High Performance Safety Controller –TTC 580

General Description

TTC 580 is a high-end electronic control solution for the off-highway industry satisfying all upcoming needs: The core of the controller is the very powerful TMS570 CPU designed for use in demanding safety-critical automotive and transportation applications. The TTC 580 fulfils safety requirements up to SIL 2 (IEC 61508), PL d (EN ISO 13849), AgPL d (ISO 25119 *) and ASIL C (ISO 26262 *).

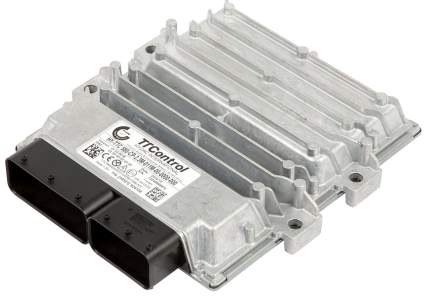
The TTC 580 is part of a complete and compatible product family and is protected by a compact, automotive-style housing suited to mobile applications.

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	1200	g
Connector	154	pins
Operating Temperature	-40 to +85	°C
Operating Altitude	0 to 4000	m
Supply Voltage	8 to 32	V
Peak Supply Voltage	45	V_{max}
Supply Current at 12/24V without load	400/200	mA_{max}
Standby Current	<1	mA_{max}
Total Load Current	60	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.4	
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	

Software

- C-Programming environment
- SAFERTOS® integration, as extension of C-Programming environment
- CODESYS® Safety SIL 2 including support for CANopen® Safety Master
- CODESYS® V3 including support for CANopen® Master



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
- 8 MB ext. Flash, 2 MB ext. RAM, 64 kB ext. EEPROM
- Safety Companion CPU

Interfaces

- 7 x CAN 50 kbit/s up to 1 Mbit/s
- 4 x CAN bus termination configurable via connector pins
- 1 x Ethernet (10 / 100 Mbit/s)
- 1 x LIN, 1 x RS232
- 1 x Real Time Clock

Outputs

- 36 x PWM OUT or digital OUT, up to 4 A, high side, with high side current measurement
  8 of these outputs can be alternatively used as digital timer IN (0.1 Hz - 10 kHz)
- 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/O´s

- 8 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
- Terminal 15 and wake up

Sensor supply

- 2 x sensor supply, 5 V, max. 500 mA
- 1 x sensor supply, 5 – 10 V, max. 2.5 W, configurable by SW in 1 V steps

All I/Os and interfaces are protected against short circuit 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 Input.

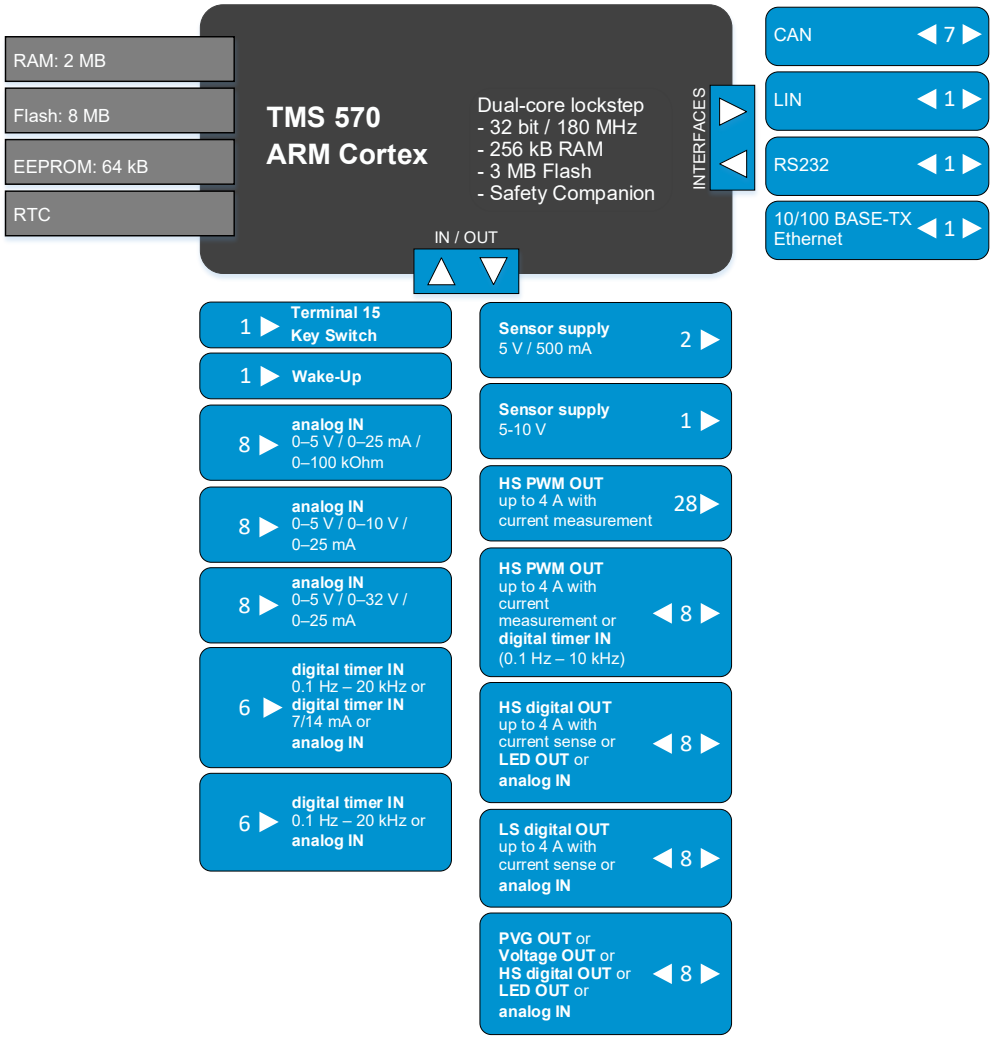
Three independent shut-off groups for PWM output stages.

Details to the standards can be found in the System-Manual.

* Available for C-Programming environment only.

TTControl S.r.l. – Brixen, Italy
Tel. +39 0472 26 80-11,
office@ttcontrol.com, www.ttcontrol.com
TTControl GmbH – Vienna, Austria
Tel.: +43 1 585 34 34-0

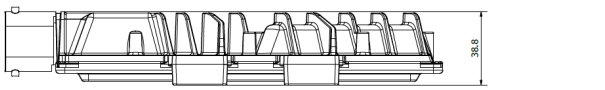
Block Diagram

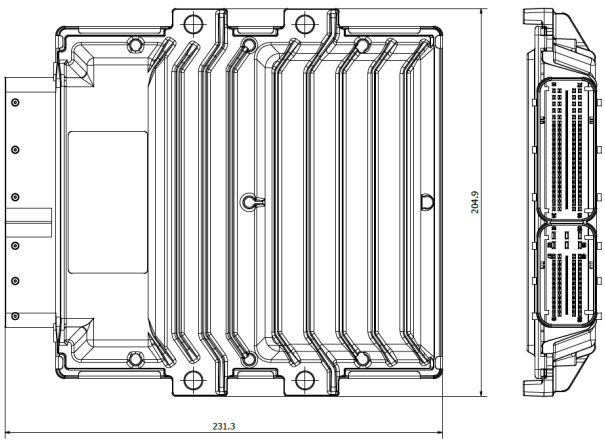


Housing and Connector

Aluminium die-cast housing

154-pin connector





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