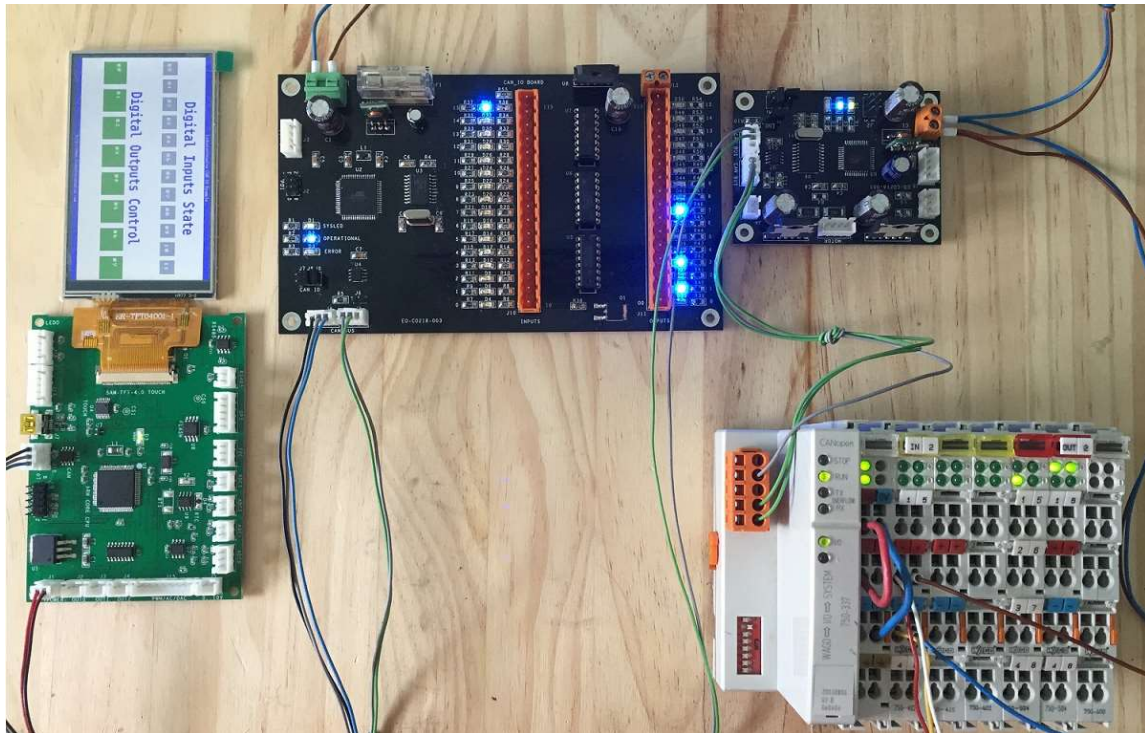# CAN BUS EXAMPLE PROJECT

SAM TFT4.0 TOUCH Board Sample Application

The example shows the use of the CAN Bus interface present on the ATSAM4E-16C chip, for communication with three different nodes:

1. **WAGO PLC 750-337**
2. **CAN IO Board from Ledoelectronics**
3. **CAN Motor Board from Ledoelectronics**

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The CAN Bus is extraordinary. It speed is only 1 Mbit / s, and only 8 bytes can be transmitted in each message. Even so, it is the standard of communication between elements of machines; used in almost all vehicles on earth and space.

It is Event driven. Each node can initiate a transaction to be attended when needed. It has an arbitrariness system, which handles possible collisions, based on the priority of the messages.

It is a redundant system by Hardware and Software. It has the highest immunity to noise among all existing communication buses.

It was developed by the German company Robert Bosh GmbH in the mid-1980s.

This application shows the CAN communication functionalities of the module

SAM TFT4.0 TOUCH from Ledoelectronics. It allows interaction with three nodes on a CAN bus.

• With the **Wago 750-337 PLC**

• With the **CAN IO** module from Ledoelectronics

• With the Ledoelectronics **CAN Motor** module

Fig.1. Starting Screen.

It is capable of reading and writing Wago's PLC inputs, using the CAN Open protocol, using SDO and PDO services. It also communicates with the CAN IO and CAN Motor modules from Ledoelectronics. A speed of 500 kbit / s has been chosen.
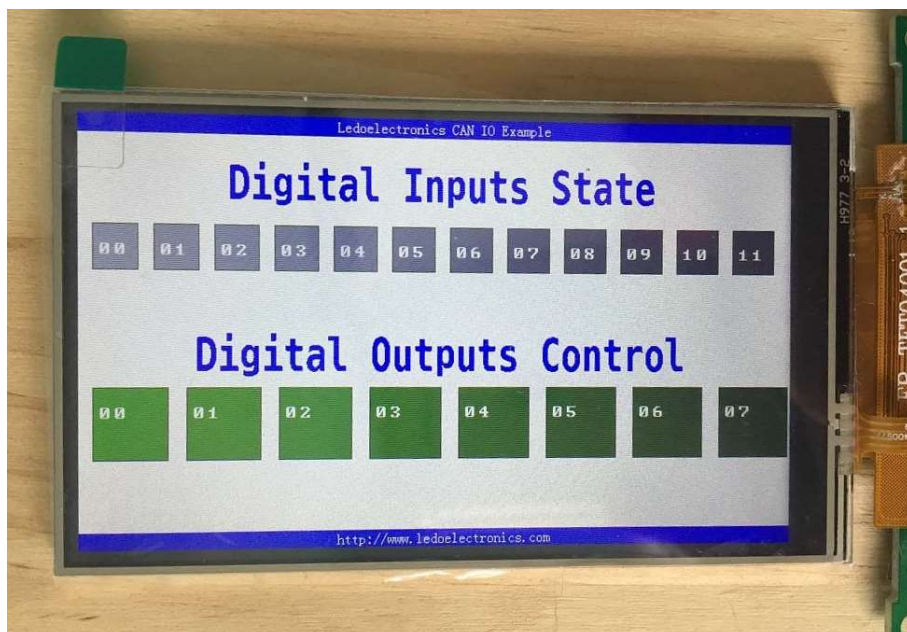
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Fig.2. IO Screen.

Fig.3. Motor Screen.

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Fig.4. Keyboard.

Board resources used in the application

1. Timer TC0.

2. Timer TC1.

3. CAN0 and CAN Bus transceiver.

4. TFT display and touch screen. They are used for data input and output, as a user interface.

5. USB interface. Only for bitmap transfer from the PC to the Flash of the board.

6. 16 MB external flash memory. Image storage.

7. Real Time Controller of the CPU (RTC). Used as a time base.

8. Ports, SPI interface. Communication between chips.

The source code of the project can be downloaded from the download area of the web www.ledoelectronics.com

Programming

The project can be compiled in any commonly used IDE: Atmel Studio, IAR Compiler, Codevision AVR etc.

The application can be transferred to the micro in two ways:

1. Without the need to use any external programmer, through SamBa. To do this, the board is put into bootloader mode by short-circuiting the "Erase" jumper. In this case, only a USB cable is required between the PC and the board.

2. Using Atmel programmer Atmel_ICE.

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Conclusions:

The code was successfully tested with all connected nodes, at a speed of 500 kbit / s. Three of the 8 Mailboxes available with the CAN interface of the ATSAM4E-16C CPU were used to receive the messages.

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