Universal Off-Highway Control – TTC 94

General Description

The TTC 94 is an extremely robust and powerful electronic control unit for use in off-highway applications. This controller compliance with the international EN ISO 13849 standard and has been certified by TÜV Nord; It meets the requirements of Functional Safety according to Performance Level (PL) d*. The TTC 94 is equipped with the Infineon XC2287M CPU providing enhanced safety features for protecting internal RAM and flash. This variant is part of a complete and compatible product family and is protected by a compact, automotive-style housing suited to mobile applications in harsh environments.

Specifications

Parameter		Unit
ECU Dimensions	147.6 x 180.3 x 39.8	mm
Dimensions for minimum connector release clearance	197.7 x 202.8 x 39.8	mm
Weight	about 650	g
Operating Temperature	- 40 to +85 (full load) - 40 to +105 (lim. load)	°C
Operating Altitude	0 to 4000	m
Supply Voltage	8 to 32	V
Peak Voltage	45	V_{max}
Standby Current	0.5	mA_{max}
Idle Current	0.15 at 9 V	A_{max}
Current	25	A_{max}
Fulfills the following standards		
Functional Safety	EN ISO 13849 PL d*	
CE-Mark	2014/30/EU 2006/42/EC	
E-Mark	ECE-R10 Rev.4	
EMC	ISO 13766, up to 200 V/m, 20 MHz to 1GHz	
ESD	IEC 61000-4-2	
Load Dump	ISO 7637-2, 173 V, 2 Ohm	
Ingression Protection	EN 60529 IP 65, IP67 DIN 40050 IP 6K9K	
Temperature	EN 60068-2-1, -14Nb, -2, -78, -30	
Climatic	EN 50581	
Vibration, Shock, Bump	IEC 60068-2-29, -64, -27, -32	

Features

All I/Os and interfaces mentioned below are protected against short circuit to GND and BAT+.

CPU Core
- 16/32-bit Infineon XC2287M safety microcontroller, 80 MHz, 832 kB int. Flash, 50 kB int. RAM, 512 kB ext. RAM
- CPU-internal safety features
  - Hardware CRC checker for supervising flash memory
  - Integrated Memory Protection Unit (MPU)
  - RAM content protection through Error-Correcting-Code (ECC).
- Watchdog CPU Freescale HC 908, including monitoring software
- 64 kbit EEPROM

Interface
- 1 x RS-232 and 1 x LIN serial interfaces
- 4 x CAN, 125 kbit/s up to 1 Mbit/s

Outputs
- 8 x digital OUT 2 A high-side, PWM, configurable as timer inputs
- 8 x digital OUT 4 A high-side, configurable as analog inputs

Inputs
- 8 x analog IN 0 to 5 V / 10-bit, configured by software alternative use as resistive measurements
- 8 x analog IN 0 to 32 V / 10-bit, range configurable by SW
- 4 x current feedback, configurable as digital outputs/ low side 2 A
- 4 x digital IN (4 timer 0.1 Hz to 10 kHz), digital (7/14 mA) current loop speed-sensor
- 8 x digital IN

Other
- Internal: monitoring of board temperature, sensor supply and battery
- 1 x sensor supply 8.5/10.0/14.5 V configurable
- 2 x sensor supply 5 V

Software
- Available with the software platform MATCH® by HYDAC Software.
- Programming: C, CODESYS® 2.3 including support for CANopen®

* For C-Programming environment only

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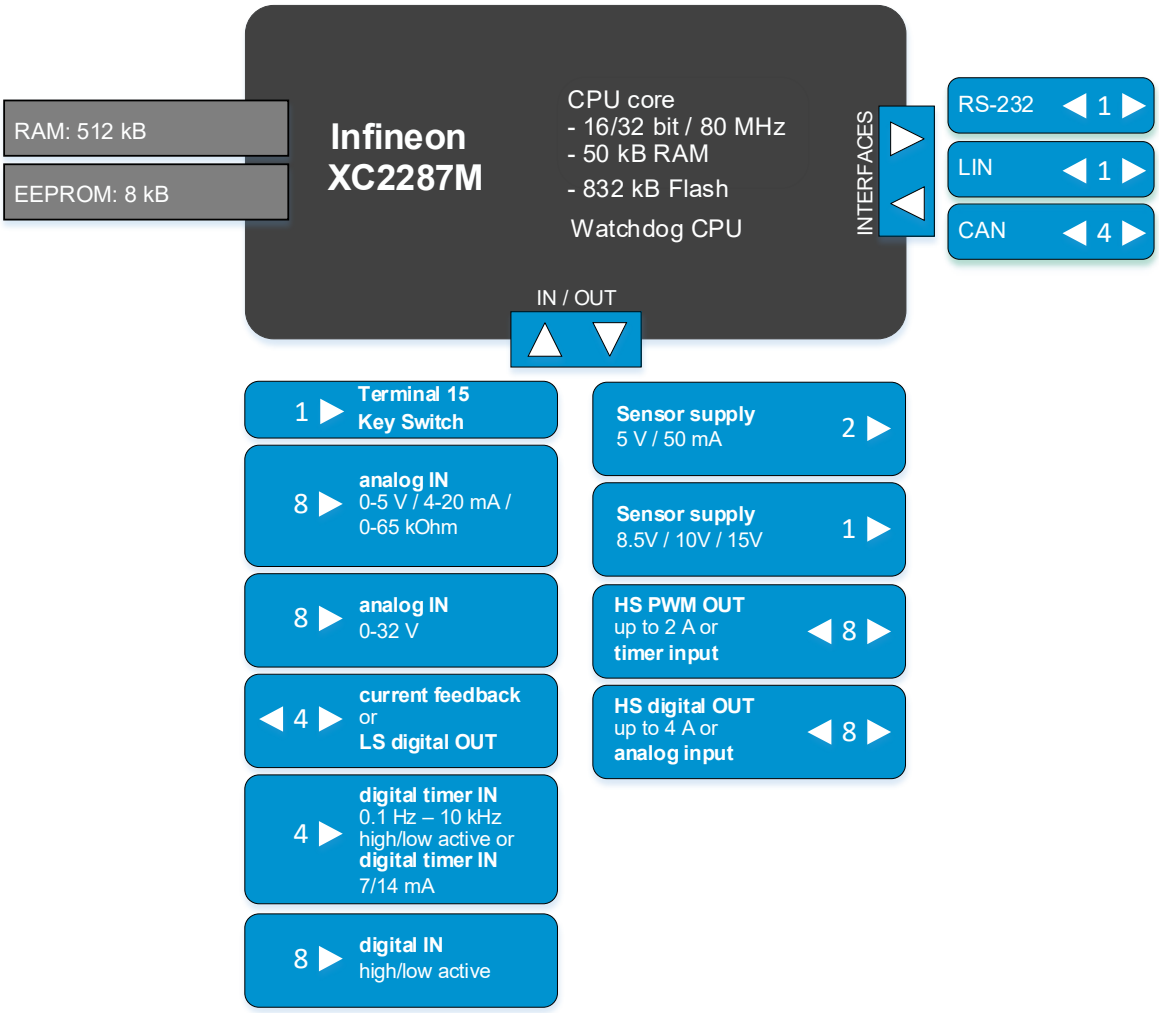
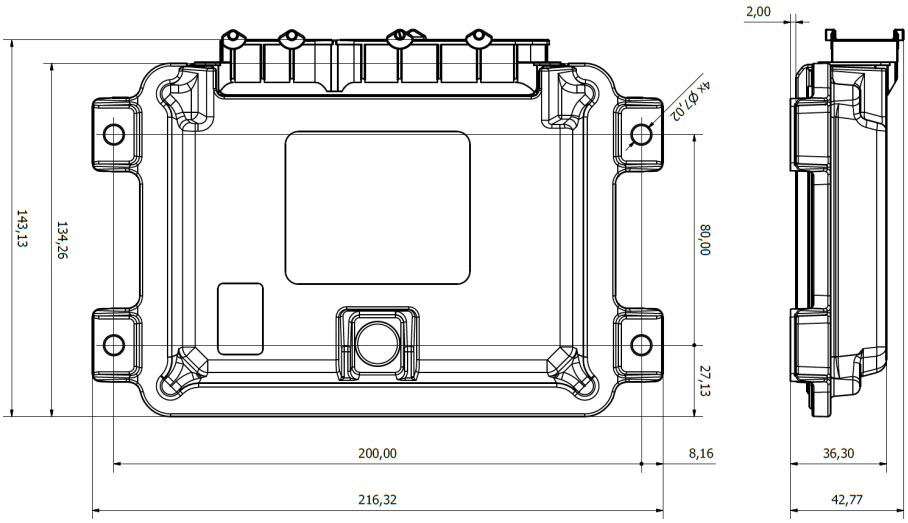
Block Diagram



Housing and Connector

- Aluminium pressure die-cast housing
- Waterproof 80-pin connector
- Pressure adjusting with water barrier



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