HYDAC | INTERNATIONAL

Mobile Controller
HY-TTC 60

Description

The HY-TTC 60 is the enhanced model in the 16-bit controller series and compared to the basic version, offers additional input functions.

It is a powerful device which can be used both as a stand-alone solution and as a part of a networked system in modern machines. It meets all the technical requirements of modern automotive electronics in the off-highway sector.

Two CAN interfaces, an RS-232 interface and a LIN interface are available for serial communication.

The HY-TTC 60 is part of a complete and compatible product series. It is protected by a robust and extremely compact housing which was specially designed for the off-highway vehicle industry.

Special features

- Programming in CODESYS 2.3 or C
- 594 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
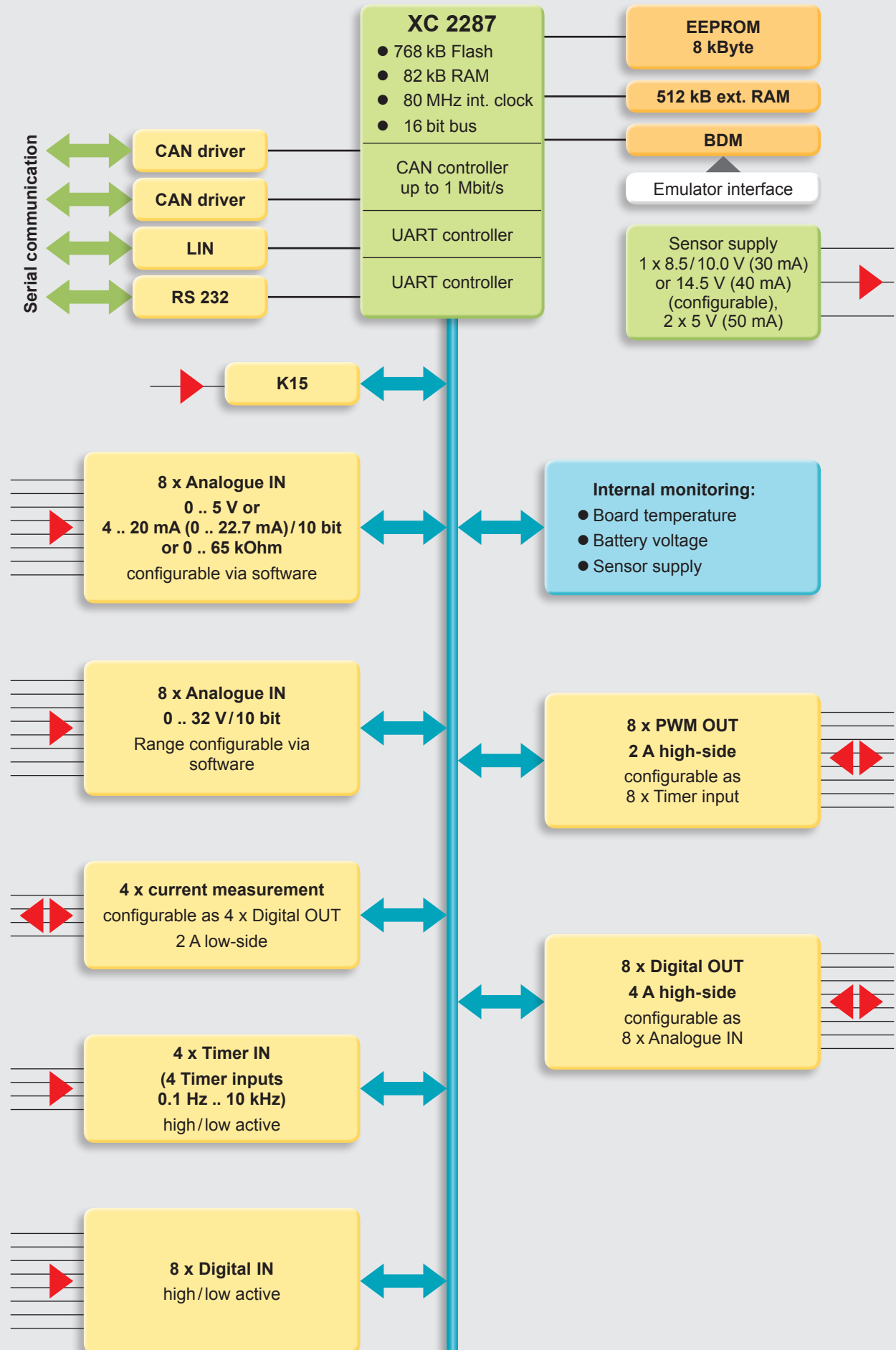- E12 type approval

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_{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	
C€ mark	Compliant with 2014/03/EU
E-mark	ECE-R10 Rev. 4
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	675 g
Features	
16-bit Infineon XC 2287 microcontroller, 80 MHz, 768 kB int. Flash, 82 kB int. RAM, 512 kB ext. RAM	
8 kByte EEPROM	
1 x RS-232 and 1 x LIN serial interfaces	
2 x CAN, up to 1 Mbit/s, 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 60

XC 2287
- 768 kB Flash
- 82 kB RAM
- 80 MHz int. clock
- 16 bit bus

CAN controller
up to 1 Mbit/s

UART controller

UART controller

**EEPROM
8 kByte**

512 kB ext. RAM

BDM

Emulator interface

Sensor supply
1 x 8.5 / 10.0 V (30 mA)
or 14.5 V (40 mA)
(configurable),
2 x 5 V (50 mA)

Serial communication

CAN driver

CAN driver

LIN

RS 232

K15

8 x Analogue IN

**0 .. 5 V or
4 .. 20 mA (0 .. 22.7 mA) / 10 bit
or 0 .. 65 kOhm**

configurable via software

Internal monitoring:
- Board temperature
- Battery voltage
- Sensor supply

8 x Analogue IN

0 .. 32 V / 10 bit

Range configurable via
software

8 x PWM OUT

2 A high-side

configurable as
8 x Timer input

4 x current measurement

configurable as 4 x Digital OUT
2 A low-side

8 x Digital OUT

4 A high-side

configurable as
8 x Analogue IN

4 x Timer IN

**(4 Timer inputs
0.1 Hz .. 10 kHz)**

high / low active

8 x Digital IN

high / low active

Model code

HY-TTC 60 – <u>XX</u> – <u>594K</u> – <u>768K</u> – <u>00</u> <u>XX</u> – <u>000</u>

Firmware

CD = CODESYS run-time system
      for CODESYS development environment
CP = for C programming without CODESYS

RAM memory (internal and external)
594K = 594 kByte

Flash memory (internal and external)
768K = 768 kByte

Functional safety
00 = none

Equipment options
00 = none
01 = fast current filter
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.
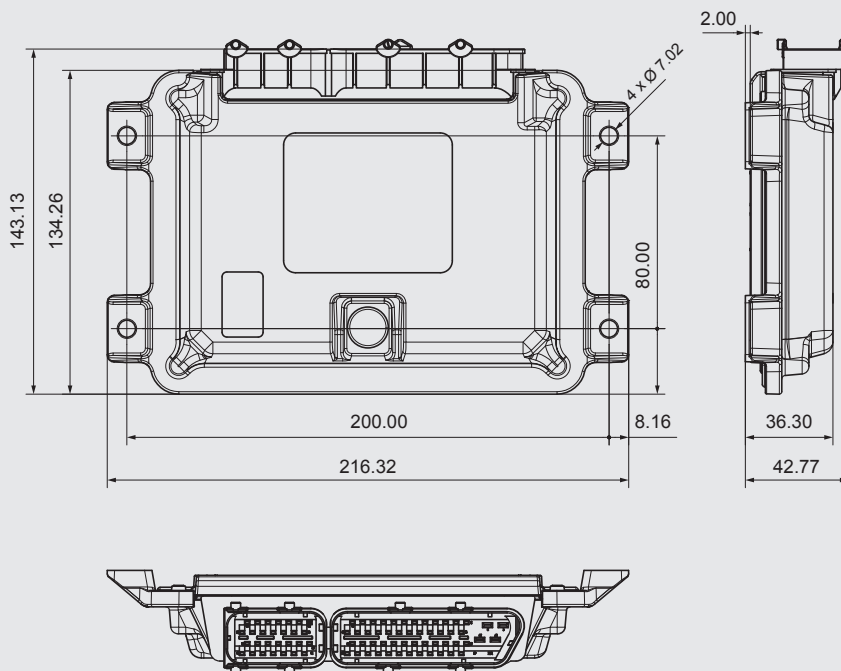
Note

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