MAV AutoPilot 2007

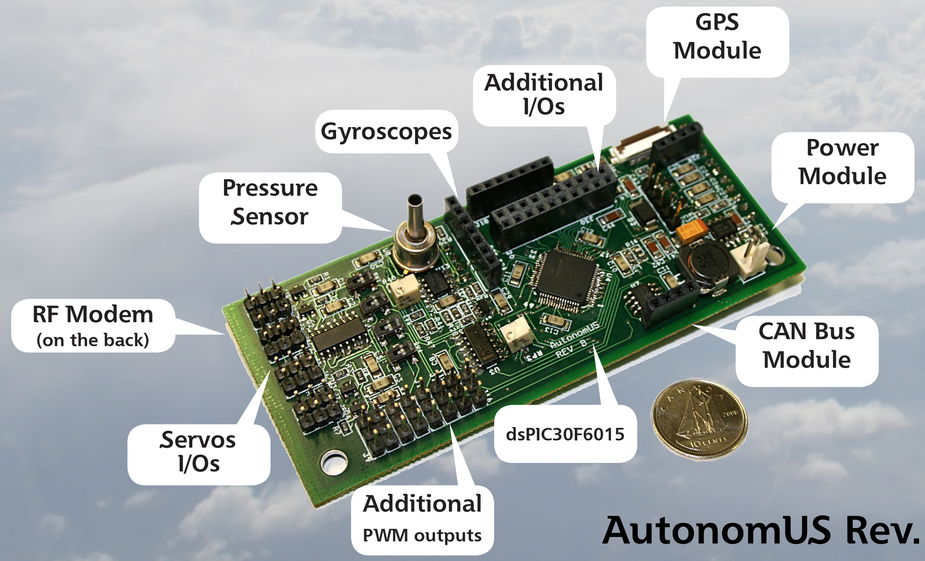
Project Highlights

- **Autopilot system for Micro Aerial Vehicles**
- Project started in January 2006
- Designed by undergraduate engineering students (Université de Sherbrooke)
- 13 students worked on the project in 2006
- 8 students are working on it in 2007
- Over 8700 work hours done up to now!
- Our solution includes:
  - Central System (AutonomUS Board)
  - Ground Station (PC Software)

AutonomUS In Brief

Rev. B (January-April 2007) features:

- Second board revision
- Size : 4 cm X 10 cm
- Weight: only 33g !
- 4-Layers PCB
- Surface mount technology
- Powered by Microchip's dsPIC30F6015
- Lots of I/Os available
- Including CAN Bus 2.0A (1.0 Mbps)

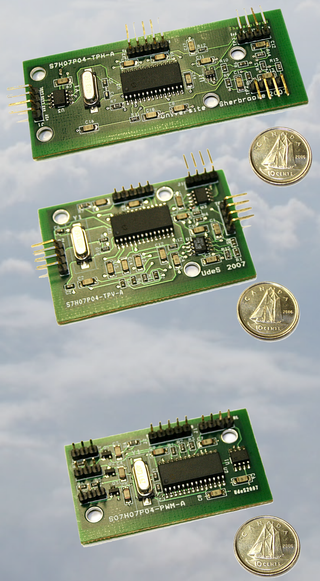


AutonomUS Rev. B

Ground Station in Brief

- Technology used: C#, OpenGL and XML
- Displays real-time flight data
- Displays real-time aircraft position
- Flight plan editor built-in
- Can be configured for any aircraft model

Auxiliary Boards



Thermopiles boards

- Used to compensate the drift of the gyroscopes
- Powered by Microchip's dsPIC30F4012
- CAN bus communication

PWM board

- Used to control servos
- Powered by Microchip's dsPIC30F4012
- CAN bus communication

Project Goal

Make a Micro Aerial Vehicle (MAV) capable of following a predefined path by itself while being able to monitor the aircraft progression using a graphical user interface (containing the flight data, the flight plan, the actual aircraft position given by GPS, etc.), located at the ground station.

2007 Objectives

- **Get the autopilot to fly!**
- Build new PCB revisions
  - Rev. B (error fixing) — Spring 2007 (done!)
  - Rev. C (smaller boards) — Autumn 2007
- Design a drift-compensation system for gyroscopes using thermopiles (80% done)
- Add a camera control module
  - Add a VR headset to display the camera image
  - Add head tracking control to the camera
- Implement the CAN bus protocol on the AutonomUS board (done!)
- Increase the range in which the miniature aircraft can be flown

Further Information

Do not hesitate to visit our website!

http://mav2007.hexpresso.org/

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