

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 injection-molded aluminum housing shields from electromagnetic disturbance and mechanical stress. A 40 MHz Motorola MPC555 integrated 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 / TTP/A / ISO-K 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 to program 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 the 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.

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System CPU

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

Interfaces

- 1 x TTP bus, RS-485 physical layer (5 Mbit/s)
- 1 x RS-232 and 1 x LIN serial interfaces
- 2 x CAN, 125 to 500 kbit/s
- TTP communication controller AS 8202 NF

Power supply

- Supply voltage: 9 to 32 V
- Peak voltage: $45 V_{\max}$
- Current consumption: $1 A_{\max}$ at 9 V
- 1 x sensor supply (10.5 V / 100 mA)
- 2 x sensor supply (5 V / 100 mA)
- Internal: monitoring of board temperature, sensor supply and battery

Inputs

- 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 (counter 10 Hz to 10 kHz)
- 5 x digital IN for TTP encoding number for hardware identification

Outputs

- 8 x digital OUT 2.35 A, PWM, current control loop, short to ground protection and open load detection
- 4 x digital OUT 4 A, PWM, short to ground protection and open load detection
- 16 x digital OUT 4 A, short to ground protection and open load detection
- 3 x digital OUT 15 A, short to ground protection and open load detection (1 x with wind screen wiper option)
- 3 x digital OUT 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

- Aluminum injection-molded 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, contact sales@cervis.net.