ASAM CMP

Capture Module Protocol

Protocol Layer Specification

Version 1.0.0

Date: 2022-03-31

Base Standard

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Foreword

The Capture Module Protocol (CMP) defines the communication between Data Sinks and Capture Modules. Capture Modules capture automotive bus communication and sensor data.

1 Introduction

1.1 Overview

The Capture Module Protocol (CMP) defines the communication between Data Sinks and Capture Modules. CMP is transported over Ethernet.

CMP also describes the mapping rules for vehicle bus communication and sensor data. The CMP Messages can be stored directly at the receiver (e.g., Data Sink), or further decomposed and analyzed.

The current CMP specification supports the following buses/signals:

- CAN / CAN-FD
- LIN
- FlexRay
- Digital signals
- UART / RS-232
- Analog signals
- Ethernet
- SPI
- I2C
- GigE Vision
- MIPI CSI-2 D-PHY
- Vendor-specific data

In addition to the captured buses/signals, meta information, like errors, is transmitted. CMP also includes the specification of:

- Status Messages
- Control Messages
- Vendor-defined Messages
- Time synchronization
- Configuration mechanisms

1.2 Motivation

Automotive systems rely on a broad variety of communication technologies between sensors, electronic control units, and actuators. These technologies range from classical analog signals, over long-established protocols like CAN or FlexRay, to more recently Ethernet. For analysis and debugging, capturing, and recording the transported data is essential. The common measurement approach is based on devices implementing capturing and recording. However, this approach lacks flexibility when performed too centralized. Indeed, the development of such a device is complex, time consuming and the capturing part leaves no space for new vehicle interfaces. In conclusion, a clear decomposition of the capturing and recording system solutions can improve flexibility and scalability, as well as increase reuse of components. At the same time, defining the communication between both capturing and recording systems becomes crucial to ensure seamless interoperability.

1.3 Scope

The standard covers all communication aspects required for the use case of capturing data in the vehicle. This includes transporting captured data, controlling Capture Modules, and synchronizing their clock.

While the capturing of data and sending it to a Data Sink is covered by the current version of the standard the replay of data is not covered.