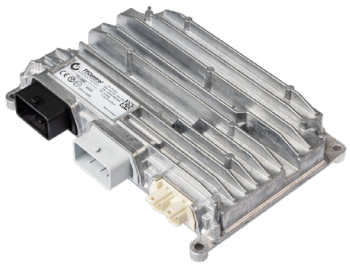
Powerful Safety Electronic Control Unit – TTC 2390

General description

The robust and powerful TTC 2390 mid-sized electronic control solution is equipped with Infineon's TriCore™ Aurix™ TC 397 CPU to fulfil the demanding performance requirements of off-highway and automotive safety applications.

Protected by a compact and robust housing, the device is specially 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	1220	g
Connector	2 x 48-pin + 1 x 2-slot HSD	
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
UKCA	SI 2016 no.1091 SI 2008 no.1597	SI 2012 no. 2032
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 397
- 6 cores (4 lockstep cores) running at 300 MHz and memory protection for safety-relevant applications
- Floating-Point Unit and Hardware Security Module
- 6.47 MB int. SRAM, 16 MB int. Flash
- 32 MB ext. Flash, 1 MB int. EEPROM emulation

Interfaces

- 4 x 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
- 2 x 100BASE-TX (internal configurable Ethernet switch) *
- 4 x SENT (with SPC support*), 1 x LIN

Outputs

- 18 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*
- 10 x digital OUT up to 4 A, high side, current sense
  alternative use as PVG OUT, 10 - 90% of BAT+ or
  4 x as voltage OUT 0 - 10 V or
  LED control OUT* or analog IN 12 bit, 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
- 4 x digital OUT 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
- 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. 500 mA
- 1 x sensor supply, 5 - 12 V, max. 2.5 W, 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.

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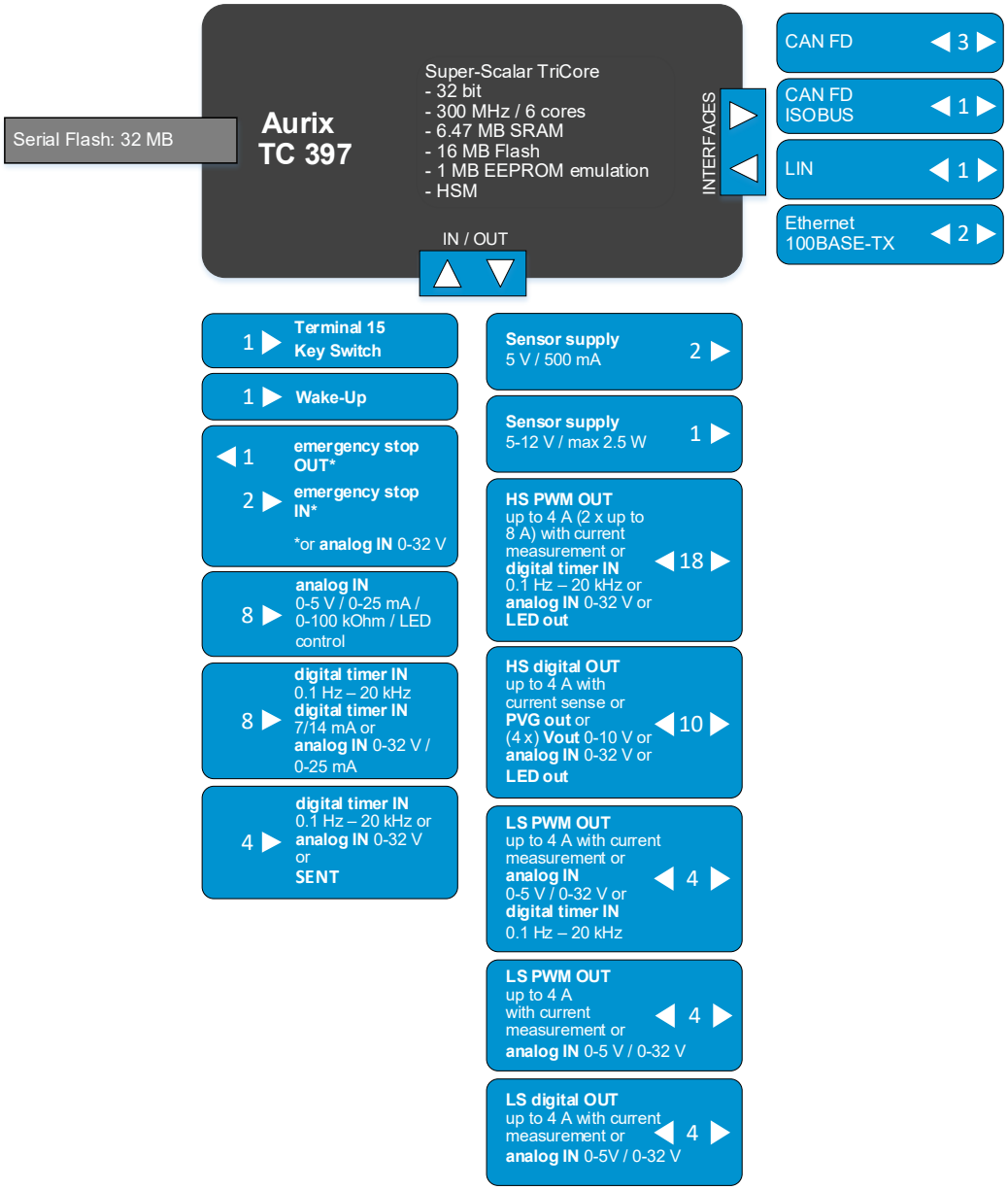
Block diagram

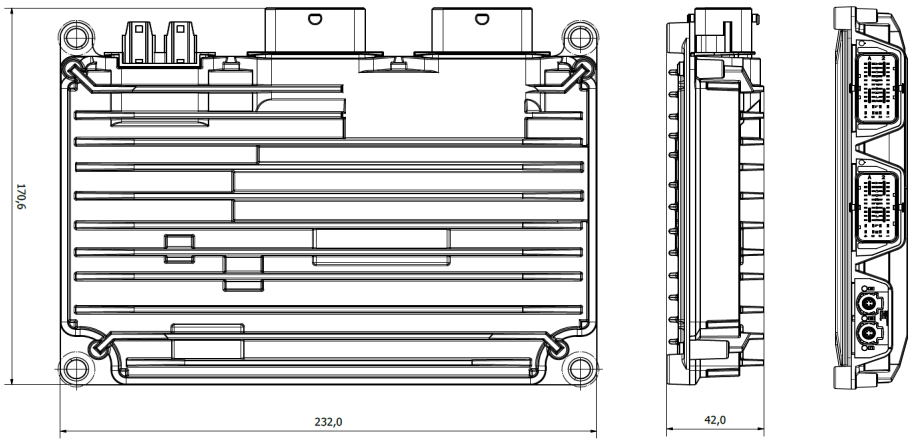


Housing and connector

Aluminium die-cast housing

2 x 48-pin connectors

1 x 2-slot HSD connector



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