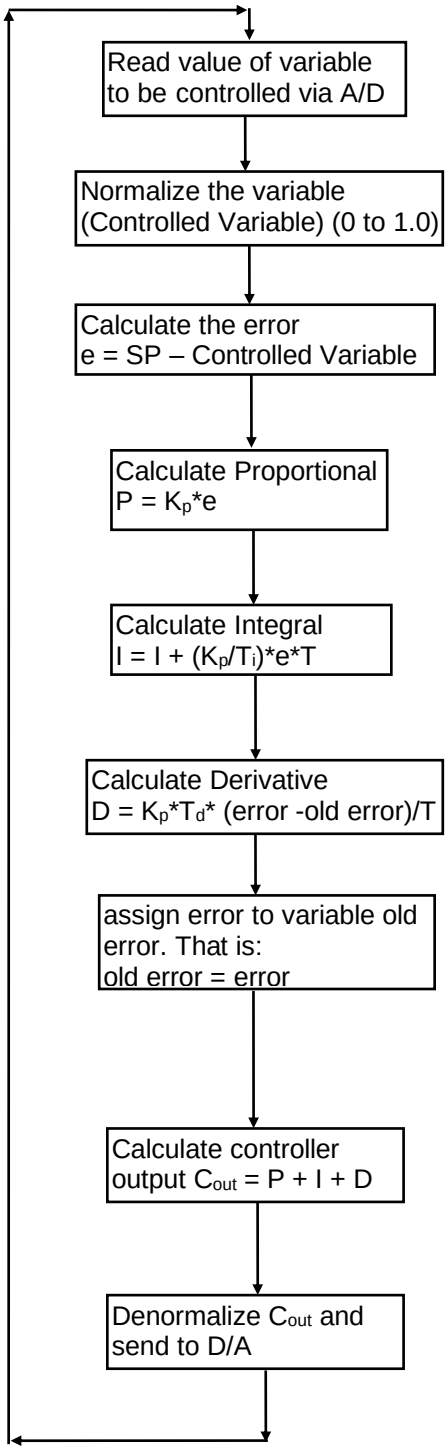
PID Pseudo Code



```
/* Simplified Reverse Acting PID Function*/
float PID(float controlled_variable, float set_point, float gain, float integral_time, float
derivative_time, float sample_time)
{
/* define variables*/
float error, proportional, derivative;
static float integral, olderror, output; /* values in these variables must retained during each iteration */
int  limiter;

error = set_point - controlled_variable;

/* integral limiting switch - limiter=0 disables integral, limiter = 1 enables integral action*/
/* If controller is at 1 (maximum) or 0 (minimum) disable integral action */
/* if integral time is >99999 or less thatn or equal to 0 disable integral action */
if ( output >=1.0||output<=0.0|| integral_time>= 99999 || integral_time <=0)
        limiter = 0;
else
        limiter = 1;


proportional = gain*error;

integral = integral + limiter*gain/integral_time*error*sample_time;

derivative = gain*derivative_time*(error-olderror)/sample_time;

olderror=error;

output = gain*error + integral + derivative;

/* clamp output  if less than 0 or greater than 1 */
if(output<0.0)
        {
        output = 0.0;
        }
else if (output>1.0)
        {
        output = 1.0;
        }
return output;
}
```