XYLON QUATTRO
Data Logger and HIL System

RECORD + PLAYBACK + ANALYSIS

L5 Autonomy Ready!

XYLON®

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Data Logger & HIL System

OVERTAKING THE FUTURE

XYLON

The new and future-proof XYLON QUATTRO® Data Logger and HIL System brings an unprecedented and L5 autonomy ready feature set! It enables centrally timestamped recording of today's and future-expected high-end automotive sensors, such as 32MP automotive video cameras, as well as data playback in advanced open- and closed-loop HIL simulations using road recordings and synthetically generated data.

XYLON QUATTRO Key Features

- ✔ 128 Gbps (16 GB/s) sustained logging and playback data bandwidth
- ✔ Up to 128 TB data storage capacity
- ✔ 60+ direct automotive interfaces – industry's best connectivity
- ✔ 2x 100 GbE HIL ports for advanced simulations
- ✔ Open & customizable software architecture

The XYLON QUATTRO differentiator is a unique programmable hardware engine that enables custom hardware acceleration implemented at the FPGA chip level. To add even more flexibility, Xylon has added a complete x86-based PC to offer new possibilities in data logging and HIL playback, AI triggering and filtering, automated scripted testing, etc. Open software architecture enables user customizations and modularity, e.g. high-speed sensors emulation and support for existing and emerging protocols and services management (SOME/IP, DoIP, DDS etc.).

DATA PROCESSING

FPGA HW Engine, PC SoM and Open SW Architecture – high performance and flexible customizations

11th Gen Intel® Core™ processor with an integrated GPU

AMD® FPGA-based HW engine enables high performance and chip-level customizations

128 Gbps (16 GB/s) sustained logging and playback bandwidth

Up to 128 TB of storage capacity (4x NVMe SSD, exFAT, off-the-shelf, TCG OPAL 2.0 encryption)

Central hardware timestamping with under 100 ns precision

Time synchronization using GPS or PTP/gPTP

Configurable and fixed I/O slots enable flexible vehicle interfacing:

- up to 16 video channels   - up to 1 low-profile PCI GPU card

- up to 16 Ethernet channels   - 1x 100 GbE expansion port

- up to 20 automotive I/O channels   - 3x USB 3.2, 2x USB4

- up to 2 100 GbE HIL ports   - 1x audio in/out

Integrated 5G/WiFi/GPS modules enable remote test fleet management

Open software architecture with software scripting, emerging protocols and services management (SOME/IP, DoIP, DDS...)

VIDEO & RADAR & LIDAR

4 video slots enable direct interfacing with up to 16 different cameras

Input and output support allows recording, playback and bypass e.g. video TAP

Camera configuration channel tunneling; I2C, GPIO

Video resolutions up to 32 MP

Raw interfaces: TI FPD-Link III, ADI GMSL1 and GMSL2, HDMI, Aurora over LVDS, emerging LVDS*

Backwards compatible with the existing logiRECORDER video I/O modules

Cameras can be initialized and powered-up either by ECUs or by XYLON QUATTRO

User scripts for custom camera and LVDS SerDes initializations

Video and metadata from the imager packed in ROS or MDF4 format

Recorded video and metadata can be played back directly from the unit

On request Xylon can develop an I/O board for any missing interface

RADARs and LIDARs with LVDS interface can be supported

16 reference cameras with HW accelerated GigE Vision, RTSP with compression support

Contact us for more details

NETWORKS & INTERFACES

Great possibilities of combining different automotive interfaces

4 slots enable up to 16 Ethernet and Automotive Ethernet channels (10M/100M/1G/2.5G/10G)

Currently supported I/O modules: 4x port 1000BASE-T, 100BASE-T1, 1000BASE-T1

HW-based TAP support allows low latency connection of ECU and sensor

PCI slot (low profile) supports either 2x 100 GbE HIL ports or 1x GPU card

8x CAN HS/FD

4x FlexRay

1x CAN OBD

6x digital I/Os

3x analog inputs

4x configurable I/O slots for two-channel: CAN FD, HS and LS, LIN, UART

Time synchronization using PPS via external GPS device or PTP(IEEE1588-2008) or gPTP (IEEE802.1AS-2011)

Data is stored in PCAP, ASC or MDF4 file format

Recorded data can be played back directly from the unit

Integrated 5G/WiFi/GPS module enables remote test fleet management

OTHER

Designed and validated for use in test cars in harsh environments

12 VDC and 24 VDC nominal operating voltage in the 6-36 VDC range

Operates on a car battery and a lab power source

Robust and protected power supply controlled by a microcontroller; graceful shutdown, etc.

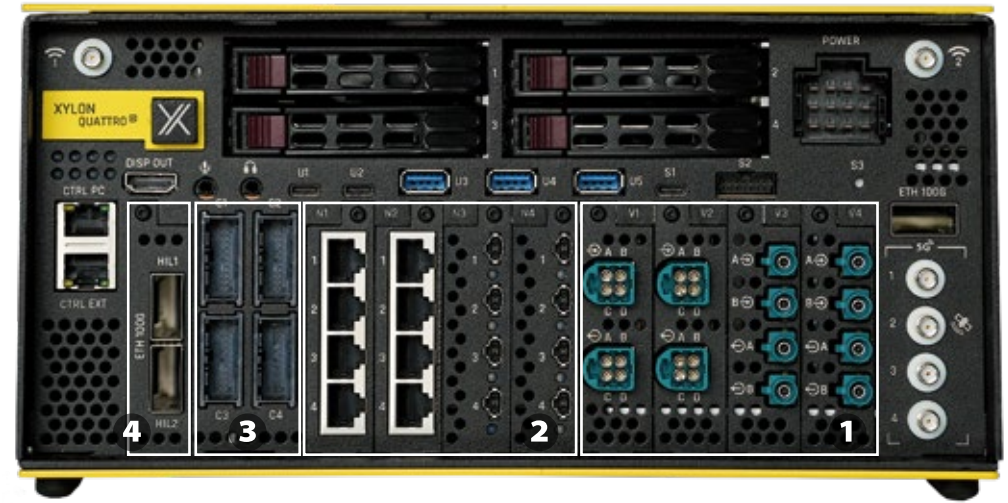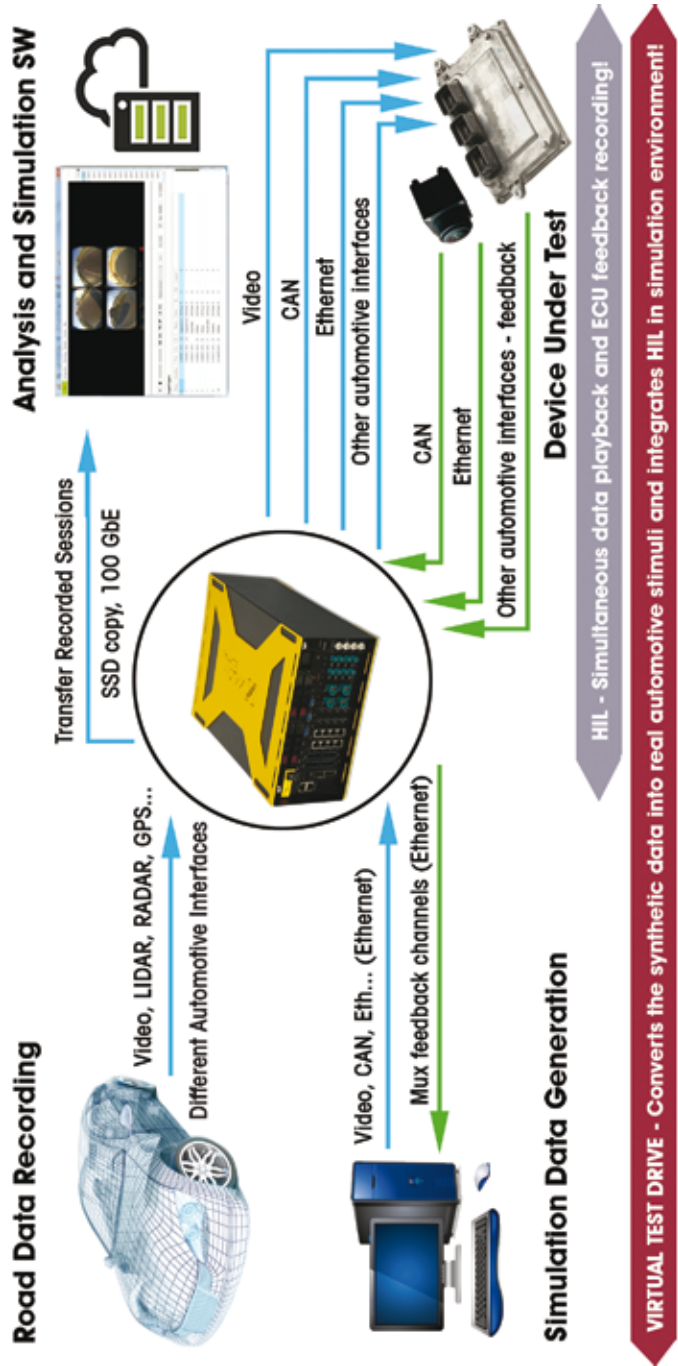Low power consumption enables comfortable work when powered-by the UPS

Well suited for use in electrical cars

Actively cooled, silent and robust housing

Dimensions (W x L x H): 280 x 370 x 133 mm, 3U Height

Temperature range: -20 to 60°C

TECH SPECS

### Analysis and Simulation SW

- Transfer Recorded Sessions
- SSD copy, 100 GbE
- Video
- CAN
- Ethernet
- Other automotive interfaces

Device Under Test

- CAN
- Ethernet
- Other automotive interfaces - feedback

HIL - Simultaneous data playback and ECU feedback recording!

VIRTUAL TEST DRIVE - Converts the synthetic data into real automotive stimuli and integrates HIL in simulation environment!

Road Data Recording

- Video, LIDAR, RADAR, GPS...
- Different Automotive Interfaces

Simulation Data Generation

- Video, CAN, Eth... (Ethernet)
- Mux feedback channels (Ethernet)

User-Definable Interfaces:

1. 4x video slots for up to 16 video channels via different I/O modules

2. 4x slots for up to 16 Ethernet and Automotive Ethernet channels

3. 20x automotive networks in different combinations

4. 1x PCI slot with inserted 2x 100 GbE HIL network cards (option)

XYLON QUATTRO is backward compatible with the existing logiRECORDER video I/O modules.

Select the right I/O modules and modify XYLON QUATTRO to perfectly suit your project needs – no external adapter boxes required!

Xylon offers customizations, and can quickly design new I/O modules to tune XYLON QUATTRO for your current and future projects.

SOFTWARE STACK AND HIL PLUG-INS
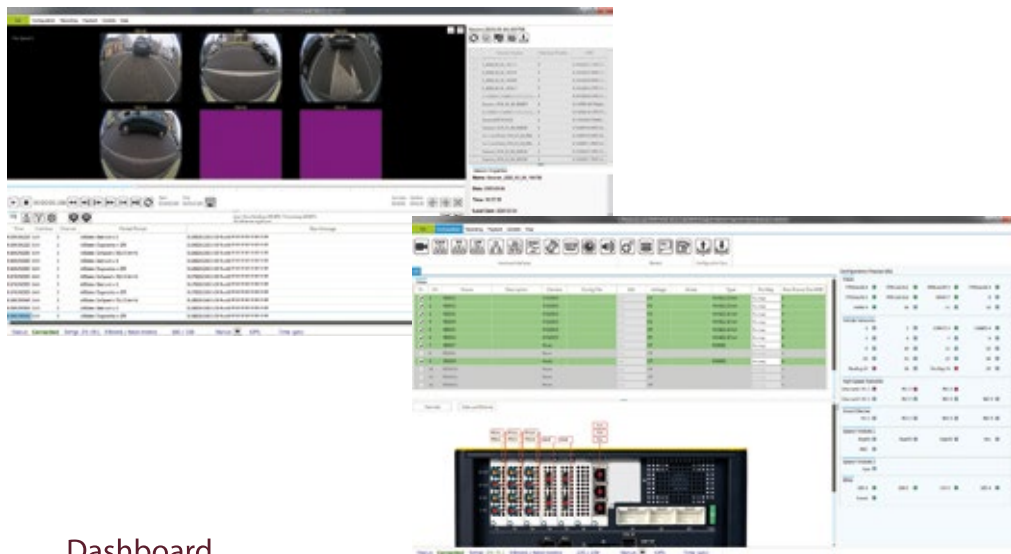
Dashboard

Intuitive PC application enables configuration, setup of advanced triggers and filters for continuous and event-triggered recordings, parallel playback of video and network data, recorded data manipulation and offline analysis. The dashboard enables remote controls through Wi-Fi and 4G mobile networks.

Software Development Kit (SDK)

Microsoft® .NET Core based SDK enables cross-platform custom applications developments: log file analysis and file format conversions, CLI control scripts, live video and network data streaming, and more.

TAPI Parser and Validator

Enabled through collaboration with an industry leading provider of vision technology, this software allows for thorough testing and validation of smart cameras for ADAS and automated driving.

HIL Plug-Ins

Xylon collaborates with the most prominent experts in driving simulation software to enable closed-loop HIL with synthetic data. In order to convert simulated data into real ECU stimuli, and vice-versa, Xylon has developed SW plug-ins for different simulation platforms.