High Performance Safety Controller – TTC 508

General Description

TTC 508 is a high-end electronic control solution for the off-highway industry. The core of the controller is the powerful TMS570 CPU designed for use in demanding safety-critical automotive and transportation applications. The TTC 508 fulfils safety requirements up to SIL 2 (IEC 61508), PL d (EN ISO 13849), AgPL d (ISO 25119) and ASIL C (ISO 26262).

The TTC 508 is part of a complete and compatible product family and is protected by a compact, automotive-style housing suited to mobile applications.

Specifications

Parameter		Unit
ECU dimensions	231.3 x 204.9 x 38.8	mm
Dimensions for minimum connector release clearance	315.3 x 204.9 x 38.8	mm
Weight	1,200	g
Connector	154	pins
Operating temperature	-40 to +85	°C
Operating altitude	0 to 4,000	m
Supply voltage	8 to 32	V
Peak supply voltage	45	V_{max}
Supply current at 12/24 V without load	400/200	mA_{max}
Standby current	<1	mA_{max}
Total load current	40	A_{max}

Standards	
Functional safety	IEC 61508 SIL2 EN ISO 13849 PL d ISO 25119 AgPL d ISO 26262 ASIL C
CE-Mark	2014/30/EU 2006/42/EC
E-Mark	ECE-R10 Rev.6
EMC	EN 13309 ISO 14982 CISPR 25 EN 61000-6-2/-4
ESD	ISO 10605
Electrical	ISO 16750-2 ISO 7637-2, -3
Ingress protection	EN 60529 IP67 ISO 20653 IP6k9k
Climatic	ISO 16750-4 EN 50581
Mechanical	ISO 16750-3
ISOBUS	ISO 11783

Software

- C-Programming environment

Features

CPU Core

- 32-bit TI TMS570, ARM cortex-R4F based
- Dual-core lockstep CPU and memory protection for safety-relevant applications
- 180 MHz, 298 DMIPS, Floating-Point Unit
- 3 MB int. Flash, 256 kB int. RAM
- 16 MB ext. Flash, 2 MB ext. RAM, 64 kB ext. EEPROM
- Safety Companion CPU

Interfaces

- 2 x CAN 50 kbit/s up to 1 Mbit/s
- 1 x CAN ISOBUS
- 3 x CAN bus termination configurable via connector pins
- 1 x 100BASE-T1 BroadR-Reach®
- 1 x Real-Time Clock

Outputs

- 10 x PWM OUT or digital OUT, up to 4 A, high side, with high side current measurement
- 8 x digital OUT up to 4 A, high side, overload and open load detection, current sense
  alternative use as LED control OUT or
  analog IN 12-bit, 0 - 32 V with configurable pull-up/down
- 8 x digital OUT up to 4 A, low side, current sense, overload and open load detection,
  alternative use as analog IN 12-bit, 0 - 32 V
- Wiring option to use up to 8 of the digital OUT, high side and 8 digital OUT, low side, as full H-bridge for motor control

Multi-purpose I/Os

- 6 x configurable as
  - PVG OUT, 10 - 90% of BAT+ or
  - voltage OUT, 0 - 100% of BAT+ or
  - digital OUT up to 4 A high side or
  - LED control OUT or
  - analog IN 12 bit, 0 - 32 V

Inputs

- 8 x analog IN 12-bit, 0 - 5 V, 0 - 25 mA, 0 - 100 kOhm
- 8 x analog IN 12-bit, 0 - 5 V, 0 - 10 V, 0 - 25 mA
- 8 x analog IN 12-bit, 0 - 5 V, 0 - 32 V, 0 - 25 mA
- 6 x digital timer IN (0.1 Hz - 20 kHz), encoder supporting digital voltage sensors with configurable pull-up/down, digital (7/14 mA) current loop speed-sensor
  alternative use as analog IN 12-bit, 0 - 32 V
- 6 x digital timer IN (0.1 Hz - 20 kHz), encoder supporting digital voltage sensors with configurable pull-up/down,
  alternative use as analog IN 12-bit, 0 - 32 V
- 8 x digital timer IN (0.1 Hz - 10 kHz) with pull-up
- Terminal 15 and wake up

Sensor supply

- 1 x sensor supply, 5 V, max. 500 mA

All I/Os and interfaces are protected against short circuits to GND and BAT+ and can be configured by software.

Board temperature, sensor supply and supply voltage are monitored by software.

Inputs and Outputs can also be used as digital Inputs.

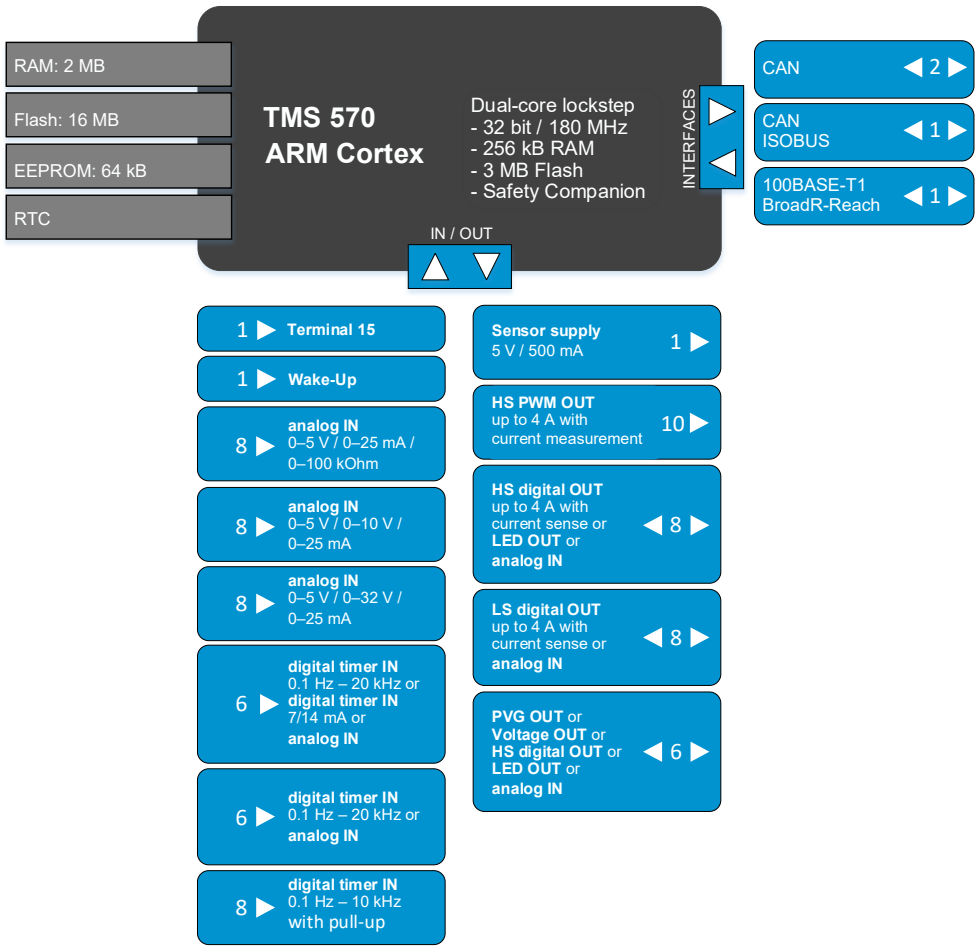
Two independent shut-off groups for PWM output stages are available.
Details about the standards can be found in the System Manual.

TTControl S.r.l. – Brixen, Italy
Tel. +39 0472 26 80-11

products@ttcontrol.com, www.ttcontrol.com

TTControl GmbH – Vienna, Austria
Tel.: +43 1 585 34 34-0

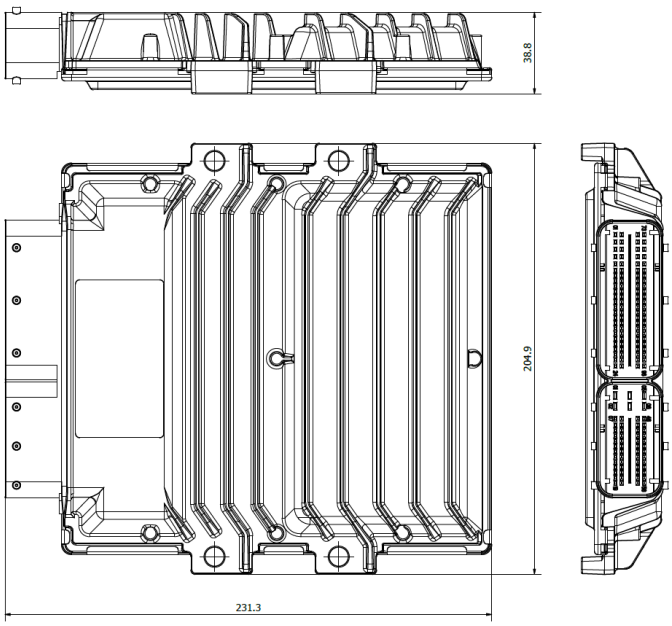
Block Diagram



Housing and connector

Aluminium die-cast housing

154-pin connector



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