Intelligent controllers for realization of functions in vehicles

- Powerful
- Versatile
- Easy to program
- Standardized
ICCS Controllers

Overview

ICCS Controllers

ICCS = Intelligent Command and Control Systems

With our ICCS product range we offer you controllers and modules to realize various functions for all standard types of vehicles.

From standard functions to complex special functions – integrated on Powerboards and Central electrical systems our intelligent ICCS controllers can be used in many ways. They are compact, powerful and easy to program!

Central electrical systems with plugged-in electronic control and CAN modules enable an intelligent and efficient distribution of power in motor vehicles as well as the integration of the electrical systems into the communication networks.

Some of the functions that can be controlled with ICCS:

- Headlights
- Fog lights
- Temperature control
- Seat belt sensor
- Turn signal
- Windscreen wipers
- Heated Windscreen
- Hazard lights
- Door control
Your benefits at a glance

**ICCS is the optimal solution when you ...**

- are looking for an intelligent and at the same time efficient solution for the power distribution and control for your vehicle
- would like to create a new CAN network or to expand an existing network
- want to expand your existing system without high cost
- need a lighter and more compact solution
- want to reduce the consumption of materials and installation costs
- want to exchange data between different bus systems

**We can offer you:**

- Complete solutions for hard- and software as well as systems with electrical parts, housing and full wiring
- Customized: Implementations from simple functions to complex logical tasks
- A software development kit for on-site testing and programming
- Qualified advice and support for the entire duration of the project
ICCS products

Application example

Application:
Gateway module for CAN & LIN communication

Initial solution:
The automotive industry uses a lot of sensors based on LIN communication, which are mainly intended for 12 V applications.
Some customers wanted to use those sensors but were not equipped with LIN bus on their central electrical systems and didn’t had the possibility to use CAN sensors.
The requirement was to be able to read a battery sensor and to communicate with a rain and light sensor mounted on the windshield.

Solution:
The Micro Gateway solution with one LIN bus and two CAN buses has allowed the interpretation of the LIN communication and the sharing on custom frame on the CAN bus.
The information could be provided to two different CAN buses taking advantage of the two independent CAN buses possibility.
This solution allows the flexible implementation of standardized and cost effective automotive sensors within a customer specific CAN network where data manipulation and bridging functions could even be achieved.

Micro Gateway
- 9 pins relay shape
- Operating voltage 9-30 V DC (CAN-CAN)
  12 V DC (CAN-CAN-LIN)
- Freescale HCS12 XEG processor with 128 kB flash memory
- 1 Analogue input, 2x CAN high speed and optional 1 LIN bus processor
- Standard functions, e.g. CAN message filtering, LIN to CAN gateway, signal manipulation and connection of LIN sensor to the CAN bus
ICCS products

Application example

Applications:
Battery monitoring

Initial situation:
The customer has deployed two battery monitors in his electrical system. In the course of modernization, the customer has replaced the existing electrical system with a circuit board-based central electrical system. The previous solution, connecting the battery monitors to the circuit board, however, has been problematic and expensive.

Solution:
The function of the battery monitor was implemented with a Micro ICCS module and a 60 A Maxi relay which could be connected without problems via a relay base to the circuit board. With the new solution, the cable harness and the wiring requirements could be significantly reduced and thus considerable cost and space savings are achieved.

Function of the battery monitors:
The system will be started when the voltage is over 12.5 V. Should the voltage fall under 11.05 V, a 12 seconds alarm will be triggered. After that, a timer will be turned on which will turn the system off after five minutes.

Micro ICCS
- Relay or high side based with 9 pins
- Operating voltage 12 V, 24 V or 9-30 V
- MSP430 16 bit microprocessor with flash technology
- In the maximum version 1 analogue input, 3 digital inputs, 2 overload protected high side power outputs (~ 4 A); alternatively 1 relay output (10/15 A) and 1 open collector output (2 W) are available
- Standard functions, e.g. voltage monitoring, frequency monitoring, or customized functions
Cars & special vehicles
Applications:
Function extension CAN system

Initial situation:
The previous solution consisted of a number of controllers with inputs and outputs which were all already allocated. For this reason, any expansion of the existing system with new functions such as, for example, switching work lights on and off was not achievable.

Solution:
The system was expanded with an ICCS Micro CAN that can be connected without difficulty to the existing CAN bus network. The Micro ICCS CAN switches the work lights on and off by sending a CAN message via bus to the control module.

ICCS Micro CAN
- Relay or high side based with 9 pins
- Operating voltage 12 V, 24 V or 9-30 V
- Freescale HCS08 microprocessor with 60 kB flash memory
- 1 kB EEPROM for data backup
- CAN high speed, SAE J939
- 2 high side outputs, alternatively 1 relays output (10/15 A), 1 open collector output, up to 3 analogue/digital inputs
- Standard functions, e.g. output/input extension modules, sensors to CAN module, or customized functions
Agricultural machinery
ICCS products

Application example

Applications:
System simplification of application control

Initial situation:
A customers fire fighting truck has a storage compartment on the roof for the storage of hoses, ladders etc. The manufacturers use about 8 relays to open and close these compartments. These relays control the high current relay which in turn controls the hydraulic system.

Solution:
After analysis of the existing solution, our system engineers could propose a complete new system. The hardwired logic, build from the severals relays, could be completely integrated in a Software. The ICCS CAN I/O with its inputs/outputs possibilities could replace the box, offering the same final functions. This new system provides the same behavior in only a percentage of the original system weight and volume, and it even provided more diagnostic and communication as the outgoing current is measured. The defaults are reported on CAN bus.

ICCS CAN I/O
- Connection over Molex Mini Fit 22-way connector
- Operating voltage 9-30 V
- 1 analogue input 0-30 V, 5 analogue inputs 0-10 V, 8 in- or output pins, 1 activation pin
- Freescale HCS08 microprocessor with 60 kB flash memory
- CAN high speed J939
- 1 kB EEPROM for data backup
- Standard functions, e.g. output/input extension modules, sensors to CAN module, light control module, or customized functions
Special vehicles & trucks
ICCS products

Application example

Applications:
Intelligent central electrical unit

Initial situation:
The previously used solution was a box with relays and fuses that were connected via cable. Carrying out the wiring was very time-intensive and prone to errors.

ICCS 64P CAN Controller
- Connection over 4 Mini Fit 16-way connector
- Operating voltage 9-30 V DC
- 5 V and 10 V reference voltage
- Up to 16 2A high side outputs, 14 analogue inputs 0-10 V
  12 bit ADC, 22 digital inputs, 4 digital inputs with interrupt-request
- Freescale HCS12XEQ 16 bits microprocessor with 384 kB flash memory
- CAN high speed
- 1 kB EEPROM for data backup
- Standard functions, e.g. management of fuses and relays on the PCB, analogue sensor to CAN bus, direct handling of low power devices, switches to CAN interface

Solution:
A circuit board based central electrical system was developed. The central electrical unit, together with the ICCS 64P CAN Controller and the IP66 housing, forms a complete system solution. It will fulfil not only the originally desired function, the control by the application of the rear part of the vehicle, e.g. the hydraulics or the rear windscreen wiper, but will also communicate via CAN bus with the CAN display module in the vehicle’s cabin.
Medium sized commercial vehicles
ICCS products

Application example

Applications:
Specific functions replacement and plug & play systems

Initial situation:
Two motor time relays control the pre-heating of the motor and the solenoid to prevent the motor being damaged by the fuel. The individual components are accommodated in a housing unit with protection class IP54 and cabled together.

Solution:
Intelligent solutions can be reached even with the smallest ICCS product. Control of the motor is performed by two Nano ICCS, each with its own software. Connecting cables are no longer required when changing to the circuit board based solution. The new solution is more compact and the amount of assembly work is significantly reduced.

Nano ICCS
- Relay based with 5 or 6 pins
- Operating voltage 12 V or 24 V
- MSP430 16 bit microprocessor with flash technology
- 1 digital input, 1 relay output (max. 30 A)
- Standard functions, e.g. time delay, impulse or toggle functions, or customized functions
Construction machinery
ICCS products

More products and application solutions

ICCS PropCAN

- Graphically programmable
- Operating voltage 9-30 V DC
- Freescale HCS08 processor with 60 kB flash memory
- 2 analogue inputs, 1 proportional valve output, 1 open collector output or analogue input
- Standard functions, e.g. autonomous mini control system for proportional valves, control proportional valves by CAN bus

ICCS Voltage Reference

- Output voltage 5 or 12 V DC
- Input voltage of 9-30 V DC (for the 5 V version) and 15 to 30 V DC (for the 12 V version)
- Output current up to 500 mA
- Standard functions, e.g. power supply for sensors or IC, USB (5 V DC) power supply
ICCS 48P CAN Interface
- Connection over 3 Mini Fit 16-way connectors
- Operating voltage 9-30 V DC
- 5 V, max 500 mA reference voltage
- 10 analogue inputs
- 6 digital outputs
- 14 analogue inputs or digital outputs
- Freescale HCS08 processor with 60 kB (48P) or 128 kB (48P+) flash memory
- Standard functions, e.g. control unit for central electrical distribution, monitoring of fuses and switching of relay, input and output extensions for CAN bus systems

ICCS 88P CAN Controller
- Connection over 4 Mini Fit 22-way connectors
- Operating voltage 9-30 V DC
- 5 V, max. 500 mA reference voltage
- 12 analogue inputs, 23 digital inputs, 28 digital low side outputs
- Freescale HCS12 XEQ with 16 bit processor with 384 kB flash memory
- Standard functions, e.g. connection of binary and analogue sensors via the CAN bus, input and output extensions for CAN bus systems, control unit for central electrical distribution
Creating programs for the ICCS CAN Modules is easy when using our software development tool. The *ICCS SDK Plus* including hardware and corresponding interfaces between soft- and hardware is offered as *Try & Buy Kit*. With this tool you can create programs for all our ICCS CAN products and with little effort.

The Try & Buy Kit can be used for development purposes and also is qualified for pilot series, service uses, testings, etc.

We are constantly working on the optimization and functionality of our ICCS SDK software. In the software download area on our website is always the latest version available.

With the Try & Buy option, we offer you the development tool **for three months** on consignment to test without obligations. Afterwards, it can be returned or purchased.

ICCS products

**ICCS Try & Buy Kits**

*ICCS SDK Try & Buy Kit*

If you are interested in testing the ICCS SDK Plus, please contact our Sales.
The Try & Buy Kit for the ICCS SDK Plus includes following components:

- Software development kit “ICCS SDK Plus”
- Peak USB to CAN Adapter
- ICCS CAN I/O
- ICCS Micro CAN
- ICCS PropCAN
- ICCS 64P CAN Controller
Your specialist for the development and production of system solutions for intelligent and efficient power and signal distribution in vehicles.

Würth Elektronik ICS GmbH & Co. KG
Intelligent Power & Control Systems
Gewerbepark Waldzimmern
Würthstraße 1
74676 Niedernhall · Germany
Tel. +49 7940 9810-0
Fax +49 7940 9810-1099
ics@we-online.com