

```

// pid.hpp: Header file for the pid controller and all of it's assets
// Copyright (C) 2017 Ethan Wells
//
// This program is free software: you can redistribute it and/or modify
// it under the terms of the GNU Lesser General Public License as published by
// the Free Software Foundation, either version 3 of the License, or
// (at your option) any later version.
//
// This program is distributed in the hope that it will be useful,
// but WITHOUT ANY WARRANTY; without even the implied warranty of
// MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
// GNU Lesser General Public License for more details.
//
// You should have received a copy of the GNU Lesser General Public License
// along with this program. If not, see <http://www.gnu.org/licenses/>.

#pragma once
#include "lift.hpp"

/** Consists of pid, and all subcomponents, etc */
namespace pid {
    /** Maximum value for the drive */
    static const int DRIVE_MAX = 127;
    /** Minimum value for the drive */
    static const int DRIVE_MIN = -127;
    /** Limit for the integral value */
    static const int INTEGRAL_LIMIT = 50;
    /** p value */
    extern float Kp;
    /** i value */
    extern float Ki;
    /** d value */
    extern float Kd;
    /** Default precision for waiting on pid to reach value */
    extern unsigned int default_precision;
    /** Whether or not each side of the drive's pid is enabled, in the order of
     * left
     * to right */
    extern bool enabled[2];

    /** Enables all pid */
    void enable(void);

    /** Disables all pid */
    void disable(void);
}

```

```

    /** Task to manage pid */
    void controller(void* none);

    /** Initialize pid. Call in initialize() */
    void init(void);

    /** Stops the pid task */
    void stop(void);

    /** (Re)starts the pid task */
    void go(void);

    /** Requests values for the left and right side of the drive */
    void request(long l, long r);

    /** Wait until pid reaches specified precision, for no longer than the
     * specified
     * blockTime. If 0 is passed to blockTime, it will wait indefinitely until the
     * requested values are met */
    void wait(unsigned long precision, unsigned long blockTime);
    /** TaskHandle for the pid task */
    extern TaskHandle pidHandle;
} // namespace pid

```