



## Mobile Controller HY-TTC 94

Functional safety  
PL d



### Description

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 94 was developed in accordance with the international standard ISO/EN 13849 and is certified by TÜV Nord. Therefore, it meets the requirements of safety level **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
- 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
- Stabilised, 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

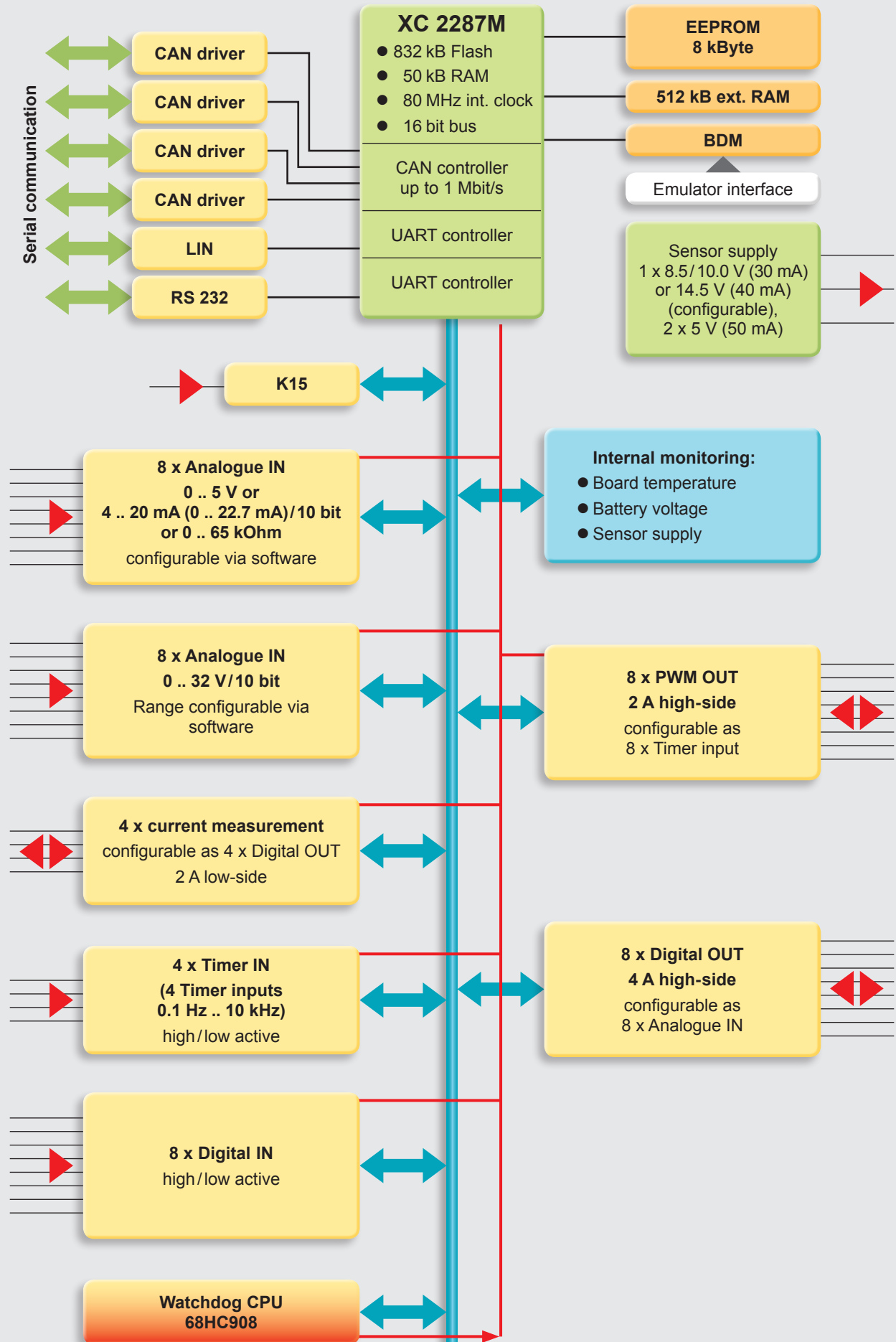
### Technical data

Environmental conditions	
Operating temperature	-40 .. +85 °C (full load) acc. to EN 60068-2
Operating altitude	0 .. 4,000 m
Supply voltage	8 .. 32 V
Permitted voltage drop	up to ≥ 4 V (U <sub>BAT</sub> ) 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 2014/30/EU, 2006/42/EC
E-mark	ECE-R10 Rev.4
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, 50 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, 2 x with terminations configurable via pin	
128 individually configurable CAN message buffers	
8 x Analogue IN 0 .. 5 V or 4 .. 20 mA (0 .. 22.7 mA) / 10 bit or 0 .. 65 kOhm, 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 / 2 A low-side	
4 x Timer IN (Timer inputs 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 (50 mA)	
Programming: CODESYS 2.3; 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 programming without CODESYS

### RAM memory (internal and external)

570K = 570 kByte

### Flash memory (internal and external)

832K = 832 kByte

### Functional safety

WD = Watchdog with standard software

### Equipment options

00 = none  
10 = open housing / developer version

### Modification number

000 = standard

### Note

On devices with a different modification number, please read the name plate or the technical amendment details supplied with the device.

### Accessories

Appropriate accessories, such as cable harnesses, cabling and connection technology, service tools and software can be found in the Accessories section.

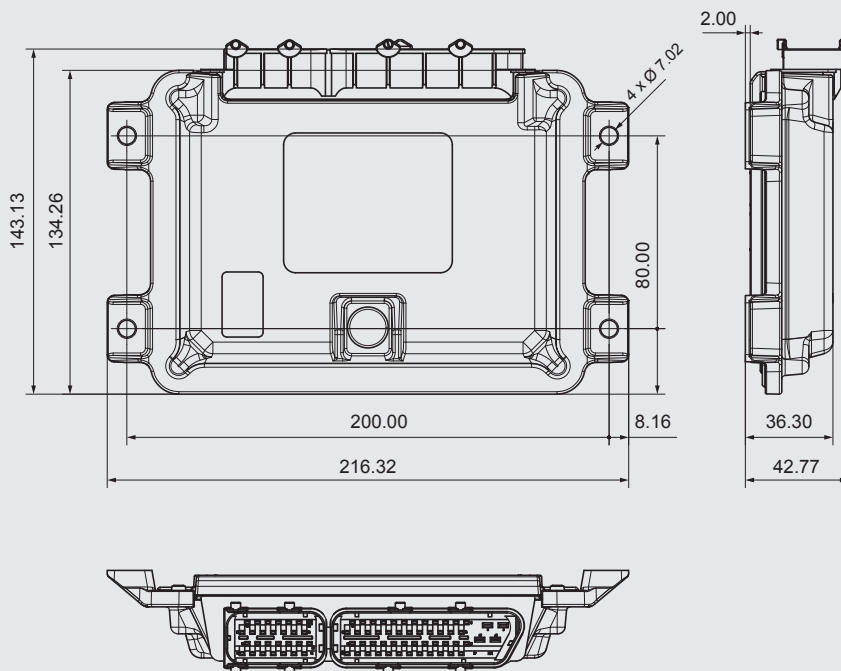
## Note

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

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

Subject to technical modifications and corrections.

## Dimensions



### HYDAC ELECTRONIC GmbH

Hauptstr. 27  
66128 Saarbrücken, Germany  
Tel. +49 6897 509-01  
Fax +49 6897 509-1726  
E-mail: [electronic@hydac.com](mailto:electronic@hydac.com)  
Internet: [www.hydac.com](http://www.hydac.com)

