

# Protocol Fundamentals

## Agenda VectorAcademy

<b>Delivery Format:</b>	This course is offered in Classroom or in Remote Format
<b>Duration:</b>	Classroom: 1 days Remote: 6 hours
<b>Target Group:</b>	CAN users
<b>Prerequisites:</b>	None
<b>Goal:</b>	Knowledge about serial bus systems in motor vehicles, physical characteristics of a CAN network and characteristics of the CAN and CAN FD protocol. Also we introduce the basics of a CAN network description.

### 1. Introduction to CAN

- > Electronification of motor vehicles
- > Primary tasks in bus networking > Standards and implementation
- > Node architecture, bus-connection and termination > Voltage levels and corresponding bit values
- > Physical failures

### 2. Characteristics of the CAN Protocol

- > Addressing, message transmission and reception
- > Bus access method and arbitration
- > Message types, detailed description of the structure and functions
- > Increase noise immunity, neutralize errors
- > Error detection mechanisms
- > Error treatment & tracking
- > Motivation for the bit time interval
- > Relation of baud rate and length of the CAN bus
- > Synchronization and resynchronization

### 3. CAN FD

- > Motivation for CAN FD
- > Message formats and structure
- > Larger data field and the consequences
- > Bit rate switching

### 4. CAN Network Description

- > Usage and content of Network Description
- > Tools and Examples