

EtherCAN 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* 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, DeviceNet 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.

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*. The basis for the *EtherCAN* forms a powerful 32-bit CPU with integrated Ethernet controller and the CAN-Controller Philips SJA1000.

Description

On the *EtherCAN* 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. It includes besides tools to generate the FLASH image, a cross compiler and necessary libraries. Further examples in C, Java or Tcl can be downloaded from our web site <http://www.port.de>.

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* 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:

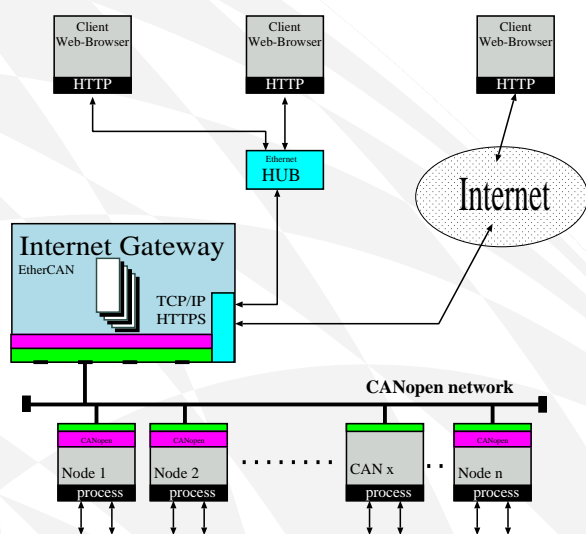
- NMT Services
- Heartbeat, Node Guarding
- SDO Services including Domain Transfers
- PDO Consumer and Producer
- SYNC Producer
- Emergency Consumer

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* 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.

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* 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	12 - 30 V
current consumption	max. 150mA
galvanical separation	Ethernet/CAN
microprocessor	32-bit-RISC-ARM 16 MB RAM 2 MB FLASH 80-MHz clock frequency RS232 Interface CAN High Speed Interface
CAN-Controller	NXP SJA1000
CAN	D-SUB-9f D-SUB-9m and D-SUB-9f CiA-DS 102
Ethernet 10/100BaseT	RJ45
serial port	D-SUB-9m
Temperature range	0 - 85 °C
Humidity	max. 90% non-condensing
Size	100mm x 90 mm x 40mm
Weight	approx. 200 g

Scope of Delivery

- *EtherCAN* Gateway
- manual

Ordering Information

0540/07	EtherCAN-CI-ARM7W (Winbond)
0540/08	EtherCANopen-CI-ARM7W (Winbond)
0540/21	Developer Package DEV-PACK-ETH

Engineering Services

port is providing engineering services and trainings for our business activities:

- CAN and CAN-based protocols: CANopen, J1939, DeviceNet
- Industrial Ethernet Protocols: POWERLINK, EtherNet/IP, EtherCAT
- Implementation of devices according to CANopen device profiles
- VHDL based solutions for industrial applications
- application specific implementations or enhancements
- embedded LINUX projects

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Functional demo versions of the CAN-RE*port* and *CANopen Device Monitor* SW tools are available for download on: <http://www.canopen-tools.com>