

Universal Off-Highway Control – TTC 200



TTC 200 - More Reliability for Safety-Critical Applications

TTC 200 is a high-performance programmable electronic control unit for sensor/actuator management. It can be used, by means of many configurable I/Os, with different sensor and actuator types. The control unit is part of an extensive and compatible product family designed specifically for machines operating in rough environments and at extreme operating temperatures. Its robust die-cast housing shields from electromagnetic disturbance and mechanical stress. A 40 MHz Freescale MPC555 integrated 32-bit microprocessor supplies the necessary processing power.

Safety and Certification

All TTC 200 inputs and outputs are protected against electrical surges and short circuits. In addition, internal safety measures allow the detection of open load, overload and short circuit conditions at the outputs. Proportional hydraulic components can be connected directly to the current controlled PWM outputs. Hydraulic valves with integrated power stages can be operated by two analog output signals.

CAN, TTP[®], RS-232 and LIN are available for serial communication. TTC 200 was designed to comply with the IEC 61508 international standard. The stand-alone version and the network version with TTP fulfill SIL 2 (Safety Integrity Level) and SIL 3 requirements respectively.

Advanced Programming Possibilities

A broad range of tools is available for programming TTC 200. At the basic level, the unit may be programmed in C. In addition, a TTP[®] Matlink library for MATLAB[®]/ Simulink[®] and an I/O library are available for TTC 200. These enable rapid automatic code generation for the application software without manual coding via Real-Time Workshop[®] Embedded Coder code generator from The MathWorks.

CoDeSys[®], which is one of the most common IEC 61131-3 programming systems that runs under Microsoft Windows[®], is also available for programming the TTC 200. Several editors are supported, including the Instruction List Editor, the Sequential Function Chart Editor and the Function Block Diagram Editor. CoDeSys produces native machine code for the main processor of TTC 200. CoDeSys combines the power of familiar programming languages, such as C and Pascal, with the easy handling and operational functions of PLC programming systems.

System CPU

- 32-bit Freescale MPC555 processor, 40 MHz, 448 kB int. Flash, 26 kB int. RAM, 512 kB ext. RAM (1 MB ext. RAM optional), 2 MB ext. Flash
- 16 kbit EEPROM
- Watchdog CPU Freescale 68HC908, including monitoring software

Power supply

- Supply voltage: 9 to 32 V
- Peak voltage: $45 V_{max}$
- Idle current: $1 A_{max}$ at 9 V
- 1 x sensor supply (10.5 V / 50 mA)
- 2 x sensor supply (5 V / 50 mA)
- Internal: monitoring of board temperature, sensor supply and battery

Interfaces (short circuit protected to GND and BAT+)

- 1 x TTP bus with redundant channels, RS-485 physical layer (up to 5 Mbit/s) with austriamicrosystems AS8202NF TTP communication controller (optional)
- 1 x RS-232 and 1 x LIN serial interfaces
- 2 x CAN, 125 kbit/s up to 1 Mbit/s

Inputs (short circuit protected to GND and BAT+)

- 8 x analog IN 0 to 5 V or 4 to 20 mA / 10 bit, configured by software
- 12 x analog / digital IN 0 to 10 V / 10 bit
- 8 x digital IN (timer 10 Hz to 10 kHz)
- 5 x digital IN

Outputs (short circuit protected to GND and BAT+)

- 8 x digital OUT 2.35 A high-side, PWM, current control loop, open load detection, configurable as digital IN (timer)
- 4 x digital OUT 4 A high-side, PWM, open load detection, configurable as digital IN (timer)
- 16 x digital OUT 4 A high-side, open load detection, configurable as 16x digital IN
- 3 x digital OUT 15 A high-side, open load detection (1 x with wind screen wiper option), configurable as digital IN (timer)
- 3 x digital OUT high-side for external relays to switch off output for safely applications (fail-silent)
- 2 x analog OUT, 0.2 to 0.8 V_{bat}

Specifications

- Dimensions: 234 x 181 x 48 (in mm)
- Weight: 790 g
- Ambient temperature: -40 °C to +85 °C

Housing

- Aluminium die-cast housing
- Splash-proof 154-pin connector
- Pressure adjusting with water barrier
- Housing fins for optimal temperature deduction

Subject to changes and corrections.

For further information, including price and availability, please contact products@ttcontrol.com