Universal Off-Highway Control – TTC 48XS

General Description

TTC 48XS is an intelligent I/O module that is controlled using CANopen®. It is compliant to CANopen Safety standard certified by CiA and to the international ISO/EN 13849 standard on functional safety, performance level (PL) d. It is part of a complete and compatible product family and is protected by a compact, automotive-style housing suited to mobile applications in harsh environments.

Specifications

Parameter		Unit
ECU Dimensions	147.6 x 180.3 x 39.8	mm
Dimensions for minimum connector release clearance	197.7 x 202.8 x 39.8	mm
Weight	about 650	g
Operating Temperature	-40 to +85	°C
Operating Altitude	0 to 4000	m
Supply Voltage	8 to 32	V
Peak Voltage	45	V_{max}
Idle Current	0.15 at 9 V	A_{max}
Standby Current	0.5	mA_{max}
Current	25	A_{max}

Fulfills the following standards	
CE-Mark	2014/30/EU 2006/42/EC
E-Mark	ECE-R10 Rev.4
EMC	ISO13766, up to 100 V/m, 20 MHz to 1GHz
ESD	IEC61000-4-2
Load Dump	ISO 7637-2, 173 V, 2 Ohm
Ingression Protection	EN 60529 IP 65, IP67 DIN 40050 IP 6K9K
Communication Profile	CANopen CiA DS-401 CANopen EN 50325-5
Temperature	EN 60068-2-1, -14Nb, -2, -78, -30
Climatic	EN 50581
Vibration, Shock, Bump	IEC 60068-2-29, -64, -27, -32
Functional Safety	ISO EN 13849 – PL d

Features

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

CPU core
- 16/32-bit Infineon XC2287M microcontroller, 80 MHz, 832 kB int. Flash, 50 kB int. RAM, 512 kB ext. RAM
- CPU-internal safety features
  - Hardware CRC checker for supervising flash memory
  - Integrated Memory Protection Unit (MPU)
  - RAM content protection through Error-Correcting Code (ECC).
- Watchdog CPU Freescale HC 908, including monitoring software
- 64 kbit EEPROM

Interfaces
- 1x CAN, 125 kbit/s up to 1 Mbit/s

Outputs
- 8x digital OUT 2 A high-side, PWM, configurable as timer inputs
- 8x digital OUT 4 A high-side, configurable as analog inputs

Inputs
- 8x analog IN 0 to 5 V or 4 to 20 mA / 10 bit, configured by software alternative use as resistive measurements
- 8x analog IN 0 to 32 V / 10-bit, range configurable by SW
- 4x current feedback, configurable as digital outputs/ low side 2 A
- 4x digital IN (4 timer 0,1 Hz to 10 kHz)
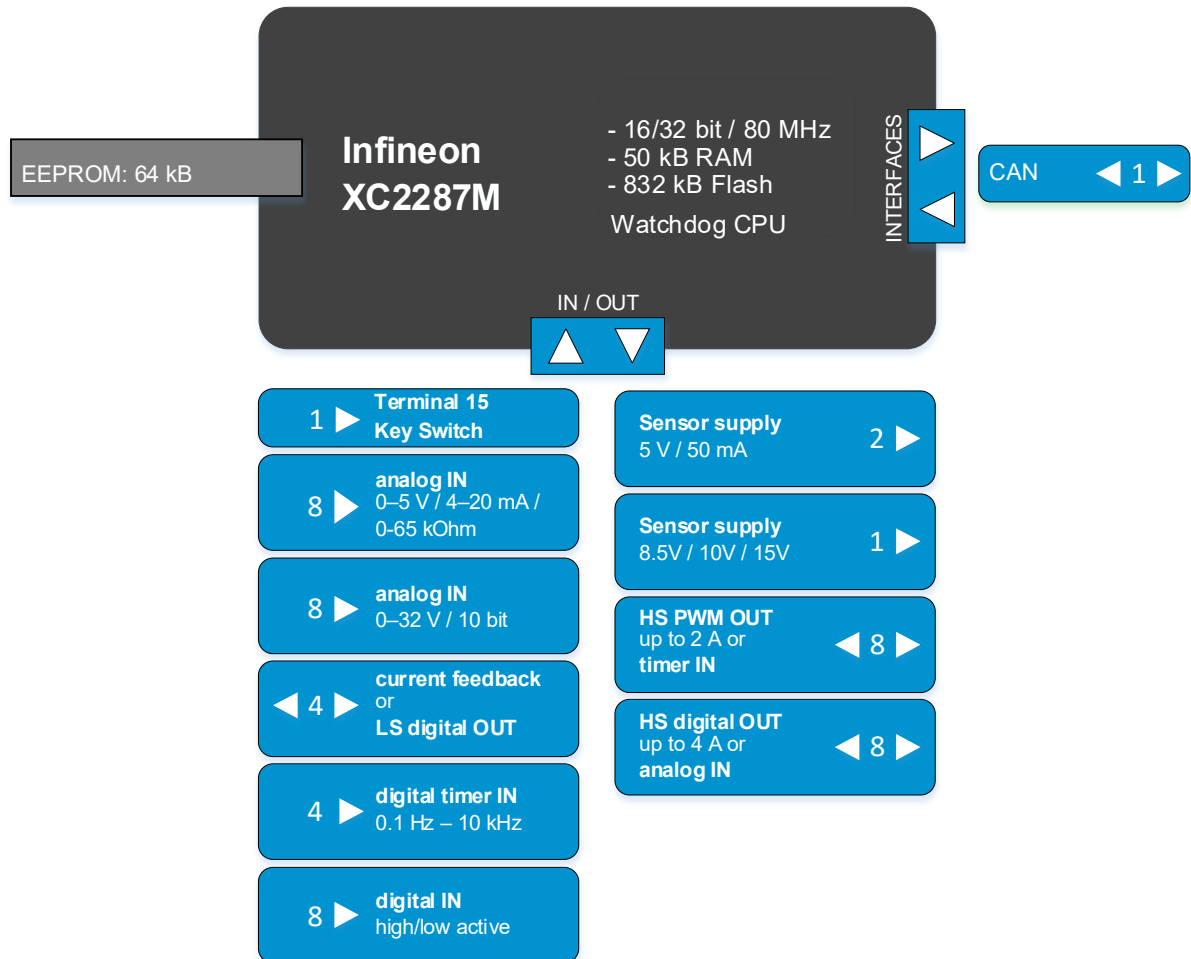- 8x digital IN

Other
- Internal: monitoring of board temperature, sensor supply and battery
- 1x sensor supply 8.5 V/10.0V/14.5 V configurable
- 2x sensor supply 5 V

Software
- CANopen® Safety slave software preinstalled

Block Diagram

EEPROM: 64 kB

Infineon XC2287M

- 16/32 bit / 80 MHz
- 50 kB RAM
- 832 kB Flash

Watchdog CPU

INTERFACES

CAN ◀ 1 ▶

IN / OUT

1 ▶	**Terminal 15** Key Switch
8 ▶	**analog IN** 0–5 V / 4–20 mA / 0-65 kOhm
8 ▶	**analog IN** 0–32 V / 10 bit
◀ 4 ▶	**current feedback** or **LS digital OUT**
4 ▶	**digital timer IN** 0.1 Hz – 10 kHz
8 ▶	**digital IN** high/low active

Sensor supply 5 V / 50 mA	2 ▶
Sensor supply 8.5V / 10V / 15V	1 ▶
HS PWM OUT up to 2 A or **timer IN**	◀ 8 ▶
HS digital OUT up to 4 A or **analog IN**	◀ 8 ▶

Housing and Connector

- Aluminium pressure die-cast housing
- Waterproof 80-pin connector
- Pressure adjusting with water barrier
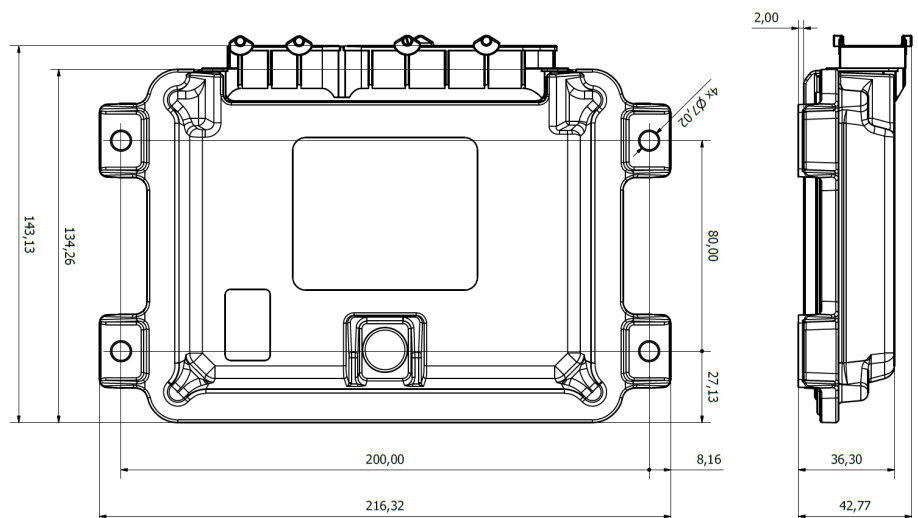
For further information, including price and availability, please contact products@ttcontrol.com