Objective: To program TMS320F280021 to configure GPIO’s, EPWM, ADC and CAN

IDE used: code composer studio

Software development kit: Texas instruments c2000 ware

Tasks involved:

Embedded C program to toggle a GPIO after a certain amount of delay for charging of the DC bus capacitor before constant voltage charging.

Problems faced: initialisation of GPIO makes the configured pin to go low for a split nano second before toggling which will undesirably turn on the relay operation.

Solution: The Device initialisation function call was removed that disables pullup on the GPIO’s and only GPIO pin config function and GPIO direction mode function were used and set to OUT.

Embedded C program for EPWM generation of varying duty cycle based on feedback voltage from the DC bus grid, battery feedback and current feedback measured by configuring the Analog to digital converters with the conversion factor of (3300/4096).

Problems faced: The reference for the ADC channels was set to INTERNAL and 2.5V which read the exact voltages on the watch window, but was not the same when reference was set to intended 3.3V,

Solution: The base reference was changed to EXTERNAL and 3.3V which gave the exact reading as the earlier case

Embedded C programs to configure CAN communication to communicate with the BMS of the charging vehicle.