

the old CAN cards. To control several motor controllers on one card to save room however it was discovered that the PWM signals on the old card was insufficient both in number and in resolution. It was therefore decided to make a new generation of the card with six high quality PWM signals. The rest of the card remained unchanged except for the SPI interface and the user LED was changed from leg 6 to leg 14 (relevant for software). In the 5.0 card the SPI interface was removed to make the card quicker to produce.

It is however believed that it is possible to keep the SPI in future generations. This could be done by moving the two PWM signals that are currently where the SPI was located before to the other side of the 5V (where the M_PWM are located on 4.4). This would require the motor extension board and the LED-control board to be modified as well but if this was done the same card should be able to be used on all locations of the system adding to the modularity of the system. At the moment both 4.4 and 5.0 are in the system.

8.4 INS-board

switch order first two sentence
 The INS board is ~~the board that~~ delivers navigational data to a generic CAN card. The INS board is powered by ~~a generic CAN-card~~. It delivers data that the IMU measures through a USART interface to the CAN-card. It also measure values from the FOG and ~~offer it the safe and stable power levels it requires~~. The FOG data is then sent from the INS board to a generic CAN card through a SPI interface. Since The FOG is very sensitive to voltage levels, especially when it comes to 5V, 12V & -12V lines. ~~There are safety solutions implemented.~~ For the 5V to be able to start three requirements needs to be fulfilled. A digital pins needs to be set ~~High~~ through software and the 12V & -12V lines need to be active. When these requirements are fulfilled the FOG is active and the INS board can start supplying data to the CAN card.

8.5 LED-control board

Vilken kva?
 The LED controller board is made to control all the lights. NAIAD will have two regular and one ir-spotlight pointed forward and downward. It will also have two RGB LED's on each wing to make it easier to understand decisions made by NAIAD and also to make debugging easier. The LED controller card has one power input for powering the LED's supplied by the Power board and one power input for the logic circuits on the board supplied by a generic CAN card. the RGB LED's on the wings is controlled by a generic CAN card through a SPI interface. to activate a LED 16 bits need to be sent. The spotlights is controlled by a pwm signal. One pwm signal for the spotlights facing forward and one for the spotlights facing downward. The duty cycle of the pwm signal determines the brightness of the spotlights. The experiment board for the LED-controller can be seen in 29.

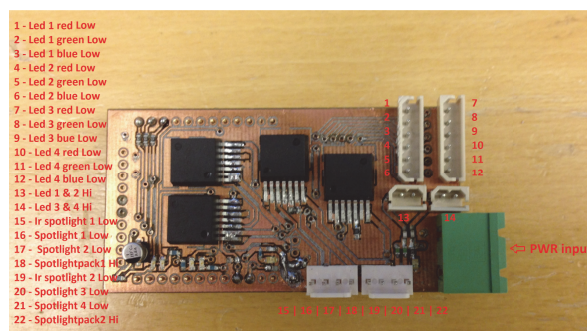


Figure 29: Picture of the LED controller experiment board