Task-3:- A PPR Valve Control using STM Microcontroller

Design and implement a control system for a PPR (Pilot-Operated Pressure Relief) valve using an STM microcontroller.

Components used:-

Component	Function
STM32F103C8T6 MCU	Core controller (PWM, ADC, logic)
Actuonix L16 Actuator	Adjusts Valve Position
Pressure Sensor (e.g., MPX5010)	Measures System Pressure(0-5v)
12V Power Supply	Powers Actuators
TIM3	Generates PWM signals
ADC1	Reads Peressure sensor voltage

Logic:-

1. Read the pressure from the sensor using ADC.
2. Compare current pressure with
    - SETPOINT (minimum acceptable pressure)
    - RELIEF_PRESSURE(maximum safety pressure)
3. Control actuator using PWM
    - If pressure < SETPOINT == valve closed(0%)
    - If pressure < RELIEF_PRESSURE == valve fully open(100%)
    - If in between ==actuator opens proportionally