```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);
}
```