The Microprocessor

Backward compatibility is an important consideration and needs to be incorporated in the system design. This ensures the system will work most devices both existing and future along with being non-proprietary. To accomplish this a programmable microcontroller was used. The microcontroller used in this project is an Atmel chip series. Using this chip allows for the ability to send I/O signals to any device and allows necessary modularity.

The high-performance, low-power Atmel 8-bit AVR RISC-based microcontroller combines 128KB of programmable flash memory, 4KB SRAM, a 4KB EEPROM, an 8-channel 10-bit ADC converter, and a UART interface for on-chip debugging. The device supports throughput of 16 MIPS at 16 MHz and operates between 4.5-5.5 volts.

By executing instructions in a single clock cycle, the device achieves throughputs approaching 1 MIPS per MHz, balancing power consumption and processing speed.

Conclusion

From the very beginning our project was made to be customizable based on needs, useful, modular, efficient and inexpensive. There are solutions to each problem that this devices solves, but they are problem specific, you would need an array of devices to do what this single device does. When we were going through the design process, we focused on how we could use it in our own homes. Thus we tried to solve things that we ran into, and we built something that, not only that we can be proud of, but something that we can use on a day to day basis.

Our smart home security modules fulfills all these goals and has to potential to do so much more. From connecting with cellular networks and your home Wi-Fi, to being able to run off solar power in remote locations, these unexplored avenues have an almost unlimited amount of potential, due to our steadfast hold onto those few ideals that we kept in mind while designing our project.