTOSAR description files (ARXML), version 3.0 to 4.4
- ► Diagnostic support
- ► File management
- ► CCP/XCP (optional)



Requirements

The following software requirements must be fulfilled to run the Vector Logger Suite: Windows 10 (64 bit) or Windows 11 (64 bit)

Reference

The Vector Logger Suite is described in detail in the user manual of this configuration program. The user manual is available as PDF and can be opened via the Vector Logger Suite program group in the start menu.

3.3.2 Quick Start

3.3.2.1 Installation

Step by Step Procedure

The Vector Logger Suite can be installed as a 64 bit program as follows:

1. Execute the setup, which is found on the installation DVD: .\VLSuite\Setup_VLSuite_64Bit.exe.
2. Please, follow the instructions in the setup program to complete the installation.
3. After successful installation, the Vector Logger Suite can be found in the start menu (if selected during installation).
4. Also install the basic software e. g. for wireless transmission. The software can be found on the installation DVD under .\MLtools\setup.exe.

3.3.2.2 Configuring the Logger

Step by Step Procedure
Follow the instructions below to configure the logger with an SSD, start long-term logging and read out logging data.

1. Start the program.
2. Create a new project in the backstage via New Project…. In the displayed dialog, select the logger type.
3. Select suitable baud rates for CAN and/or LIN (Hardware | CAN Channels and/or Hardware | LIN Channels), respectively.
4. Select the timeout to sleep mode (value > 0) in Hardware | Settings.
5. Connect the logger via USB to your computer, power it up and wait until the display shows USB Mode.
6. Load the configuration via Configuration | Write to Device… on the connected logger.
7. Open the module Logging Data and eject the logger with the menu from . Disconnect the logger from USB.
8. Connect the logger e. g. to your test system (CAN bus). During the configuration update, the logger starts up first and displays approx. 30 s Record and afterwards approx. 30 s Update in progress. After a successful update Update finished is displayed for three seconds. As soon as Record is displayed again, the new configuration is active.

   Note

   During update, the logger must not be disconnected from the power supply.
   Please allow up to 5 minutes for extensive firmware updates (e. g. including Linux update).
9. The logger then starts the configuration and the data logging. LED1 flashes continuously (default setting for a new configuration, LED 1 configurable).
10. Open the module Logging Data.
11. Stop recording by connecting the logger to your computer via USB. Wait until the display shows USB Mode.
12. The data from the logger is automatically displayed if the Measurement Selection list was empty before. Otherwise click on Backstage and select the logger from the Attached Hardware list.
13. Click on Destination Format and select the file format (e. g. BLF logging file) and further settings.
14. Click on File Storage and select the target directory and further settings.
15. Click on Export to initiate the readout of the logging data and the automatic conversion to the selected file format. The files will be stored in a new subfolder (Destination Subdirectory) of the target directory.
16. Eject the logger with the menu from . Disconnect the logger from USB.

3.3.2.3 Setting the Real-Time Clock

Step by Step Procedure

The following example describes how to set the date and the time of the logger.
Before delivery the logger is set to CET.

1. Connect the logger via USB to your computer.
2. Start the logger (if it is not switched on yet) by supplying power. Wait until the display shows USB Mode. The logger must be switched on during the whole procedure.
3. Start the Vector Logger Suite. Make sure a configuration for GL3400 is active.
4. Select Device | Set Real-Time Clock…. The current computer system-time is displayed.
5. With [Set] the current computer system-time is set in the logger. The logger is then automatically ejected.

Appendix

In this chapter you find the following information:

4.1 Accessories

4.1.1 Cameras Host CAM and F44

Overview

The logger supports the logging of color pictures via the network cameras HostCAM (P1214_E) and F44. Therefore, the cameras must be connected to one of the Ethernet ports EP1 to EP5 on the back of the logger. The cameras can be configured directly in the Vector Logger Suite. For logging of the color pictures, a camera license must be installed either on the logger or the camera. Please note that the licenses cannot be transferred.
You can find further information on configuring and connecting the camera in the HostCAM/HostCAMF44 user manual.

Note

► The simultaneous operation of more than four HostCAMs or of more than four sensor units of the F44 camera is not recommended due to performance reasons.

► If multiple cameras are triggered simultaneously, the storage of recorded bus data to the SSD may be delayed during the image transmission. That may lead to a temporary impossibility to record any bus data.

► A Factory Reset at the HostCAM and F44 via web interface removes the camera license. Afterwards, the license has to be reinstalled. Please perform a Factory Reset (if required) by using the Hostname Setup from the Vector Logger Suite. A previously installed license file is retained.

4.1.2 Miscellaneous Accessories

► CANgps/CANgps 5 Hz for recording the vehicle position via GPS
► LINprobe as extension of the LIN channels
► VoCAN for voice recording and voice output (1 button, 4 LEDs and signal tone)
► CASM2T3L for voice recording (2 buttons, 3 LEDs and signal tone)
► CAS1T3L (1 button, 3 LEDs and signal tone)
► LOGview for displaying signal and status information
► VX1060 for read-out of ECU-internal signals via XCP on Ethernet
► CAN and ECAT measurement modules for advanced measurement technology

4.2 Miscellaneous Features

4.2.1 Beep

Speaker

The logger has a speaker that acoustically alerts the user e.g. in case of a trigger.
Triggers and beep can be defined using the configuration program.

4.2.2 Real-Time Clock and Battery

General information

The logger has an internal real-time clock, which is battery supplied, and thus continues running even if the logger is disconnected from power supply. The real-time clock inside the logger is required to store the date and time together with the logged data. It is recommended to set the real-time clock before first logging.

Primray cells

The logger has two Lithium primary cells:

► For supply of the real-time clock (type designation: BR2032). This battery has a typical durability of approximately 5 to 10 years under the following conditions:

– T = +40 °C … +80 °C for at most 40 hours per week
– T = -40 °C … +40 °C in the rest of the time
► For the maintaining of the classification data (type designation: CR 2/3 AA). This battery has a typical durability of approximately 4 to 7 years under the following conditions:
– T = +40 °C to +70 °C for at most 40 hours per week
– T = -40 °C to +40 °C in the rest of the time

Replacing battery

The batteries may only be replaced by Vector Informatic GmbH. For more information, please contact the Vector Support.

4.3 System Messages

System start

System Messages	Duration	Description
Welcome to GL3400 Header Revision HI.LO hh:mm:ss dd: mm: yyyy	1 s	Information about revision and time/d- ate.
Welcome to GL3400 Header Revision HI.LO Dispatcher Version HI.LO	1 s	Information about revision and dispatcher firmware.

System update

System Messages	Duration	Description
Update in progress: 1/14 Keep device powered on!	_	Update of firmware, configuration, Linux files etc. (step 1 of 14).
Update finished	3 s	Update successful.

Events

System Messages	Duration	Description
~ Door Opened!	500 ms	Protective cover opened.
~ Door Closed!	500 ms	Protective cover closed.
~ Leaving Menu Mode	2 s	The menu mode was exited by pressing left or by the m enu item “Exit Menu”.
~ Device Shutdown now	2 s	Linux CPU finished the shutdown process. The device e nters to sleep mode.
~ Waiting for Logger	2 s	Dispatcher waits for a shutdown message from logger C PU before switching to sleep mode.
~ Reboot Device	2 s	Logger reboots instead of switching to sleep mode.
~ Linux CPU started	2 s	Linux CPU is ready.
~ Logger CPU started	2 s	Logger CPU is ready.
~ Wakeup from CAN1	2 s	Display the wakeup source sent from the logger CPU. T he following wakeup sources are known: – CAN1 … CAN8 – LIN1 … LIN6 – AUX
~ Wakeup from 2 Sources CAN1 CAN 2	2 s	Display the wakeup source sent from the logger CPU w hen multiple sources actively wakeup the system simult aneously.
~ Power Cycle requested	2 s	Logger requested power cycle of logger/prolonger volta ge.
~ Linux Version too old!	500 ms eve ry 5 s	Linux version is too old that it causes compatibility probl ems.
~ ADC is not working!	2 s	Dispatcher does not get any new ADC values anymore and tries a recovery, otherwise it goes to sleep mode.
~ Restarted Display	2 s	Display is reinitialized after an error has been detected.
~ SSD not usable	2 s	Linux has requested a system shut- down because the SSD is not functioning.

Events

System Messages	Duration	Description
~ Fallback COD broken!	2 s	Linux has requested system shutdown because the fall back COD is not useable
~ Config Inconsistency!	2 s	Linux has requested system shutdown because the CO D is corrupt or incompatible.
~ Infrastructure Error!	2 s	Linux has requested system shutdown due to an unexp ected error.
~ Linux Error (generic)!	2 s	Linux has requested system shutdown because the Lin ux software is defect.
~ Logger not reachable!	2 s	Linux has requested system shutdown because it doesn’t reach the logger (no response within 25 s).
~AUX turned Off by Fuse	2 s then eve ry 5 s	AUX/AUX+ error during this run, AUX supply is switched off.
~Press Menu+1 to ignore	2 s then eve ry 5 s	Note on how to ignore the AUX error message.
~ AUX Error on AUX/AUX+ X!	2 s	Fuse on AUX+/AUX connector has dis- connected the li ne. Connected devices are not supplied anymore!
~ Timeout Linux	5 s	Received no messages for 1 minute from the Linux CPU . Either comedication is defective or the CPU no longer r esponds. The device enters to sleep mode.
~ Timeout Logger	5 s	Received no messages for 50 s from the logger CPU. Ei ther communication is defective or the CPU no longer re sponds. The device enters to sleep mode.
~ No Linux Watchdog 15 s	500 ms eve ry 1 s	At least 3 watchdog messages were not received from t he Linux CPU.
~SleepMed Mismatch	2 s	Logger reports wakeup from different sleep mode than anticipated, data loss of the first frames.

Text messages

System Messages	Duration	Description
Hold Menu Button and press Button 3 to enter Menu Menu	5 s	Note for how to enter the menu mode.
Vin < 6V! Device will Shutdown!	10 s	Device enters to sleep mode because supply voltage is too low.
Vin > 52V! Device will Shutdown!	10 s	Device enters to sleep mode because supply voltage is too high.
Started without SSD, going back to SleepMed	5 s	Device started without inserted SSD and enters to the sleep mode.
Wakeup without SSD, going back to SleepMed	5 s	Device woke up without inserted SSD and enters to sleep mode.
Media removed without permission!	10 s	The hard disk was removed while the device was running (glowing LED) or during an uncompleted Power Fail . Power Fail: Short period of bypassing power supply with built-in buffering.
Menu Mode Timeout No Input for 20 s Leaving Menu Mode	5 s	The menu mode is exited if no keypress is detected for 20 s.
Started with Open Door Entering SleepMed		Device was started with opened protective cover and enters to sleep mode.
Power On Again! Device will restart		If the power supply is re-established during a Power Fail, the device restarts automatically. The start of the Power- Fail process is not shown on the display but it is signaled with a flashing LED1.
Pin correct! Restarting with Linux Barebow Countdown!!	2 s every 5 s	The dispatcher reboots the device when the correct pin is entered. Linux starts in the barebow countdown mode .
Rebooting with Barebow Countdown! Do not unplug!	5 s	Is started by the user and ended via RTSYS reset or after 200 s.
Shutdown Requested Switch to SleepMed Do not remove SSD!	10 s	Shutdown was requested via the menu.
Record	–	Configuration is executed.
Stop Rec	–	Configuration is stopped.
Save XX%	–	Configuration is stopped. The progress of saving the data is shown (if data > 100 KB).

Text messages

System Messages	Duration	Description
Shutdown	–	Logger enters to sleep mode.

Wake-up events

System Messages	Duration	Description
~ Wakeup Reboot	5 s	Wakeup of the device via Linux reboot.
~ Wakeup from KL15	5 s	Wakeup of the device via KL15.
~ Wakeup from rising KL15	5 s	Wakeup of the device via Kl15 status change.
~ Wakeup from Sleeper	5 s	Wakeup of the device via bus activity.
~ Wakeup from RTC	5 s	Wakeup of the device via the real-time clock set by LTL.
~ Wakeup from Door	5 s	Wakeup of the device via closing the protective cover.
~Restart after Timeout	5 s	Logger restarts after logger shutdown timeout switched i t off.

4.4 Menu Navigation and Commands

4.4.1 Navigation

The following table describes the keypad functions.

Keypad	Description
	The **[menu]** key, in combination with key **[3]**, opens the main menu. Keep the **[menu]**key pressed and then press key **[3]**.
	This key is used to accept a menu selection.
	Navigation keys, PIN input: Allow navigating the menus. Only the nu mbers 1, 2, 3 and 4 are avail- able for entering the PIN, with the corre sponding keys. The system created PIN has 4 digits and is randomly created every time. Specific settings can be secured by the user with a personal PIN (up to 12 digits).
	Key **[1]** and **[4]** allow navigating up- or downwards in the menu tree. The keys have a “repeat func- tion”; this means that a longer keypres s activates the key multiple times, as long as it is pressed.
	Key **[2]** and **[3]** allow navigating horizontally through the menu.
	Forward key: One step forwards in the menu (one layer deeper in th e menu structure).
	Back key, Exit key: One step backwards in the menu with every keyp ress (one layer higher in the menu structure). One long keypress exit s the menu. If no key is pressed for 20 seconds, the menu will be exit ed automatically.

4.4.2 Commands

In order to support navigation in the menu, the following characters are shown (at the beginning or end of a line):

Character	Description
	Additional menu item above/below
	Topmost/lowermost menu item
	Submenu (one layer deeper)
	Enter key needed to initiate action (e. g. shutdown logger)
	Menu selection in editing mode

Menu Command	Description
Exit Menu	Exits the menu
Shutdown Logger	Device enters sleep mode
Wakeup Logger	Wakeup the device
System Info	Information about the whole system
yyyy-mm-dd Thh: mm: ss	System Info | Timezone1: none/±xx:xx
Timezone1: none/±xx: xx	Displays the data logger time zone. “none” if it is not set.
Hardware	Information about the built-in hardware
Sternum	Serial number of the device
Carname	Current vehicle name of the device is shown with the enter key
MAC1	MAC address of the logger CPU
MAC2	MAC address of the Linux CPU
MAC3	Reserved
CAN1-8	Sub menu shows the order of designation.
LIN3-6	Sub menu shows the order of designation.

Software	Information regarding the installed software
AUX in Sleep- mode is ON/OFF	If activated, Vbat is supplied to the AUX-/“AUX+“ sockets in sleep mode. This is needed to supply add-on devices like GLX427 in sleep mode (fast wake-up of GLX427). **Note:** Providing Vbat during sleep mode requires approx. 10 mA at 12V.
Comp. Time	Compiling time of the installed configuration
Comp. Date	Compiling date of the installed configuration
Comp. Time zone	Time zone of the installed configuration. “none” if it is not set.
COD size	Size of the installed configuration in MB
COD ver.	Currently used COD version
Dips:	Currently used Dispatcher version
FW Info’s	Sub menu with detailed firmware information of the device
Environment	Environmental conditions of the device (system temperature and internal voltages)
Licenses	Installed licenses on the device
Show Error Log	Display of all recently occurred errors (up to 255 entries)
Show event Log	Display of all recently events (up to 127 entries)
Watchdog Status	Display the current watchdog counter (50s and 60s for Linux)
Settings	
AUX in SleepMed ON/OFF	Provision of Vbat to the AUX-/“AUX+“ sockets during sleep mode can be activated or deactivated.
AUX Fuse Reset	Resets the fuses of the AUX-“AUX+“ connectors
Linux Maintenance	Reserved
Advanced Services	
Update Dispatcher	Leads to pin input for dispatcher update. The pin is “1234”.

Menu Command	Description
Full Reconfiguration	Reserved
Set Time/Date	Sets system date and system time in the logger
IP Settings	Set/change IP address

Note
All menu functions (e. g. Update Dispatcher) are not usable during a logger update process (firmware update, configuration, Linux files etc.). It is recommended to set the date and time with the Vector Logger Suite.

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Documents / Resources

	VECTOR GL3400 Data Logger [pdf] Instruction Manual GL3400 Data Logger, GL3400, Data Logger, Logger

References

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