

Powerful Safety Electronic Control Unit – TTC 2310

General description

The robust and powerful TTC 2310 mid-sized electronic control solution is equipped with Infineon's TriCore™ Aurix™ TC 377 CPU to fulfill the demanding performance requirements of off-highway and automotive safety applications.

Protected by a compact and robust housing, the device was especially developed for vehicles and machines used in a rugged operating environment and at extreme operating temperatures. Due to the ISO 26262 ASIL C automotive safety certification, the device is also used in road vehicles.

Specifications

| Parameter | | Unit |
|--|----------------------|------|
| ECU dimensions | 170.6 x 232.0 x 42.0 | mm |
| Dimensions for minimum connector release clearance | 70.0 x 182.0 x 50.0 | mm |
| Weight | 1215 | g |
| Connector | 2 x 48 | pins |
| Operating temperature | -40 to +85 | °C |
| Operating altitude | 0 to 4000 | m |
| Supply voltage | 8 to 32 | V |
| Maximum supply current at 12 / 24V without load | 200 / 130 | mA |
| Maximum standby current | <1 | mA |
| Maximum total load current | 45 | A |

Standards

| | | |
|--------------------|--|---|
| Functional safety | IEC 61508 SIL2 EN ISO 13849 PL d ISO 25119 AgPL d SRL2 | ISO 26262 ASIL C ISO 19014 MPL d |
| CE | 2014/30/EU 2011/65/EU | 2006/42/EC |
| E-Mark | ECE-R10 Rev.6 | |
| FCC | 47 CFR Part 15B, Class A | |
| EMC | EN 13766 ISO 14982 CISPR 25 | IEC 61000-4-2/-3/-4/-5/-6/-8 IEC 61000-6-4 |
| ESD | ISO 10605 | |
| Electrical | ISO 16750-2 ISO 7637-2,-3 | |
| Ingress protection | EN 60529 IP65 and IP67 ISO 20653 IP6k9k | |
| Climatic | ISO 16750-4 | |
| Mechanical | ISO 16750-3 | |
| ISOBUS | ISO 11783 | |

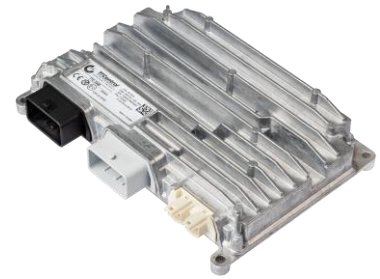
Software

- Available with the software platform MATCH® by HYDAC Software.
- C Programming Environment with real-time operating system
- CODESYS®** Safety SIL 2 including support for CANopen® Safety Master

Board temperature, sensor supply, and supply voltage are monitored by software. Two independent safety shut-off groups for output stages. For details on the standards, see the system manual.

* upcoming feature

** can be used as PWM low side only in combination with PWM high side



Features

CPU core

- 32-Bit Infineon TriCore™ Aurix™ TC 377
- 3 cores (2 lockstep cores) running at 300 MHz and memory protection for safety-relevant applications
- Floating-Point Unit and Hardware Security Module
- 992 KB int. SRAM, 6 MB int. Flash
- 16 MB ext. Flash, 8 kB FRAM, 256 KB int. EEPROM emulation

Interfaces

- 4 x CAN / CAN FD 50 kbit/s up to 2 Mbit/s (1 x CAN with wake-up capability and 1 x CAN ISOBUS)
- 1 x CAN bus termination configurable via connector pins
- 4 x SENT (with SPC support*), 1 x LIN

Outputs

- 10 x PWM OUT up to 1 kHz or digital OUT, up to 4 A (2 x up to 8 A), high side, with current measurement, alternative use as digital timer IN* (0.1 Hz - 20 kHz) or analog IN 12 bit, 0 - 32 V or LED control OUT*
- 18 x digital OUT up to 4 A, high side, with current sense alternative use 4 x as voltage OUT 0 - 10 V or 10 x as PVG OUT, 10 - 90% of BAT+ or 8 x as digital timer IN (0.1 Hz - 20 kHz)* or LED control OUT* or analog IN 12 bits, 0 - 32 V
- 4 x PWM OUT up to 4 kHz, up to 4 A, low side, with current measurement (featuring timer feedback) alternative use as analog IN 12 bit, 0 - 5 V, 0 - 32 V or as digital timer IN (0.1 Hz - 20 kHz)
- 4 x PWM OUT** up to 4 kHz, up to 4 A, low side, with current measurement alternative use as analog IN 12 bit, 0 - 5 V, 0 - 32 V
- 1 x emergency stop OUT*, alternative use as analog IN 12 bit, 0 - 32 V
- Option to configure up to 4 x H-bridges for motor control*
- 3 x status LED

Inputs

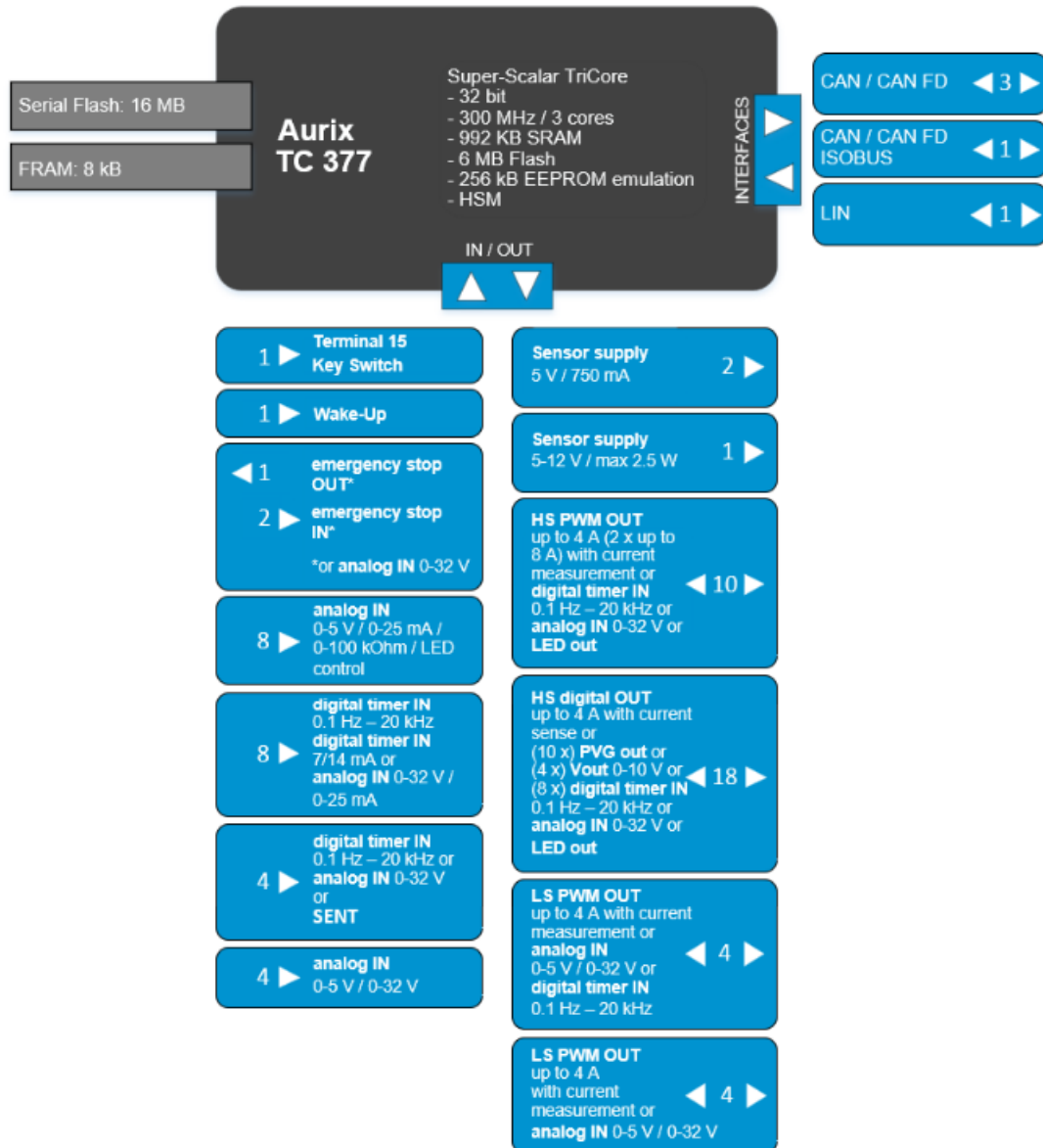
- 8 x analog IN 12 bit, 0 - 5 V, 0 - 25 mA, 0 - 100 kOhm, LED control*
- 4 x analog IN 12 bit, 0 - 5 V, 0 - 32 V
- 8 x digital timer IN (0.1 Hz - 20 kHz), encoder support, configurable pull-up/down, support for 7/14 mA current loop speed sensors alternative use as analog IN 12 bit, 0 - 32 V, 0 - 25 mA
- 4 x digital timer IN (0.1 Hz - 20 kHz), encoder support, configurable pull-up, alternative use as analog IN 12 bit, 0 - 32 V or SENT interface
- 2 x emergency stop IN*, alternative use as analog IN 12 bit, 0 - 32 V
- Terminal 15 and Wake-Up pin

Sensor supply

- 2 x sensor supply, 5 V, max. 750 mA
- 1 x sensor supply, 5 - 12 V, max. 2.5 W, max 750 mA, configurable by SW in 0.5 V steps

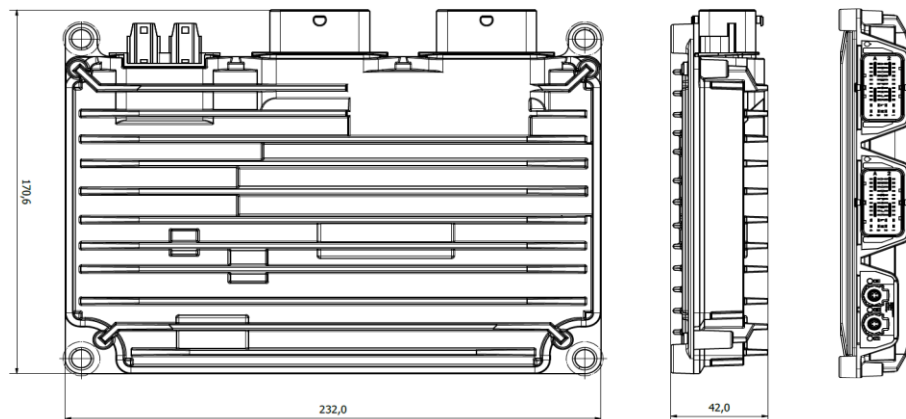
All inputs and outputs supporting analog IN can also be used as digital Input. All I/Os and interfaces are protected against short circuit to GND and BAT+ and can be configured by software.

Block diagram



Housing and connector

Aluminium die-cast housing
2 x 48-pin connectors



For further information, including price and availability, please contact products@ttcontrol.com

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