Universal Mobile Controller
HY-TTC 94

Functional Safety
PL d

TÜV NORD
TÜV NORD CERT GmbH
Safety Approved
DIN EN 13849-1
PL d

Description

Alongside the HY-TTC 90, the HY-TTC 94 is safety-certified and is the most powerful controller in the 16 bit controller series. It meets all the technical requirements of modern vehicle electronics in the off-highway sector.

The HY-TTC 90/94 was developed in accordance with the international standards IEC 61508 and ISO/EN 13849 and is certified by TÜV NORD. Therefore, it meets the requirements of safety levels PL d (Performance Level d).

For the CPU, it uses the safety CPU XC2287M which was specially developed by Infineon for safety applications. This offers enhanced safety features for the protection of the internal RAM and Flash memories.

Special features

- **PL d certified**
- Additional watchdog CPU
- Programming in CODESYS® 2.3 or C/C++
- 570 kB RAM
- 48 inputs and outputs, including
  - 16 power outputs
  - 4 current measuring inputs
  - 8 analogue inputs: voltage / current
  - 8 analogue inputs: voltage, configurable
- All inputs and outputs are configurable and are protected against overvoltage and short circuits
- Stabilized, adjustable sensor voltage supply with internal monitoring
- No reset caused by dip in voltage when engine is started
- Robust aluminium die cast housing with a waterproof 80-pole male connection and pressure equalization via a waterproof Gore-Tex® membrane
- E12 type approval

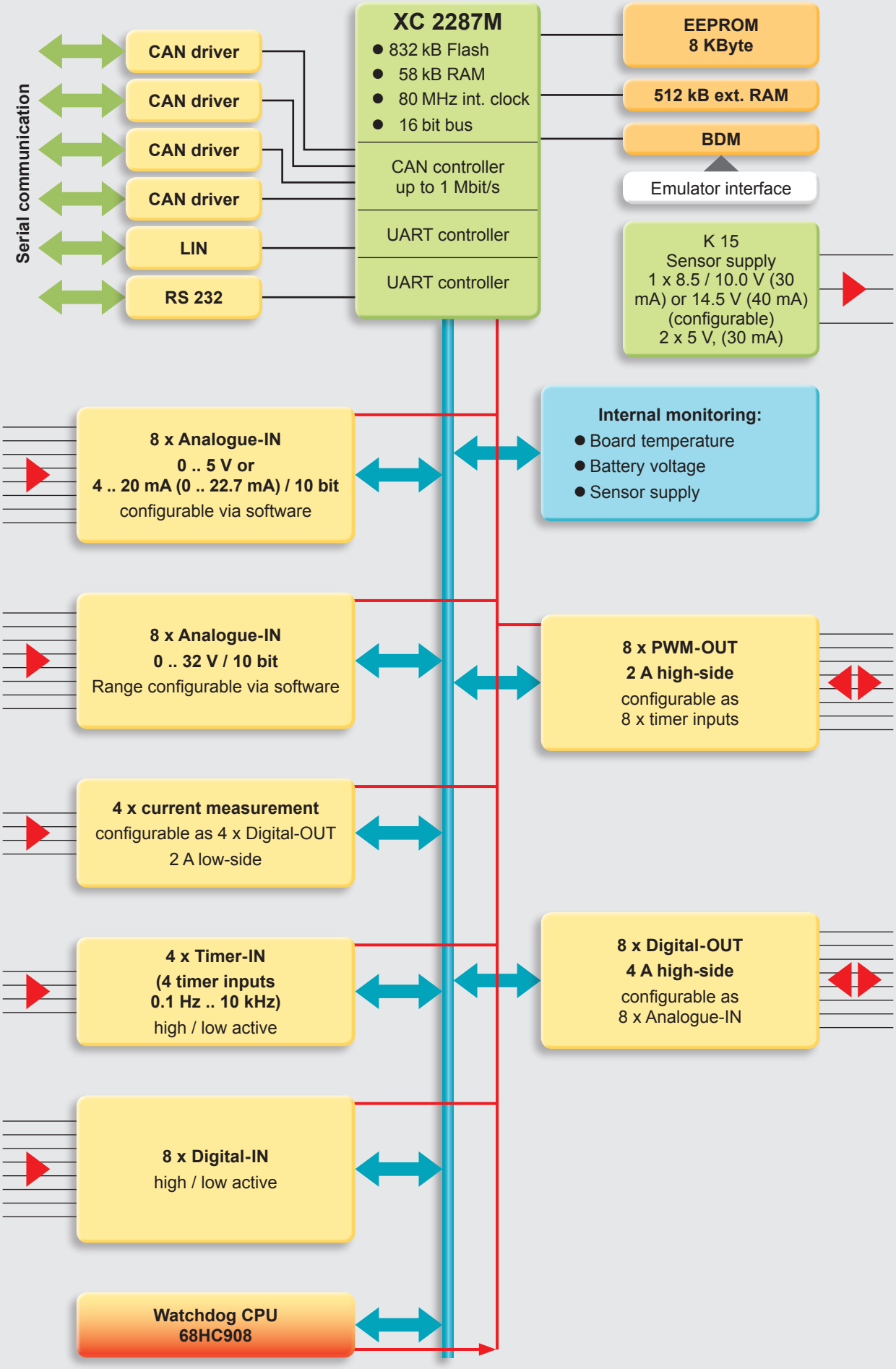
Technical data

Ambient conditions	
Operating temperature	-40 .. +85 °C (with full load) to EN 60068-2
Operating altitude	0 .. 4,000 m
Supply voltage	8 .. 32 V
Permitted voltage drop	up to ≥4 V (U_{Bat}) without reset to ISO 7637-1 (for engine start in 12 V systems)
Peak voltage	45 V max. (1 ms)
Idle current	0.15 A max. at 9 V
Standby current	0.5 mA max.
Current consumption	25 A max. (complete voltage and temperature range)
Fulfils the following standards	
CE mark	Compliant with 2004/108/EC
E-mark	ECE-R10 Rev.3
Functional safety	EN ISO 13849 -PL d-
EMC	ISO 13766 (up to 200 V/m, 20 MHz .. 1 GHz)
ESD	IEC 61000-4-2
Load dump	ISO 7637-2
Protection class	EN 60529 IP 65 / IP 67 DIN 40050 IP 6k9k
Temperature	EN 60068-2-1; -14Nb; -2; -78; -30
Vibration, shock, bump	IEC 60068-2-29; -64; -27; -32
Dimensions and weight	
Housing dimensions	148 x 181 x 40 mm
Minimum clearance for connection	198 x 203 x 40 mm
Weight	664 g
Features	
16-Bit Infineon XC2287M microcontroller, 80 MHz, 832 kB int. Flash, 58 kB int. RAM, 512 kB ext. RAM	
8 KByte EEPROM	
Watchdog CPU freescale HC 908, including monitoring software	
1 x RS-232 and 1 x LIN serial interfaces	
4 x CAN, up to 1 Mbit/s	
128 individually configurable CAN message buffers	
8 x Analogue-IN 0 .. 5 V or 4 .. 20 mA (0 .. 22.7 mA) / 10 bit, configurable via software	
8 x Analogue-IN 0 .. 32 V / 10 bit, range configurable via software	
4 x current measurement, configurable as 4 x Digital-OUT / low-side 2 A	
4 x Timer-IN (timer input 0.1 Hz .. 10 kHz)	
8 x Digital-IN	
8 x PWM-OUT 2 A high-side, configurable as 8 x Timer inputs	
8 x Digital-OUT 4 A high-side, configurable as 8 x Analogue-IN	
Internal monitoring of board temperature, sensor supply and battery voltage	
Connector types: 52-pole Tyco PN 1393450-5 / 28-pole Tyco PN 1393436-4	
1 x sensor supply 8.5 V / 10.0 V (30 mA) or 14.5 V (40 mA) configurable	
2 x sensor supply 5 V (30 mA)	
Programming: CODESYS® 2.3; C/C++	

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

Block circuit diagram

HY-TTC 94



Model code

HY-TTC 94 – XX – 570K – 832K – WD XX – 000

Firmware
CD = CODESYS® run-time system for CODESYS® development environment
CP = for “C/C++” programming without CODESYS®

RAM memory (internal and external)
570K = 570 kByte

Flash memory (internal and external)
832 K = 832 kByte

Functional safety
WD = watchdog with standard software

Unit options
00 = none

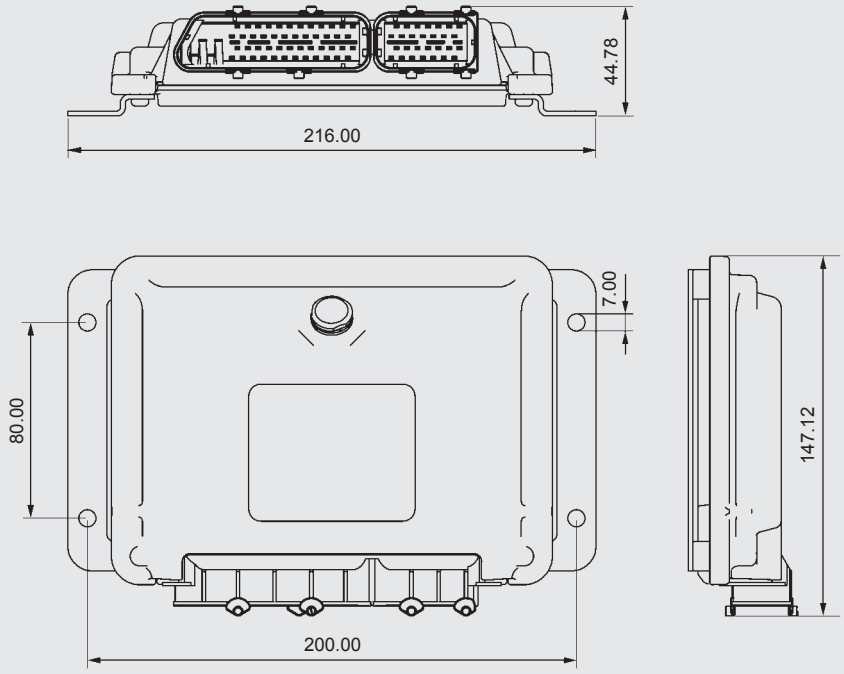
Modification number
000 = standard

Note:
On instruments with a different modification number, please read the label or the technical amendment details supplied with the instrument.

Accessories
Appropriate accessories, such as cables and connectors, service tools, software etc. can be found in the Accessories section.

Dimensions

52-pole Tyco PN 1393450-5 / 28-pole Tyco PN 1393436-4



Note

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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