

EtherCAN CI-ARM9 Gateway

Overview

Connecting "embedded" controllers via the Internet becomes more and more popular in the last time. World wide computer networks are using the common Ethernet cabling standard and TCP/IP as common protocol family.

The reason is the increasing data communication for recording the production and operating data as well as for visualization and remote maintenance.



The *EtherCAN CI-ARM9* Gateway combines the decentral CAN and CANopen networks with the classical Ethernet network. To communicate via Ethernet the TCP/IP protocol is used, while on the CAN bus the communication is realized by CANopen or another user-specific protocol.

Application

Merging the data of production control and data acquisition with operating data lately became a standard requirement of application users. It is foreseeable, that the real-time control of machines still will be implemented directly with event controlled real time capable field buses for a longer period of time.

CANopen/Ethernet Gateway

Therefore linking the control network over a gateway to office or automation networks or to the Internet at all via TCP/IP is an interesting and cost-effective solution. This task is fulfilled by the CAN-TCP/IP Gateway *EtherCAN CI-ARM9*. The basis for the *EtherCAN CI-ARM9* forms a powerful Freescale ARM9 CPU with integrated Ethernet controller and dual FlexCAN interfaces.

DataLogger

A slot for a SD card is integrated in this device. Therefore this gateway provides the option to use the EtherCAN gateway as a data logger. The gateway (data logger) can operate autonomously without a connection to an Ethernet network.

The existing SD card allows the storage of data over a long period. e.g. recording of the logical data transfer on CAN bus and storage in a log file. Thus, a detailed analysis of the data traffic on a Standard PC possible at a later date.

Description

On the *EtherCAN CI-ARM9* an Embedded LINUX™ operating system is installed. Therefore a lot of services like FTP, Telnet or an integrated web server but also a RS-232 interface are available to run user-specific applications.

For own developments a Developer Package is available.

The usage of the *CANopen Library* is possible to create CANopen applications.

Of course ready-to-run programs are available.

For the usage as gateway to CANopen based systems the CANopen Server *m4d* running on the *EtherCAN CI-ARM9* realizes the complete handling of the CANopen protocol. It runs as a Network Management Master, can configure LSS slaves with the LSS commands and supports the following CANopen services:

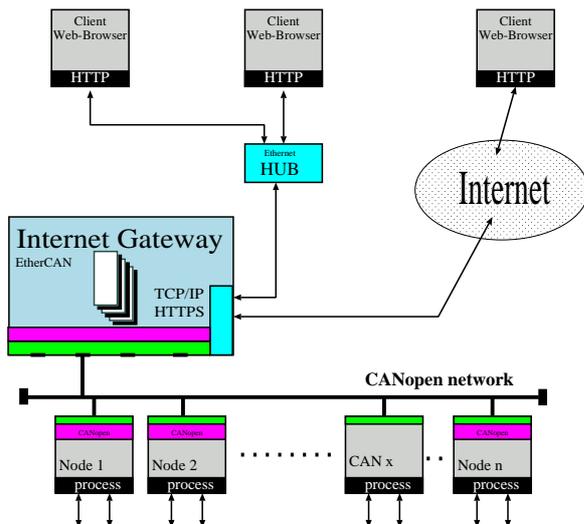
- NMT Services
- Heartbeat, Node Guarding
- SDO Services including Domain Transfers
- PDO Consumer and Producer
- SYNC Producer
- Emergency Consumer

Cyclic services like SYNC or Heartbeat are handled autonomously.

As protocol between a client application and the CANopen Server the CiA specification DSP309-3 is used at the Ethernet side.

For a comfortable handling of the CANopen Server the platform independent and graphical application *CANopen Device Monitor* can be used.

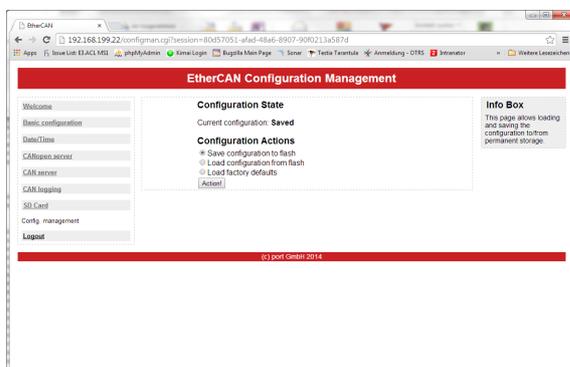
For CAN based systems without High-Layer protocol the *EtherCAN CI-ARM9* provides the CAN server *horch* that can send all received data via a TCP/IP port to other applications.



Sending CAN message via the CAN server is possible, too. In the easiest case the server is used as a CAN analyzer via the Ethernet. The CAN Analyzer CAN-REport can be used for this.

Configuration

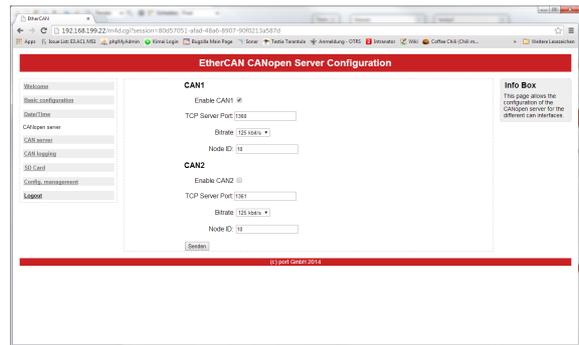
The configuration of this gateway is implemented via web-interface. Therefore the user can interact with the gateway about any web browser.



For this reason the customer is independent of any platform or operating system. Furthermore it's not necessary to install an additional software.

With this user interface the following parameters can be set respectively data can read for the CAN interfaces "CAN1" and "CAN2":

- IP address
- CANopen Server "m4d"
- CAN Server "horch"
- bit rate
- node-ID
- Port-Nr. for TCP-Server



Advantages

The main advantage of such a network linking is the possibility to remote control or do a remote observation and/or service of machines and installations from any place in the world.

The following advantages are to be mentioned further:

- Combination of the advantages from the CAN/CANopen fieldbus technology with the Ethernet
- high transmission capacity in the Ethernet area
- high security and reliability
- no limitation referable the network topology
- TCP/IP is an established standard in information technology
- free access is available to all modules about the network
- low costs per module and for the overall system
- usage of the TCP/IP-protocol

By using the *EtherCAN CI-ARM9* gateway also costs for expensive special wirings can be saved, because existing CANopen networks or Ethernet connections can be used again.

Technical Data

Power supply	10 - 30 V
current consumption	max. 150mA
galvanical separation	Ethernet/CAN
microprocessor	i.MX287 ARM926EJ-S CPU 128 MByte DDR2 RAM 2 GB EMMC FLASH 454-MHz clock frequency 2x CAN High Speed Interface
Operating System	Embedded Linux
CAN-connector	2x 5-pole screw-in connector
SD-Card slot	for data storage
USB	host interface
RS232 interface	for configuration
Ethernet 10/100BaseT	RJ45
serial port	D-SUB-9m
Temperature range	-20 - 60 °C
Humidity	max. 90% non-condensing

Mechanical Dimensions

Size	120mm x 100 mm x 25mm
Weight	approx. 150 g

The plastic casing used is suitable for 35mm DIN rail. The module is fixed to the rail by means of a snap-in mechanism. Additional tools are not required.

Scope of Delivery

- *EtherCAN CI-ARM9* Gateway
- manual

Ordering Information

0540/30	EtherCAN-CI-ARM9
0540/31	EtherCANopen-CI-ARM9
0540/33	Developer Package DEV-PACK-ETH V3.0