

Integrated System

The Microcontroller

The core processing unit of Trans Am is the 68HC11E9 microcontroller. It is an advanced microprocessor which contains additional memory and specialized hardware to perform analog-to-digital conversion, memory mapping, and pulse width modulation (PWM).

The microcontroller is mounted on a Mekatronics MTJPRO11 board. This board expands the 68HC11E9s functionality even further. It adds 32Kbytes of SRAM, 8 input channels for analog signal, 5 PWM digital outputs, 8 digital outputs regulated with 330 ohm resistors for infra-red LEDs, 3 digital inputs, five-volt serial communications interface, 40KHz square wave generator, 5V voltage regulator, and a low-voltage inhibit reset circuit. The microcontroller board also features 4 input port enable lines, and 4 output enable lines for expansion.

Analog Port Breakdown		Digital Port Breakdown	
Port Name	Connection	Port Name	Connection
PE0	Bumper Network	PA0	Unused
PE1	Nose CDS	PA1	Unused
PE2	Right IR	PA2	Unused
PE3	Left IR	PA3	Left Motor
PE4	Forward IR	PA4	Steering Servo
PE5	Left CDS	PA5	Unused
PE6	Right CDS	PA6	Unused
PE7	Debug Switch	PA7	Right Motor