ACME Robotics- PID Controller

1.0.1

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Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

Chapter 3

Class Documentation

3.1 PIDController Class Reference

The class PIDController has private members Kp, Ki, Kd, and a public member function to compute the new velocity given the input parameters such as targetSetpoint and actualVelocity.

`#include <PID.hpp>`

Public Member Functions

- PIDController (double kp, double ki, double kd, double dt, double max, double min)
- double compute (double currentValue, double setPoint)

  Computes the output based on the defined gains.
- void updateParameters (double kp, double ki, double kd)

  update kp,ki,kd values for PIDController class
- double getValueKi ()

  get value of ki
- double getValueKp ()

  get value of kp
- double getValueKd ()

  get value of kd

3.1.1 Detailed Description

The class PIDController has private members Kp, Ki, Kd, and a public member function to compute the new velocity given the input parameters such as targetSetpoint and actualVelocity.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 PIDController()

```
PIDController::PIDController (
            double kp,
            double ki,
            double kd,
            double dt,
            double max,
            double min )  [inline]
```

3.1.3 Member Function Documentation

3.1.3.1 compute()

```
double PIDController::compute (
            double currentValue,
            double setPoint )
```

Computes the output based on the defined gains.

Parameters

curentValue	A double which holds the current process value
setPoint	A double which holds the setpoint value

Returns

A double which outputs computed using the gains.

3.1.3.2 getValueKd()

```
double PIDController::getValueKd ( )
```

get value of kd

Return value of Kd member variable.

Returns

kd value of PIDController

3.1.3.3 getValueKi()

```
double PIDController::getValueKi ( )
```

get value of ki

Return value of Ki member variable.

Returns

Ki value of PIDController

3.1.3.4 getValueKp()

```
double PIDController::getValueKp ( )
```

get value of kp

Return value of Kp member variable.

Returns

kp value of PIDController

3.1.3.5 updateParameters()

```
void PIDController::updateParameters (
            double kp,
            double ki,
            double kd )
```

update kp,ki,kd values for PIDController class

Updates new values to member variables of the class.

Parameters

kp	- proportional gain
ki	- integral gain
kd	- differential gain

The documentation for this class was generated from the following files:

- PID.hpp
- PID.cpp

Chapter 4

File Documentation

4.1 CMakeLists.txt File Reference

Functions

- add_library (PIDlibrary SHARED PID.cpp) add_executable(shell-app main.cpp) target_link_libraries(shell-app PIDlibrary) include_directories($

4.1.1 Function Documentation

4.1.1.1 add_library()

```
add_library (
             PIDlibrary SHARED PID. cpp )
```

4.2 main.cpp File Reference

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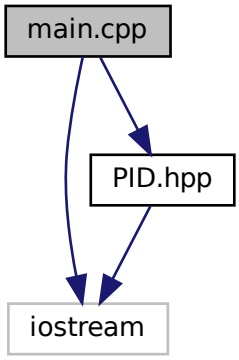
```
#include <iostream>
#include <PID.hpp>
```

Include dependency graph for main.cpp:



Functions

- int main ()

4.2.1 Detailed Description

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Main method to feed input to PID controller and Compute output to the PID controller

4.2.2 Function Documentation

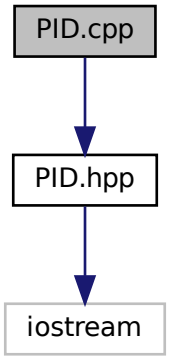
4.2.2.1 main()

```
int main ( )
```

4.3 PID.cpp File Reference

Class members source file.

`#include <PID.hpp>`
Include dependency graph for PID.cpp:



4.3.1 Detailed Description

Class members source file.

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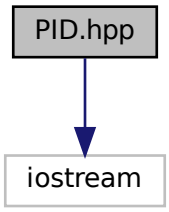
4.4 PID.hpp File Reference

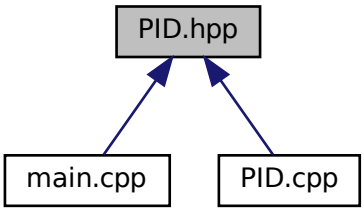
Declaration of the PID class and its members.

```
#include <iostream>
```

Include dependency graph for PID.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class PIDController

  The class PIDController has private members Kp, Ki, Kd, and a public member function to compute the new velocity given the input parameters such as targetSetpoint and actualVelocity.

4.4.1 Detailed Description

Declaration of the PID class and its members.

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Index