

PROJECT SUMMARY (500 WORDS) :

The Automobile Cruise Control acronymed the ACC is a microwave radar guided and a microcontroller controlled cruise control for cars, trucks and all types of automobiles and heavy vehicles. The ACC is a stand alone unit that aids driving on busy streets and highways. The system alerts the driver of vehicles ahead within a range of 50-75 metres and those pulling up and prevents dangerous driving and collisions under all weather conditions. An optional facility provides tail-end watch while changing lanes in a multilane expressway. The ACC is but a friendly co-pilot to the automobile driver.

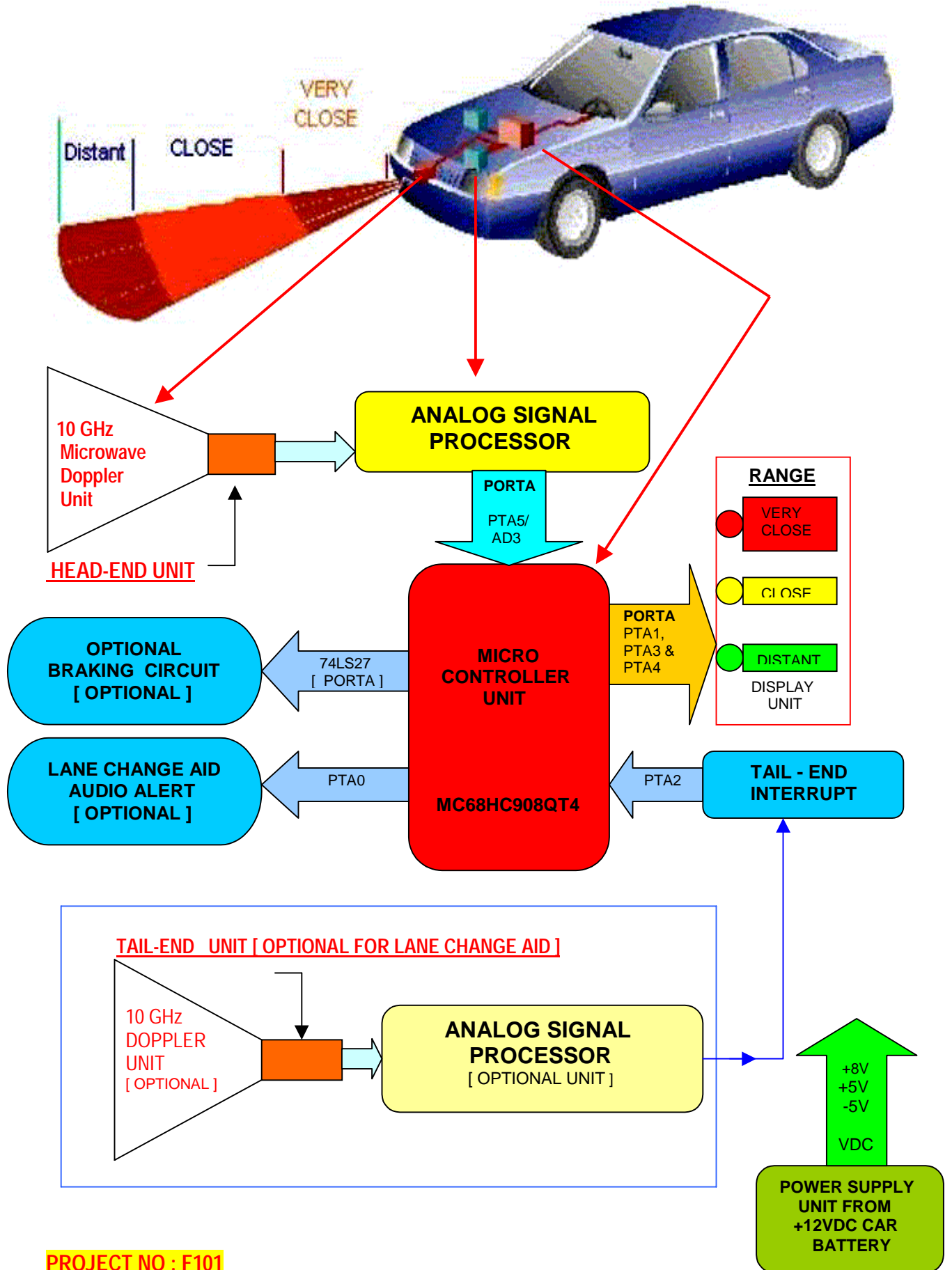
Unlike conventional adaptive cruise controls that provide an electronic throttle governor to maintain a uniform cruise speed and activation of electromechanical braking in times of emergency, this system in no way interferes with the vehicle dynamics. For the simple reason that all conventional cruise controls are designed for a specific vehicle like the Cadillac XLR comes fitted with a radar enhanced automatic cruise control or the Audi A8 that has similar features. Cars in the category of US\$ 70,000 to 80,000 are radar enhanced and optional radar units may be fitted in modern cars at an expense of US\$2000 to 3000. However, one wouldn't find a radar that fits in any car like the ACC.

The system may be fitted in any model of cars, trucks or heavy vehicles with an easy installation procedure. The head-end sensing radar may be fitted on the front grill and the optional tail-end unit on the rear bumper guard. The radar utilises 10 GHz microwaves of low power levels for detecting obstacles or moving objects within a range of 50-75 metres. The radar uses the Doppler effect principle to detect moving objects in front or rear of the vehicle. The core combines a CISC engine, with a microcontroller-typical fast real-time response and analog signal processing power. It uses minimum system components and greatly simplifies the architecture of the ACC. The Doppler signals are processed by an Analog Signal Processor before being fed into the heart of the core. The heart is but the little genie, the MC68HC908QT4, CISC microcontroller that performs an analog to digital conversion of the doppler signals, compares the digital values to a preset table of signal levels (that may be programmed individually) and drives a display port to indicate the relative proximity of the target to the driver of the vehicle. An optional tail-end unit detects cars pulling up at the rear when the vehicle is changing lanes and generates an audio alert of tail-end traffic.

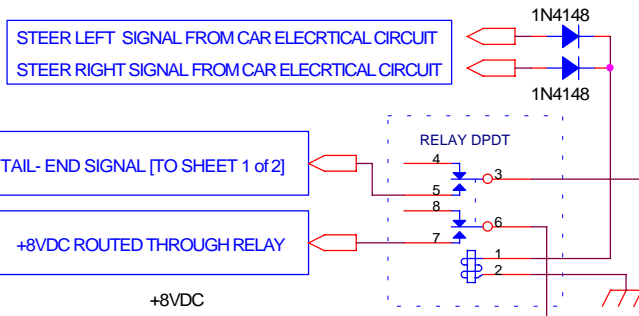
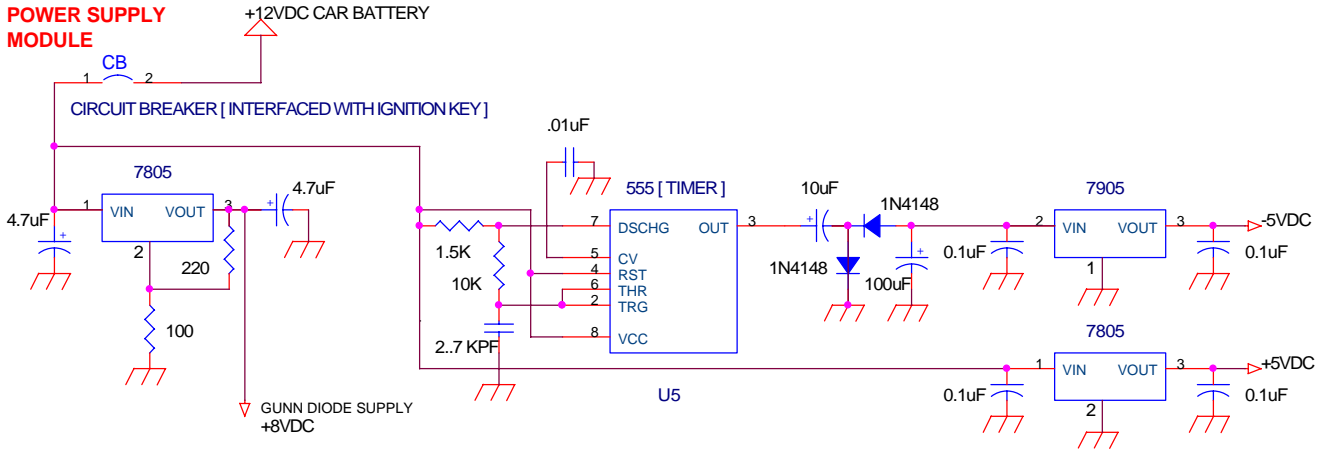
The ACC is a simple system with minimum number of components that improves system reliability, offers a great deal of program flexibility and is cost effective to suit the motorist's budget. It would be of great use in highway driving and city cruising for motorists who would be alerted of head-end or tail-end obstacles. The system fits into any vehicle, modern or archaic of any make, and is dirt cheap with a market cost of less than US\$500.

PROJECT NO : F101

SYSTEM BLOCK DIAGRAM :

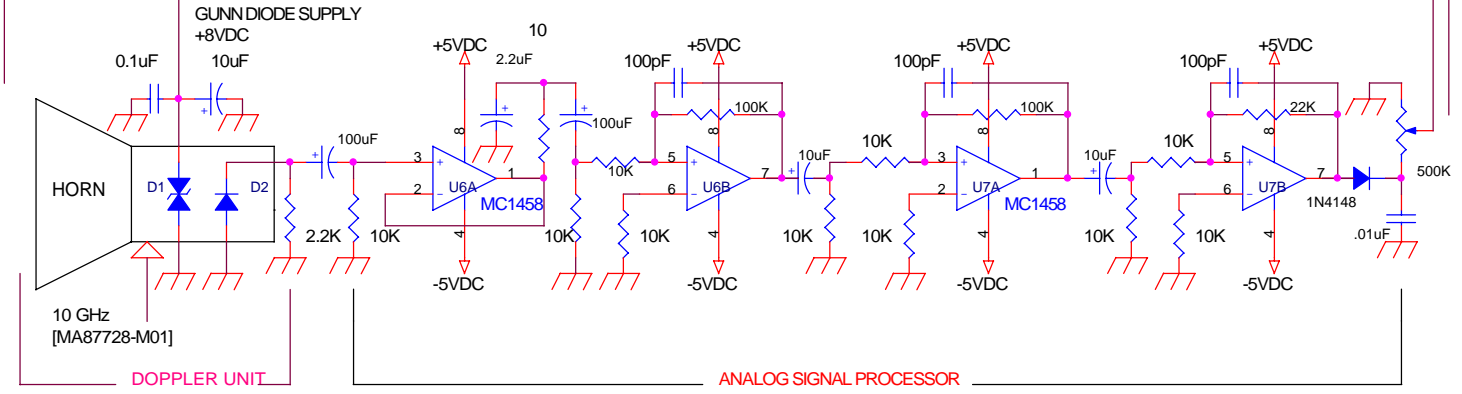


POWER SUPPLY MODULE



OPTIONAL TAIL- END UNIT [LANE CHANGE AID]

VEHICLE TAIL- END SENSING



1. STEER LEFT OR RIGHT SIGNAL FROM THE CAR ELECTRICAL CIRCUITRY [USED FOR INDICATOR LIGHTS] IS USED TO SWITCH ON THE LANE CHANGE AID
2. TAIL-END DOPPLER UNIT IS SWITCHED ON ONLY DURING LANE CHANGE OPERATIONS
3. +/- 5VDC SUPPLY TO ANALOG UNIT IS CONTINUOUS

NOTE:

1. RESISTANCES IN OHMS [1/4 WATT METALLISED]
2. CAPACITORS IN FARADS
3. ALL UNITS COPPER SHIELDED
4. CHAINED LINES IN RED ARE BASIC BLOCKS
5. CHAINED LINES IN BLUE ARE OPTIONAL BLOCKS
6. INDIVIDUAL POWER SUPPLY FOR HEAD AND TAIL ENDS - 2NOS. IDENTICAL MODULES
7. ALL POWER REGULATORS WITH HEAT SINKS

Title		
MOTOROLA FLASH INNOVATION 2003 DESIGN CONTEST		
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PROJECT PHOTOGRAPHS :



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