GL Logger Family

The professional data loggers for test fleets
Versatility

**GL Family Approach**

**GL1000 Family**
- 2 CAN, 2 LIN and I/Os
- GL1010 as waterproof IP65 variant
- Very compact housing

**GL2000 Family**
- **NEW:** GL2400 with **4 CAN FD**
- 4 CAN, 2 LIN and I/Os
- Wireless data transfer via 4G
- GL2010 as waterproof IP65 variant

**GL3000/GL4000 Family**
- 9 CAN, 2 LIN, 2 FlexRay, 1 MOST150 and I/Os
- 2 independent logging memories for separate configuration
- High storage capacities on CF card, SSD
- Wireless data transfer via Wi-Fi, 4G

**GL5000 Family**
- **!!  NEW  !!**
- Up to 24 CAN, thereof up to **12 CAN FD**, 6 LIN, 2 FlexRay, 1 MOST150 and I/Os
- 2 independent logging memories for separate configuration
- High storage capacities on SSD
- Wireless data transfer via Wi-Fi, 4G
Versatility

Various Data Sources: Vehicle Networks & ECU Access

Vehicle Networks:
Access to ECU communication
- Messages & signals in vehicle
- CAN, LIN, FlexRay, MOST

Vehicle Diagnostics:
Access to series ECUs
- ECU identification data, measurement values & fault memory (DTCs)
- UDS, KWP2000, OBD II

CCP/XCP:
Development access to ECU
- Firmware variables
- Measured signals
- On CAN, FlexRay, Ethernet
- VX module & POD
- DAQ or polling mode
- Seed & Key

Various ECU Ports:
Proprietary debug ports of ECUs
- RS232
- Ethernet
Versatility

Various Data Sources: Vehicle Environment & Operator Input

**GPS:**
Register vehicle location synchronously to measurement

**Physical Measurement:**
Access to ECU environment
- Analog measurements
- Temperatures, pressure, voltage, ...
- CSM Measurement modules over CAN or Ethernet

**Camera:**
Capture environment visually
- Actions of driver or instruments, outside environment
- Configurable resolution, compressed images, ...

**Various Accessories:**
Easy operation by test drivers
- Remote control, display
- Voice recording
Vector Logger Configurator

Easy-to-use graphical configuration program

Import databases

- DBC
- LDF
- XML
- A2L
- CDD
- ODX
- MDX

Export logged data

- BLF
- ASC
- MDF
- TXT
- MAT
- HDF
- ADTF

Download configuration COD

Upload logged files COD

CAN/CAN FD, LIN, FlexRay, MOST150
Configure the logger with the suitable mode for your logging use case:

1. **Permanent long-term logging**: Record all data directly after start of the test drive until the end

   - Wake-up
   - Marker
   - M1
   - M2
   - M3
   - M2
   - Marker
   - Sleep

2. **Conditioned long-term logging**: Record data between Start and Stop conditions

   - Start
   - Marker
   - M1
   - M2
   - Stop
   - Start
   - M3
   - Stop
   - Start
   - M3
   - M2
   - M1
   - Stop

3. **Triggered logging**: Record data of a trigger event with pre- and post-trigger time

   - Trigger A
   - Trigger B
   - Trigger A
   - Trigger C

   **pre-trigger time**
   **post-trigger time**

... and use filters for further data reduction → **optimal for long-term logging**
Configure Power Management: Sleep vs. Standby

- Managing power consumption where the logger is directly connected to the vehicle battery
- Two power saving modes – sleep & standby
- Bus idle
  - Enter sleep mode $\rightarrow$ $<1$ mA
  - Enter standby mode $\rightarrow$ $>1$ mA but $<<$ normal operation
- Automatic wake on bus activity or ignition
  - From sleep: Wake-up time 20-200 ms
  - From standby: No message lost
Tool Chain
Configuration Programs

**Vector Logger Configurator**
- **Graphical** user interface
- Easy and comfortable configuration
- Comfortable File Manager
- CDD/ODX support for Diagnostics
- A2L support for CCP/XCP

**G.i.N. Configuration Program**
- Freely **programmable** in LTL (Log Task Language)
- Extended configuration possibilities tailored to specific needs
- Extensive filters and triggers
- Classification, Drive Recorder, Gateway
- ...
Comfortable analysis with the Vector tools CANoe/CANalyzer and CANape/vSignalizer or 3rd party tools

- CAN data
- GPS position
- Camera images
- Trigger events
- Voice notes
- Data Mining
- Offline Classifications
Logging Functions

Bus Systems

- **Wakeup-on-CAN**
- **Switchable Output/ACK**
- **Logging of CAN Error frames (with ECC)**
- **CAN FD** (GL2400, GL5000)

- **Wakeup-on-LIN**
- **Additional LIN channels via LINprobe**
- **Logging of LIN errors**

- **Wakeup-on-FlexRay**
- **Logging data from**
  - A + B of one cluster (with XCP on FlexRay)
  - 2 independent channels

- **Optional MOST150 expansion GLA150**
- **Configurable logging of Status events, Control message events, MDP, MEP**

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**CAN**
- DBC
- ARXML

**FlexRay**
- FIBEX 2.0, 3.0, 3.1
- ARXML 2.0, 3.1

**MOST**
- LDF

**GL1000** 2..12
**GL2000** 2..12
**GL3000** 2..16
**GL4000** 2..16
**GL5000** 1
**GL2000** 2..16
**GL3000** 1
**GL4000** 1
**GL5000** 6..16
**GL3000** 2..16
**GL4000** 2..16
**GL5000** 1
**GL5000** 1
**GL5000** 1
**GL5000** 1
Triggers and markers* on:
- Symbolic messages and signals
- CAN and LIN identifier, FlexRay slot, raw data
- CAN and LIN message timeout
- CAN bus statistics (bus load, error frames)
- CCP/XCP and diagnostic signal
- Analog and digital inputs
- Ignition
- Keys and panel keys
- VoCAN voice recording*

* For GL2000/GL3000/GL4000/GL5000

Trigger types:
- Trigger (standard)
- Single-shot trigger → trigger set only once
- End measurement → stops logging afterwards

Conditions:
- Combination via AND & OR
- Beneath AND conditions, OR conditions can be used in a second level.
  e.g. (Speed > 128) AND (Gear <= 3) AND (Status == 2 OR Status == 3)
Logging Functions

Additional Features

- Data reduction via Filters
- Data compression (GL3000+)

- Analog inputs
- Digital inputs / outputs

- Transmit CAN messages
- Gateway functionality

<table>
<thead>
<tr>
<th>GL1000</th>
<th>GL2000</th>
<th>GL3000</th>
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<th>GL5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>On board</td>
<td>4</td>
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Additional Data Sources

Diagnostics, OBD II, Trigger on DTC

- Gather additional information via diagnostic ECU access
- Either with diagnostic description or via OBD II
- Trigger on DTC: React to selected error conditions
Additional Data Sources

**ECU Measurement via CCP/XCP, optionally with VX Modules and POD**

- Recording additional internal ECU measurement data via CCP/XCP
- XCP on Ethernet allows for a much higher data rate than XCP on vehicle buses
- VX module and POD: allow to record internal ECU data without load on vehicle buses
Overview

Readout and conversion of logged data:

- File Manager displays logged files from logger or memory card
- Fast data read-out from memory card in card reader or directly via USB
- Data storage on PC as:
  - CLF raw logged file format.
  - CLF and ZIP archive as general format for later conversions
- Data conversion to various file formats
  - Message oriented: BLF, ASC, MDF4, ADTF, TXT, RAW
  - Signal oriented: MDF, MAT, HDF5, TXT
  - MOST150: IMG
Marker and Navigator: Use Case

- Easily find relevant events in the recorded data based on markers
- Quickly export relevant sections of data based on markers or time spans

(Available for GL2000/GL3000/GL4000/GL5000)
Wireless Data Exchange

- Upload logging data with automatic conversion to desired format and automatic update of a new configuration
- Built-in Wireless LAN Option available with GL3000/GL4000/GL5000
- Robust external solution available for 4G/LTE for GL2000 and above
Remote Access

4G/LTE Connectivity Solution – Sierra Wireless RV50X Industrial Gateway

**AirLink® RV50 Industrial LTE Gateway**

**Industrial Grade, LTE-Advanced Performance, Low Power**

**In-vehicle 4G/LTE solution:**
- Ruggedized, industrial grade form factor for in-vehicle environments
  - IP64 ingress rating
  - Designed specifically for commercial/industrial/engineering applications
- LTE-Advanced support
  - 21 frequency bands / dual SIM support
- Very low power consumption
- Ethernet port connectivity
- Secure communication features
  - Multiple VPN support to backend systems
- Remote configuration features
- Vector: Authorized Reseller/Distributor
Remote Access

Vector Logger Cloud: Data Solution for GL2000 and above

- Efficient test fleet operation now additionally available with the Vector Logger Cloud
  - Remote access to data from vehicles on test drive
  - Shared data between fleet operator, test engineers and developers
  - Remote configuration of the loggers
- Fleet management
- Easy setup – no infrastructure, no maintenance, no interference with IT department
- High security standard
Vector Logger Cloud

- Data center locations in the following regions:
  - USA (Buffalo), Germany (Frankfurt), Japan (Tokyo)
- Customer-specific data location policy
  - e.g. Europe only
- Operated by certified partners
For more information about Vector and our products please visit

www.vector.com

Presenter:
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