



## I/O Expansion Module HY-TTC 48X

### Description

The HY-TTC 48X module is an intelligent I/O module which can be controlled and parameterized via CANopen Standard according to CiA DS 401.

It provides a means of expanding control systems with additional inputs and outputs, and hence additional functionality, in a simple and uncomplicated way.

The PID control components built into the device make it possible to add independent proportional controls in conjunction with the powerful PWM outputs and the current measurement.

The module is protected in a proven, extremely compact housing of the 16-bit controller series, which was specially designed for the off-highway vehicle industry.

### Special features

- 48 inputs and outputs:
  - 8 PWM outputs
  - 4 current feedbacks
  - 8 digital outputs
  - 16 analogue inputs
  - 12 digital inputs
- Robust aluminium die cast housing with pressure equalization via a waterproof Gore-Tex® membrane
- Waterproof, 80-pin male connection
- E12 type approval

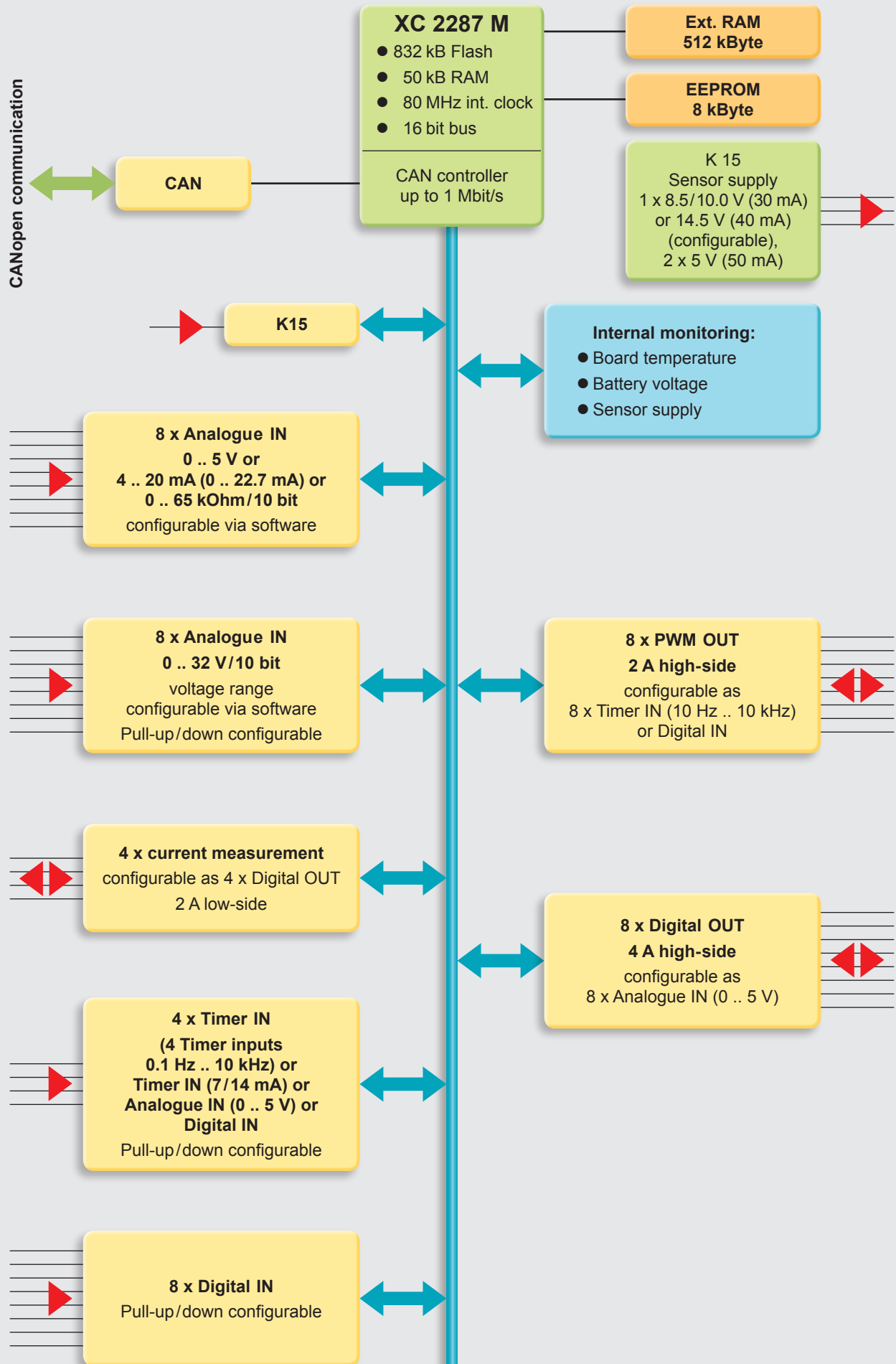
### Technical data

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
E-mark	ECE-R10 Rev. 4
EMC	ISO 13766 (up to 100 V/m, 20 MHz .. 1 GHz)
ESD	IEC 61000-4-2
Load dump	ISO 7637-2, 173 V, 2 Ohm, 350 ms
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
Communication profile	CANopen CiA DS 401
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, 832 kB int. Flash, 50 kB int. RAM, 512 kB ext. RAM	
1 x CAN, 125 kbit/s .. 1 Mbit/s	
IN	
8 x Analogue IN 0 .. 5 V or 4 .. 20 mA (0 .. 22.7 mA) or 0 .. 65 kOhm/10 bit, configurable via software	
8 x Analogue IN 0 .. 32 V/10 bit, voltage range configurable via software, pull-up/down configurable	
4 x current feedback, configurable as 4 x Digital OUT/low-side 2 A	
4 x Timer IN (Timer inputs 0.1 Hz .. 10 kHz), Timer IN (7/14 mA), Analogue IN (0 .. 5 V), pull-up/down configurable	
8 x Digital IN, pull-up/down configurable (0 .. 5 V)	
OUT	
8 x PWM OUT 2 A high-side, configurable as 8 x Timer IN (10 Hz .. 10 kHz), Digital IN	
8 x Digital OUT 4 A high-side, configurable as 8 x Analogue IN (0 .. 5 V)	
Internal monitoring of circuit 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)	

**Note:** \* All I/O's and interfaces mentioned below are protected against short circuit to GND and BAT+.

# Block circuit diagram

## HY-TTC 48X



## Model code

HY-TTC 48X – F11 – 00 – 000

### CAN protocol

F11 = CANopen

### Equipment option

00 = standard

### 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.

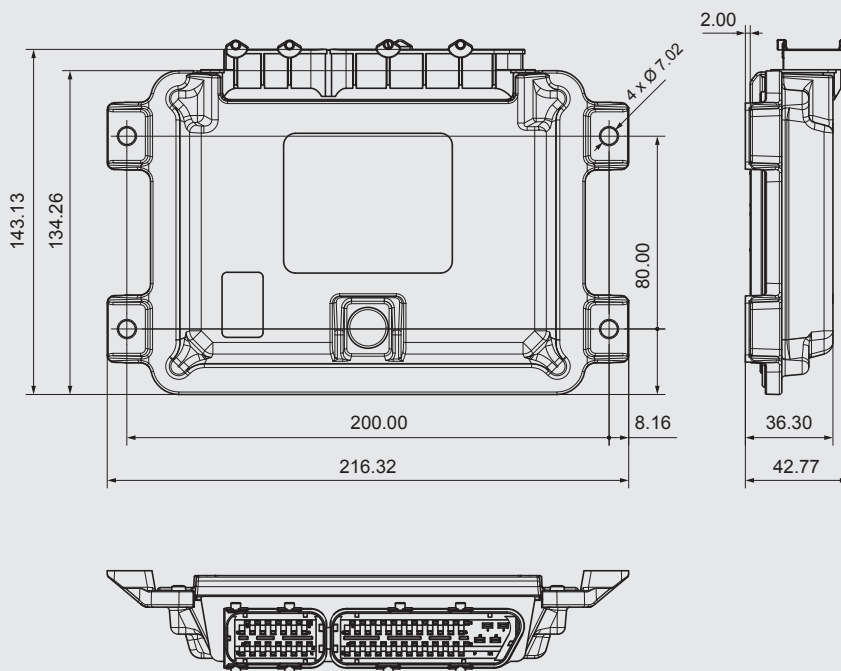
## Note

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



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