

CAN-Control-CPU Controller Board with Analog and Digital I/Os



CAN Controller

- 68376 microcontroller
- CAN interface acc. to ISO11898
- 512 kbyte Flash EPROM
- 256 kbyte Fast SRAM
- 1 Mbyte SRAM
- 128 kbyte NV-RAM with RTC

Digital Inputs

- 18 digital inputs 12 V
- 2 incremental encoder interfaces with 3 inputs each and 2 additional inputs
- all inputs electrically isolated

Digital Outputs

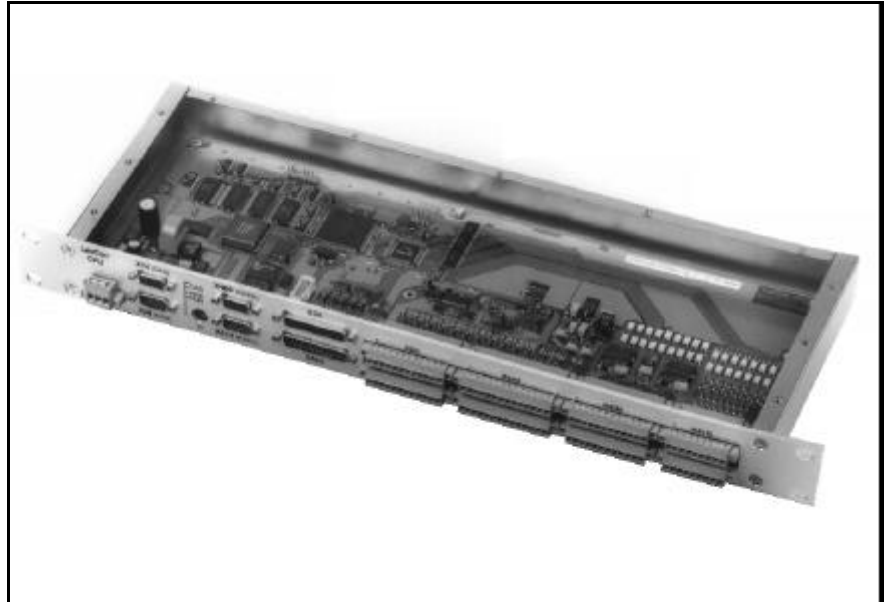
- 16 digital outputs, electrically isolated
- 4 differential outputs

Analog Inputs

- 8 analog inputs, 12 bit, 0...10 V
- 3 analog inputs, 10 bit, 0...10 V

Analog Outputs

- 4 analog outputs, 12 bit, 0...10 V



CAN-Control-CPU case with removed cover panel

Stand-Alone CAN Controller

The CAN-Control-CPU is a stand-alone controller unit in a 19" plug-in case. The power supply is 24 V/DC.

The board is equipped with a 68376 microcontroller that offers an internal CAN controller, timer/counter, SSI interface, analog inputs and digital I/O ports. The program code is stored in the local Flash EPROM. Process data can be stored in two SRAM banks. A real time clock (RTC) is integrated in a NV-RAM circuit.

Serial Communication

A terminal can be connected to a RS-232 interface via a 9-pole DSUB connector. Additionally two RS-422 inputs and two outputs are available at another 9-pole DSUB connector. Both interfaces are controlled by the serial controller DUART SC26C92.

PLD for I/Os

A PLD is used for interfacing the digital I/Os to the 68376 microcontroller.

Digital Inputs

The inputs are designed for 24 V and can be connected via a combicon-style connector. Each 8 inputs of the 16 digital inputs use one GND. The inputs are electrically isolated. Two additional inputs are equipped with Schmitt triggers.

Incremental Encoder Interfaces

There are two incremental encoder interfaces on the board that can be connected via DSUB25 connectors. Each interface is equipped with two encoder inputs and one index input. A following Schmitt trigger negates the input signal. Two additional inputs are followed by Schmitt triggers, too.

Digital Outputs

16 of the digital outputs are designed to switch 24 V to GND. The outputs are electrically isolated and protected against overtemperature and short circuit. There are four additional outputs with differential RS-422 drivers.

Analog Inputs

An AD7858 A/D converter is used to convert the input signals of eight inputs. This converter has a resolution of 12 bits. Three analog inputs are connected to the internal A/D converter of the 68376 microcontroller with a resolution of 10 bits. The input circuits are realized with INA117 instrumentation amplifiers. The input range is 0...10 V, but can be set to 0...20 mA by activating a local shunt with a solder bridge.

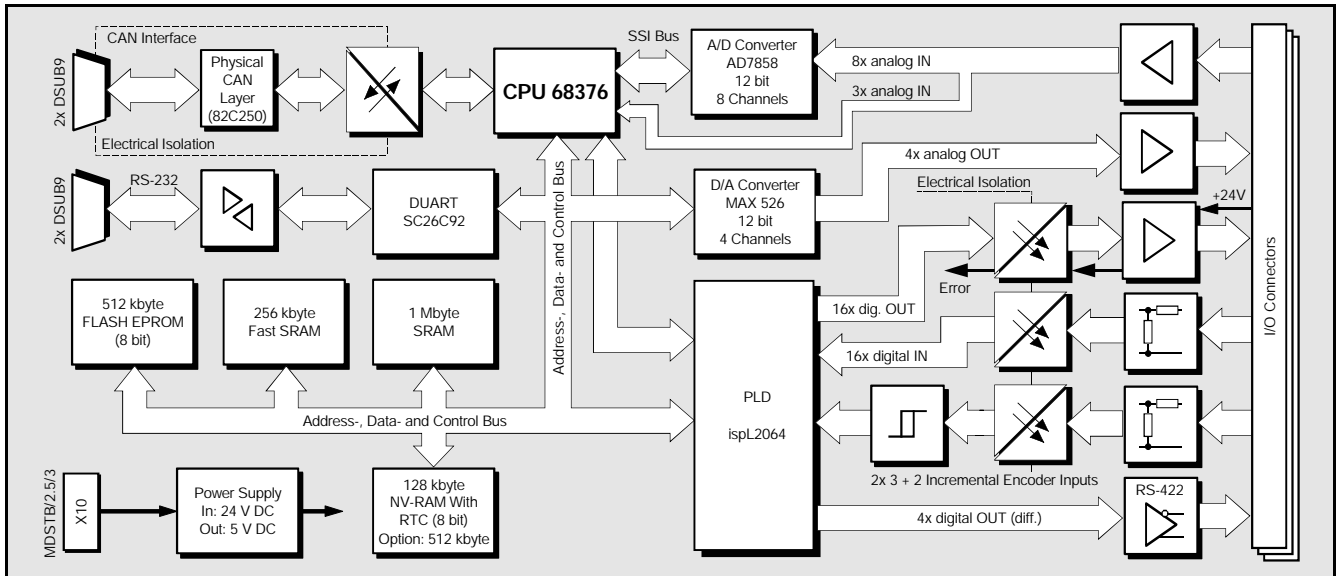
Analog Outputs

The four analog outputs of the board are realized with a MAX 526 D/A converter. This converter offers a resolution of 12 bits. The output voltage range is 0...10 V.

Software Support

The CAN-Control-CPU is shipped with the real time operating system RTOS-UH.

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Technical Specifications:

Microcontroller and CAN section:

Microcontroller:	68376
Memory:	512 kbyte Flash EPROM, 256 kbyte Fast SRAM, 1 Mbyte SRAM, 128 kbyte NV-RAM, 4 kbit serial EPROM
Serial:	controller DUART SC26C92, RS-232 interface, RS-422 interface
CAN:	68376-internal CAN controller, interface acc. to ISO11898, 1 Mbit/s, electrical isolation

Digital inputs:

Single ended inputs:	number: 16, in groups with 8 inputs each input voltage: max. $-30 V \leq U_{IN} \leq 33 V$ switching threshold: '0': $U_{IN} < 9 V$, '1': $U_{IN} > 15 V$ electrically isolated
Universal inputs:	number: 2 input voltage: 5 V, 15 V, 24 V switching threshold '1': $5 V: U_{IN} \geq 3 V$, $15 V: U_{IN} \geq 8 V$, $24 V: U_{IN} \geq 18 V$ electrically isolated

Digital outputs:

Standard outputs:	number: 16, in groups with 4 outputs each driver supply voltage: $U_{VCC} = 9.5 V \dots 35 V/DC$ load (24 V/50 °C): 0.65 A ... 1.2 A protection: short circuit, overload (thermal) electrically isolated
Differential outputs:	number: 3 driver: RS-422 driver

Incremental encoder interface:

Number of inputs:	2 encoder interfaces, 3 inputs each, 2 additional inputs
Interface:	differential, electrically isolated
Input parameter:	$U_N = 5 V$, $R_I = 182 \Omega$, $I_{TYP} = 10 mA$

Analog inputs:

AD7858-inputs:	number: 8 resolution: 12 bits range: 0...10 V, or 0...20 mA conversion time: 5 : s instrumentation amplifier: INA117
68376-inputs:	number: 3 resolution: 10 bits range: 0...10 V, or 0...20 mA conversion time: 10 : s instrumentation amplifier: INA117

Analog outputs:

Number:	4
Converter:	MAX 526
Resolution:	12 bit (converter only)
Range:	0...10 V
Settling time:	$\leq 5 : s$

General:

Ambient temperature:	0...50 °C
Humidity:	max. 90 %, non-condensing
Connector types:	combicon-style connectors and DSUB connectors
Case dimensions:	19" x 1 HE x 240 mm
Power supply:	24 V/DC, approx. 5 W

Order information:

Designation		Order no.
CAN-Control-CPU	CAN Controller with I/Os	C.2070.01
CAN-Control-CPU-RTOS-UH	RTOS-UH real time operating system for CAN-Control-CPU	C.2070.10
CAN-Control-CPU-CON	Set of connector pluggs	C.2070.11
CAN-Control-CPU-ME	English users' manual	C.2070.21