

CageControl

Control waveplates inside tomography cages

Generated by Doxygen 1.8.13

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Chapter 1

Bug List

File [debug.h](#)

Printing to console does not work on Windows. Workaround: Redirect stderr to stdout and redirect stdout to a file.

File [defines.h](#)

There are no known bugs.

Namespace [helper](#)

There are no known bugs.

Class [Motor](#)

There are no known bugs.

Class [UDPlistener](#)

There are no known bugs

File [version.h](#)

There are no known bugs.

Chapter 2

Namespace Index

2.1 Namespace List

Here is a list of all documented namespaces with brief descriptions:

[helper](#)

Small functions to display messages [11](#)

Chapter 3

Hierarchical Index

3.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

QMainWindow	
cagecontrol	13
QObject	
Motor	21
UDPListener	27

Chapter 4

Class Index

4.1 Class List

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

cagecontrol	13
Motor		
	Operates the PCB-motor	21
UDPlistener		
	Used to control dinspect with UDP packages	27

Chapter 5

File Index

5.1 File List

Here is a list of all documented files with brief descriptions:

cagecontrol.h	??
debug.h	
Debug macros	33
defines.h	
Various compile-time definitions	34
helper.h	37
motor.h	38
udplistener.h	39
version.h	
This file contains information about the code version	40

Chapter 6

Namespace Documentation

6.1 helper Namespace Reference

contains small functions to display messages

Functions

- void `message` (QString msg)
message displays a message box
- void `error` (QString msg)
error displays an error-messagebox and writes a debug_error message to stdout
- void `warning` (QString msg)
warning displays warning-messagebox and writes a debug_warning message to stdout
- void `info` (QString msg)
info displays an info-messagebox and writes a debug_info message to stdout

6.1.1 Detailed Description

contains small functions to display messages

Bug There are no known bugs.

6.1.2 Function Documentation

6.1.2.1 error()

```
void helper::error (  
    QString msg )
```

error displays an error-messagebox and writes a debug_error message to stdout

Parameters

<i>msg</i>	the message to be displayed
------------	-----------------------------

6.1.2.2 info()

```
void helper::info (
    QString msg )
```

info displays an info-messagebox and writes a debug_info message to stdout

Parameters

<i>msg</i>	the message to be displayed
------------	-----------------------------

6.1.2.3 message()

```
void helper::message (
    QString msg )
```

message displays a message box

Parameters

<i>msg</i>	the message to be displayed
------------	-----------------------------

6.1.2.4 warning()

```
void helper::warning (
    QString msg )
```

warning displays warning-messagebox and writes a debug_warning message to stdout

Parameters

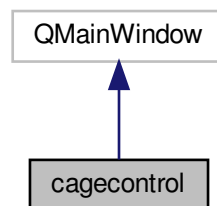
<i>msg</i>	the message to be displayed
------------	-----------------------------

Chapter 7

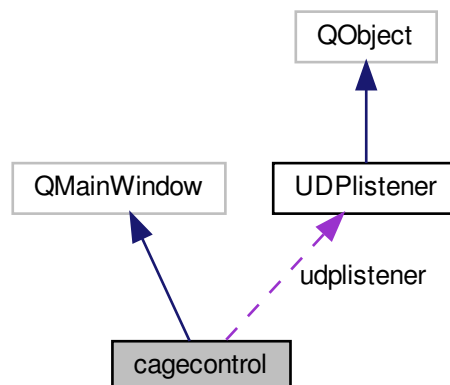
Class Documentation

7.1 cagecontrol Class Reference

Inheritance diagram for cagecontrol:



Collaboration diagram for cagecontrol:



Public Slots

- void [slot_changeWPangles](#) (QVector< double > angles)
slot_changeWPangles sets offsetangles for all waveplates
- void [slot_changeoffsetusage](#) (bool uo_in)
slot_changeoffsetusage changes the usage of the waveplate offset
- void [slot_moveHV](#) (QString color)
moveHV
- void [slot_movePM](#) (QString color)
movePM
- void [slot_moveLR](#) (QString color)
moveLR
- void [slot_movemotors](#) (QString color, double HWPang, double QWPang)
movemotors

Public Member Functions

- **cagecontrol** (QWidget *parent=nullptr)

Private Slots

- void [updatesettings](#) (double d)
updatesettings fills variables with data from GUI
- void [updatesettingsint](#) (int i)
updatesettingsint wrapper, just calls
- void [updateUI](#) ()
updateUI updates UI with supposedly new numbers (loaded from conf file, e.g.)

Private Member Functions

- void [setupUI](#) (QGridLayout *layout)
Puts together the GUI.
- void [openmotors](#) ()
Opens serial connections to the PCB motor controlllers.
- void [updatestatus](#) (QString msg)
updatestatus writes message to statusbar and to a logfile
- void [LoadConfig](#) ()
LoadConfig loads config from a file.
- void [SaveConfig](#) ()
SaveConfig stores config to a file.
- void [motorGB](#) (QGroupBox *gb, QString id)
motorGB fills an empty QGroupBox with motor controls
- void [initconnections](#) ()
initconnections connects Qt Signals to slots
- void [movemotor](#) (QString motor, double HWPang, double QWPang)
movemotor moves both motors of a cage to certain angles
- void [moveredHV](#) ()
moveredHV moves red cage to HV basis
- void [moveredPM](#) ()

- moveredPM moves red cage to PM basis*
- void [moveredLR](#) ()
 - moveredLR moves red cage to RL basis*
- void [moveredANG](#) ()
 - moveredANG moves red cage to the angles set in the GUI*
- void [movebrownHV](#) ()
 - movebrownHV moves brown cage to HV basis*
- void [movebrownPM](#) ()
 - movebrownPM moves brown cage to PM basis*
- void [movebrownLR](#) ()
 - movebrownLR moves brown cage to RL basis*
- void [movebrownANG](#) ()
 - movebrownANG moves brown cage to the angles set in the GUI*
- void [movegreenHV](#) ()
 - movegreenHV moves green cage to HV basis*
- void [movegreenPM](#) ()
 - movegreenPM moves green cage to PM basis*
- void [movegreenLR](#) ()
 - movegreenLR moves green cage to RL basis*
- void [movegreenANG](#) ()
 - movegreenANG moves green cage to the angles set in the GUI*
- void [moveblueHV](#) ()
 - moveblueHV moves blue cage to HV basis*
- void [movebluePM](#) ()
 - movebluePM moves blue cage to PM basis*
- void [moveblueLR](#) ()
 - moveblueLR moves blue cage to RL basis*
- void [moveblueANG](#) ()
 - moveblueANG moves white cage to the angles set in the GUI*
- void [movewhiteHV](#) ()
 - movewhiteHV moves white cage to HV basis*
- void [movewhitePM](#) ()
 - movewhitePM moves white cage to PM basis*
- void [movewhiteLR](#) ()
 - movewhiteLR moves white cage to RL basis*
- void [movewhiteANG](#) ()
 - movewhiteANG moves black cage to the angles set in the GUI*
- void [moveblackHV](#) ()
 - moveblackHV moves black cage to HV basis*
- void [moveblackPM](#) ()
 - moveblackPM moves black cage to PM basis*
- void [moveblackLR](#) ()
 - moveblackLR moves black cage to RL basis*
- void [moveblackANG](#) ()
 - moveblackANG*
- void [moveallhv](#) ()
 - moveallhv*
- void [moveallpm](#) ()
 - moveallpm*
- void [movealllr](#) ()
 - movealllr*
- void [moveallarb](#) ()
 - moveallarb*

Private Attributes

- int [udpport](#)
Hold the UDP port to listen to for commandds.
- bool [pauseupdating](#)
Keep updateUI and updatesettings from interfering with each other.
- bool [useoffset](#)
If true, the angles in the settings-tab will be used as '0'.
- QSettings * [settings](#)
A QSettings object, used to store settings in a config file.
- UDPlistener * [udplistener](#)
Listens to a UDP port, aquires & checks commands send to it.
- QWidget * [tabs](#)
GUI tab widget.
- QWidget * [settingstab](#)
GUI tab containing settings.
- QWidget * [motorstab](#)
GUI tab containing motor controls.
- QStatusBar * [status](#)
Status bar.
- QVector< QString > [comports](#)
Vector containing available serial ports names ports.
- QVector< bool > [invert](#)
True: invert predefined bases (H/V -> V/H, P/M-> M/P, L/R-> R/L)
- QVector< Motor * > [motors](#)
List of serial connections to the cages.
- QVector< QString > [motorName](#)
List of colorcodes of the cages.
- QVector< QDoubleSpinBox > [HWP0sp](#)
List of QSpinBoxes to set the '0' of the HWPs.
- QVector< QDoubleSpinBox > [QWP0sp](#)
List of QSpinBoxes to set the '0' of the QWPs.
- QVector< int > [HWPmnum](#)
Motor number of controller the HWP is connected to.
- QVector< int > [QWPMnum](#)
Motor number of controller the QWP is connected to.
- QVector< double > [HWP0](#)
'0' of HWPs
- QVector< double > [QWP0](#)
'0' of QWPs
- QVector< double > [HWPcust](#)
custom set angle to rotate HWP to
- QVector< double > [QWPCust](#)
custom set angle to rotate QWP to
- QVector< QGroupBox * > [uiMotorGroupBoxes](#)
List of Groupboxes containing cage controls.

7.1.1 Member Function Documentation

7.1.1.1 initconnections()

```
void cagecontrol::initconnections ( ) [private]
```

initconnections connects Qt Signals to slots

Defines what happens when a button is clicked, a number is changed, et cetera

7.1.1.2 LoadConfig()

```
void cagecontrol::LoadConfig ( ) [private]
```

LoadConfig loads config from a file.

The dialog is set up with values already stored in the QSettings object. If a specific quantity does not exist there, it is set to a standard value.

7.1.1.3 motorGB()

```
void cagecontrol::motorGB (
    QGroupBox * gb,
    QString id ) [private]
```

motorGB fills an empty QGroupBox with motor controls

Parameters

<i>gb</i>	empty QGroupBox
<i>id</i>	colorcode of the cage

7.1.1.4 movemotor()

```
void cagecontrol::movemotor (
    QString motor,
    double HWPang,
    double QWPang ) [private]
```

movemotor moves both motors of a cage to certain angles

Parameters

<i>motor</i>	colorcode of the cage
<i>HWPang</i>	angle of the HWP in degrees
<i>QWPang</i>	angle of the QWP in degrees

7.1.1.5 SaveConfig()

```
void cagecontrol::SaveConfig ( ) [private]
```

SaveConfig stores config to a file.

The QSettings object is updated with the values received from the dialog and saved immediately.

7.1.1.6 slot_changeoffsetusage

```
void cagecontrol::slot_changeoffsetusage (
    bool uo_in ) [slot]
```

slot_changeoffsetusage changes the usage of the waveplate offset

Parameters

<i>useoffset</i>	true if waveplate offset is to be used
------------------	--

The term 'offset' refers to the waveplate angles specified in the

See also

[settingstab](#). E.g.: 'H' of HWP specified in the [settingstab](#) is 50° and one wants to rotate the waveplate to H+10°. If ([useoffset](#)==true), one needs to rotate the motor to 10°. If ([useoffset](#)==false), one needs to rotate the motor to 60°.

7.1.1.7 slot_changeWPangles

```
void cagecontrol::slot_changeWPangles (
    QVector< double > angles ) [slot]
```

slot_changeWPangles sets offsetangles for all waveplates

Parameters

<i>angles</i>	vector containing all angles. Ordering: HWP0,HWP1,...,HWPn,QWP0,QWP1,...,QWPn
---------------	---

7.1.1.8 slot_moveHV

```
void cagecontrol::slot_moveHV (
    QString color ) [slot]
```

moveHV

Parameters

<i>color</i>	colorcode of the cage, or 'all'
--------------	---------------------------------

7.1.1.9 slot_moveLR

```
void cagecontrol::slot_moveLR (  
    QString color ) [slot]
```

moveLR

Parameters

<i>color</i>	colorcode of the cage, or 'all'
--------------	---------------------------------

7.1.1.10 slot_movemotors

```
void cagecontrol::slot_movemotors (  
    QString color,  
    double HWPang,  
    double QWPang ) [slot]
```

movemotors

Parameters

<i>color</i>	colorcode of the cage, or 'all'
--------------	---------------------------------

7.1.1.11 slot_movePM

```
void cagecontrol::slot_movePM (  
    QString color ) [slot]
```

movePM

Parameters

<i>color</i>	colorcode of the cage, or 'all'
--------------	---------------------------------

7.1.1.12 updatesettings

```
void cagecontrol::updatesettings (
    double d ) [private], [slot]
```

updatesettings fills variables with data from GUI

Parameters

<i>d</i>	unused
----------	--------

7.1.1.13 updatesettingsint

```
void cagecontrol::updatesettingsint (
    int i ) [private], [slot]
```

updatesettingsint wrapper, just calls

See also

[updatesettings\(double d\)](#)

Parameters

<i>i</i>	unused
----------	--------

7.1.1.14 updatestatus()

```
void cagecontrol::updatestatus (
    QString msg ) [private]
```

updatestatus writes message to statusbar and to a logfile

Parameters

<i>msg</i>	Message to write
------------	------------------

7.1.2 Member Data Documentation

7.1.2.1 useoffset

```
bool cagecontrol::useoffset [private]
```

If true, the angles in the settings-tab will be used as '0'.

See also

[slot_changeoffsetusage](#)

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

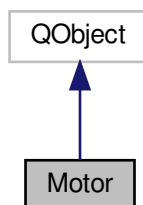
- cagecontrol.h
- cagecontrol.cpp
- cagecontrol_motors.cpp
- cagecontrol_ui.cpp

7.2 Motor Class Reference

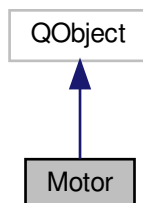
The [Motor](#) class operates the PCB-motor.

```
#include <motor.h>
```

Inheritance diagram for Motor:



Collaboration diagram for Motor:



Public Slots

- void [open](#) (QString port)
open establishes a connection over a serial port
- void [close](#) ()
close closes the serialport connection
- void [read](#) ()
read reads from the serial port
- void [write](#) (const QByteArray &data)
write writes to the serialport
- void [handleError](#) (QSerialPort::SerialPortError error)
handleError prints an error message of the serialport connection and closes the connection
- void [showStatusMessage](#) (const QString &message)
showStatusMessage fills the label in the GUI with text
- bool [isopen](#) ()
isopen returns the state of the serial connection
- void [command_park](#) ()
command_park moves the motor to the mechanical stop
- void [command_home](#) ()
command_home sends commands to position at the mechanical stop and afterwards go to the offset starting position, but in an inaccurate way
- void [command_info](#) ()
command_info sends the command to request the PCBMotor information
- void [command_help](#) ()
command_help sends the command to print the PCBMotor help
- void [command_frequency_sweep](#) ()
command_frequency_sweep sends the PCBMotor command for a frequency sweep
- void [command_singlestep](#) (QString dirstring)
command_singlestep moves the motor a single step in a direction specified by dirstring
- void [command_step](#) (uint16_t numsteps, QString dirstring)
command_step moves the motor numstep steps in a direction specified by dirstring
- void [command_microstep](#) (uint16_t nummsteps, QString dirstring)
command_microstep applies nummsteps micropulses to the motor
- void [stop](#) (bool stop)
stop Tries to stop movement if possible
- void [command_moveboth](#) (double ang1, double ang2)
command_moveboth moves both motors connected to the controller

Signals

- void [motorstatusmessage](#) (const QString &message)
motorstatusmessage emitted when the status of the serial connection changes, with a string indicating the actual state.
- void [ConnectionClosed](#) ()
emitted when serial connection is closed

Public Member Functions

- [Motor](#) ()
Motor the constructor initializes variables and establishes the serial connection.
- bool [sensordata](#) ()
sensordata returns the current PCBMotor optical encoder wheel sensor state

Public Attributes

- QString [publicmotorstatusmessage](#)
A string containing the current state of the serial connection.
- QSerialPort * [serial](#)
Qt serial connection interface.

Private Member Functions

- void [moveboth](#) ()
command_moveboth moves both motors connected to the controller

Private Attributes

- QTimer [hometimer](#)
Used to iterate through the steps of 'go to the starting position' - but in an inaccurate way.
- QTimer [bothtimer](#)
Used to iterate through the steps of moving two motors of one controller.
- int [movebothstep](#)
Controls logic flow when two motors are to be moved consecutively.
- bool [serialconnectionok](#)
False if opening the serial connection failed.
- uint16_t [motor1steps](#)
number of steps the 1st motor is to be moved
- uint16_t [motor2steps](#)
number of steps the 2nd motor is to be moved

7.2.1 Detailed Description

The [Motor](#) class operates the PCB-motor.

Bug There are no known bugs.

The PCBMotor is controllable by sending ASCII commands over a serial connection. This class establishes such a connection and controls the movements of the motor.

7.2.2 Member Function Documentation

7.2.2.1 command_microstep

```
void Motor::command_microstep (
    uint16_t nummsteps,
    QString dirstring ) [slot]
```

`command_microstep` applies nummsteps micropulses to the motor

Parameters

<i>nummsteps</i>	number of micropulses to apply
<i>dirstring</i>	string containing the desired direction

dirstring may either be "bw" of "fw" for backward/forward movement.

7.2.2.2 command_moveboth

```
void Motor::command_moveboth (
    double ang1,
    double ang2 ) [slot]
```

command_moveboth moves both motors connected to the controller

Parameters

<i>ang1</i>	angle motor 1 is to be moved to
<i>ang2angle</i>	motor 2 is to be moved to

7.2.2.3 command_singlestep

```
void Motor::command_singlestep (
    QString dirstring ) [slot]
```

command_singlestep moves the motor a single step in a direction specified by dirstring

Parameters

<i>dirstring</i>	a string containing the desired movement direction
------------------	--

Dirstring may either be "bw" of "fw" for backward/forward movement.

7.2.2.4 command_step

```
void Motor::command_step (
    uint16_t numsteps,
    QString dirstring ) [slot]
```

command_step moves the motor numstep steps in a direction specified by dirstring

Parameters

<i>numsteps</i>	number of steps to go
<i>dirstring</i>	direction to go

Dirstring may either be "bw" of "fw" for backward/forward movement.

7.2.2.5 handleError

```
void Motor::handleError (
    QSerialPort::SerialPortError error ) [slot]
```

handleError prints an error message of the serialport connection and closes the connection

Parameters

<i>error</i>	
--------------	--

7.2.2.6 isopen

```
bool Motor::isopen ( ) [slot]
```

isopen returns the state of the serial connection

Returns

true if serial connection was established successfully, false otherwise

7.2.2.7 motorstatusmessage

```
void Motor::motorstatusmessage (
    const QString & message ) [signal]
```

motorstatusmessage emitted when the status of the serial connection changes, with a string indicating the actual state.

Parameters

<i>message</i>	the message
----------------	-------------

7.2.2.8 sensordata()

```
bool Motor::sensordata ( )
```

sensordata returns the current PCBMotor optical encoder wheel sendor state

Returns

the current PCBMotor optical encoder wheel sendor state

7.2.2.9 showStatusMessage

```
void Motor::showStatusMessage (
    const QString & message ) [slot]
```

showStatusMessage fills the label in the GUI with text

Parameters

<i>message</i>	the text to be shown in the label
----------------	-----------------------------------

7.2.2.10 stop

```
void Motor::stop (
    bool stop ) [slot]
```

stop Tries to stop movenents if possible

Parameters

<i>stop</i>	Input: True if movents shall be stopped if possible
-------------	---

7.2.2.11 write

```
void Motor::write (
    const QByteArray & data ) [slot]
```

write writes to the serialport

Parameters

<i>data</i>	data to be written to the serial port
-------------	---------------------------------------

7.2.3 Member Data Documentation

7.2.3.1 hometimer

```
QTimer Motor::hometimer [private]
```

Used to iterate through the steps of 'go to the starting position' - but in an inaccurate way.

See also

[command_home\(\)](#)

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

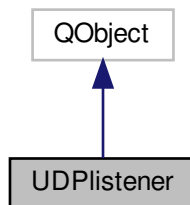
- [motor.h](#)
- [motor.cpp](#)

7.3 UDPlistener Class Reference

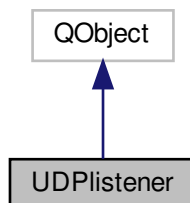
The [UDPlistener](#) class is used to control dinspect with UDP packages.

```
#include <udplistener.h>
```

Inheritance diagram for UDPlistener:



Collaboration diagram for UDPlistener:



Public Slots

- void [bind](#) ()
bind Binds to a new UDP port

Signals

- void [changeWPAngles](#) (QVector< double > angles)
changeWPAngles emitted when received message contains command to set waveplate characterization angles ('H')
- void [changeoffsetusage](#) (bool useoffset)
changeoffsetusage emitted when message to change usage of offset is received
- void [Move](#) (QString controller, double HWPang, double QWPang)
Move emitted when message to move the waveplates in a cage to certain angles is received.
- void [MoveHV](#) (QString controller)
MoveHV emitted when message to move cage to H/V basis is received.
- void [MovePM](#) (QString controller)
MovePM emitted when message to move cage to P/M basis is received.
- void [MoveLR](#) (QString controller)
MoveLR emitted when message to move cage to R/L basis is received.

Public Member Functions

- [UDPlistener](#) (QSettings *[settings](#), QObject *parent=0)
UDPlistener listen for commands on a UDP port and execute them.

Private Slots

- void [processPendingDatagrams](#) ()
processPendingDatagrams reads data from the UDP socket
- void [processCommands](#) (QString msg)
processCommands extracts commands out of received data and executes them

Private Attributes

- QSettings * [settings](#)
configuration
- QUdpSocket [socket](#)
the UDP socket
- uint [port](#)
port the listener listens to
- bool [alreadybound](#)
true if the listener is already listening to a port

7.3.1 Detailed Description

The [UDPlistener](#) class is used to control dinspect with UDP packages.

Bug There are no known bugs

7.3.2 Constructor & Destructor Documentation

7.3.2.1 UDPlistener()

```
UDPlistener::UDPlistener (
    QSettings * settings,
    QObject * parent = 0 ) [explicit]
```

[UDPlistener](#) listen for commands on a UDP port and execute them.

Parameters

<i>settings</i>	a pointer to a qsettings instance, used to get the port to bind to and known commands
-----------------	---

[UDPlistener](#) opens a UDP socket and binds to a port specified in qsettings. Incoming packages are analysed to check if they contain known commands. If they do, these commands are executed.

The commands can be changed in the dinspect settings dialog, but the standard ones are:

- [Move\(QString, QString\)](#)
- [Move\(QString, double, double\)](#)

7.3.3 Member Function Documentation

7.3.3.1 bind

```
void UDPlistener::bind ( ) [slot]
```

bind Binds to a new UDP port

This function checks whether the UDP socket is already bound to a a specific port. If so, it closes this connection and binds to the new port. If not, it binds to the port right away.

7.3.3.2 changeoffsetusage

```
void UDPlistener::changeoffsetusage (
    bool useoffset ) [signal]
```

changeoffsetusage emitted when massage to change usage of offset is received

Parameters

<i>useoffset</i>	true if waveplate offset is to be used
------------------	--

7.3.3.3 changeWPangles

```
void UDPlistener::changeWPangles (
    QVector< double > angles ) [signal]
```

changeWPangles emitted when received message contains command to set waveplate characterization angles ('H')

Parameters

<i>angles</i>	vector containing all angles. Ordering: HWP0,HWP1,...,HWPn,QWP0,QWP1,...,QWPn
---------------	---

7.3.3.4 Move

```
void UDPlistener::Move (
    QString controller,
    double HWPang,
    double QWPang ) [signal]
```

Move emitted when message to move the waveplates in a cage to certain angles is received.

Parameters

<i>controller</i>	either colorcode of cage or 'all'
<i>HWPang</i>	angle of the HWP in degree
<i>QWPang</i>	angle of the QWP in degree

7.3.3.5 MoveHV

```
void UDPlistener::MoveHV (
    QString controller ) [signal]
```

MoveHV emitted when message to move cage to H/V basis is received.

Parameters

<i>controller</i>	either colorcode of stage, or 'all'
-------------------	-------------------------------------

7.3.3.6 MoveLR

```
void UDPlistener::MoveLR (
```

```
QString controller ) [signal]
```

MoveLR emitted when message to move cage to R/L basis is received.

Parameters

<i>controller</i>	either colorcode of stage, or 'all'
-------------------	-------------------------------------

7.3.3.7 MovePM

```
void UDPlistener::MovePM (
    QString controller ) [signal]
```

MovePM emitted when message to move cage to P/M basis is received.

Parameters

<i>controller</i>	either colorcode of stage, or 'all'
-------------------	-------------------------------------

7.3.3.8 processCommands

```
void UDPlistener::processCommands (
    QString msg ) [private], [slot]
```

processCommands extracts commands out of received data and executes them

Parameters

<i>msg</i>	input: the received message
------------	-----------------------------

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

- [udplistener.h](#)
- [udplistener.cpp](#)

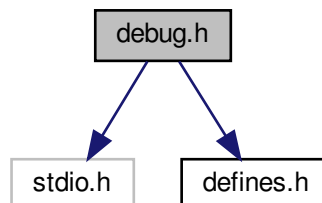
Chapter 8

File Documentation

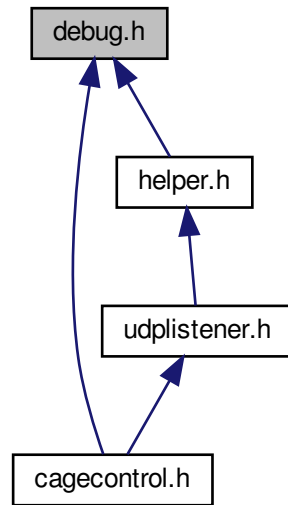
8.1 debug.h File Reference

contains debug macros

```
#include "stdio.h"  
#include "defines.h"  
Include dependency graph for debug.h:
```



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



8.1.1 Detailed Description

contains debug macros

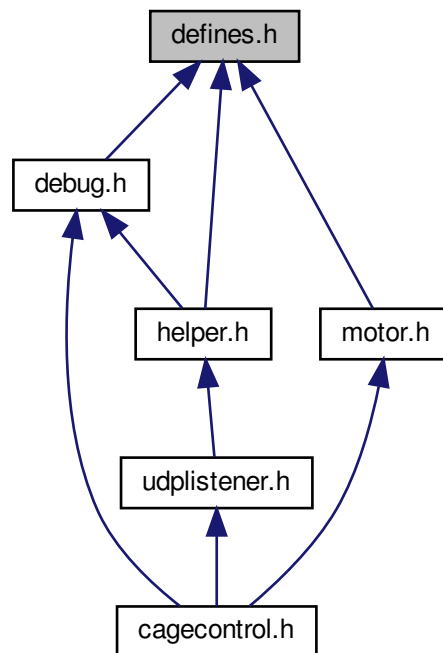
Bug Printing to console does not work on Windows. Workaround: Redirect stderr to stdout and redirect stdout to a file.

This file defines macros to style and simplify output to console.

8.2 defines.h File Reference

Various compile-time definitions.

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



Macros

- #define **DEBUGSPECTROMETERCONFIG** FALSE
- #define **UNUSED**(expr) do { (void)(expr); } while (0)
- #define **DEBUG** 1
- #define **DEBUGERROR** 1
- #define **DEBUGWARNING** 1
- #define **DEBUGINFO** 1
- #define **EPS** 0.0000001
- #define **PI** 3.14159265358979323846
- #define **DEGTORAD** PI/180
- #define **RADTODEG** 180/PI

8.2.1 Detailed Description

Various compile-time definitions.

Bug There are no known bugs.

Contains definitions of various kind - mathematical, version constants, debug-variables, ...

8.2.2 Macro Definition Documentation

8.2.2.1 DEBUG

```
#define DEBUG 1
```

Enables the execution of various debug-paths used during development.
default: FALSE.

8.2.2.2 DEBUGERROR

```
#define DEBUGERROR 1
```

If set to TRUE, enables the execution of the `DEBUG_ERROR()` makro which is used to write error messages (critical) to stdout.
default: true

8.2.2.3 DEBUGINFO

```
#define DEBUGINFO 1
```

If set to TRUE, enables the execution of the `DEBUG_INFO()` makro which is used to write usefull information to stdout.
default: true

8.2.2.4 DEBUGWARNING

```
#define DEBUGWARNING 1
```

If set to TRUE, enables the execution of the `DEBUG_WARNING()` makro which is used to write warnings about unexpected behaviour to stdout.
default: true

8.2.2.5 DEGTORAD

```
#define DEGTORAD PI/180
```

Conversion factor from degree to radians. $\text{PI}/180$

8.2.2.6 EPS

```
#define EPS 0.0000001
```

'epsilon' used to check floatingpoint variables in if-conditions.
default: 0.0000001

8.2.2.7 PI

```
#define PI 3.14159265358979323846
```

Pi.

default: 3.14159265358979323846

8.2.2.8 RADTODEG

```
#define RADTODEG 180/PI
```

Conversion factor from radians to degree. 180/PI

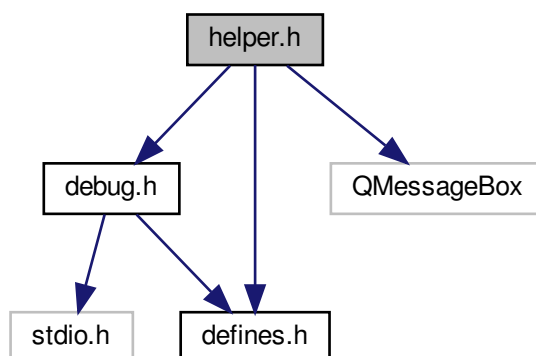
8.2.2.9 UNUSED

```
#define UNUSED(  
    expr ) do { (void)(expr); } while (0)
```

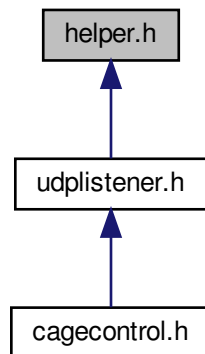
Use [UNUSED\(var\)](#) in function f(...,type var,...) to silence compiler warnings about unused parameter var.

8.3 helper.h File Reference

```
#include "debug.h"  
#include "defines.h"  
#include <QMessageBox>  
Include dependency graph for helper.h:
```



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



Namespaces

- [helper](#)
contains small functions to display messages

Functions

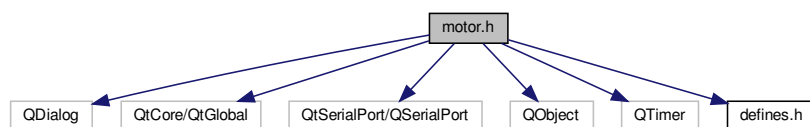
- void [helper::message](#) (QString msg)
message displays a message box
- void [helper::error](#) (QString msg)
error displays an error-messagebox and writes a debug_error message to stdout
- void [helper::warning](#) (QString msg)
warning displays warning-messagebox and writes a debug_warning message to stdout
- void [helper::info](#) (QString msg)
info displays an info-messagebox and writes a debug_info message to stdout

8.4 motor.h File Reference

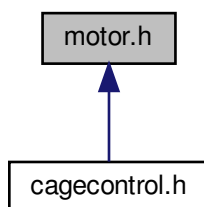
```
#include <QDialog>
#include <QtCore/QtGlobal>
#include <QtSerialPort/QSerialPort>
#include <QObject>
#include <QTimer>
```

```
#include "defines.h"
```

Include dependency graph for motor.h:



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



Classes

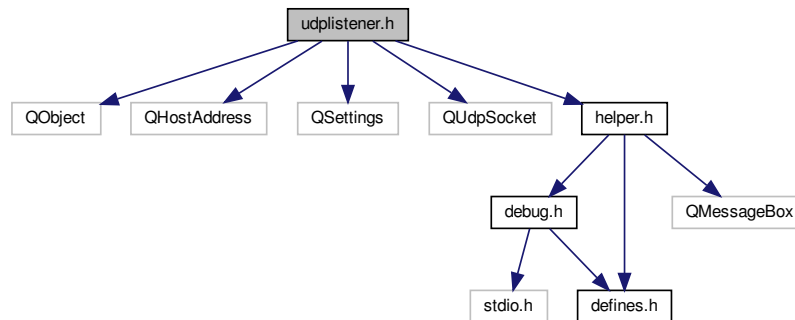
- class [Motor](#)

The [Motor](#) class operates the PCB-motor.

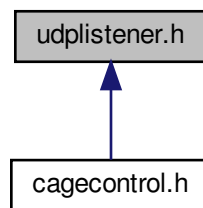
8.5 udplistener.h File Reference

```
#include <QObject>
#include <QHostAddress>
#include <QSettings>
#include <QUdpSocket>
#include "helper.h"
```

Include dependency graph for udplistener.h:



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



Classes

- class `UDPlistener`
The `UDPlistener` class is used to control dinspect with UDP packages.

8.6 version.h File Reference

This file contains information about the code version.

Macros

- `#define VERSION_GIT "v0.1-9-g0c78d25"`
The git commit description.
- `#define VERSION_GIT_DATE 201812181743`
The date of the git commit.
- `#define VERSION_BUILD_DATE 201812181755`
The builddate.

8.6.1 Detailed Description

This file contains information about the code version.

Author

Peter Schiansky

Bug There are no known bugs.

The definitions in this file are used to fill the about-dialog with information about the code: The git commit description, the commit date and the builddate.

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