```cpp
float pidController::outputCalc(float pv, float sp)
{
        float pterm, dterm, result, err, ffterm;


        err = sp - pv;
        if (err > deadBand || err < -1*deadBand)
        {
                pterm = pgain * err;
                if (pterm < outputPosMax || pterm > outputNegMax) //if the proportional term is not maxed
                {
                        integral += igain * err * timePeriod; //add to the integral
                        if (integral > IntegralPosMax)
                                integral = IntegralPosMax;
                        else if (integral < IntegralNegMax)
                                integral = IntegralNegMax;
                }

                dterm = ((err - lastError)/timePeriod) * dgain;

                ffterm = forwardGain * sp;
                result = ffterm + pterm + integral + dterm;
                if(result<-outputNegMax)
                        result = -outputNegMax;
                else if(result>outputPosMax)
                        result=outputPosMax;
        }
        else
                result = integral;

        lastError = err;

        return (result);

}
```