

## CAN bus

### Set up of Freescale and STMicroelectronic Microcontroller

Ref : 002601A

Duration : 2 days

#### OBJECTIVES

- Becoming familiar with CAN 2A & 2B specifications through implementation examples
- Parameterizing and using a CAN controller driver developed by MVD for the following CAN controllers
  - Freescale TouCAN and FlexCAN
  - STR710
- Testing a CAN system and optimising the hardware parameters with the assistance of the Lecroy CAN Analyser

#### RELATED COURSES

- Flexray bus (004333A)

#### PREREQUISITES

- Knowledge of a digital bus is recommended



#### Contact

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Course also available  
customized

Next sessions, see : <http://www.mvd-fpga.com/en/formationsCalend.html>

#### TOPICS

##### INTRODUCTION

- History
- CAN benefits
- PHY and Link layers features

##### FRAME ANALYSIS

- Message frames structure
- 2.0A and 2.0B frame description
- Compatibility between both formats
- ARBITRATION
- Point to multipoint communication model
- Dominant and recessive states
- Frame priority selection through the label value
- Automatic switch into receive state when an arbitration is lost

##### TIMING AND SYNCHRONIZATION

- Bit time phases
- Hardware and software resynchronization
- RJW determination

##### ERROR MANAGEMENT

- The error counter registers

- Error detection areas inside a transmit frame and a receive frame
- Fault confinement
- The 3 states of a CAN node : active, passive and bus off
- Overload frame

##### CAN NETWORK PERFORMANCE

- The parameters that determine network performance
- Data rate selection
- Distance between both farthest stations
- Connection establishment time

##### SETTING UP OF A CAN BUS SYSTEM

- Set up of many communications between all CAN stations
- Labs to show the error counter management
- Labs to show the impact of the RJW parameter

##### CAN SOFTWARE DRIVER DEVELOPMENT

- FlexCAN controller description
- Label filters configuration through the mask registers
- Bit time phases initialization
- Description of a CAN driver written in C-language by MVD

#### DOCUMENTATION

- Training manuals will be given to attendees during training in print.