



## Universal Compact I/O Expansion Module HY-TTC 30X-H

### Description

The HY-TTC 30X-H module is an intelligent I/O module which can be controlled and parameterized both via CANopen Standard according to CiA DS 401 and via SAE J 1939.

The HY-TTC 30X-H was specially designed for use in low-cost applications or smaller machines. It provides a means of expanding control systems with additional inputs and outputs, and hence additional functionality, in a simple and uncomplicated way.

The 30X-H version has been optimised for expansion to include additional hydraulic functions.

The PID control devices built into the instrument make it possible to develop independent proportional controls in conjunction with the powerful PWM outputs and the current measurement.

The module is protected in a proven, robust and compact housing, specially designed for the off-highway automotive industry.

### Special features

- Freely configurable Node-ID via CAN
- 30 inputs and outputs:
  - 10 analogue inputs
  - 4 timer inputs
  - 8 PWM outputs, high-side:
    - 6 with integrated current measurement
    - 2 digital outputs, low-side
    - 6 ratiometric Voltage outputs
- Robust, very compact die-cast aluminium housing
- Waterproof, 48-pin male connection

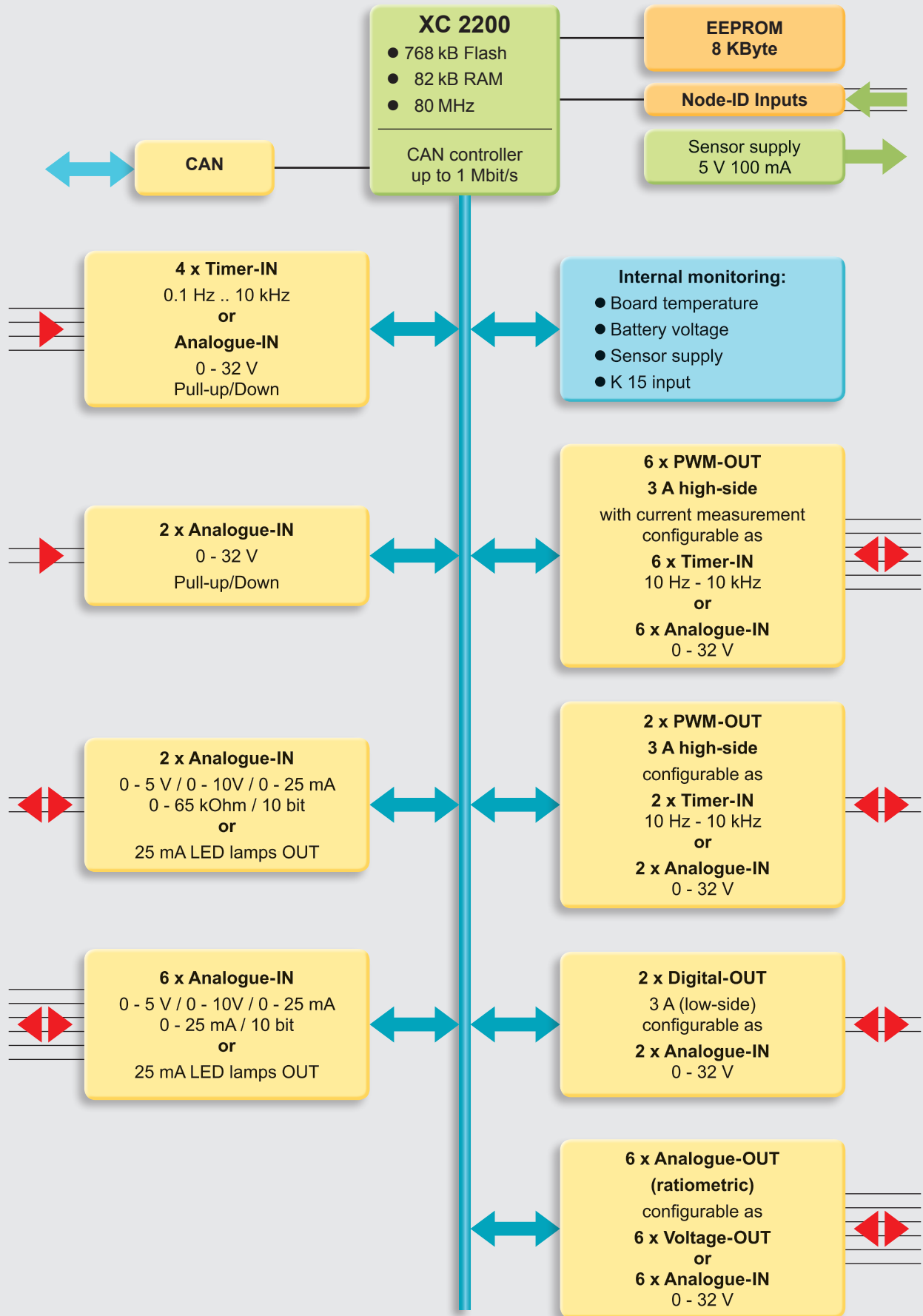
### Technical data

Ambient conditions	
Operating temperature	-40 .. +85 °C (with full load)
Operating altitude	0 .. 4,000 m
Supply voltage	8 .. 32 V
Peak voltage	40 V max.
Idle current	40 .. 120 mA
Standby current	≤ 1 mA
Current consumption	24 A max.
Fulfils the following standards	
CE mark	Compliant with 2004/108/EC
E-mark	ECE-R10 Rev.4
EMC	EN 13309 / ISO 14982 / CISPR 25
ESD	ISO 10605
Electrical	ISO 16750-2 / ISO 7637-2-3, limited to 40 V with external load dump protection
Protection class	EN 60529 IP 67 / ISO 20653 IP 6K9K
Temperature	ISO 16750-4
Vibration, shock, bump	ISO 16750-3
Communication profile	CANopen CiA DS 401 / SAE J1939
Dimensions and weight	
Housing dimensions	147 x 92 x 38 mm
Minimum clearance for connection	208 x 94 x 38 mm
Weight	330 g
Features <sup>1)2)</sup>	
Infineon XC 22xx microcontroller, 80 MHz, 768 kB int. Flash, 82 kByte int. RAM	
8 kByte EEPROM	
1 x CAN, 50 kbit/s up to 1 Mbit/s with configurable termination	
2 x Node ID pins for optional configuration of CAN-ID	
IN	
6 x Analogue-IN 0 .. 5 V / 0 .. 10 V or 0 .. 25 mA or 25 mA LED lamps OUT configurable via software	
2 x Analogue-IN 0 .. 5 V / 0 .. 10 V / 0 .. 25 mA / 0 .. 65 kOhm or 25 mA LED lamps OUT configurable via software	
2 x Analogue-IN 0 .. 32 V with configurable pull-up/down in digital voltage input mode	
4 x Timer-IN (timer inputs 0.1 Hz .. 10 kHz) / Analogue-IN 0 .. 32 V configurable pull-up/down, 1 encoder	
OUT	
6 x PWM-OUT 3 A high-side, current measurement, overload and wirebreak detection configurable as 6 x Timer-IN (10 Hz - 10 kHz) / Analogue-IN 0 .. 32 V with integrated pull-up	
2 x PWM-OUT / digital-OUT 3 A high-side, current measurement, overload and wirebreak detection configurable as 2 x Timer-IN (10 Hz - 10 kHz) / Analogue-IN 0 .. 32 V with integrated pull-up	
2 x Digital-OUT 3 A low-side, overload and wirebreak detection configurable as 2 x Analogue-IN 0 .. 32 V with integrated pull-up	
6 x Analogue-OUT 15 % .. 85 % $V_{Bat+}$ (ratiometric) configurable as 0 V .. 75 % $V_{Bat+}$ with 10 kOhm low-side load or 6 x Analogue-IN 0 .. 32 V	
Dedicated power supply pins for high side outputs	
Internal monitoring of board temperature, sensor supply, K15 input and battery voltage	
1 x sensor supply 5 V (100 mA)	

**Note:** <sup>1)</sup> All I/Os and interfaces are protected against short circuit to GND and BAT+.  
<sup>2)</sup> All analogue inputs have 10 bit resolution.

# Block circuit diagram

## HY-TTC 30X-H



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## Model code

HY-TTC 30X - H - FXX - 00 - 000

### CAN protocol

F11 = CANopen slave  
F12 = CAN J1939 slave

### Equipment options

00 = standard

### Modification number

000 = standard

### Note

On units with a different modification number, please read the label or the technical amendment details supplied with the unit.

### Accessories

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

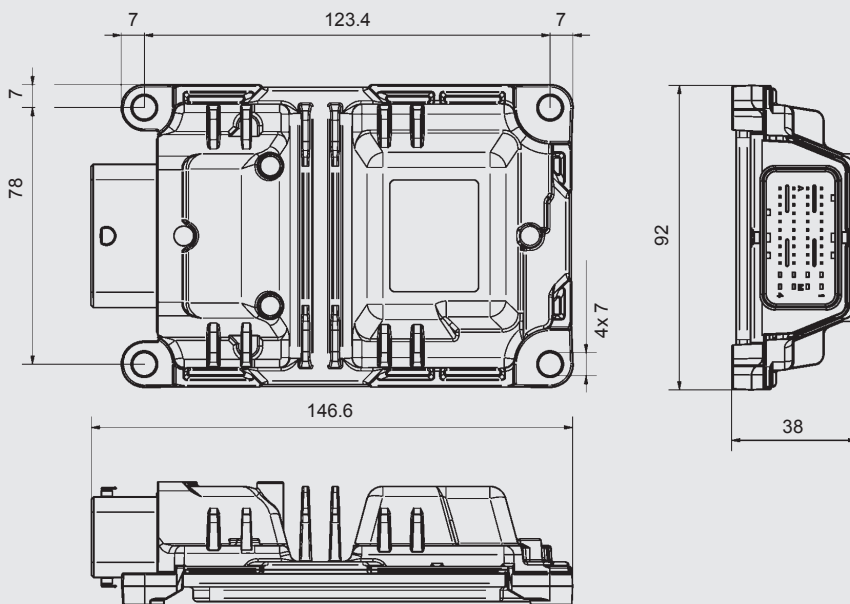
## Note

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.

## Dimensions



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