

ROBOTECH CONTROLLER 501

Advanced Robotics Computer



Introduction

The Conpleks Robotech Controller 501 is a high-performance, ruggedized embedded vehicle computer platform ideal for rough outdoor robotic applications.

The controller is equipped with a number of standardized interfaces making it easy to connect the controller to the sensors, actuators and all other relevant parts of your application.

The Conpleks Robotech Controller software package includes a Linux/Ubuntu operating system and optional ROS-based middleware and application software.

Robotech Controller 501 Main Features

The Conpleks Robotech Controller 501 has a set of main functions and features that makes it very suitable for any AGV robotics application. The main features are:

- On-board 3rd generation Intel Core i5 processor
- Flash-based hard-drive
- Linux/Ubuntu operating system
- Compact , ruggedized enclosure, fully sealed and IP67 compliant
- High quality connectors

Robotech Controller Software

The Conpleks Robotech Controller 501 is pre-loaded with a Linux/Ubuntu board support software package.

Optionally, it can be loaded with more advanced software, e.g. real-time OS's with ROS-support or a complete application specific software package tailored for your specific needs.

Conpleks uses the ROS-middleware (Robot Operating System) in order to efficiently develop and implement the software needed for various automation and robotics applications.

- ROS is an open source robotics platform providing software tools and infrastructure for robotics development.
- ROS enables rapid development of prototypes with high reuse of already available components and provides a short path between state of the art research algorithms and production ready software.
- ROS is supported by a large community of both industrial companies and research institutions which are all contributing to the ROS eco-system.

The ROS-based middleware is fully integrated with the 501's hardware interfaces giving the basis needed for rapid prototyping and easy interfacing to existing systems.

Developers can easily connect their own sensors and actuators and start to code their application instead of worrying about device drivers and compatibility etc.

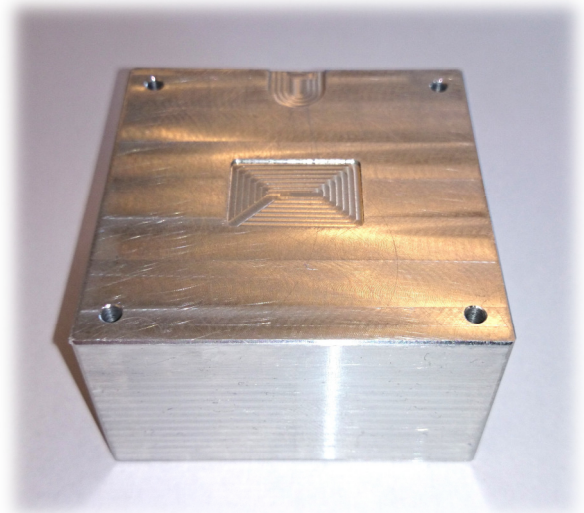
Rugged and hardened design

All operational interfaces are located on a single side of controller, making it easy to install and fit the controller into almost any vehicle or other robotics application.

The controller enclosure is a rugged, powder painted, die cast aluminum box. The box cover lid is fastened by stainless screws and seals the box, thus providing IP67 ingress protection.



In order to have an efficient cooling of the CPU, the heat is transferred directly to the enclosure through a high-quality solid aluminum heat-sink.

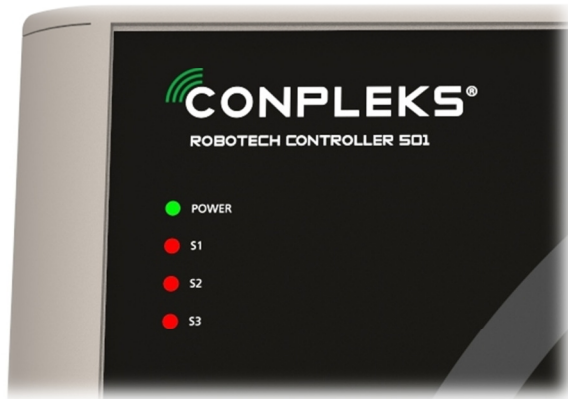


This way, the heat dissipated inside the CPU is transferred directly to the enclosure, and there is no need for venting holes or fans.

Monitoring and Maintenance

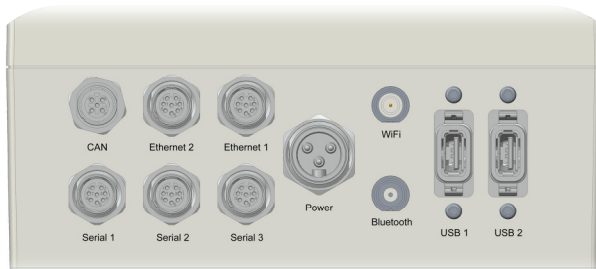
The Conpleks Robotech Controller 501 is equipped with four LEDs in order to monitor the overall operational status.

Using one of the USB ports it is possible to connect a local craft tool i.e. a laptop or a USB memory stick for e.g. maintenance boot procedures.



External Interfaces

The Conpleks Robotech Controller 501 is equipped with a number of IP67 compliant interface connectors, all on one side of the unit.



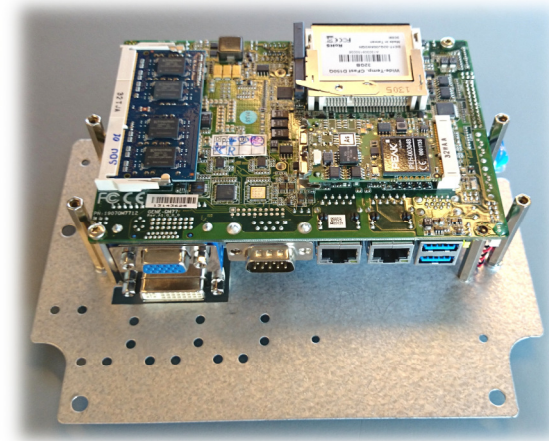
The controller has as default the following connectors:

- 2 Ethernet ports (2 GE 4 pair)
- 2 USB 2.0 ports
- 4 Serial ports
- 12 VDC power (with ignition signal)
- 1 WiFi antenna port (optional)
- 1 Bluetooth antenna port (optional)
- 1 or 2 CAN ports (optional, replacing either Ethernet or serial ports using the M12 connector mounts)

Other port and connector configurations are possible on request.

Powerful Main Board

The Conpleks Robotech Controller 501 is equipped with a powerful Aaeon GENE-QM77 main CPU board that supports the 3rd Generation Intel® i7-, i5-, i3 multi-core CPU technology. Core i5 is the default.



Based on the Mobile 3rd generation Intel® chipset, the motherboard offers an ideal performance-per-watt ratio and the very latest interface technology

The board features a CFAST slot which allows for ultra compact Flash disk for storage. The motherboard also supports Intel Active Management Technology (Intel AMT 8.0) for remote management and easy maintenance resulting in higher system availability and lower total costs.

Installation

The Robotech Controller 501 supports easy mounting e.g. in your AGV application. Using four mounting screws, the unit can be securely fastened to the vehicle.

Please secure adequate cooling and use optional vibrations suppressors.

Technical specifications

GENERAL

- Advanced, high-performance, ruggedized, embedded computer platform
- Well suited for temperature-hardened outdoor robotics.
- Pre-loaded Linux/Ubuntu operating system
- Optional ROS-based middle-ware and application software
- Rugged mechanical enclosure, die casted powder-painted aluminum
- Passive cooling through the enclosure, no venting holes, no internal fans

MAIN BOARD

- Aaeon GENE-QM77
- 3rd generation Intel Core i5 processor, i5-3360M
- Flash-based hard-drive, CFAST 16 GB (32GB optional)
- RAM, 4 GB

RADIO OPTIONS

- WiFi supported according to IEEE 802.11a, IEEE 802.11b/g, IEEE 802.11n, 2.4 GHz, Client or AP mode (optional)
- Bluetooth v4.0 (optional)

MECHANICS

- Material: Aluminum
- Color: RAL 7001
- Cover screws: Stainless Steel
- Cover gasket: Neoprene
- Ingress Protection: IP67 (according to EN 60529)

DIMENSIONS

- L x W x H: 200 x 170 x 90 mm
- Weight: 2850 g

INTERFACES

- 2 Ethernet ports (2GE, 4 pair, M12)
- 2 USB ports (Samtec, sealed)
- 4 Serial ports (M12)
- 12 VDC (7/8 UFN)
- 1 WiFi antenna port (TNC, optional)
- 1 or 2 CAN ports (optional, replacing Ethernet or serial ports using the M12 connector mounts)
- 1 Bluetooth antenna port (optional)
- Other port and connector configurations are possible

POWER

- Power consumption: 20-40 W (35W typical)
- 12 VDC automotive power (with ignition signal)
- Wide operational input voltage range: 10-30 VDC (6 and 34 VDC shutdown limits)
- Intelligent shutdown controller
- On/off motherboard control
- <1.0mA standby current

ELECTROMAGNETIC

COMPATIBILITY

The Robotech Controller 501 product is built to comply with the following:

- 2004/108/EC Electromagnetic Compatibility Directive (EMC)
- EN 55022:2010 (EMC)

ENVIRONMENTAL

Operational environment

- Temperature range +0 °C to +40 °C @ 100% CPU load
- Temperature range +0 °C to +50 °C @ 50% CPU load
- Humidity range 5% to 100 % RH, condensing

Storage (packaged)

- Temperature range -20 °C to +55 °C, Humidity range 10% to 95% RH, non-condensing

RoHS compliance

- The product meets the requirements in the European RoHS directive: 2011/65/EU, RoHS6.

End-of-life treatment – WEEE directive

- Requirements meeting the WEEE-directive (2002/96/EC)

