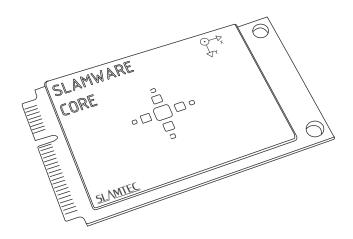


# SLAMWARE

Modular Autonomous Robot Localization and Navigation Solution





Contents

## $\underline{\mathsf{SL}} \underline{\mathsf{MTEC}}$

CONTENTS	1
OVERVIEW	3
CLASS	4
RLEWRAPPER CLASS REFERENCE	4
RPABSTRACTDEVICE CLASS REFERENCE	
RPABSTRACTDISCOVER CLASS REFERENCE	
< RPACTIONPROTOCOL > PROTOCOL REFERENCE	6
< RPBLeConfigureListener> Protocol Reference	7
RPBLEDEVICE CLASS REFERENCE	7
RPBLEWIFIINFO CLASS REFERENCE	7
RPDeviceManager Class Reference	8
RPDeviceManager(connect) Category Reference	9
< RPDISCOVERYDELEGATE > CLASS REFERENCE	9
RPFirmwareUpdateInfo Class Reference	10
RPFIRMWAREUPDATEPROGRESS CLASS REFERENCE	10
RPHEALTHERROR CLASS REFERENCE	11
RPHEALTHINFO CLASS REFERENCE	12
RPLASERPOINT CLASS REFERENCE	12
RPLASERSCAN CLASS REFERENCE	13
RPLINE CLASS REFERENCE	14
RPLOCATION CLASS REFERENCE	15
RPMAP CLASS REFERENCE	16
< RPMOVEACTIONPROTOCOL > PROTOCOL REFERENCE	17
RPPATH CLASS REFERENCE	17
RPPOINT CLASS REFERENCE	18
RPPOINTF CLASS REFERENCE	18
RPPose Class Reference	19
RPRECTANGLE CLASS REFERENCE	21
RPRECTANGLEF CLASS REFERENCE	23
RPROTATION CLASS REFERENCE	25
RPSCHEDULETASK CLASS REFERENCE	25
RPSIZE CLASS REFERENCE	27
RPSIZEF CLASS REFERENCE	27
RPSLAMWAREPLATFORMPROTOCOL REFERENCE	28
< RPSWEEPMOVEACTIONPROTOCOL > PROTOCOL REFERENCE	37
REVISION HISTORY	30

Overview <u>SLAMTEC</u>

## Class List

Class Name	Description
RLEWrapper	Class, representing wrapper
<u>RPAbstractDevice</u>	Class, representing device
RPAbstractDiscover	Class, representing discovery
<rpactionprotocol></rpactionprotocol>	Action protocol definition
<pre><rpbleconfigurelistener></rpbleconfigurelistener></pre>	Bluetooth configure listener protocol definition
<u>RPBleDevice</u>	Class, representing Bluetooth device
<u>RPBleWifiInfo</u>	Class, representing the Bluetooth WiFi information
<u>RPDeviceManager</u>	Class, representing device manager
RPDeviceManager(Connect)	Category, representing
<pre><rpdiscoverydelegate></rpdiscoverydelegate></pre>	Discovery delegate protocol definition
<u>RPFirmwareUpdateInfo</u>	Class, representing the update information of firmware
<u>RPFirmwareUpdateProgress</u>	Class, representing the update progress of firmware.
RPHealthError	Class, representing error
<u>RPHealthInfo</u>	Class, representing health information
<u>RPLaserPoint</u>	Class, representing laser point
<u>RPLaserScan</u>	Class, representing laser scan
<u>RPLine</u>	Class, representing line
<u>RPLocation</u>	Class, represent location
RPMap	Class, representing map
<pre><rpmoveactionprotocol></rpmoveactionprotocol></pre>	MoveAction protocol definition
<u>RPPath</u>	Class, representing path
RPPoint	Class, representing point
RPPointF	Class, representing Point
RPPose	Class, representing pose
<u>RPRectangle</u>	Class, representing rectangle
<u>RPRectangleF</u>	Class, representing rectangle
RPRotation	Class, representing rotation
<u>RPScheduleTask</u>	Class, representing schedule task
RPSize	Class, representing Size
RPSizeF	Class, representing Size
RPSlamwarePlatformProtocol	Protocol, defining unified interfaces to interact with SLAMWARE devices
	02/11/11/11/200

Class <u>SL\MTEC</u>

## RLEWrapper Class Reference

#### Methods

- + encode
- + decode

#### Details

+ encode

Encode.

+ decode

Decode.

## RPAbstractDevice Class Reference

Class, represent a device.

#### Instance Methods

-canBeFoundWith:

## **Properties**

int manufacturerId

int modelId

NSString \*manufacturerName

NSString \*modelName

int hardwareVersion

int softwareVersion

NSString \*serialNumber

NSUUID \*deviceId

NSString \*deviceName

#### **Details**

#### -canBeFoundWith:

Whether the device can be found with discovery mode on.

#### int manufacturerId

Represent the manufacturer id and the data type is int.

#### int modelId

Represent the model id and the data type is int.

#### NSString \*manufacturerName

Represent the manufacturer name and the data type is NSString.

#### NSString \*modelName

Represent the model name and the data type is NSString.

#### int hardwareVersion

Represent the hardware version and the data type is int.

#### int softwareVersion

Represent the software version and the data type is int.

#### NSString \*serialNumber

Represent the serial number and the data type is NSString.

#### NSUUID \*deviceId

Represent the device id and the data type is NSUUID.

#### NSString \*deviceName

Represent the device name and the data type is NSString.

## RPAbstractDiscover Class Reference

Abstract discover interface.

#### Instance Methods

```
-getStatus:
```

-start:

-stop:

-getMode

## -getStatus: Get status. -start: Start. -stop: Stop. -getMode Get mode. < RPActionProtocol > Protocol Reference RPAction protocol definition. Instance Methods -status -progress -cancel -waitUntilDone -actionName Details -status Get the status of the action. -progress Get the progress of the action. -cancel Cancel the action. -waitUntilDone Wait the action to be done. -actionName Get the action name.

Details

## <RPBleConfigureListener> Protocol Reference

RPBleConfigureListener protocol definition.

Instance Methods

-onConfigureSuccess

-onConfigureFailure:

#### Details

-onConfigureSuccess

Configuration success.

-onConfigureFailure:

Configuration failure.

## RPBleDevice Class Reference

Class. Represent Bluetooth device.

Instance Methods

-canBeFoundWith:

**Properties** 

CBPeripheral \*peripheral

Properities inherited from **RPAbstractDevice** 

#### Details

-canBeFoundWith:

Whether the device can be found with discovery mode.

CBPeripheral \*peripheral

Get the Bluetooth device.

## RPBleWifilnfo Class Reference

Class, represent the WiFi information.

#### Instance Methods

NSString \*ssid

NSString \*pwd

#### Details

NSString \*ssid

Get the ssid.

NSString \*pwd

Get the password.

## RPDeviceManager Class Reference

Class, represent the manager to manage the devices.

#### Instance Methods

- -initWithDelegate:
- -connect:withPort:
- -connect:
- -pair:withWifiInfo:withListenter:

Instance Methods inherited from RPAbstractDiscover

## **Properties**

id< RPDiscoveryDelegate > delegate

#### Details

#### -initWithDelegate:

Initialization function, and the parameter is RPDiscoveDelegate.

#### -connect:withPort:

Connect with specified device. And parameters are ip in NSString type and port in int type.

#### -connect:

Connect with device. And the parameter is RPAbstractDevice.

```
-pair:withWifiInfo:withListenter:
```

Pair device and connect to specified WiFi. And parameters are RPAbstractDevice, RPBleWifilnfo, RPBleConfigureListener.

```
id< RPDiscoveryDelegate > delegate
```

Delegate.

## RPDeviceManager(connect) Category Reference

#### Method

```
(nonnull id< RPSlamwarePlatformProtocol >) + connect:withPort:
(nonnull id< RPSlamwarePlatformProtocol >) + connect:
```

#### Details

```
(nonnull id< RPSlamwarePlatformProtocol >) + connect:withPort:
```

Static method. Parameters are IP address and portal. The data type of IP address is NSString; the data type of portal is int.

```
(nonnull id< RPSlamwarePlatformProtocol >) + connect:
```

Static method. Parameter is the RPAbstractDevice object of DiscoveryModeMDNS.

## <RPDiscoveryDelegate> Class Reference

Instance Methods

-onStartDiscovery:

-onStopDiscovery:

-onDiscoveryStatusChanged:withStatus:withError:

-onDeviceFound:withDevice:

#### Details

-onStartDiscovery:

Start discovery.

-onStopDiscovery:

Stop discovery.

```
Discovery status changed.
-onDeviceFound:withDevice:
Found device.
RPFirmwareUpdateInfo Class Reference
Method
-init
Properties
current
<u>latest</u>
<u>releaseDate</u>
brief
Details
-init
Initialization function. The data type is NSString.
current
Current version. The data type is NSString.
latest
The latest version. The data type is NSString.
releaseDate
The release data. The data type is NSString.
brief
The brief introduction. The data type is NSString.
RPFirmwareUpdateProgress Class Reference
Properties
- init
<u>currentStep</u>
                                      10/39
```

-onDiscoveryStatusChanged:withStatus:withError:

#### <u>totalSteps</u>

#### <u>currentStepProgress</u>

#### <u>currentStepName</u>

#### Details

- init

Initialization function.

#### currentStep

Current step. The data type is unsigned int.

#### totalSteps

All the steps. The data type is unsigned int.

#### currentStepProgress

The progress of current step. The data type is unsigned int.

#### currentStepName

The name of current step. The data type is NSString.

## RPHealthError Class Reference

## **Properties**

errorId

<u>errorLevel</u>

<u>errorComponent</u>

<u>componentErrorCode</u>

<u>errorCode</u>

errorMessage

#### Details

errorId

The ID of error message. And the data type is int.

#### errorLevel

Error level. And the data type is BaseErrorLevel.

#### errorComponent

Component which has error. And the data type is BaseErrorComponent.

#### componentErrorCode

The component error code. And the data type is int.

#### errorCode

Error code. And the data type is int.

#### errorMessage

Error message. And the data type is NSString.

## RPHealthInfo Class Reference

## **Properties**

**hasWarning** 

hasError

**hasFatal** 

errors

#### Details

#### hasWarning

Whether there is warning. The data type is Boolean.

#### hasError

Whether there is error. The data type is Boolean.

#### hasFatal

Whether there is fatal error. The data type is Boolean.

#### errors

The error list. The data type is NSArray<RPHealthError\*>.

## RPLaserPoint Class Reference

Class, represent laser point.

#### Instance Methods

#### -init

```
-initWithDistance:andAngle:
```

#### -initWithDistance:andAngle:andValid:

## **Properties**

float distance

float angle

BOOL valid

#### Details

-init

Initialization function.

#### -initWithDistance:andAngle:

Initialization function. And parameters are Distance in float type and Angle in float type.

#### -initWithDistance:andAngle:andValid:

Initialization function. And parameters are Distance in float type, Angle in float type and Valid in Boolean type.

float distance

Get the distance.

float angle

Get the angle.

BOOL valid

Whether the laser point is valid.

## RPLaserScan Class Reference

Class, represent laser scan.

Instance Methods

-initWithLaserPoints:

-initWithLaserPoints:andPose:

## **Properties**

NSArray<RPLaserPoint\*>\* laserPoints

RPPose\* pose

#### Details

-initWithLaserPoints:

Initialization function. And parameter is RPLaserPoint in NSArray type.

-initWithLaserPoints:andPose:

Initialization function. And parameters are NSArray<RPLaserPoint>and RPPose.

NSArray<RPLaserPoint\*>\* laserPoints

Get laser points.

RPPose\* pose

Get pose.

## **RPLine Class Reference**

Class, represent line.

Instance Methods

-initWithStartPoint: andEndPoint:

-initWithStartPoint:andEndPoint:andLineId:

Properties

RPPointF\* startPoint

RPPointF\* endPoint

int lineId

#### Details

-initWithStartPoint:andEndPoint:

Initialization function. And parameters are StartPoint in RPPointF type and EndPoint in RPPointF type.

#### -initWithStartPoint:andEndPoint:andLineId:

Initialization function. And parameters are StartPoint in RPPointF type, EndPoint in RPPointF type and LineId in int type.

```
RPPointF* startPoint
```

Get start point.

RPPointF\* endPoint

Get end point.

int lineId

Get line id.

## **RPLocation Class Reference**

Class, represent location.

Instance Methods

-init

-initWithX:andY:andZ:

## **Properties**

float x

float y

float z

#### Details

-init

Initialization function.

-initWithX:andY:andZ:

Initialization function with x, y and z as parameters.

float x

Get x.

float y

Get y.

```
float z
```

Get z.

## RPMap Class Reference

Class, represent map.

Instance Methods

=

initWithOrigin:andDimension:andResolution:andTimestamp:andData:

-initWithOrigin:andDimension:andResolution:andData:

-getMapArea

**Properties** 

RPPointF\* origin

RPSize\* dimension

RPPointF\* resolution

long timestamp

NSData\* data

Details

\_

initWithOrigin:andDimension:andResolution:andTimestamp:andData:

Initialization function. And parameters are Origin in RPPointF type, Dimension in RPSize type, Resolution in RPPointF type, Timestamp in long type and Data in NSData type.

-initWithOrigin:andDimension:andResolution:andData:

Initialization function. And parameters are Origin in RPPointF type, Dimension in RPSize type, Resolution in RPPointF type and Data in NSData type.

-getMapArea

Get map area.

RPPointF\* origin

Get origin.

16/39

RPSize\* dimension

Get dimension.

RPPointF\* resolution

Get resolution.

long timestamp

Get timestamp.

NSData\* data

Get data.

## < RPMoveActionProtocol > Protocol Reference

Instance Methods

- (RPPath\*) remainingPath
- (RPPath\*) remainingMilestones

Instances Methods inherited from < <a href="RPActionProtocol">RPActionProtocol</a>>

#### Details

- (RPPath\*) remainingPath

Get the remaining path.

- (RPPath\*) remainingMilestones

Get the remaining milestones.

#### RPPath Class Reference

Class, represent a path.

Instance Methods

-init

-initWithPoints:

## **Properties**

NSArray<RPLocation\*>\* points

## Details -init Initialization function. -initWithPoints: Initialization function. And parameter is points in NSArray<RPLocation>. NSArray<RPLocation\*>\* points Get points. RPPoint Class Reference Class, represent point. Instance Methods -init -initWithX:andY: **Properties** int x int y **Details** -init Initialization function. -initWithX:andY: Initialization function with x and y as parameters. int x Get x with int as parameters. int y

## RPPointF Class Reference

Get y with int as parameters.

Class, represent PointF.

```
Instance Methods
-init
-initWithX:andY:
Properties
float x
float y
Details
-init
Initialization function.
-initWithX:andY:
Initialization function with x and y as parameters.
float x
Get x with float as parameters.
float y
Get y with float as parameters.
RPPose Class Reference
Class, represent pose.
Instance Methods
-init
-initWithLocation:
-initWithRotation:
-initWithLocation:andRotation:
-initWithX:andY:andZ:andYaw:andPitch:andRoll:
<u>- X</u>
-setX:
<u>- y</u>
```

```
-setY:
<u>- Z</u>
-setZ:
-yaw
-setYaw:
-pitch
-setPitch:
-roll
-setRoll:
Properties
RPLocation* location
RPRotation* rotation
Details
-init
Initialization function.
-initWithLocation:
Initialization function with location as parameters.
-initWithRotation:
Initialization function with rotation as parameters.
-initWithLocation:andRotation:
Initialization function with location and rotation as parameters.
-initWithX:andY:andZ:andYaw:andPitch:andRoll:
Initialization function with x, y, z, yaw, pitch, roll as parameters.
- X
Get x.
-setX:
Set X.
```

```
-y
Get y.
-setY:
Set Y.
- Z
Get z.
-setZ:
Set Z.
-yaw
Get yaw.
-setYaw:
Set yaw.
-pitch
Get pitch.
-setPitch:
Set pitch.
-roll
Get roll.
-setRoll:
Set roll.
RPLocation* location
Get location.
RPRotation* rotation
Get rotation.
RPRectangle Class Reference
Class, represent the RPRectangle.
Instance Methods
-init
```

<pre>-initWithOrigin:andSize:</pre>
<u>-left</u>
<u>-top</u>
<u>-right</u>
-bottom
<pre>-empty</pre>
<pre>-unionOf:</pre>
-intersectionOf:
<u>-area</u>
Properties
RPPoint* origin
RPSize* size
Details
-init
Initialization function.
-initWithOrigin:andSize:
Initialization function. And parameters are Origin in RPPoint type and Size in RPSize type.
-left
Left.
-top
Top.
-right
Right.
-bottom
Bottom.
-empty
Whether the size is empty.

#### -unionOf:

Get the union of two rectangles. And parameter is dest in RPRectangle type. The invoked object will be changed after calling this function.

#### -intersectionOf:

Get the intersection of two rectangles. And parameter is dest in RPRectangle type. The invoked object will be changed after calling this function.

#### -area

Get area. And parameter is area in int type.

```
RPPoint* origin
```

Get origin.

RPSize\* size

Get size.

## RPRectangleF Class Reference

Class, represent the RPRectangleF.

#### Instance Methods

- -init
- -initWithOrigin:andSize:
- -left
- -top
- -right
- -bottom
- -empty
- -unionOf:
- -intersectionOf:
- -area

**Properties** 

RPPointF\* origin

#### RPSizeF\* size

#### Details

-init

Initialization function.

```
-initWithOrigin:andSize:
```

Initialization function. And parameter are Origin in RPPointF type and Size in RPPointF type.

-left

Left.

-top

Top.

-right

Right.

-bottom

Bottom.

-empty

Whether the size is empty.

```
-unionOf:
```

Get the union of two rectangles. And parameter is dest in RPRectangleF type. The invoked object will be changed after calling this function.

#### -intersectionOf:

Get the intersection of two rectangles. And parameter is dest in RPRectangleF type. The invoked object will be changed after calling this function.

```
-area
```

Get area.

RPPointF\* origin

Get origin.

RPSizeF\* size

Get size.

## RPRotation Class Reference

Class, represent rotation. Instance Methods -init -initWithYaw: -initWithYaw:andPitch:andRoll: **Properties** float yaw float pitch float roll Details -init Initialization function. -initWithYaw: Initialization function with yaw as parameters. -initWithYaw:andPitch:andRoll: Initialization function with yaw, pitch and roll as parameters. float yaw Get yaw. float pitch Get pitch. float roll Get roll. RPScheduleTask Class Reference **Properties** 

int id

25 / 39

int hour int minute int year int month int day int maxDuration BOOL enabled int weekRepeat NSString task Details int id The ID of schedule task. And the data type is int. int hour Hour. And the data type is int. int minute Minute. And the data type is int. int year Year. And the data type is int. int month Month. And the data type is int. int day Day. And the data type is int. int maxDuration The time maximum of task execution. And the data type is int. BOOL enabled Enable the schedule task or not. And the data type is Boolean. int weekRepeat

Repeat the schedule task.

26 / 39

0 for not repeating the schedule task; 1 for repeating the schedule task on Sunday; 2 for Monday; 4 for Tuesday; 8 for Wednesday; 16 for Thursday; 32 for Friday; 64 for Saturday; 127 for each day.

## NSString task

The name of the schedule task. The data type is NSString and cannot be null value.

### **RPSize Class Reference**

Class, represent size.

Instance Methods

-init

-initWithWidth:andHeight:

**Properties** 

int width

int height

Details

-init

Initialization function.

-initWithWidth:andHeight:

Initialization function. And parameters are width and height in int type.

int width

Get width with int as parameters.

int height

Get height with int as parameters.

## **RPSizeF Class Reference**

Class, represent size.

### Instance Methods

#### -init

## -initWithWidth:andHeight:

#### **Properties**

float width

float height

#### Details

-init

Initialization function.

#### -initWithWidth:andHeight:

Initialization function. And parameters are width and height in float type.

#### float width

Get width with float as parameters.

#### float height

Get height with float as parameters.

## RPSlamwarePlatformProtocol Reference

#### Instance Methods

- -disconnect
- deviceId
- manufacturerId
- manufacturerName
- modelId
- modelName
- hardwareVersion
- softwareVersion
- -availableMaps
- -getMapWithMapType:inArea:ofMapKind:

```
-setMapWithMap:ofMapType:andMapKind:
-getKnownAreaOfMapType:andMapKind:
-clearMap
-location
-pose
-setPose:
-mapLocalization
-setMapLocalization:
-mapUpdate
-setMapUpdate:
-localizationQuality
-moveToLocations:andAppendingToCurrentTask:andSetAsMilestones:
-moveToLocation:andAppendingToCurrentTask:andSetAsMilestones:
-moveBy:
-rotateToOrientation:
-rotateBy:
-currentAction
-searchPathToLocation:
-batteryPercentage
-batteryIsCharging
-dcIsConnected
-slamwareVersion
-sdkVersion
-laserScan
-walls
-addWall:
-addWalls:
```

- -clearWallById:
- -clearWalls
- -startSweep
- -sweepSpot:
- -goHome
- -restartModuleWithMode:
- -setSystemParameterNamed:withValue:
- -valueOfSystemParameterNamed:
- getFirmwareUpdateInfo
- startFirmwareUpdate
- getFirmwareUpdateProgress
- getScheduledTasks
- addScheduledTask:
- getScheduledTaskWithId:
- updateScheduledTask:
- deleteScheduledTaskWithId:
- getRobotHealth
- clearRobotHealth

#### Details

-disconnect

Disconnect.

- deviceId

Get the device ID. The return value is ID and the data type is NSUUID.

- manufacturerId

Get the device manufacturer ID. The return value is ID and the data type is integer.

#### - manufacturerName

Get the manufacturer name. The data type is NSString.

#### - modelId

Get the device model ID. The data type of the return value is integer.

#### - modelName

Get the name of the device model. The data type of the return value is NSString.

#### - hardwareVersion

Get the hardware version information. The data type of the return value is NSString.

#### - softwareVersion

Get the software version information. The data type of the return value is NSString.

#### -availableMaps

Get available maps.

## -getMapWithMapType:inArea:ofMapKind:

Get map with map type and kind as parameters.

#### -setMapWithMap:ofMapType:andMapKind:

Upload map data to the Slamware. (Notice: should be used with setPose, and with map update and localization stopped)

#### **Parameters**

map: the map object.

type: the data type of the map.

kind: the kind of the map.

#### -getKnownAreaOfMapType:andMapKind:

Get the known area of the map. The return value is the explored area of the map.

#### **Parameters**

type: the data type of the map.

kind: the kind of the map.

#### -clearMap

Clear current map.

#### -location

Get the position of robot in the map coordinate system. The return value is the location of the robot.

#### -pose

Get the pose of the robot (including location and rotation). The return value is the pose of the robot.

#### -setPose:

Set the pose of the robot.

#### **Parameters**

\_pose: the new pose of the robot.

#### -mapLocalization

Get if the Slamware is doing localization. The return value is a boolean to indicate if the Slamware is doing localization.

#### -setMapLocalization:

Enable or disable localization.

#### **Parameters**

v: a boolean to indicate if the Slamware should do localization.

#### -mapUpdate

Get if the Slamware is updating map. The return value is a boolean to indicate if the Slamware is updating map.

#### -setMapUpdate:

Enable or disable map update.

#### **Parameters**

v: a boolean to indicate if the Slamware should update map.

#### -localizationQuality

Represent whether the localization information is valid.

#### -moveToLocations:andAppendingToCurrentTask:andSetAsMilestones:

Make robot move to a series of points. The return value is the move action to manipulate this operation.

**Parameters** 

locs: the points to visit.

appending: a boolean to indicate if Slamware should clear current tasks or append these point to the visit list.

isMilestone A boolean to indicate if Slamware should plan a route to the points or go directly to the point.

-moveToLocation:andAppendingToCurrentTask:appending andSetAsMilestones:

Make robot move to a specific point. The return value is the move action to manipulate this operation.

**Parameters** 

loc: the point to visit

appending: a boolean to indicate if Slamware should clear current tasks or append these point to the visit list

isMilestone A boolean to indicate if Slamware should plan a route to the points or go directly to the point.

#### -moveBy:

Manual control robot's movement (notice: this action will not do any obstacle avoidance). You have to invoke this API repeat to keep the robot move, and call MoveAction.cancel() to stop the movement in time, or the robot will stop after a period of last moveBy call.

The return value is the move action to manipulate this operation.

**Parameters** 

direction: which type of movement you want the robot do.

#### -rotateToOrientation:

Make robot rotate a specific pose. The return value is the move action to manipulate this operation.

#### **Parameters**

orientation: required pose.

#### -rotateBy:

Make robot rotate a specific angle (differential). The return value is the move action to manipulate this operation.

#### **Parameters**

offset: the rad the robot required to rotate.

#### -currentAction

Get robot current action.

#### -searchPathToLocation:

Search a path in the map from robot's current position to the required location. The return value is a path from robot's current location to the target location.

#### **Parameters**

location: the target location.

#### -batteryPercentage

Get the left percentage of the battery (from 0  $\sim$  100). The return value is the battery percentage.

#### -batteryIsCharging

Get if the battery is charging. The return value is a boolean to indicate if the battery is charging.

#### -dcIsConnected

Get if the robot is \_connected with an outlet. The return value is a boolean to indicate if the robot is \_connected to the charger.

#### -slamwareVersion

Get the version of Slamware. The return value is the version string of the Slamware.

#### -sdkVersion

Get the version of Slamware SDK. The return value is the version string of the Slamware SDK.

#### -laserScan

Get the most recent LASER scan. The return value is the most recent LASER scan.

#### -walls

Get existing virtual walls. The return value is a list of existing virtual walls.

#### -addWall:

Add a virtual wall to Slamware.

#### **Parameters**

wall: the virtual wall to add

#### -addWalls:

Add a set of virtual walls to Slamware.

#### **Parameters**

walls: virtual walls to add.

#### -clearWallById:

Remove specific virtual wall.

#### **Parameters**

wallId: the id to the virtual wall to remove.

#### -clearWalls

Remove all virtual walls from Slamware.

#### -startSweep

Make robot to start sweep (Notice: This method is only available on Slamware Core Vacuum Robot Edition). The return value is the sweep move action to manipulate this operation.

#### -sweepSpot:

Make robot to sweep a particular area (Notice: This method is only available on Slamware Core Vacuum Robot Edition). The return value is the sweep move action to manipulate this operation.

#### -goHome

Make robot go back to the charging base (Notice: This method is only available on robots which support auto home feature). The return value is the move action to manipulate this operation.

#### -restartModuleWithMode:

Restart the Slamware module

**Parameters** 

mode: the mode to restart Slamware module

-setSystemParameterNamed:withValue:

Set system parameter.

**Parameters** 

name: The parameter to set.

value: The value you want to set.

-valueOfSystemParameterNamed:

Get system parameter. And the return value is the current value of the parameter.

**Parameters** 

Name: the parameter to get.

getFirmwareUpdateInfo

Get the firmware update information. The return value is the firmware update information.

startFirmwareUpdate

Start the firmware update.

getFirmwareUpdateProgress

Get the firmware update progress. The return value is firmware update progress.

- getScheduledTasks

Get the information of scheduled tasks. The return value data type is an array.

- addScheduledTask:

Add scheduled task or not. The return value data type is Boolean. YES for adding successfully; NO for failing to add the scheduled task.

Parameters:

task: task to be added in scheduled task list.

#### - getScheduledTaskWithId:

Get the information of a specified scheduled task.

Parameters:

id: the ID of the schedule task

- updateScheduledTask:

Update scheduled task. The return value is the updated schedule task.

Parameters:

task: task to be added in scheduled task.

- deleteScheduledTaskWithId:

Delete schedule task. The data type of the return value is Boolean. YES for deleting successfully; NO for failing to delete the task.

Parameters:

Id: The ID of a task which is going to be deleted.

getRobotHealth

Get the health status of the robot. The return value is RPHealthInfo.

- clearRobotHealth

Clear the error message.

Parameters:

errorCode in errorCode: RPHealthError class.

## <RPSweepMoveActionProtocol> Protocol Reference

Instance Methods

-getAvailableSweepMaps

-getSweepMap:withArea:

-getSweepMapArea:

#### **Details**

-getAvailableSweepMaps

Get available sweep maps.

-getSweepMap:withArea:

Get sweep map.

-getSweepMapArea:

Get sweep map area.

Date	Version	Description
2016-05-12	0.1	Initial version
2016-06-07	1.8	Added the SLAMWARE core image in the cover
2016-11-04	1.8	Added the definition of latest classes