Serdes Logging Adapter (SLA)
SLA-4C-GMSL

User Instructions Manual

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Terms and Acronyms

Term/Acronym	Definition
AB	Adapter-Board
CPU	Central Processing Unit
CSI	Camera Serial Interface
DLM	Data Logger Module
ECU	Electronic Control Unit
EEA	European Economic Area
ESD	Electrostatic Discharge
FPD-Link	Texas Instruments Flat Panel Display Link
FPGA	Field-Programmable Gate Array
GMSL	Maxim Gigabit Multimedia Serial Link
HIL	Hardware In The Loop
IP v4	Internet Protocol version 4
LED	Light-Emitting Diode
MIPI	Mobile Industry Processor Interface
MIPI CSI-2	MIPI Camera Serial Interface 2
MPO/MTP	Multi-fiber Termination Push-on
MTA	Mess-Technik-Adapter (Measurement Equipment Adapter)
PoC	Power over Coax
PTP	Precision Time Protocol
QSFP+	Quad Small Form-factor Pluggable (40Gb/s capable)
RX	Receiver
SerDes	De-/serializer pair of blocks: hardware for serial/parallel intercommunication
SFP+	Small Form-factor Pluggable (10Gb/s capable)
SLA	SerDes Logging Adapter
STP	Shielded Twisted Pair
TI	Texas Instruments
TX	Transmitter
WEEE	Waste of Electrical and Electronic Equipment

1 Introduction

1.1 General Information

The SerDes Logging Adapter (SLA) is part of a measurement equipment infrastructure for test vehicles with MIPI CSI-2 based sensor ECU systems. This manual contains important advice, notes, and information about the SLA. Read this manual carefully. It helps avoiding accidents, reduces repair costs and extends the operating time of the SLA.

1.2 Further products

Product	Description
SLA-1C-GMSL	1 Channel Maxim GMSL2 up to 6 Gb/s, Coax
SLA-1S-GMSL	1 Channel Maxim GMSL2 up to 6 Gb/s, Shield Twisted Pair (STP)
SLA-4C-GMSL	4 Channel Maxim GMSL2 up to 6 Gb/s, Coax
SLA-4C-FPD	4 Channel Texas Instruments FPD-link-III up to 4.16 Gb/s, Coax
AB-ADCAM-MID	Debug-Board for ADCAM-MID application
SLA-DCDC-30W	Galvanic isolated power source

1.3 Available manuals

- User Instructions Manual
- Technical datasheet
- User Reference Manual

1.4 Pictograms

The following pictograms are used in the following to highlight important information related to the safe operation and handling of the SLA:

Warning

This pictogram combined with the word “Warning” warns of a potentially imminent danger to the health and lives of people.
Ignoring this warning could cause serious personal injury, including death in the worst case.

Caution

This pictogram combined with the word “Caution” warns of a potentially dangerous situation or an unsafe procedure.
Ignoring this warning could result in injury of people or property and environmental damage.

2 Safety Notes

2.1 General safety instructions

Damage due to overvoltage

Application of overvoltage may cause destruction of the device.

Caution

- Only apply the voltage to the device as specified in the data sheet

Damage or malfunction due to electrostatic discharge

Electrostatic discharge may cause damage the device.

Caution

- Operate the device only in ESD-compliant environment
- Make sure to ground yourself before touching the device
- Do not touch connectors
- Observe section 5

Damage or malfunction due to unauthorized opening

Unauthorized opening of the device may cause abnormal behavior or destruction of the device.

Caution

- Do not open the housing in any case
- Contact the manufacturer if repair is required

Safety and functional defects due to incorrect accessories and spare parts

Accessories or spare parts that are not recommended by AED Vantage GmbH may have adverse effects on the safety and functionality of the device.

Caution

- Do only use and connect original accessories and spare parts that are recommended by AED Vantage GmbH

Damage or malfunction due to incorrect connection

Incorrect connection of cables may cause abnormal behavior or destruction of the device.

Caution

- Do only connect cables according to the specification
- Do only apply the signals and voltages to inputs and outputs as specified in section 4 and data sheet

Damage or malfunction due to short circuit

Wrong connected or defect cables may cause a short circuit which may cause abnormal behavior or destruction of the device.

Caution

- Make sure that the cable insulation and plugs of the cables and the device are intact and the cables are correctly mounted
- Observe section 4

Damage or malfunction due to overheating

Overheating may cause abnormal behavior or destruction of the device.

Caution

- Operate the device only within the specified temperature range and ensure proper ventilation
- Do not cover the device during operation
- Do not operate the device close to heat sources
- Observe section 5

Hot Surfaces

The surfaces of the device may have elevated temperatures during operation

Warning

- Avoid touching the housing during operation

Damage or malfunction due to shocks

Excessive mechanical shocks and vibration may cause abnormal behavior or destruction of the device.

Caution

- Do not expose the device to excessive mechanical shocks and vibration during transport, operation and storage

Damage or malfunction due to penetration of dust, moisture or liquids

Dust, moisture or liquids inside the device may cause abnormal behavior or destruction of the device.

Caution

- Transport, store and operate the device in a clean environment
- Only clean the device in de-energized status
- Do not use wet wipes near plugs or openings in the housing
- Observe section 5

Damage or malfunction due to pollution

Any contamination may affect the functionality of the device

Caution

- Transport, store and operate the device in a clean environment

Overcurrent when using Power-over-Coax (PoC)

Malfunction or damage of device possible

Caution

- Limit the current for PoC to the max. specified current of the SLA (e.g. by current limitation in the ECU)

Grounding issues / Ground loops

Malfunction or damage of device possible

Caution

- Use galvanically isolated power supply for the SLA to avoid any grounding issues
- Observe section 3.2

LASER class 1M

MPO connectors inside the Data Link port (see section 4.2) contain a LASER class 1M.

Warning

- Do not view directly into the module with optical instruments, as this may be harmful for the eyes

2.2 Product liability

Manufacturer liability for damage caused by using the device is excluded.

If the device is not strictly used in the intended way then the liability is transferred to the user.

The following cases are examples for not intended usage:

- The device is used in series production cars.
- The device is not used according to the user manual or according to the described scope.
- Modifications are done to the device without permission of AED Vantage GmbH.
- Installation instructions of the device are not fulfilled.

2.3 Terms of use

The device is designed to be used for engineering purpose only. Special care has to be taken during operation of the device. Installation in series production cars is not scope of this product.

The usage of the SLA must apply to all of the described installation instructions (User Instructions Manual).

All safety requirements have to be fulfilled by the overall system in the car excluding the device. Users of cars equipped with the device have to be instructed about possible risks (for example communication interruption) and proper handling of the SLA.

2.4 Warranty

Warranty period is limited to 12 months as this device is likely to be used under rough conditions.

Excluded are damages due to improper installation, improper handling, modification of the product or usage of the product not according to the described scope or not according to the manual.

Manufacturers liability for damage caused by using the device is excluded.

3 Intended use and integration into system

The SLA and Adapter Boards can be installed in test-vehicles for recording of the sensor and debug port data. In this use case the sensor data will be forwarded to the ECU and simultaneously sent to the DLM for logging purposes. Debug data from ECU interfaces will be handled by the Adapter Board and recorded through the SLA.

In laboratory environment, typically the reinjection mode is used (e.g. in HIL environment). The formerly recorded data will be sent to the SLA from a server and sent to the ECU. Debug data from ECU interfaces will be handled by the Adapter Board and can be recorded through the SLA or reinjected towards the ECU.

3.1 Important notices

- Use the SLA only as a measurement probe for electrical high speed busses, especially SerDes links
- Users must be qualified in electronic or electrical engineering.
- Users must be qualified for using measurement instrumentation.
- The SLA is for industrial environments only. No use in domestic environments.
- The SLA is for test vehicles only (no use in series vehicles).
- No liability for any failures caused by the product to the functionality of the ECU and other vehicle functionality. Risk analysis needs to be done by the user for operation in vehicles on public roads.
- In case of variant SLA-1C-GMSL, SLA-4C-GMSL and SLA-4C-FPD:
  PoC over-current protection needs to be taken care of in ECU.
- Do not use in a safety related system or signal path.
- Do not use in hazardous areas.
- Do not use in wet locations or in areas where moisture or condensation can be expected.
- Do not use the device in outdoor locations.
- Use the SLA according to its technical specifications.
- Use a regulated power supply or car battery and observe the technical specifications of the SLA. AED Vantage GmbH recommends the use of isolating DC/DC converters between power input of the SLA and power supply (e.g. AED DC/DC converter: SLA-DCDC-30W).
- Do not open, modify or repair the SLA. Otherwise operational safety cannot be guaranteed.
- Repairs are only carried out by AED Vantage GmbH.
- Avoid ground-loops through the device in a measurement system.
- The SLA must remain switched off for at least 10 seconds before it can be switched on again.

3.2 Additional notices to electrical Grounding issues

- The coax cables between cameras, SLAs and ECUs have a common ground connection by the nature of the application's sensor to ECU connection. For this reason, the SLAs power supply must be galvanically isolated from the ECUs power supply. Otherwise physical damage to the ECU and/or SLA devices is likely to be observed as well as a degradation of the sensor signal quality.
- AED recommends using the SLA-DCDC-30W isolated DC/DC converter for the power supply of every individual SLA to avoid misfunction or damage of SLAs, sensors, or ECUs because of ground loops.
- It is the responsibility of the customer to avoid ground loops. AED will not take liability for any damages or malfunction caused by grounding issues.

4 Installation and Operation

4.1 Identification

A laser engraved nameplate on the bottom of the SLA contains the following information:

Figure 4-1 Nameplate of the SLA

- P/N: Device type and version
- S/N: Serial number
- Rev: Hardware Revision
- (DD/MM/YY): Date of production
- Input: Max. current consumption @ nominal supply voltage
- CE Conformity of standards for product sold within the EEA
- Warning of hot surface
- Read operators manual
- Electronic device according to WEEE

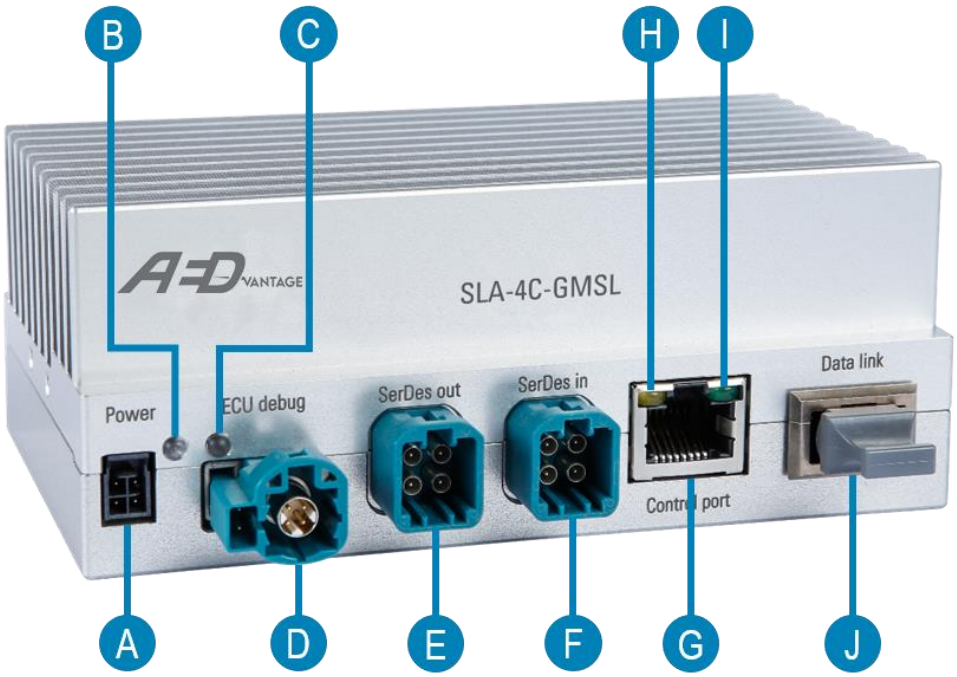
By contacting our support always provide device type, revision and serial number.

The interface parameters are configurable and not part of the nameplate. For detailed information about the interface configuration see section 6.

4.2 Connections and controls

This section provides an overview of the physical interfaces of the SLA. The following pictures provide an overview of the front side interfaces and their positions.

Front Side

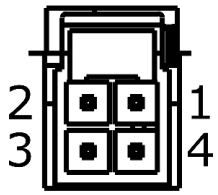


A	Power: • Power Supply voltage 12 V nom. • 2 Wake-up inputs • Connector type Molex Nano-Fit 4 pin	**F**	SerDes in: • Connector type Coax TE Mate-AX 4 pos. • Connection of sensor output • PoC available
B	Left status LED: Mode	**G**	Control port: • Interface type 1000Base-T • Connector Type TE RJ45
C	Right status LED: Alive	**H**	Left status LED of control port: Activity
D	ECU debug port: • Connector type Rosenberger HSD+2 • Data Connection to Extension Board • Power supply of Extension Board optionally supplied from SLA • Cable length up to 2 m • Output power available up to 8 W	**I**	Right status LED of control port: Link
E	SerDes out: • Connector type Coax TE Mate-AX 4 pos. • Connection of ECU • PoC available	**J**	Data link: • Connector MPO optical • Connection to logger device

Figure 4-2 Front side ports of the SLA

A. Power and wake connector

By default, the SLA must be supplied with 12 V DC voltage. According to the technical datasheet it can also operate with power supplies between 8 V and 16 V. You can download this document at the AED wiki see section 11.4. The external wake inputs allow waking up the SLA from sleep. The wake signal must shift from 0 V to +12 V and must be activated in internally configuration.



Power and Wake connector Molex 105314-1104			
Pin 2	GND (VBAT-)	**Pin 1**	+12V (VBAT+)
Pin 3	WAKE1	**Pin 4**	WAKE2

Figure 4-3 Pinning of Power and Wake connector

B. Left status LED

The left status LED indicates the mode of the SLA.

Green (continuous): Logging
Red (continuous): Replay

C. Right status LED

The right status LED indicates the alive status of the SLA.

Green (flashing): Alive
Red (continuous): Fault detected

LED left	LED right	Status
Off	Off	No Power or Standby-Mode
Constant green	Flashing green	Logging-Mode
Constant red	Flashing green	Replay-Mode
Constant red	Constant red	Device is booting
Others	Others	Error occurs or SLA is running the recovery process, see section 8.

Figure 4-4 Summary of LED status

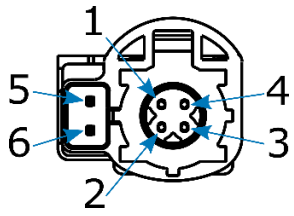
D. ECU debug port

The ECU debug connector is AED Vantage's designation to the Aurora-based proprietary SERDES bidirectional communication protocol established between two Xilinx FPGAs: the one located at the SLA and the second present on a customer-specific Adapter Board directly attached to the ECU.

The main objective of the ECU debug port is aggregating and sending some interfaces of interest from the Adapter Board to the SLA, most of them to be timestamped and logged (next to the original SLA's MIPI data and sideband interfaces). Optionally an Ethernet interface form the Adapter Board may also be forwarded to the SLA's Control.

The connector used is hybrid: it has two SERDES twisted pairs for TX/RX and a separate optional third pair (12 V output) able to forward the SLA's main power input (+12V nominal) to the Debug Module. Beware, Pin 5 and Pin 6 operate as voltage output. Do not connect any other voltage supply to these pins.

Therefore, do not connect two SLAs via ECU-link with each other. This is not a use-case. The output voltage of 12 V on both sides of the SLA, will defect the device and maybe other devices connected through.

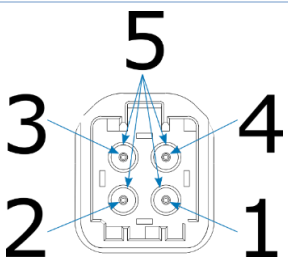


ECU debug connector Rosenberger HSD+2					
Pin 5	+12V out	**Pin 1**	TX+	**Pin 4**	RX-
Pin 6	GND	**Pin 2**	RX+	**Pin 3**	TX-

Figure 4-5 Pinning of ECU debug connector

E. SerDes out:

SerDes interfaces are handling the MIPI CSI-2 signals coming from the cameras or sensors to the ECU. It enables forward channel data rate up to 6 Gb/s and back channel data rate 187.5 Mb/s. SerDes out is serial Coax connector and is connected to an ECU. A PoC mechanism to supply 12 V over the coaxial cable to the sensors is supported.

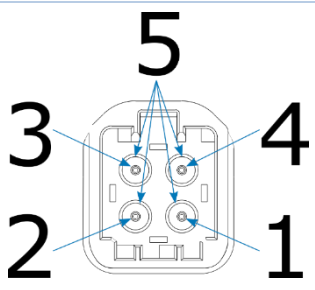


SerDes Out pin mapping 4 channel Coax connector					
Pin 1	Ch 0 out	**Pin 3**	Ch 2 out	**5**	Shield
Pin 2	Ch 1 out	**Pin 4**	Ch 3 out		

Figure 4-6 Pinning of SerDes out connector

F. SerDes in:

SerDes interfaces are handling the MIPI CSI-2 signals coming from the cameras or sensors to the ECU. It enables forward channel data rate up to 6 Gb/s and back channel data rate 187.5 Mb/s. SerDes in is a Coax connector and is connected to the sensor. A Power-over-Coax (PoC) mechanism to supply 12 V over the coaxial cable to the sensors is supported.



SerDes In pin mapping 4 channel Coax connector					
Pin 1	Ch 0 in	**Pin 3**	Ch 2 in	**5**	Shield
Pin 2	Ch 1 in	**Pin 4**	Ch 3 in		

Figure 4-7 Pinning of SerDes in connector

G. Control port:

Communication between the SLA's CPU and an external host is accomplished via 1000BASE-T interface. This interface has many potential use-cases, like providing access to a web-based page for monitoring and configuration of the whole SLA system or a PTP-based time synchronization with an external clock master. The Control Port sometimes is also referred to as Management Port. The RJ45 provides two integrated status LEDs.

H. Left status LED of control port:

The yellow LED indicates the link activity of the control port.

I. Right status LED of control port:

The green LED signalling that link is established.

J. Data Link:

Up to 3x 10G Ethernet ports (depending on software release and configuration) with MPO optical connector to 3xLC for connectivity between SLA and Data Logger Module (DLM) with the purpose of externally storing the MIPI CSI-2 data and sideband interfaces flowing between sensors and ECU. Further use case is to retransmit data to the ECU which was previously stored or synthesized – in the case of HIL mode.

LASER class 1M

MPO optical connectors contain a LASER class 1M:

- Wavelength 840nnm to 860nm
- Optical power -1.5 to 3.5 dBm
- IEC60825-1 Laser Safety compliant

5 Installation location

Always prepare the protection of the SLA against external damage. As proper location for installation serves preferably a firm and stable base.

5.1 Grounding

For installation in test vehicles it is required to provide an electrical connection of the enclosure of the SLA with the chassis of the vehicle by e.g. fixing bracket or copper tape.

- Impedance (Z): < 50mOhm
- Resistance (R): < 10mOhm

5.2 ESD

Operate with the device in an ESD-compliant environment.

5.3 General environmental conditions

The following general environmental conditions shall be considered when using the SLA:

- Indoor use only except in automotive test vehicles
- Altitude up to 3000 m
- Operating temperature -30 °C … +70 °C
- Maximum relative humidity 95 % non-condensing
- No use in wet locations or in areas where moisture or condensation can be expected
- Supply voltage fluctuations between +8 VDC and +16 VDC
- Transient over-voltages up to the levels of overvoltage category I (CAT I)
- Pollution degree 2: Only non-conductive pollution occurs except that occasionally a temporary conductivity caused by condensation is to be expected

It is the responsibility of the user to provide sufficient cooling keeping the SLA within its specified temperature limits in all cases. Further details are provided in the *technical data sheet*. You can download this document from the AED wiki see section 11.4.

6 Quick Start Guide

6.1 Power up the device

Before powering the device, make sure to read and understand the safety notes in section 2. Connect the SLA to a power supply which provides 12 V DC nominal. AED recommends using a galvanically isolated power supply (e.g. power supply in combination with AED DC/DC converter: SLA-DCDC-30W). Please note the port pinning assignments in section 4.2 and read the important notices in section 3. The SLA will boot automatically. After booting, the SLA will start up in logging-mode by default.

Please note that the device must remain switched off for at least 10 seconds before it can be switched on again.

6.2 Connect with SLA via control port interface

Connect the SLA via ethernet cable from your PC to the SLA control port. The control port interface can be accessed through one of two IP v4 addresses. Beware, the user IP address of the 1G Port is configurable and persistent. The secondary static IP v4 address is pre-configured by factory which cannot be changed. This provides a guaranteed way of accessing the SLA device for configuration and management as a fallback.

- IPv4 user (default): 10.104.3.192
- IPv4 secondary (fixed): 192.178.1.100

6.3 Get access to the web interface

The web interface is the preferred way to configure the SLA for an application. This section explains how the get access to the Web Interface of the SLA. Enter the IP address of the SLA in your favorite web browser and a web interface like this shows up:

In this interface it is possible, amongst other things, to configure parameters, read out status-registers of the SLA, change operating mode or execute an update. For further details see the *User Reference Manual*. You can download this document at the AED wiki see section 11.4.

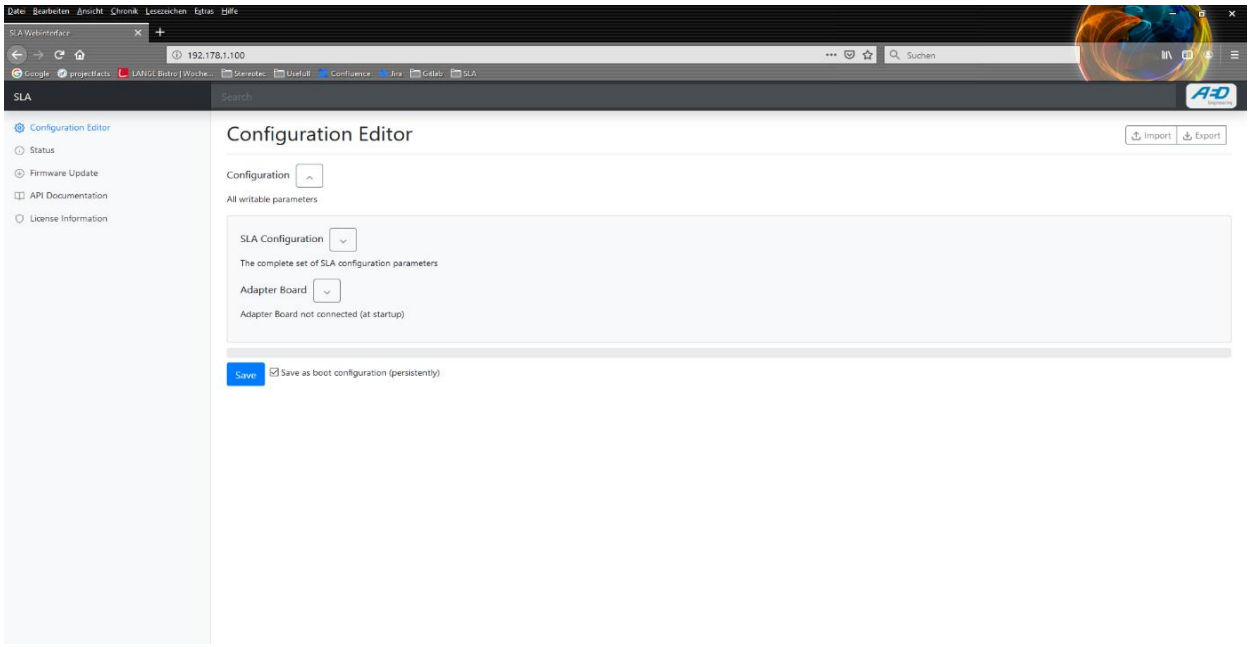


Figure 6-1 Web interface shows configuration editor

7 Example use case

The SLA can be used in two different ways. In logging mode, for forwarding the sensor data to the ECU, or in replay mode for laboratory use in HiL test benches. In both ways prepare not sending data during the start-up time of the SLA. There are two examples of typical applications below:

7.1 Logging mode

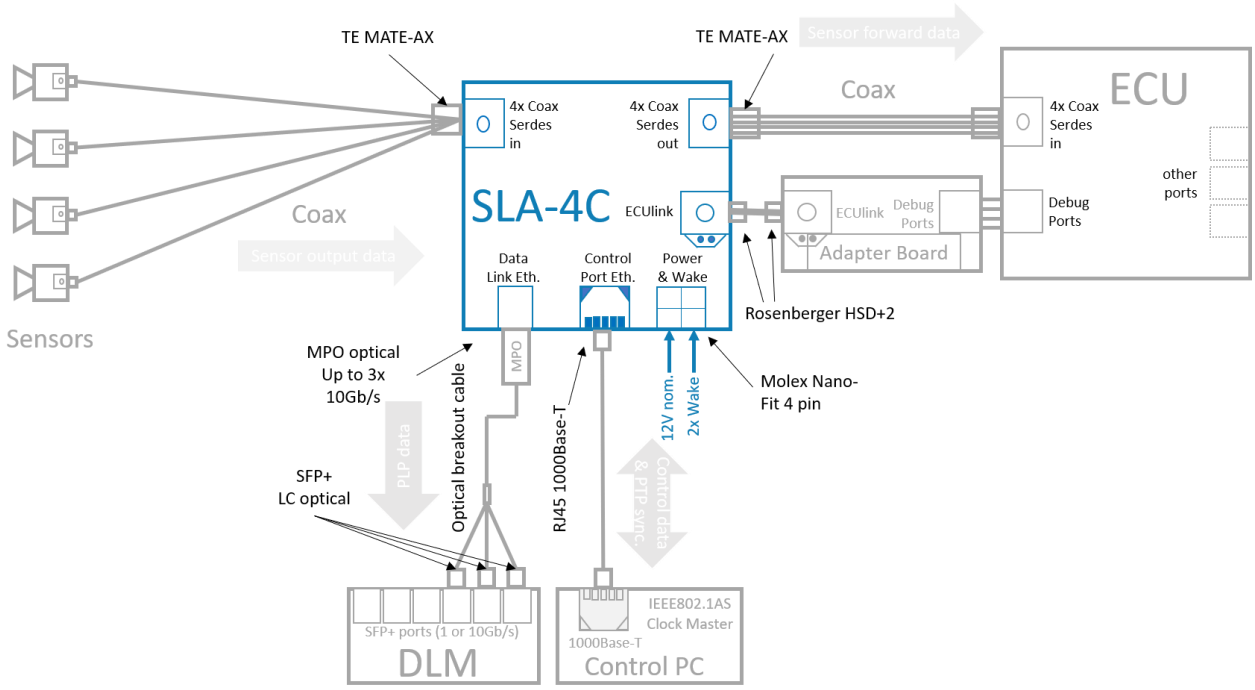


Figure 7-1 Application example in SLA logging mode

Be careful not to swap the SerDes ports. The sensor is connected to SerDes in and the ECU is connected to SerDes out. Wrong connection can damage the device.

7.2 Replay mode

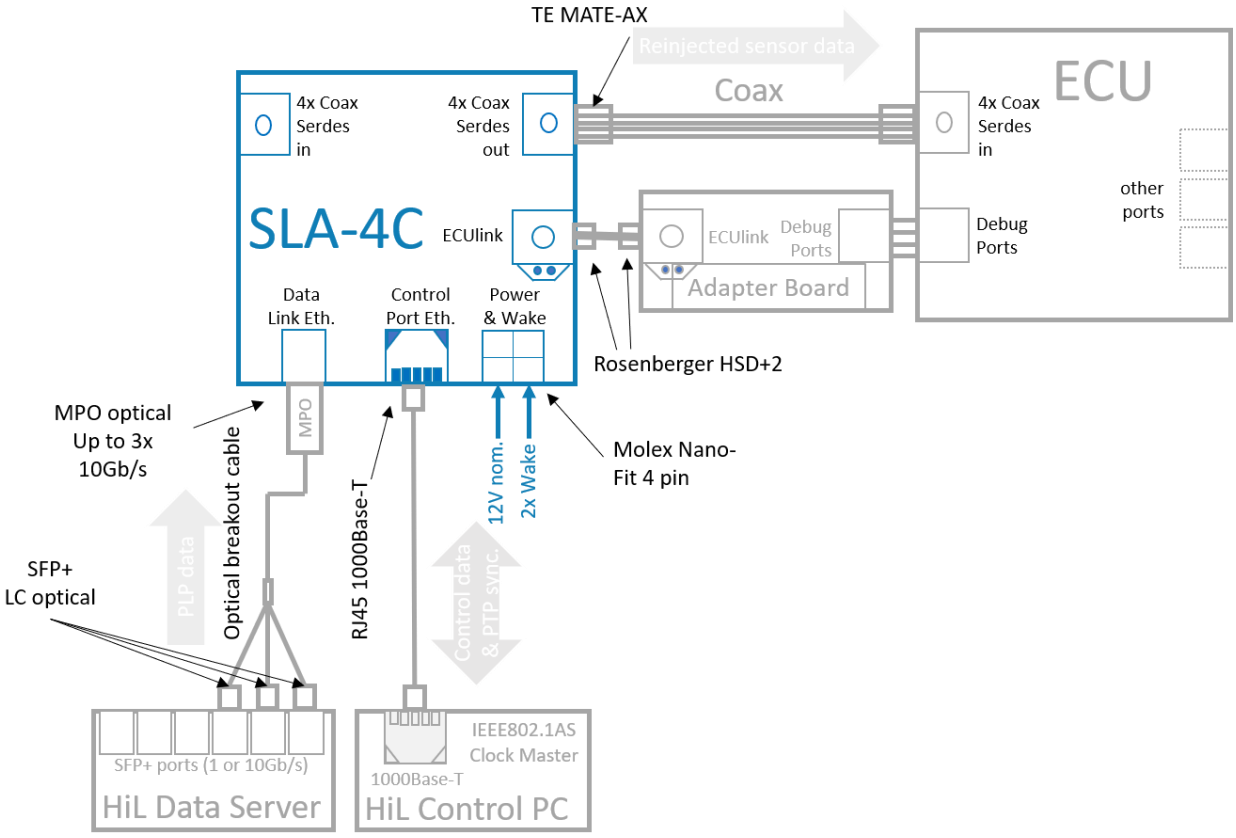


Figure 7-2 Application example in SLA replay mode in HiL environment

8 Recovery mode

A power-failure during a software update process may cause a Flash or file system corruption preventing the SLA from booting up properly. For this case, a recovery feature is available. It allows an automatic recovery of Flash and file system to a known-good software version (RecoveryOS) at the next power-up. This way, the SLA will boot up again and the user is able to use the regular software update mechanism to flash the device to the intended software version.

This Recovery mechanism is available on the following or newer product revisions:

- SLA-1C-GMSL/01 Rev:D
- SLA-1S-GMSL/01 Rev:D
- SLA-4C-GMSL/01 Rev:D
- SLA-4C-FPD/01 Rev:E

Please notice that SLAs containing the recovery mechanism do not support a downgrade to software releases lower than R5.1.3.

The recovery mechanism is part of the initial firmware and therefore only in new produced devices available as described above. In case of a corrupt firmware of any device component, the recovery process will be triggered during start up and will install the recovery linux (RecoveryOS). With the RecoveryOS an update package can be installed manually from ssh or via web interface. For further details how to update the SLA firmware, see the *User Reference Manual*. You can download this document at the AED wiki, see section 11.4. A log is generated during recovery.

Stage	LED left	LED right	Description	Duration
1. Recovery U-Boot	Off	Red	Pre booting stage before attempting booting from TFTP or 3rd partition.	-
	Green	Off	Successfully obtained IP from DHCP server.	-
	Red	Off	Faulty Status. Unable to boot from TFTP or 3rd Partition	-
	Off	Green	Booted successfully from 3rd partition.	15 seconds
	Green	Green	Booted Successfully from TFTP.	-
2. RepairOS	Toggling: Green/Off	Toggling: Off/Green	RepairOS running and repairing SLA.	2 to 8 minutes (depending on the content of the SLA)
3. RecoveryOS	Toggling: Red/Off	Toggling: Red/Off	RecoveryOS running. At this point an update is possible to be performed to restore the SLA to a desired version.	15 seconds (normal boot process)

Figure 8-1 Stages and LED states of recovery mechanism

The recovery process consists of several stages which are indicated by additional LED states other than described in section 4.2.

Please note: Unplugging the power cable during recovery process in first two stages could damage the SLA.

9 Technical specification

The following table provides an overview of electrical and technical data of SLA.

Property	Value/ Characteristic
Power Dissipation	Typ. 8 W, Max. 18 W
Supply voltage	+8 VDC … +16 VDC 12 VDC nominal
Supply Current operating	900 mA nominal @ 12 V, 1.5 A max @ 12 V
ECU debug supply output voltage	SLAs main supply voltage (12 V nominal)
ECU debug port output current	≤750 mA DC
PoC output current	Up to 500 mA
Input protection	Integrated ceramic slow-blow fuse - Max 4 A @ VDC
Short-circuit prove	durable
Overvoltage category	CAT I
Dimensions (H x W x D)	48 x 120 x 86 mm
Weight	Approx. 510g
IP grade	IP30

Figure 9-1 Technical Data

10 Storage, transport and disposal

10.1 Storage

For a longer unused storage of our device we advise the following conditions:

- Storage temperature: -40 °C … +85 °C
- Storage humidity: 0 … 99 % non-condensing
- Protect the SLA from strong sunlight, heat and shocks
- Do not place any object on the SLA
- Store the SLA in a dry, dust-free and ESD safe area

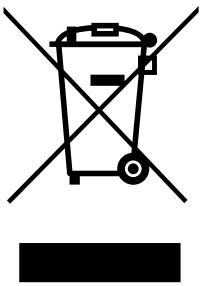
10.2 Transport

Transport conditions of the SLA:

- Transport temperature: -40 °C … +85 °C
- Transport humidity: 0 ... 95 % non-condensing
- Use only original packaging

10.3 Disposal

The user is responsible for the proper disposal of the device. Therefore, industry-specific and local provisions must be observed for the disposal of this device and its packaging.



According to the Waste Electrical and Electronic Equipment Directive (WEEE Directive) 2012/19/EU, electrical and electronic devices may not be disposed of with the normal household waste

11 Maintenance and Service

11.1 Safety measures

Damage or malfunction due to short circuit

Wrong connected or defect cables may cause a short circuit which may cause abnormal behavior or destruction of the device.

Caution

- Make sure that the cable insulation and plugs of the cables and the device are intact and the cables are correctly mounted
- Observe section 4

Safety and functional defects due to incorrect accessories and spare parts

Accessories or spare parts that are not recommended by AED Vantage GmbH may have adverse effects on the safety and functionality of the device.

Caution

- Do only use and connect original accessories and spare parts that are recommended by AED Vantage GmbH

11.2 Cleaning

Damage or malfunction due to pollution

Any contamination may affect the functionality of the device

Caution

- Transport, store and operate the device in a clean environment

Damage or malfunction due to penetration of dust, moisture or liquids

Dust, moisture or liquids inside the device may cause abnormal behavior or destruction of the device.

Caution

- Transport, store and operate the device in a clean environment
- Only clean the device in de-energized status
- Do not use wet wipes near plugs or openings in the housing
- Observe section 5

11.3 Repair

In case of any malfunction or defect of the device please contact SLA support (see section 11.4) before sending the device to AED Vantage GmbH. With the support it will be checked if it is necessary to send the device to AED or if the issue can be solved remotely at the customers facility. If it is mandatory to send the SLA to AED Vantage GmbH, the customers will receive an RMA number and will be informed about the next steps.

For more details see *RMA Procedure-Description Handout* provided on our AED wiki see section 11.4.

Damage or malfunction due to unauthorized opening
Unauthorized opening of the device may cause abnormal behavior or destruction of the device.


Caution

- Do not open the housing in any case
- In case of a defect contact AED Vantage GmbH

11.4 Service

AED Vantage GmbH provides a wiki for all products to share software, firmware and documents:

https://wiki.aed-vantage.com/

Please contact sla-support@aed-vantage.com for further questions.

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EU Declaration of Conformity (DoC)

We

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

Product name: SerDes Logging Adapter (SLA)
Model: SLA-4C-GMSL

Object of the declaration:

The SLA (SerDes Logging Adapter) is a high-precision SerDes data-logging and replay solution.

- 4 MIPI CSI2 channel based on Coax connectors
- Maxim GMSL2 SerDes interface

The object of the declaration described above is in conformity with the relevant Union harmonized legislation:

DIRECTIVE 2014/30/EU:	Electromagnetic Compatibility (EMC)
DIRECTIVE 2015/863/EU:	Restriction of the use of certain hazardous substances (RoHS)

The following harmonized standards and technical specifications have been applied:

EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
EN 50498:2010-07	Electromagnetic compatibility (EMC) - Product family standard for aftermarket electronic equipment in vehicles
IEC 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements

The declaration of conformity is issued under the exclusive responsibility of the manufacturer.

Munich, 22.07.2020	Carlos Urquizar	CEO	
Place, date	Name	Function	Signature

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