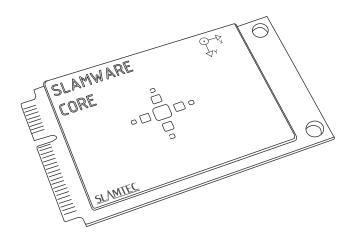


SLAMWARE

Modular Autonomous Robot Localization and Navigation Solution





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Introduction <u>SLAMTEC</u>

Packages

Package Name	Description
<u>com.slamtec.slamware</u>	
com.slamtec.slamware.action	
com.slamtec.slamware.discovery	
com.slamtec.slamware.FirmwareUpdate	
com.slamtec.slamware.geometry	
com.slamtec.slamware.robot	

Class

Class	Description
<u>AbstractDiscover</u>	Class, represent abstract discover interface.
AbstractDiscover.BleConfigureListener	Class, represent BleConfigureListener
AbstractDiscover.DiscoverStatus	Class, represent DiscoverStatus
AbstractDiscover.DiscoveryListener	Class, represent DiscoveryListener.
<u>AbstractSlamwarePlatform</u>	Class, defined unified interfaces to interact with Slamware devices
ActionStatus	Enum, represent the status of an action
BleDevice	Class, represent BleDevice.
<u>Device</u>	Class, represent a device.
<u>DeviceManager</u>	Class, represent the manager to manage devices
<u>DiscoveryMode</u>	Enum, indicate how the robot is discovered.
<u>FirmwareUpdateInfo</u>	Class, represent the firmware update information
<u>FirmwareUpdateProgress</u>	Class, represent the firmware update progress.
<u>HealthInfo</u>	Class, represent the health status.
HealthInfo.BaseError	Class, represent the base health status and error information.
<u>IAction</u>	Interface, represent a robot action.
<u>IMoveAction</u>	Interface, represent a Move Action.
<u>ISweepMoveAction</u>	Interface, represent a sweep move action
<u>LaserPoint</u>	Class, represent a LASER scan point.
<u>LaserScan</u>	Class, represent a LASER scan.
<u>Line</u>	Class, represent a geometry line.
<u>Location</u>	Class, represent the position of robot in 3d space.
Map(Robot)	Class, represent a map.
<u>MapKind</u>	Enum, represent the kind of map.
<u>MapType</u>	Enum, represent map data type.
<u>MdnsDevice</u>	Class, represent MdnsDevice.
<u>MoveDirection</u>	Enum, represent direction of request while manual controlling robot
<u>NetworkMode</u>	Class, represent the network mode.
<u>Path</u>	Class, represent a path
<u>PointF</u>	Class, represent a float 2d point type.

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<u>Pose</u>	Class, represent robot pose.
<u>RestartMode</u>	Enum, restart mode.
Rotation	Class, represent the rotation.
<u>ScheduledTask</u>	Class, represent the scheduled task.
Size	Class, represent an integer size type.
SlamwareCorePlatform	Class, subclass of Abstract Slamware Platform
<u>SystemParameters</u>	Class, represent system parameters.

Class AbstractSlamwarePlatform

Abstract Slamware Platform Class, defined unified interfaces to interact with SLAMWARE devices

Direct Known Subclasses:

SlamwareCorePlatform

Constructor

```
AbstractSlamwarePlatform()
```

Method

```
addScheduledTask(ScheduledTask task)
addWall(Line wall)
addWalls(java.util.List<Line> walls)
clearMap()
clearWallById(int id)
clearWalls()
configureNetwork(int
                                                           mode.
java.util.HashMap<java.lang.String,java.lang.String> options)
deleteScheduledTask(int taskId)
disconnect()
getAvailableMaps()
getBatteryIsCharging()
getBatteryPercentage()
getCurrentAction()
getDCIsConnected()
getDeviceId()
getFirmwareUpdateInfo()
getFirmwareUpdateProgress()
```

```
getHardwareVersion()
getKnownArea(MapType type)
getKnownArea(MapType type, MapKind kind)
getLaserScan()
getLocalizationQuality()
getLocation()
getManufacturerId()
getManuFacturerName()
getMap(MapType type, MapKind kind, android.graphics.RectF area)
getMap(MapType type, android.graphics.RectF area)
getMapLocalization()
getMapUpdate()
getModelId()
getModelName()
getNetworkStatus()
getPose()
getRobotHealth()
getScheduledTask(int taskId)
getScheduledTasks()
getSDKVersion()
getSlamwareVersion()
getSoftwareVersion()
getSystemParameter(java.lang.String param)
getWalls()
goHome()
moveBy(MoveDirection direction)
```

```
moveTo(java.util.List<Location> locations)
moveTo(java.util.List<Location> locations, boolean appending)
moveTo(java.util.List<Location> locations, boolean appending,
boolean isMilestone)
moveTo(Location location)
moveTo(Location location, boolean appending)
moveTo(Location location, boolean appending, boolean isMilestone)
restartModule()
restartModule(RestartMode mode)
rotate(Rotation rotation)
rotateTo(Rotation orientation)
searchPath(Location location)
setMap(Map map)
setMap(Map map, MapType type)
setMap(Map map, MapType type, MapKind kind)
setMapLocalization(boolean v)
setMapUpdate(boolean v)
setPose(Pose pose)
setSystemParameter(java.lang.String param, java.lang.String
value)
startFirmwareUpdate()
startSweep()
sweepSpot(Location location)
updateScheduledTask(ScheduledTask task)
```

Details

AbstractSlamwarePlatform()

AbstractSlamwarePlatform is an abstract class and the class of it cannot be created

directly. Please use DeviceManager to connect to the device and get the object of AbstractSlamwarePlatform.

```
addScheduledTask(ScheduledTask task)
```

Whether add scheduled task. The return value data type is Boolean.

Parameters:

task-scheduled task

```
addWall(Line wall)
```

Add a virtual wall to Slamware.

Parameters:

wall - The virtual wall to add

```
addWalls(java.util.List<Line> walls)
```

Add a set of virtual walls to Slamware.

Parameters:

walls - Virtual walls to add

```
clearMap()
```

Clear the current map.

```
clearWallById(int id)
```

Remove specific virtual wall.

Parameters:

id - The id to the virtual wall to remove

```
clearWalls()
```

Remove all virtual walls from Slamware.

```
configureNetwork(int mode,
java.util.HashMap<java.lang.String,java.lang.String> options)
```

Configure the network mode for slamware core woking. The return value data type is Boolean.

```
Parameters:

mode – network mode

options – options
```

Note:

The current supported work modes are:

- AP mode (In this mode, the Slamware core works as a WiFi spot, when the user device connects to the WiFi spot via wired network or WiFi, it will get an IP address from DHCP and visit the device by 192.168.11.1. This mode is the preset mode for Slamware core delivery.)
- Station mode (In this mode, Slamware core works as a WiFi device and connects to other WiFi spot. Then the Slamware core will be a wireless bridge and configure ip address for devices on high speed bus and provide services for outer net visit)
- Disabled mode (In this mode, Slamware core will disable the wireless network visit function and only permits wired network visit. The ip address, gateway and DNS server are decided according to the invoked parameters by API.

Sample:

O Configure the Slamware Core as AP mode

```
Platform.configureNetwork(NetworkMode.NetworkModeAp, new HashMap<String, String>());
```

O Configure the Slamware Core connect to an AP named Slamtec-*****

```
HashMap<String, String> options = new HashMap<String, String>();
options.put("ssid", "Slamtec");
options.put("password", "Password");
platform.configureNetwork(NetworkMode.NetworkModeStation, options);
```

• Configure the Slamware Core's ip address / default gateway / DNS server as 192.168.12.13 / 192.168.12.1 / 114.114.114.114 respectively.

```
HashMap<String, String> options = new HashMap<String, String>();
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```

```
options.put("ip", "192.168.12.13");
options.put("mask": "255.255.255.0");
options.put("gateway": "192.168.12.1");
options.put("dns": "114.114.114.114");
platform.configureNetwork(NetworkMode.NetworkModeDisabled,
options);
deleteScheduledTask(int taskId)
Get whether the scheduled task would be deleted. The return value data type is
Boolean.
Parameters:
taskld – task id
disconnect()
Disconnect from the platform
getAvailableMaps()
Get available map types in Slamware. The return value is a list of map type
getBatteryIsCharging()
Get if the battery is charging.
Returns:
A boolean to indicate if the battery is charging
getBatteryPercentage()
Get the left percentage of the battery (from 0 \sim 100).
Returns:
The battery percentage
getCurrentAction()
Get robot's current action.
```

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Returns:

Move action that the robot is running

```
getDCIsConnected()
```

Get if the robot is connected with an outlet.

Returns:

A boolean to indicate if the robot is connected to the charger

```
getDeviceId()
```

Get the UUID of the device. The return value data type is string.

```
getFirmwareUpdateInfo()
```

Please refer to FirmwareUpdateInfo class

getFirmwareUpdateProgress()

Please refer to FirmwareUpdateProgress class

getHardwareVersion()

Get the hardware version of the device. The return value data type is string.

getKnownArea(MapType type)

Get the known area of the map

Parameters:

type - The data type of the map

Returns: The explored area of the map

getKnownArea(MapType type, MapKind kind)

Get the known area of the map

Parameters:

type - The data type of the map

kind - The kind of the map

Returns:

The explored area of the map

getLaserScan()

Get the most recent LASER scan.

Returns:

The most recent LASER scan

```
getLocalizationQuality()
```

Get whether the localization is valid.

getLocation()

Get the position of robot in the map coordinate system

Returns:

The location of the robot

getManufacturerId()

Get the device manufacturer id and the return value data type is int.

getManuFacturerName()

Get the device manufacturer name and the return value data type is int.

```
getMap(MapType type, MapKind kind, android.graphics.RectF area)
```

Get map data from Slamware.

Parameters:

type - The data type of the map

kind - The kind of the map

area - Required area of the map

Returns: The partial map object.

getMap(MapType type, android.graphics.RectF area)

Get map data from Slamware.

Parameters:

type - The data type of the map

area - Required area of the map

Returns: The partial map object.

getMapLocalization()

Get if the Slamware is doing localization.

Returns:

A boolean to indicate if the Slamware is doing localization

getMapUpdate()

Get if the Slamware is updating map.

Returns:

A boolean to indicate if the Slamware is updating map

getModelId()

Get the device model id and the return value data type is int.

getModelName()

Get the device model name and the return value data type is string.

getNetworkStatus()

Get the network status and the return value data type is string.

getPose()

Get the pose of the robot (including location and rotation)

Returns:

The pose of the robot

getRobotHealth()

Get the health status of the robot, and the return value is the health status of therobot.

getScheduledTask(int taskId)

Get scheduled task.

Parameters: taskId – task id。
getScheduledTasks()

Get the scheduled task, and the return value is scheduled task list.

getSDKVersion()

Get the version of Slamware SDK.

Returns:

The version string of the Slamware SDK

getSlamwareVersion()

Get the version of Slamware.

Returns:

The version string of the Slamware

getSoftwareVersion()

Get the software version of the device, and the return value data type is string.

getSystemParameter(java.lang.String param)

Get system parameter.

Parameters:

param - The parameter to get

Returns: the current value of the parameter

getWalls()

Get existing virtual walls.

Returns:

A list of existing virtual walls

goHome()

Make robot go back to the charging base (Notice: This method is only available on robots which support auto home feature).

Returns:

The move action to manipulate this operation

moveBy(MoveDirection direction)

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.

Parameters:

direction - Which type of movement you want the robot do

Returns:

The move action to manipulate this operation

moveTo(java.util.List<Location> locations)

Make robot move to a series of points.

Parameters:

locations - The points to visit

Returns:

The move action to manipulate this operation

moveTo(java.util.List<Location> locations, boolean appending)

Make robot move to a series of points.

Parameters:

locations - The points to visit

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

Returns:

The move action to manipulate this operation

moveTo(java.util.List<Location> locations, boolean appending, boolean isMilestone)

Make robot move to a series of points.

Parameters:

locations - 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 point or go directly to the point. When the parameter is set as true, the robot will regard the above point as a key point and move to the point by path finding; when the parameter is set as false, the robot will regard the above point as a normal point and the path finding function won't be enabled.

Returns:

The move action to manipulate this operation

moveTo(Location location)

Make robot move to a specific point.

Parameters:

location - The point to visit

Returns:

The move action to manipulate this operation

moveTo(Location location, boolean appending)

Make robot move to a specific point.

Parameters:

location - The point to visit

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

Returns:

The move action to manipulate this operation

moveTo(Location location, boolean appending, boolean
isMilestone)

Make robot move to a specific point.

Parameters:

location - 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 point or go directly to the point. When the parameter is set as true, the robot will regard the above point as a key point and move to the point by path finding; when the parameter is set as false, the robot will regard the above point as a normal point and the path finding function won't be enabled.

Returns:

The move action to manipulate this operation

restartModule()

Restart the Slamware module.

restartModule(RestartMode mode)

Restart the Slamware module.

Parameters:

mode - The mode to restart Slamware module

rotate(Rotation rotation)

Make robot rotate a specific angle (differential).

Parameters:

rotation - The rad the robot required to rotate

Returns:

The move action to manipulate this operation

rotateTo(Rotation orientation)

Make robot rotate a specific pose.

Parameters:

orientation - Required pose

Returns:

The move action to manipulate this operation

```
searchPath(Location location)
```

Search a path in the map from robot's current position to the required location.

Parameters:

location - The target location

Returns:

A path from robot's current location to the target location

setMap(Map map)

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

Parameters:

map - The map object

```
setMap(Map map, MapType type)
```

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

setMap(Map map, MapType type, MapKind kind)

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 setMapLocalization(boolean v) Enable or disable localization Parameters: v - A boolean to indicate if the Slamware should do localization setMapUpdate(boolean v) Enable or disable map update. Parameters: v - A boolean to indicate if the Slamware should update map setPose(Pose pose) Set the pose of the robot. Parameters: pose - The new pose of the robot setSystemParameter(java.lang.String param, java.lang.String value) Set system parameter. Parameters: param - The parameter to set value - The value you want to be set

startFirmwareUpdate()

Get whether the firmware update will start. The return value data type is Boolean which indicates whether the firmware update will start.

startSweep()

Make robot to start sweep (Notice: This method is only available on Slamware Core Vacuum Robot Edition).

Returns:

The sweep move action to manipulate this operation

sweepSpot(Location location)

Make robot to do spot sweeping (Notice: This method is only available on Slamware Core Vacuum Robot Edition).

Returns:

The sweep move action to manipulate this operation

updateScheduledTask(ScheduledTask task)

Update the scheduled task list.

Parameters: task – the scheduled task list to be updated

Interface IAction

All known subinterfaces: IMoveAction, ISweepMoveAction

Interface, represent a robot action, provide interfaces to manipulate this action.

Method

cancel() getActionName() getProgress() getStatus()

waitUntilDone()

Details

```
cancel()
```

Abort this operation.

getActionName()

Get action name. The return value is the action name.

getProgress()

Get the progress of the action $(0 \sim 1)$. The return value is the action progress.

getStatus()

Get the status of the action. The return value is the action status.

waitUntilDone()

Wait the action to be done. The return value is the finished action result.

Interface IMoveAction

All superinterfaces: IAction

All known subinterfaces: ISweepMoveAction

Interface, represent a Move Action.

Method

getRemainingMilestones()

getRemainingPath()

Details

getRemainingMilestones()

Get remaining milestones. The return value is the remaining milestones.

getRemainingPath()

Get remaining path to the next milestone. The return value is the remaining path to the next milestone.

Methods inherited from interface com.slamtec.slamware.action.lAction

cancel, getActionName, getProgress, getStatus, waitUntilDone

Interface ISweepMoveAction

All superinterfaces: IAction, IMoveAction

Interface, represent a sweep move action

Method

Methods inherited from interface com.slamtec.slamware.action.lMoveAction

getRemainingMilestones, getRemainingPath

Methods inherited from interface com.slamtec.slamware.action.lAction

cancel, getActionName, getProgress, getStatus, waitUntilDone

Class path

Class, represent a path.

Constructor

Path()

Path(Path path)

Path(java.util.Vector<Location> points)

Method

getPoints()

setPoints(java.util.Vector<Location> points)

Details

Path()

Create an object Path.

Path(Path path)

Create an object path with path as the parameter.

Path(java.util.Vector<Location> points)

Create an object path with points as the parameter.

getPoints()

Get points.

setPoints(java.util.Vector<Location> points)

Set points.

Enum ActionStatus

enum ActionStatus, extends java.lang.Enum<ActionStatus>, the status of an action.

Enum Constants

WAITING FOR START

RUNNING

FINISHED

PAUSED

STOPPED

ERROR

Details

WAITING_FOR_START

The action has been created, but not started.

RUNNING

The action is currently running.

FINISHED

The action has finished successfully.

PAUSED

The action has been paused.

STOPPED

The action has been stopped.

ERROR

The action met some errors.

Enum MoveDirection

enum MoveDirection, extends java.lang.Enum<MoveDirection>, direction of request while manual controlling robot.

Enum Constants

FORWARD

BACKWARD

TURN RIGHT

TURN LEFT

Details

FORWARD

The current move action is forward.

BACKWARD

The current move action is backward.

TURN_RIGHT

The current move action is right.

TURN_LEFT

The current move action is left.

Interface AbstractDiscover.BleConfigureListener

Enclosing class: AbstractDiscover

Method

onConfigureSuccess()

onConfigureFailure(java.lang.String error)

Details

onConfigureSuccess()

Configure success.

onConfigureFailure(java.lang.String error)

Configure failure.

Class AbstractDiscover

Direct Known Subclasses: <u>DeviceManager</u>

Nested Class

AbstractDiscover.BleConfigureListener

<u>AbstractDiscover.DiscoverStatus</u>

<u>AbstractDiscover.DiscoveryListener</u>

Constructor

AbstractDiscover()

Method

getMode()

setListener(AbstractDiscover.DiscoveryListener listener)

getStatus(DiscoveryMode mode)

start(DiscoveryMode mode)

stop(DiscoveryMode mode)

Details Abstrac

AbstractDiscover()

Create an object AbstractDiscover.

getMode()

Get mode.

setListener(AbstractDiscover.DiscoveryListener listener)

Set listener.

getStatus(DiscoveryMode mode)

Get status.

start(DiscoveryMode mode)

Start.

stop(DiscoveryMode mode)

Stop.

Class AbstractDiscover.DiscoveryListener

Enclosing class: AbstractDiscover

Constructor

DiscoveryListener()

Method

onStartDiscovery(AbstractDiscover discover)

onStopDiscovery(AbstractDiscover discover)

onDiscoveryError(AbstractDiscover discover, java.lang.String error)

onDeviceFound(AbstractDiscover discover, Device device)

Details

DiscoveryListener()

Create an object DiscoveryListener.

onStartDiscovery(AbstractDiscover discover)

The callback function of Start discovery.

onStopDiscovery(AbstractDiscover discover)

The callback function of Stop Discovery.

onDiscoveryError(AbstractDiscover discover, java.lang.String
error)

The callback function of Discovery Error.

onDeviceFound(AbstractDiscover discover, Device device)

The callback function of Device Found.

Class BleDevice

extends **Device**

Constructor

BleDevice(BluetoothDevice device)

Method

getDevice()

canBeFoundWith(DiscoveryMode mode)

Methods inherited from class com.slamtec.slamware.discovery.Device: getHardwareVersion, getDeviceName, getManufactureld, getDeviceId, getManufactureName, getModelName, getSerialNumber, getModelld, getSoftwareVersion, setDeviceId, setDeviceName, setHardwareVersion, setManufactureld. setManufactureName, setModelld, setModelName, setSerialNumber, setSoftwareVersion

Details

BleDevice(BluetoothDevice device)

Create an object BleDevice.

getDevice()

Get device.

canBeFoundWith(DiscoveryMode mode)

Whether the device can be found with discovery mode. Specified by:

canBeFoundWith in class Device

Class Device

Device, represent a device.

Direct known subclasses:

<u>BleDevice</u>, <u>MdnsDevice</u>

Constructor

Device()

Method

getManufactureId()

setManufactureId(int manufactureId)

getModelId()

setModelId(int modelId)

getManufactureName()

setManufactureName(java.lang.String manufactureName)

getModelName()

setModelName(java.lang.String modelName)

getHardwareVersion()

setHardwareVersion(int hardwareVersion)

```
getSoftwareVersion()
setSoftwareVersion(int softwareVersion)
getSerialNumber()
setSerialNumber(java.lang.String serialNumber)
canBeFoundWith(DiscoveryMode mode)
getDeviceId()
setDeviceId(java.util.UUID deviceId)
getDeviceName()
setDeviceName(java.lang.String deviceName)
Details
Device()
Create an object Device.
getManufactureId()
Get manufacture id.
setManufactureId(int manufactureId)
Set manufacture id.
getModelId()
Get mode id.
setModelId(int modelId)
Set mode id.
getManufactureName()
Get manufacture name.
setManufactureName(java.lang.String manufactureName)
Set manufacture name.
```

```
getModelName()
Get mode name.
setModelName(java.lang.String modelName)
Set mode name.
getHardwareVersion()
Get hard ware version.
setHardwareVersion(int hardwareVersion)
Set hardware version.
getSoftwareVersion()
Get software version.
setSoftwareVersion(int softwareVersion)
Set software version.
getSerialNumber()
Get serial number.
setSerialNumber(java.lang.String serialNumber)
Set serial number.
canBeFoundWith(DiscoveryMode mode)
Whether the device can be found with discovery mode on.
getDeviceId()
Get device id.
setDeviceId(java.util.UUID deviceId)
Set device id.
getDeviceName()
Get device name.
```

```
setDeviceName(java.lang.String deviceName)
```

Set device name.

Class DeviceManager

extends AbstractDiscover

The manager to manage devices.

Nested classes/interfaces inherited from class

com.slamtec.slamware.discovery.AbstractDiscover:

AbstractDiscover.BleConfigureListener,

AbstractDiscover.DiscoverStatus.

AbstractDiscover.DiscoveryListener

Constructor

DeviceManager(Context context)

Method

connect(java.lang.String host, int port)

connect(Device device)

pair(Device device, java.lang.String wifiSSID, java.lang.String
wifiPassword, AbstractDiscover.BleConfigureListener listener)

setListener(AbstractDiscover.DiscoveryListener listener)

getStatus(DiscoveryMode mode)

start(DiscoveryMode mode)

stop(DiscoveryMode mode)

getMode()

Details

DeviceManager(Context context)

Create an object DeivceManager.

```
connect(java.lang.String host, int port)
```

Connect to Slamware Core directly (usually used in Android devices directly connected to Slamware Core via the High Speed Bus).

Parameters:

host - The device host (usually 192.168.11.1)

port - The port

Returns:

The connected platform

connect(Device device)

Connect to a specific Slamware-based device.

Parameters:

device - The device to connect to

Returns:

The connected platform

pair(Device device, java.lang.String wifiSSID, java.lang.String
wifiPassword, AbstractDiscover.BleConfigureListener listener)

Pair Slamware device with SSID and password.

Parameters:

device - The device to pair

wifiSSID - The WiFi SSID

wifiPassword - The WiFi password

listener - The configuration listener

setListener(AbstractDiscover.DiscoveryListener listener)

Specified by:

setListener in class AbstractDiscover

```
getStatus(DiscoveryMode mode)
Specified by:
getStatus in class AbstractDiscover
start(DiscoveryMode mode)
Specified by:
start in class AbstractDiscover
stop(DiscoveryMode mode)
Specified by:
stop in class AbstractDiscover
getMode()
Specified by:
getMode in class AbstractDiscover
Class MdnsDevice
extends Device
Constructor
MdnsDevice(java.lang.String addr, int port)
Method
getAddr()
getPort()
canBeFoundWith(DiscoveryMode mode)
Details
MdnsDevice(java.lang.String addr, int port)
Create an object MdnsDevice.
```

<pre>getAddr()</pre>
Get address.
<pre>getPort()</pre>
Get port.
<pre>canBeFoundWith(DiscoveryMode mode)</pre>
Specified by:
canBeFoundWith in class Device
Enum AbstractDiscover.DiscoverStatus
Enclosing class:
AbstractDiscover
Enum Constants
STOPPED
WORKING
<u>ERROR</u>
Details
STOPPED
Stop.
WORKING
Working.
ERROR
Error.
Enum DiscoveryMode
Indicate how the robot is discovered.

Enum Constants

BLE

<u>MDNS</u>

Details

BLE

BLE mode.

MDNS

MDNS mode.

com.slamtec.slamware.FirmwareUpdateSL\MTEC

FirmwareUpdateInfo Class

public class FirmwareUpdateInfo represents for the information about firmware update.

Constructor

FirmwareUpdateInfo(java.lang.String current, java.lang.String
latest, java.lang.String releaseDate, java.lang.String brief)

Method

getBrief()

getCurrent()

getLatest()

getReleaseDate()

Details

FirmwareUpdateInfo(java.lang.String current, java.lang.String
latest, java.lang.String releaseDate, java.lang.String brief)

Create object FirmwareUpdateInfo with current, latest, releasedDate, brief as specified value.

getBrief()

Get the brief information and the data type is string.

getCurrent()

Get the current firmware version and the data type is string.

getLatest()

Get the latest firmware version and the data type is string.

getReleaseDate()

Get the firmware release date and the data type is string.

FirmwareUpdateProgress Class

public class Firmware Update Progress represents the firmware update progress.

Constructor

<u>FirmwareUpdateProgress(int currentStep, int totalStep, int currentStepProgress, java.lang.String currentStepName)</u>

Method

getCurrentStep()

getCurrentStepName()

getCurrentStepProgress()

getTotalStep()

Details

<u>FirmwareUpdateProgress(int currentStep, int totalStep, int currentStepProgress, java.lang.String currentStepName)</u>

Creat an object FirmwareUpdateProgress with currentStep, totalStep, currentStepProgress, currentStepName as specified value.

getCurrentStep()

Get the current step and data type is int.

getCurrentStepName()

Get the name of the current step and data type is string.

getCurrentStepProgress()

Get the progress of the current step and data type is int.

getTotalStep()

Get all the steps and data type is int.

Class Line

class Line, represent a geometry line.

Constructor

```
Line(int segmentId, PointF startPoint, PointF endPoint)

Line(int segmentId, float startX, float startY, float endX,
float endY)

Line(Line line)

Line(PointF startP, PointF endP)
```

Method

```
getStartPoint()
setStartPoint(PointF startPointF)
getEndPoint()
setEndPoint(PointF endPoint)
getStartX()
getStartX()
getStartY()
getEndX()
getEndY()
getSegmentId()
setSegmentId(int segmentId)
```

Details

```
Line(int segmentId, PointF startPoint, PointF endPoint)
```

Create an object Line with segment id, start point and end point as specified value.

```
Line(int segmentId, float startX, float startY, float endX,
float endY)
```

Create an object Line with segment id, startX, startY, endX, endy as specified value.

```
Line(Line line)
Create an object Line with Line as the parameter.
Line(PointF startP, PointF endP)
Create an object Line with startP and endP as specified value.
getStartPoint()
Get start point.
setStartPoint(PointF startPointF)
Set start point.
getEndPoint()
Get end point.
setEndPoint(PointF endPoint)
Set end point.
getStartX()
Get start x.
getStartY()
Get star y.
getEndX()
Get end x.
getEndY()
Get end y.
getSegmentId()
Get segment id.
setSegmentId(int segmentId)
Set Segment id.
```

Class PointF

class PointF, represent a float 2d point type.

```
Constructor
PointF()
PointF(float x, float y)
PointF(PointF rhs)
Method
getX()
setX(float x)
getY()
setY(float y)
Details
PointF()
Create an object PointF.
PointF(float x, float y)
Create an object PointF with x, y as specified value.
PointF(PointF rhs)
Create an object PointF with the parameter as PointF.
getX()
Get X.
setX(float x)
Set X.
getY()
Get Y.
setY(float y)
```

Set Y.

Class Size

class Size, represent an integer size type.

```
Constructor
```

```
Size()
Size(int width, int height)
Size(Size rhs)
Method
getWidth()
setWidth(int width)
getHeight()
setHeight(int height)
Details
Size()
Create an object Size.
Size(int width, int height)
Create an object Size with width and height as specified value.
Size(Size rhs)
Create an object Size with Size as the parameter.
getWidth()
Get width.
setWidth(int width)
Set width.
getHeight()
Get height.
```



setHeight(int height)

Set height.

HealthInfo Class

public class HealthInfo, represents the health status of the robot.

Nested Class

HealthInfo.BaseError

Constructor

HealthInfo()

HealthInfo(boolean warning, boolean error, boolean fatal,
java.util.ArrayList<HealthInfo.BaseError> errors)

Method

```
getErrors()
```

isError()

isFatal()

isWarning()

setError(boolean error)

setErrors(java.util.ArrayList<HealthInfo.BaseError> errors)

setFatal(boolean fatal)

setWarning(boolean warning)

Details

HealthInfo()

Create an object HealthInfo().

HealthInfo(boolean warning, boolean error, boolean fatal,
java.util.ArrayList<HealthInfo.BaseError> errors)

Create an object HealthInfo() with warning, error, fatal, errors as specified value.

getErrors()

Get the error information. The return value is error information list.

isError()

Get whether they are error information. The return value is Boolean.

isFatal()

Get whether they are fatal error information. The return value is Boolean.

isWarning()

Get whether they are warning information. The return value is Boolean.

```
setError(boolean error)
```

Get whether to set the error information.

Parameters: error – the error information to be handled.

setErrors(java.util.ArrayList<HealthInfo.BaseError> errors)

Set error information list.

Parameters: errors – error information list.

setFatal(boolean fatal)

Set as fatal error information.

Parameters: fatal – fatal error.

setWarning(boolean warning)

Set as warning.

Parameters: warning – set as warning error information.

HealthInfo.BaseError Class

Enclosing class: <u>HealthInfo</u>

Fields

<u>BaseErrorComponentMotion</u>

<u>BaseErrorComponentPower</u>

<u>BaseErrorComponentSensor</u>

BaseErrorComponentSystem

```
BaseErrorComponentUnknown
BaseErrorComponentUser
<u>BaseErrorLev</u>elError
BaseErrorLevelFatal
BaseErrorLevelUnknown
BaseErrorLevelWarn
Constructor
BaseError()
BaseError(int id, int errorCode, int errorLevel, int
errorComponent, int
                        componentErrorCode, java.lang.String
errorMessage)
Method
getComponentErrorCode()
getErrorCode()
getErrorComponent()
getErrorLevel()
getErrorMessage()
getId()
setComponentErrorCode(int componentErrorCode)
setErrorCode(int errorCode)
setErrorComponent(int errorComponent)
setErrorLevel(int errorLevel)
setErrorMessage(java.lang.String errorMessage)
setId(int id)
```

Details

BaseErrorComponentMotion

Robot base motion error.

BaseErrorComponentPower

Robot base power error.

 ${\tt BaseErrorComponentSensor}$

Robot base sensor error.

BaseErrorComponentSystem

Robot base system error.

BaseErrorComponentUnknown

Robot base unknown error.

BaseErrorComponentUser

Robot base user error.

BaseErrorLevelError

The base error level is "error".

BaseErrorLevelFatal

The base error level is "fatal error".

BaseErrorLevelUnknown

The base error level is "unknown error".

BaseErrorLevelWarn

The base error level is "warning".

BaseError()

Creat an object BaseError ()

BaseError(int id, int errorCode, int errorLevel, int errorComponent, int componentErrorCode, java.lang.String errorMessage)

Create an object BaseError () with error code, error level, error component, componentErrorCode, errorMessage as specified value.

getComponentErrorCode()

Get componentErrorCode and the return value data type is int.

getErrorCode()

Get error code and the return value data type is int.

getErrorComponent()

Get error component and the return value data type is int.

getErrorLevel()

Get error level and the return value data type is int.

getErrorMessage()

Get error information and the return value data type is string.

getId()

Get error id and the return value data type is int.

setComponentErrorCode(int componentErrorCode)

Set the component error code. The return value is component error code and the data type is int.

```
setErrorCode(int errorCode)
```

Set the error code. The return value is error code and the data type is int.

```
setErrorComponent(int errorComponent)
```

Set the error component. The return value is error component and the data type is int.

```
setErrorLevel(int errorLevel)
```

Set error level. The return value is error level and the data type is int.

```
setErrorMessage(java.lang.String errorMessage)
```

Set error information. The return value is error information and the data type is string.

```
setId(int id)
```

Set Id. The return value is Id and the data type is int.

Class LaserPoint

LaserPoint(LaserPoint rhs)

class LaserPoint, represent a laser scan point.

Constructor

```
LaserPoint()
LaserPoint(float distance, float angle)
LaserPoint(float distance, float angle, boolean valid)
```

Method

```
getDistance()
setDistance(float distance)
getAngle()
setAngle(float angle)
isValid()
setValid(boolean valid)
```

Details

```
LaserPoint()
```

Create an object LaserPoint.

```
LaserPoint(float distance, float angle)
```

Create an object LaserPoint with the distance and angle as specified value.

```
LaserPoint(float distance, float angle, boolean valid)
```

Create an object LaserPoint with the distance, angle and validity as specified value.

```
LaserPoint(LaserPoint rhs)
```

Create an object LaserPoint with LaserPoint as the parameter.

```
getDistance()
```

Get distance.

```
setDistance(float distance)
```

Set distance.

```
getAngle()
```

Get angle.

```
setAngle(float angle)
```

Set angle.

isValid()

Whether the measurement is valid.

```
setValid(boolean valid)
```

Set the value as valid.

Class LaserScan

class LaserScan, represent a laser scan.

Constructor

LaserScan()

LaserScan(java.util.Vector<LaserPoint> laserPoints)

LaserScan(java.util.Vector<LaserPoint> laserPointsPose pose)

LaserScan(LaserScan rhs)

Method

```
getLaserPoints()
setLaserPoints(java.util.Vector<LaserPoint> laserPoints)
getPose()
setPose(Pose pose)
Details
LaserScan()
Create an object LaserScan.
LaserScan(java.util.Vector<LaserPoint> laserPoints)
Create an object LaserScan with LaserPoints as Parameter.
LaserScan(java.util.Vector<LaserPoint> laserPointsPose pose)
Create an object LaserScan with the LaserPointPose as parameter.
LaserScan(LaserScan rhs)
Create an object LaserScan with the LaserScan as the parameter.
getLaserPoints()
Get laser points.
setLaserPoints(java.util.Vector<LaserPoint> laserPoints)
Set laser points.
getPose()
Get pose.
setPose(Pose pose)
Set pose.
```

Class Location

class Location, represent the position of robot in 3d space.

Constructor

```
Location()
Location(float x, float y, float z)
Location(Location rhs)
Method
distanceTo(Location that)
getX()
setX(float v)
getY()
setY(float v)
getZ()
setZ(float v)
Details
Location()
Create an object Location.
Location(float x, float y, float z)
Create a Location object and set the x/y/z as specified value.
Location(Location rhs)
Create a Location object with Location as the parameter.
distanceTo(Location that)
Get the distance to the Localtion.
getX()
Get the value X.
setX(float v)
Set the value X.
```

```
getY()
Get the value Y.
setY(float v)
Set the value Y.
getZ()
Get the value Z.
setZ(float v)
Set the value Z.
Class Map
class Map, represent a map.
Constructor
Map(PointF origin, Size dimension, PointF resolution, long
timestamp, byte[] data)
Method
getOrigin()
setOrigin(PointF origin)
getDimension()
setDimension(Size dimension)
getResolution()
setResolution(PointF resolution)
getTimestamp()
setTimestamp(long timestamp)
getMapArea()
getData()
setData(byte[] data)
```

Details Map(PointF origin, Size dimension, PointF resolution, long timestamp, byte[] data) Create an object Map. getOrigin() Get origin. setOrigin(PointF origin) Set origin. getDimension() Get dimension. setDimension(Size dimension) Set dimensions. getResolution() Get resolution. setResolution(PointF resolution) Set resolution. getTimestamp() Get time stamp. setTimestamp(long timestamp) Set time stamp. getMapArea() Get map area. getData() Get data.

setData(byte[] data)

Set data.

NetworkMode Class

Fields

NetworkModeAP

<u>NetworkModeStation</u>

NetworkModeWifiDisabled

Constructor

NetworkMode()

Details

NetworkModeAP

The network mode is AP.

NetworkModeStation

The network mode is station.

NetworkModeWifiDisabled

The network mode is that the Wifi is disabled.

NetworkMode()

Creat an object NetworkMode().

Class Pose

class Pose, represent robot pose.

Constructor

Pose()

Pose(Location loc, Rotation rot)

Pose(float x, float y, float z, float yaw, float roll, float

```
pitch)
Pose(Pose rhs)
Method
getLocation()
setLocation(Location location)
getRotation()
setRotation(Rotation rotation)
getX()
setX(float v)
getY()
setY(float v)
getZ()
setZ(float v)
getYaw()
setYaw(float v)
getRoll()
setRoll(float v)
getPitch()
setPitch(float v)
Details
Pose()
Create an object Pose
Pose(Location loc, Rotation rot)
Create an object Pose with loc and ros as specified value.
```

```
Pose(float x, float y, float z, float yaw, float roll, float
pitch)
Create an object Pose with x/y/z/yaw/roll/pitch as specified value.
Pose(Pose rhs)
Create an object Pose with Pose as the parameter.
Location getLocation()
Get location.
setLocation(Location location)
Set Location.
getRotation()
Get rotation,
setRotation(Rotation rotation)
Set rotation.
getX()
Get X.
setX(float v)
Set X.
getY()
Get Y.
setY(float v)
Set Y.
getZ()
Get Z.
setZ(float v)
Set Z.
```

```
getYaw()
Get yaw.
setYaw(float v)
Set yaw.
getRoll()
Get roll.
setRoll(float v)
Set roll.
getPitch()
Get pitch.
setPitch(float v)
Set pitch.
Class Rotation
  class Rotation.
Constructor
Rotation()
Rotation(float yaw)
Rotation(float yaw, float pitch, float roll)
Rotation(Rotation rhs)
Method
getYaw()
setYaw(float yaw)
getRoll()
setRoll(float roll)
getPitch()
```

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```
setPitch(float pitch)
Details
Rotation()
Create an object Rotation.
Rotation(float yaw)
Create an object Rotation with yaw as specified value.
Rotation(float yaw, float pitch, float roll)
Create an object Rotation with yaw/pitch/roll as parameter.
Rotation(Rotation rhs)
Create an object Rotation with Rotation as the parameter.
getYaw()
Get yaw.
setYaw(float yaw)
Set Yaw.
getRoll()
Get roll.
setRoll(float roll)
Set roll.
getPitch()
Get pitch.
setPitch(float pitch)
Set pitch.
```

ScheduledTask Class

Constructor

<u>ScheduledTask(int taskId, java.lang.String task, int weekRepeat, boolean enabled, int maxDuration, int year, int month, int day, int hour, int minute)</u>

Method

```
getDay()
getHour()
getMaxDuration()
getMinute()
getMonth()
getTask()
getTaskId()
getWeekRepeat()
getYear()
isEnabled()
setDay(int day)
setEnabled(boolean enabled)
setHour(int hour)
setMaxDuration(int maxDuration)
setMinute(int minute)
setMonth(int month)
setTask(java.lang.String task)
setTaskId(int taskId)
setWeekRepeat(int weekRepeat)
setYear(int year)
```

Details

```
ScheduledTask(int taskId, java.lang.String task, int weekRepeat, boolean enabled, int maxDuration, int year, int month, int day, int hour, int minute)
```

Creat object ScheduledTask().

getDay()

Get the data information. The return value data type is int.

getHour()

Get the hour information. The return value data type is int.

getMaxDuration()

Get the max duration time, the return value data type is int.

getMinute()

Get the minute information. The return value data type is int.

getMonth()

Get the month information. The return value data type is int.

getTask()

Get the task. The return value data type is string.

getTaskId()

Get the task id, and the return value data type is int.

getWeekRepeat()

Get the week repeat sweeping information, and the return value data type is int.

getYear()

Get the year information. The return value data type is int.

isEnabled()

Get whether enable the scheduling function. The return value data type is boolean.

```
setDay(int day)
Set data.
Parameters: day – date
setEnabled(boolean enabled)
Whether enable the function.
Parameters: enabled - enable
setHour(int hour)
Set hour.
Parameters: hour – hour
setMaxDuration(int maxDuration)
Set the longest duration of sweep.
Parameters: maxDuration – the longest duration
setMinute(int minute)
Set minute.
Parameters: minute – minute
setMonth(int month)
Set month.
Parameters: month – month
setTask(java.lang.String task)
Set task.
Parameters: task – Task name.
setTaskId(int taskId)
Set task id.
Parameters: taskId - task id
```

setWeekRepeat(int weekRepeat)

Set weekly repeated sweeping.

Parameters: weekRepeat – repeat the task in every week.

setYear(int year)

Set year.

Parameters: year – year

Class SystemParameters

class SystemParameters.

Constructor

SystemParameters()

Fields

SYSPARAM ROBOT SPEED

ROBOT SPEED HIGH

ROBOT_SPEED_MEDIUM

SYSVAL ROBOT SPEED LOW

Details

SystemParameters()

Create an object SystemParameters.

SYSPARAM_ROBOT_SPEED

Robot speed.

SYSVAL_ROBOT_SPEED_HIGH

Robot high speed.

SYSVAL_ROBOT_SPEED_MEDIUM

Robot medium speed.

SYSVAL_ROBOT_SPEED_LOW

Robot low speed.

Enum MapKind

Enum Constants

EXPLORE MAP

SWEEP MAP

Details

EXPLORE_MAP

The map built by the SLAM algorithm.

SWEEP_MAP

The map used by the sweep operations (only available for Slamware Core Vacuum Robot Edition).

Enum MapType

Enum Constants

BITMAP 8BIT

Details

BITMAP 8BIT

Bitmap, each pixel is a SIGNED 8bit integer.

Enum RestartMode

Enum Constants

SOFT

HARD

Details

SOFT

Restart in soft mode. The kernel part of the module will restart.

HARD

Restart in hard mode. The whole module will restart and it takes a longer time.



		Description
2016-05-03	0.1	Initial version
2016-06-07	1.8	Added the SLAMWARE core image in the cover.
2016-09-30	1.8	Added latest interfaces