Microcontroller based 8 Channel Delayed Pulse Generator

Interfaced with CAMAC System

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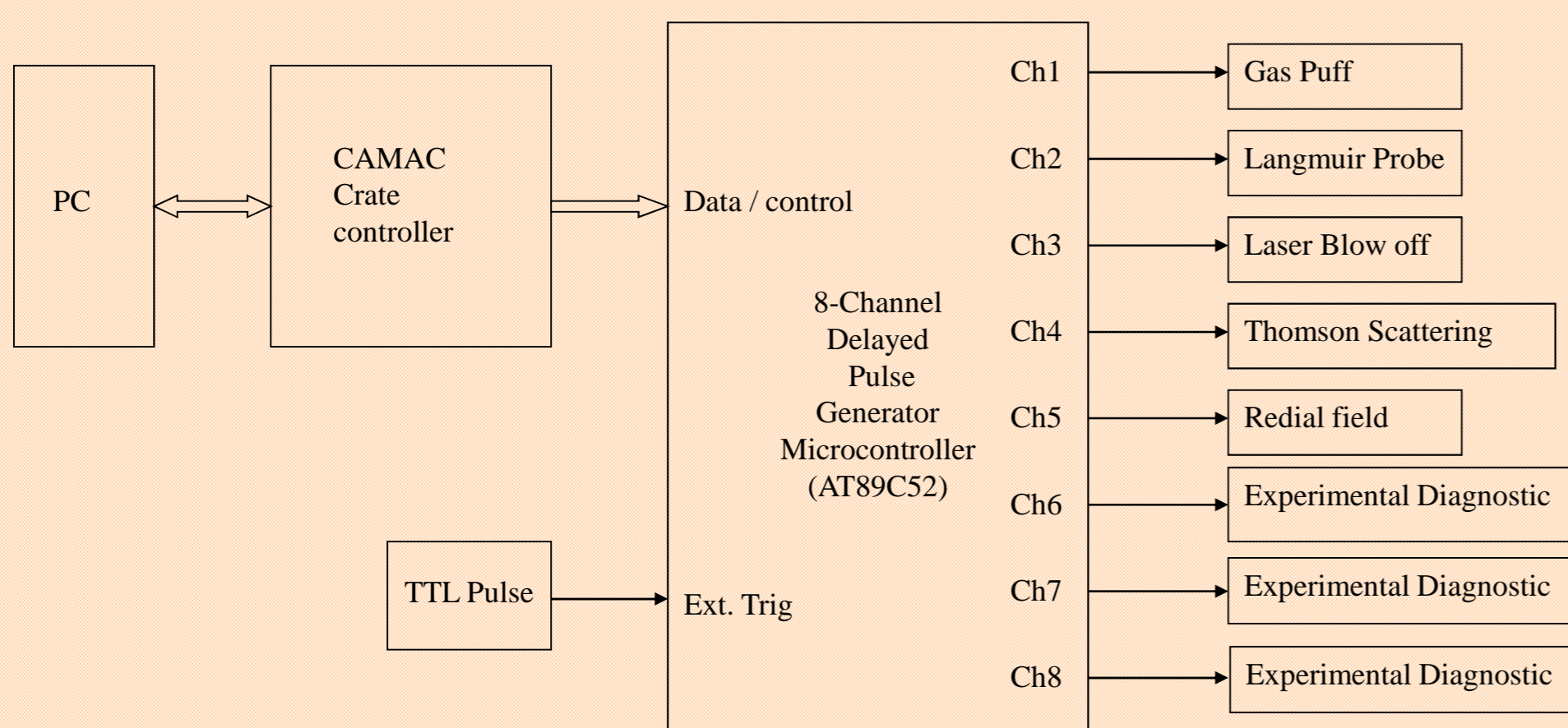## Institute for Plasma Research, Gandhinagar

Abstract:

A microcontroller based 8-channel delayed pulse generator is developed in-house. It is a single width CAMAC module, which provides 8-TTL output pulses of fix width and variable delay with respect to trigger input. The output pulse has fixed width of 255µs while delay is variable. Delay can be programmed in the range of 1ms to 250 ms, steps of 1 ms using 8 bit data from controller. The module works for either software or Ext. trigger (TTL pulse 5µs) mode. This paper presents the design and operation of the microcontroller based 8-channel delayed pulse generator.

Experimental Block Diagram

Block Diagram of Delayed Pulse Generator
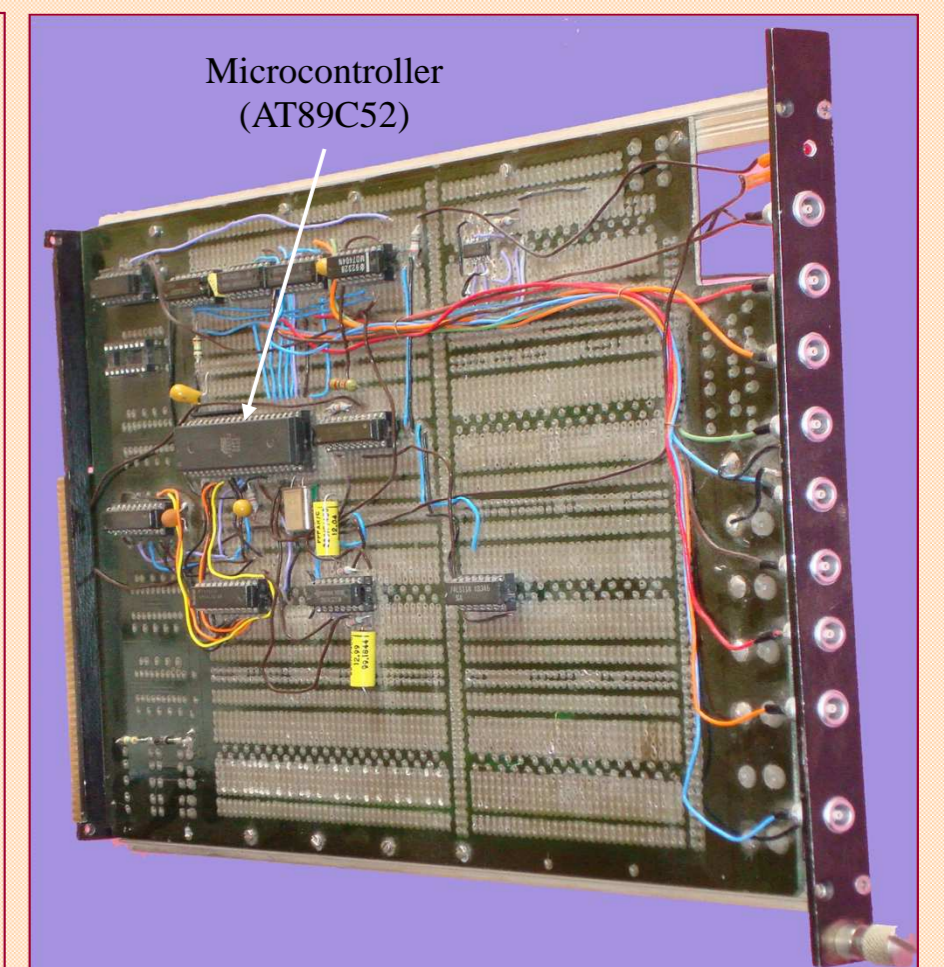

Specification

1. Dimension: Single-width CAMAC module.
2. Power Requirement: + 6V   1.00A
3. Front Panel:
   * One red LED illuminates when module is initialized and after getting triggered it will be off.
   * 8 single pin LEMO connector type RA 00250, one for each of the eight output channels.
   * 1 single pin LEMO connector type RA 00250 for the external trigger input.
4. Output pulse:
   * Eight independently controllable delayed pulse (TTL) output.
   * Pulse width 255µs fix.
   * A pulse output is capable to drive a 50-Ohm load.
5. Time Delay range: 1 to 250ms, step of 1ms.
6. Trigger Input: Software/ Ext. trigger (TTL pulse).
7. CAMAC responses: X is generated in response to all valid commands.
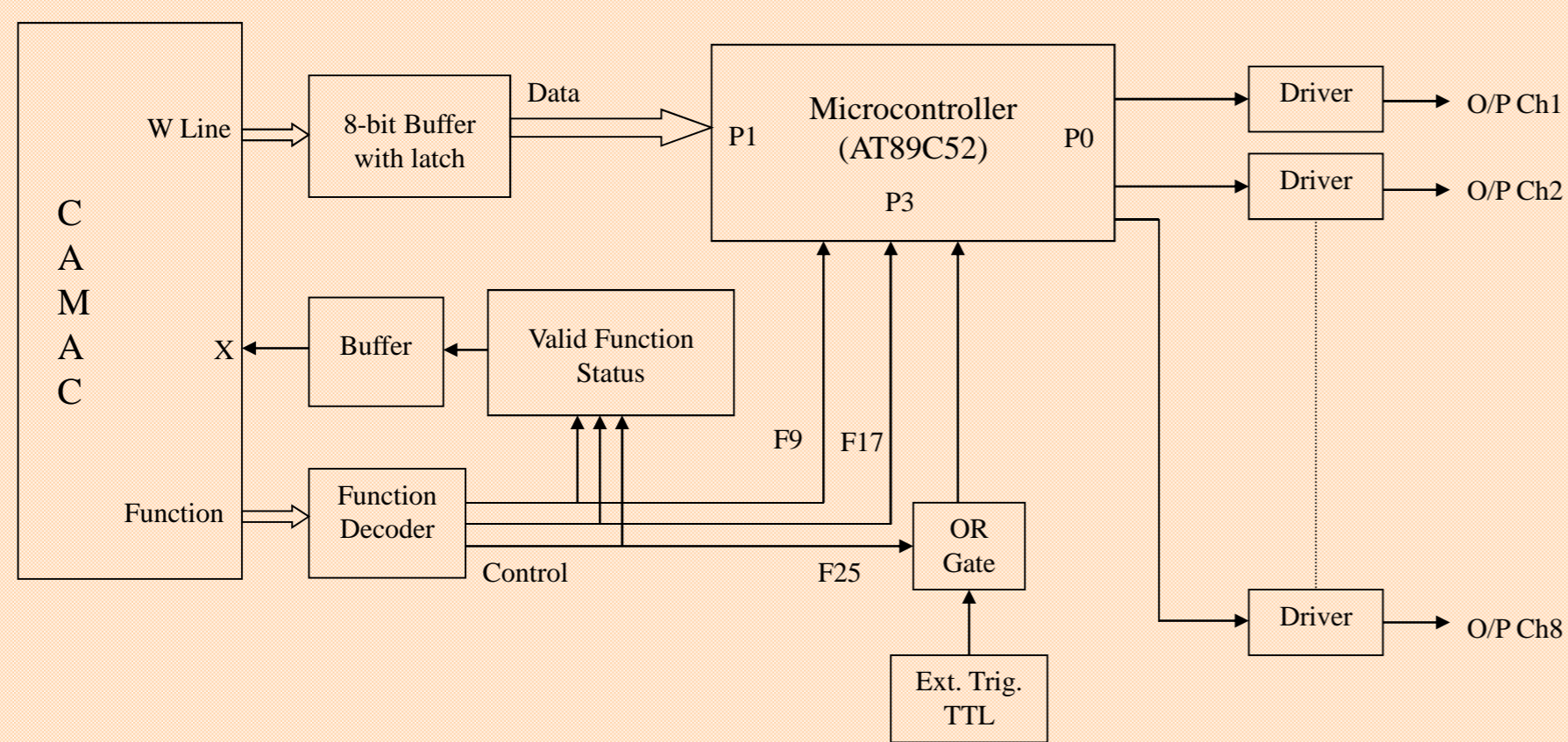8. Any Channel can be disabled through software.

CAMAC Function Code

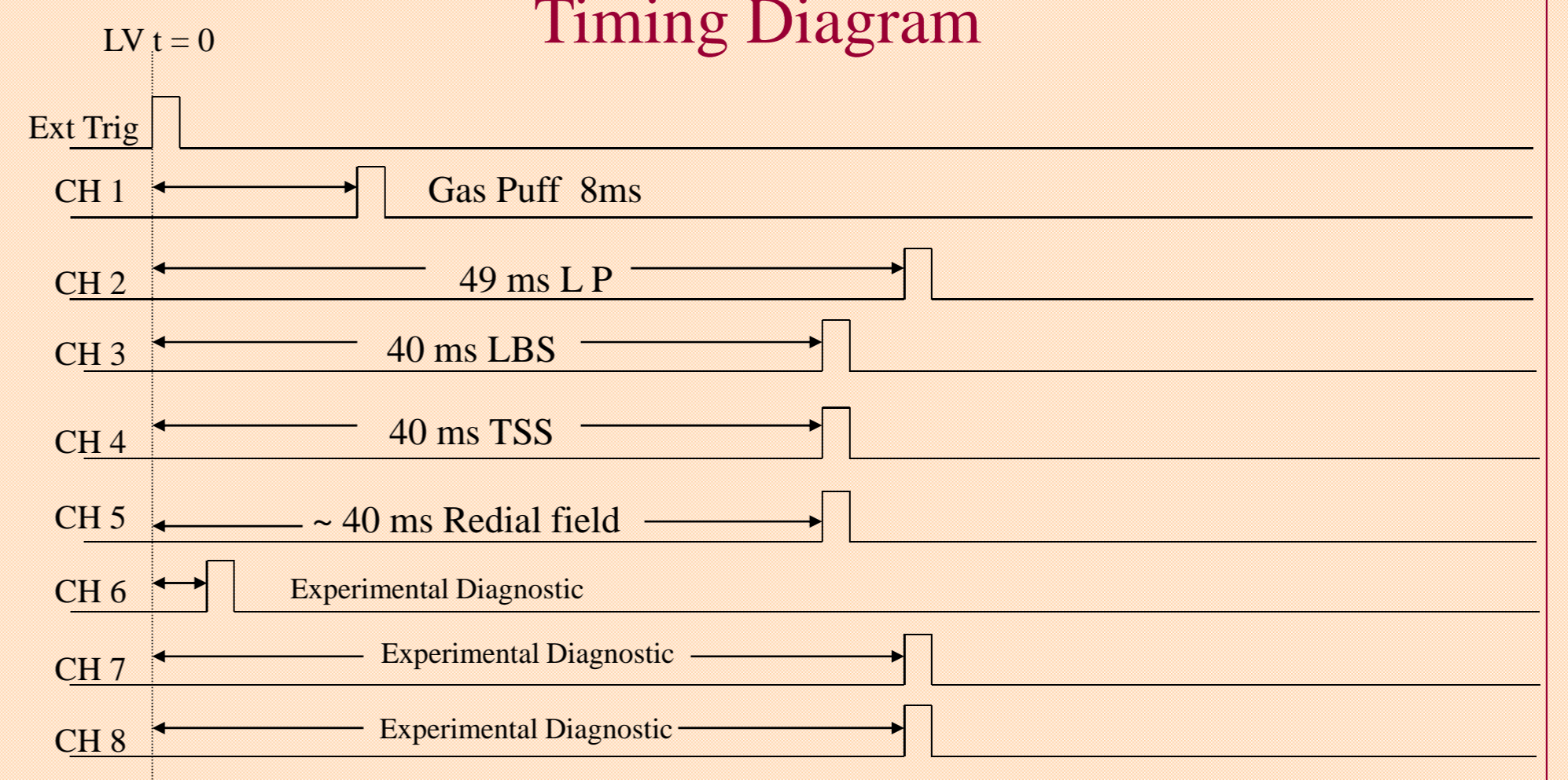|		
F(9)		Microcontroller select programming mode.
F(17)	W(x)	Set Channel 1 Delay Register.
F(17)	W(x)	Set Channel 2 Delay Register.
F(17)	W(x)	Set Channel 3 Delay Register.
F(17)	W(x)	Set Channel 4 Delay Register.
F(17)	W(x)	Set Channel 5 Delay Register.
F(17)	W(x)	Set Channel 6 Delay Register.
F(17)	W(x)	Set Channel 7 Delay Register.
F(17)	W(x)	Set Channel 8 Delay Register.
F(17)		Preset / Reload mode setting
F(25)		Simulate Trigger.

Timing Diagram

Test Results
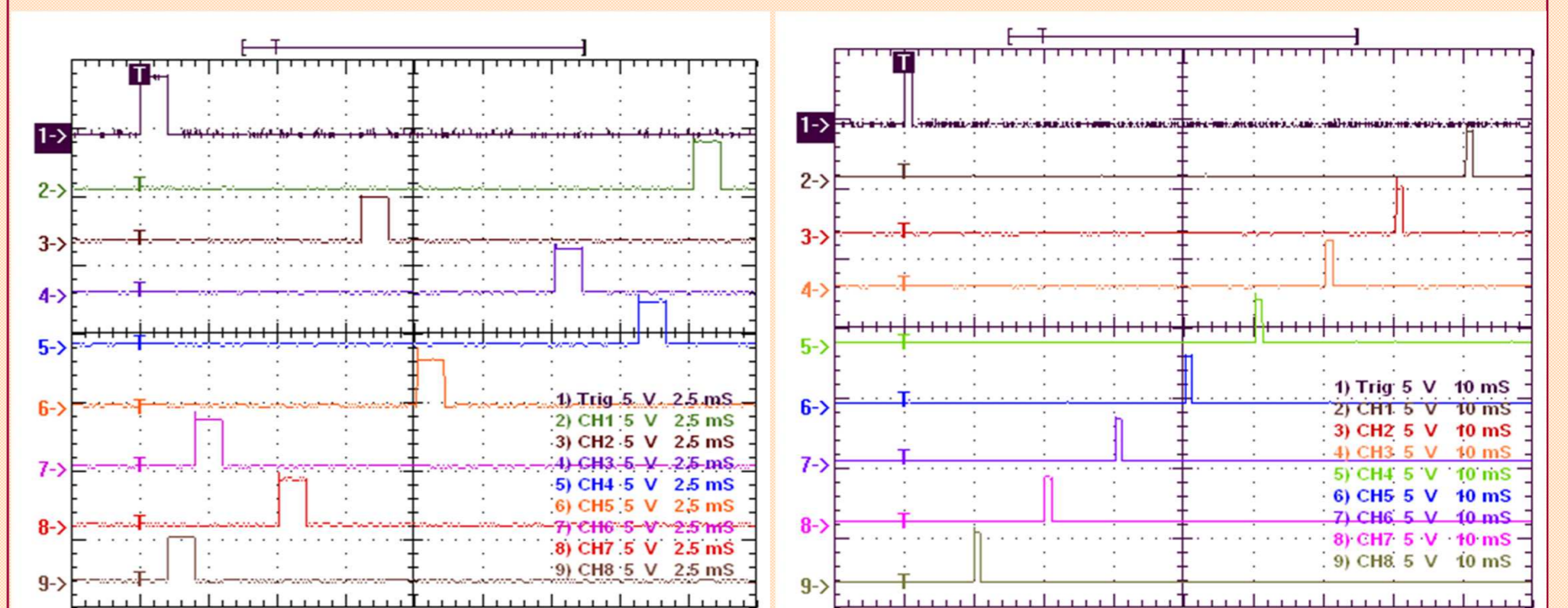
Conclusion:

In house developed microcontroller based 8-channel delayed pulse generator is successfully installed in Aditya Data Acquisition system in Aditya Tokamak. .