

***DENSO***



High-powered Handy Scanner

# DENSO SP1 SDK for Android Reference Manual

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(Navigation TAG)

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## **0. Introduction**

This manual explains how to use the RFID scanner function to develop applications for Navigation TAG. This manual is written for people who have programming experience using Android Studio.

For information on how to use and develop Android products and the grammar of each language, refer to the commercial books.

The included library may have functions that are planned to support in the future. However, the functions not described in this manual are not guaranteed.

The information in this document is subject to change without notice.

For information on the common functions of RFID scanners, see "Denso SP1 SDK for Android Reference Manual".

## **1. Precaution**

### **1.1. Precautions for RF Tag Processing**

Since contactless communication is performed with RF tags, it is necessary to keep the following precautions in mind.

- (1) If a RF tag does not respond due to its defect or it does not receive sufficient power due to wave interference, the scanner may be unable to read it even if it is located inside the reading area.
- (2) If an irrelevant RF tag is located inside the reading area, the scanner may read it.
- (3) In case of iterative reading, RF tags shall be read again if it still remain inside the reading area.
- (4) If two or more RF tags have the same Ull, they will be handled as a single RF tag.

Therefore, you may get a different result than expected if you perform the reading process in a way such as to complete it for the required number of tags. To solve this problem, take the measures described below for the upper-level application as required to read from RF tags.

In cases (1) to (3):

- Constructing a system capable of checking the number of read RF tags and the Descriptions. The results of reading tags (number of RF tags and Descriptions) should be checked by the operator. Make sure that unread RF tags are read by the scanner or registered separately.

In case (4):

- Do NOT use RF tags having the same Ull data.

### **1.2. Precautions for the response from the scanner**

Depending on the host device and environment, the response from the scanner may be delayed. Make sure that the scanner can communicate without problem in advance.

### **1.3. Precautions for the authentication with tags**

When the access password for openRead() and writeOneTag() is set to "00-00-00-00", Reading process and Writing process are executed even when the access password is set for the tag. (RFID control is performed without performing authentication process.)

### **1.4. Precautions for Navigation TAG**

It is necessary to pay attention to the following points due to the characteristics of Navigatio TAG.

- Navigation TAG uses the area of USER bank to light the LED.
- Do not lock the USER bank permanently. Navigation TAG cannot light.
- Navigation TAG uses the built-in battery to light the LED. The battery needs to be replaced on a regular basis. Check the API "getStatus ()" for the replacement time.

■ Update history

| Version | Description | Supported SDK Ver. | Supported OS Ver. |
|---------|-------------|--------------------|-------------------|
| 1st     | -           | 1.0.8              | 1.12              |
|         |             |                    |                   |
|         |             |                    |                   |
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|         |             |                    |                   |
|         |             |                    |                   |

## **2. Application Development environment**

Refer to the "Denso SP1 SDK for Android Reference Manual".

## **3. Recommended scanner settings**

The recommended settings for each scanner when using the Navigation TAG are as follows.  
(Refer to the SDK manual for the settings for using the SDK.)

### **3.1. SP1**

Not specified

## 4. RFID

### 4.1. Navigation Tag API

#### **RFIDScanner#getNavigationTag**

##### **Description**

Get Navigation Tag instance

##### **Syntax**

```
NavigationTag getNavigationTag();
```

##### **Parameters**

None

##### **Return value**

Get the Navigation Tag instance generated by CommScanner#claim.

##### **Throws**

This API does not throw an exception (no error occurs).

If you call this API before #claim method, the API returns Null.

## RFIDScanner#NavigationTag#lightOn

### Description

Light on the Navigation Tag of the specified UUI.

Trigger mode needs to be AUTO\_OFF or CONTINUOUS2.

(Recommended is CONTINUOUS2)

### Syntax

```
void lightOn ( byte[] uui );
```

### Parameters

*uui*

Target tag's UUI

### Return value

None

### Throws

RFIDException

RFIDException#getErrorCode() can get the error.

The errors of this API are as follows.

| Error label                   | Description                  |
|-------------------------------|------------------------------|
| ErrorCode.INVALID_COMMAND     | Invalid parameters or syntax |
| ErrorCode.NOT_SUPPORT_COMMAND | unsupported command          |

## RFIDScanner#NavigationTag#lightOff

### Description

Light off the Navigation Tag of the specified UUI.

Trigger mode needs to be AUTO\_OFF or CONTINUOUS2.

(Recommended is CONTINUOUS2)

### Syntax

```
void lightOff ( byte[] uui );
```

### Parameters

*uui*

Target tag's UUI

### Return value

None

### Throws

RFIDException

RFIDException#getErrorCode() can get the error.

The errors of this API are as follows.

| Error label                   | Description                  |
|-------------------------------|------------------------------|
| ErrorCode.INVALID_COMMAND     | Invalid parameters or syntax |
| ErrorCode.NOT_SUPPORT_COMMAND | unsupported command          |

## RFIDScanner#NavigationTag#lightOffAll

### Description

Turns off the Navigation Tag within the RFID radio wave output range.

Recommended trigger mode is CONTINUOUS1.

### Syntax

```
String[] lightOffAll ();
```

### Parameters

None

### Return value

*String[]*

UII string of Navigation Tag that was turned off.

### Throws

RFIDException

RFIDException#getErrorCode() can get the error.

The errors of this API are as follows.

| Error label                   | Description                  |
|-------------------------------|------------------------------|
| ErrorCode.INVALID_COMMAND     | Invalid parameters or syntax |
| ErrorCode.NOT_SUPPORT_COMMAND | unsupported command          |

## RFIDScanner#NavigationTag#getTagStatus

### Description

Gets the status of the specified UII Navigation Tag.

Recommended trigger mode is CONTINUOUS1.

### Syntax

```
TagStatus getTagStatus ( byte[] uui );
```

### Parameters

*uui*

Target tag's UUI

### Return value

*TagStatus*

Navigation Tag status

### Throws

RFIDException

RFIDException#getErrorCode() can get the error.

The errors of this API are as follows.

| Error label                   | Description                  |
|-------------------------------|------------------------------|
| ErrorCode.INVALID_COMMAND     | Invalid parameters or syntax |
| ErrorCode.NOT_SUPPORT_COMMAND | unsupported command          |

## RFIDScanner#NavigationTag#getTagStatusAll

### Description

Gets the status of Navigation Tag within the RFID radio wave output range.

Recommended trigger mode is CONTINUOUS1.

### Syntax

```
TagStatus[] getTagStatusAll ();
```

### Parameters

None

### Return value

*TagStatus*

Navigation Tag status

### Throws

RFIDException

RFIDException#getErrorCode() can get the error.

The errors of this API are as follows.

| Error label                   | Description                  |
|-------------------------------|------------------------------|
| ErrorCode.INVALID_COMMAND     | Invalid parameters or syntax |
| ErrorCode.NOT_SUPPORT_COMMAND | unsupported command          |

## RFIDScanner#NavigationTag#startLigthOnByTrigger

### Description

Starts the function to turn on / off the Navigation Tag in conjunction with the ON / OFF of the trigger key.  
Recommended trigger mode is CONTINUOUS2.

### Syntax

```
void startLightOnByTrigger ( byte[] uii );
```

### Parameters

*uii*

Target tag's UUI

### Return value

None

### Throws

RFIDException

RFIDException#getErrorCode() can get the error.

The errors of this API are as follows.

| Error label                   | Description                  |
|-------------------------------|------------------------------|
| ErrorCode.INVALID_COMMAND     | Invalid parameters or syntax |
| ErrorCode.NOT_SUPPORT_COMMAND | unsupported command          |

## RFIDScanner#NavigationTag#stopLigthOnByTrigger

### Description

Stops the function to turn on / off the Navigation Tag in conjunction with the ON / OFF of the trigger key.

### Syntax

```
void stopLightOnByTrigger ();
```

### Parameters

None

### Return value

None

### Throws

RFIDException

RFIDException#getErrorCode() can get the error.

The errors of this API are as follows.

| Error label                   | Description                  |
|-------------------------------|------------------------------|
| ErrorCode.INVALID_COMMAND     | Invalid parameters or syntax |
| ErrorCode.NOT_SUPPORT_COMMAND | unsupported command          |

## RFIDScanner#NavigationTag#TagStatus Class

### Description

Navigation Tag status class

(✓:Support)

| Property<br>: description      | Setting value                 | SP1 |
|--------------------------------|-------------------------------|-----|
| Status                         |                               |     |
| byte[] UII<br>: UII            | Navigation Tag UII            | ✓   |
| int light<br>:Lighting status  | 0 (lights off), 1 (lights on) | ✓   |
| int battery<br>:battery status | 0 (normal), 1 (warning)       | ✓   |

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