



KOZEN Terminal Management SDK Development Documentation V1.4

Shanghai Xiangcheng Communication Technology Co., Ltd.

Table of Contents

● 1. Revision History	6
● 2. Overview	7
2.1 Introduction	7
2.2 Android version and IDE version supported by the SDK	7
2.3 Feature Introduction	7
2.3.1 Terminal Management Module	7
2.3.2 Certificate Management Module	7
2.3.3 Device Management Module	7
2.3.4 Device Information Management Module	7
2.3.5 Location Management Module	8
2.3.6 Network Management Module	8
2.3.7 Resource Management Module	8
2.4 Importing the TerminalManagerService SDK	8
2.5 Initializing the TerminalManagerService SDK	9
● 3. API Interface Introduction	9
➤ 3.1 Terminal manager SDK initialization	10
3.1.1 Initialize the TerminalManagerService instance	10
-- TerminalManagerService instance callback - InitCallBack --	10
3.1.2 Initialization results	10
➤ 3.2 Certification module	10
-- Get Certification module - getCertificationManager--	10
3.2.1 Updates the application's signature certificate	10
3.2.2 Deletes the application's signature certificate	11
3.2.3 Get the application's signature certificate information	11
➤ 3.3 Device information module	11
-- Get device information module - getDeviceInfoManager--	11
3.3.1 Get the SDK service version number	12
3.3.2 Get Terminal serial number	12
3.3.3 Get the IMSI number	12
3.3.4 Get the IMEI number	12
3.3.5 Get the equipment supplier name (XC, Kozen)	12
3.3.6 Get the device model	13
3.3.7 Get the OS version number	13
3.3.8 Get the Linux kernel version number	13
3.3.9 Get the MCU version number	13
3.3.10 Get the hardware version number	13
3.3.11 Get the EMV kernel version number	14
3.3.12 Get TUSN (Only for the China region)	14
3.3.13 Get customer serial number	14
➤ 3.4 Device module	14
-- Get device module - getDeviceManager--	14
3.4.1 Sets the system time	15

3.4.2 Returns the current system time as a timestamp	15
3.4.3 Sets the time zone	15
3.4.4 Get the current time zone	15
3.4.5 Reboots the device	16
3.4.6 Shuts down the device	16
3.4.7 Schedules a timed reboot	16
3.4.8 Cancels the scheduled reboot	16
3.4.9 Enable or disable silent installation	16
3.4.10 Enforce runtime permission checks	17
3.4.11 Enforce runtime permission checks	17
3.4.12 Turn off the screen (sleep mode)	17
3.4.13 Enable or disable various device wake-up methods	17
➤ 3.5 Location module	18
Declaration on Location Interface	18
Our location interface is designed solely to provide location-related services to applications.	18
● It does not actively collect device information such as SN, IMEI, or hardware identifiers.	18
● It does not transmit any device information or location data to external servers without explicit application request and authorization.	18
● All data access is limited to the scope necessary for location service functionality.	18
This ensures that the interface complies with user privacy protection and security requirements.	18
-- Get Location module - locationManager--	18
3.5.1 Enables the location module and initializes related resources	19
3.5.2 Enables the location module and initializes related resources by key	19
3.5.3 Set location parameters	19
3.5.4 Start a single location request	19
3.5.5 Registers a location callback listener	20
3.5.6 Removes the location listener	20
3.5.7 Stop the location service	20
3.5.8 Creates a circular geofence	20
3.5.9 Registers a listener for geofence creation results	21
3.5.10 Set the action for receiving geofence status broadcasts	21
3.5.11 Removes all geofences	21
3.5.12 Add an APK to a block list	21
3.5.13 Remove an APK from the blocked list	21
3.5.14 Check if an APK is in block	22
3.5.15 Retrieves the list of blocked APKs	22
3.5.16 Disables the geofence feature	22
3.5.17 Enable the location module and initialize with the specified method	22
3.5.18 Enable the location module and initialize with the specified key and method	22
-- Location changed listener - ILocationChangeListener--	23
3.5.19 Location changed callback	23
-- GeoFence create listener - GeoFenceCreateListener --	23
3.5.20 Callback for geofence creation completion	23
➤ 3.6 Network module	24
-- Get network module - getNetworkManager--	24

3.6.1 Adds an APN configuration	24
3.6.2 Enables an APN configuration	24
➤ 3.7 Resource module	24
-- Get resource module - getResourcesManager--	24
3.7.1 Installs or updates an app	25
3.7.2 Uninstalls an app	25
3.7.3 Updates the device system version or MCU firmware version	25
3.7.4 Updates the resource package	25
3.7.5 Install or update an app with listner	26
3.7.6 Update the resource package with listener	26
3.7.7 Update the device system version / MCU firmware version with listener	26
-- Upgrade listener - OnAppUpgradeListener--	26
3.7.8 Upgrade error/failure	27
3.7.9 Upgrade successful	27
-- Upgrade listener - OnUpdateCustomResListener --	27
3.7.10 Upgrade error/failure	27
3.7.11 Upgrade successful	27
-- Upgrade listener - OnUpdateOTAListener --	27
3.7.12 Upgrade error/failure	28
3.7.13 Upgrade successful	28
3.7.14 Callback for upgrade progress	28
➤ 3.8 Device Log module	28
-- Get device log module - getDeviceLogsManager--	28
3.8.1 Get the device log file path	28
➤ 3.9 Perception Info module	29
-- Get Certification module - getCertificationManager--	29
3.9.1 Get perception data as a file stream	29
3.9.2 Get large battery cycle count list	29
3.9.3 Get large battery design capacity list	29
3.9.4 Get current max capacity of large battery	29
3.9.5 Get battery health percentage list	30
3.9.6 Get battery health status list	30
3.9.7 Get small battery voltage list	30
3.9.8 Get print distance history list	30
● 4. Error Code Definition	31
4.1 CertificationError	31
4.2 DeviceError	31
4.3 LocationError	31
4.4 NetworkError	33
4.5 ResourceError	33
● 5. Entity Class Definition	33
5.1 com.kozen.terminalmanager.Const	33
5.2 com.kozen.terminalmanager.location.constant.LocationConstant	34
5.3 LocationConstant.GeoLanguage	34
5.4 LocationConstant.LocationMode	34

5.5 LocationConstant.SignalMode	35
5.6 ApnConfiguration	35
5.7 com.kozen.terminalmanager.device.constant.WakeUpType	35
● 6. Access permission	35

● 1. Revision History

Version	Release	Modify Record	Adapted SDK version	Author
1.4	2026/04/22	✓ Adjust wakeupType to add support for double tap to wake and lift to wake	TerminalManagerService 1.3.x	Johnny
1.3	2026/01/30	<ul style="list-style-type: none"> ✓ Add an information collection module. ✓ Add support for returning OTA upgrade progress monitoring callbacks. ✓ Add a main screen brightness timeout duration. ✓ Add a screen-off reminder setting. ✓ Add log retrieval. ✓ Adjust compatibility for retrieving the OS version number. ✓ Adjust the SDK icon 	TerminalManagerService 1.2.x	Johnny
1.2	2025/09/18	<ul style="list-style-type: none"> ✓ Add forcePermission API for mandatory permission check ✓ Add silentInstall API for silent installation ✓ Add CSN API ✓ Add TUSN reading ✓ Extend getLocationManager with 2 open interfaces to specify location provider ✓ Add application install API with listener ✓ Add OTA install API with compatibility support ✓ Add resource install API with listener ✓ Add module permission ✓ Add a security statement for location 	TerminalManagerService 1.1.x	Johnny
1.1	2025/03/31	<ul style="list-style-type: none"> ✓ Positioning module constants supplement; ✓ Enhance the resource module with extended error codes and implement upgrade listener for the MCU 	TerminalManagerService 1.0.x	Yue.Cui Tong.Liu Johnny
1.0	2025/03/19	✓ Version verification and release	TerminalManagerService 1.0.x	Yao.zhang Sunan Johnny
0.2	2025/03/15	✓ Update LocationManager module, add LocationError	TerminalManagerService 1.0.x	Johnny
0.1	2025/03/14	✓ Initial version	TerminalManagerService 1.0.x	Johnny

● 2. Overview

2.1 Introduction

This document is interfaces for TMS and AppStore clients, with broader OS operation permissions compared to the Financial SDK. Main functionalities include installing/uninstalling apps on the OS, retrieving system information, location data, consumable status, and performing operations such as shutting down or rebooting the OS. After client integration, the cloud can be used to manage applications and information on terminals in bulk.

This document serves as the KozenTerminalManagerService API Reference.

2.2 Android version and IDE version supported by the SDK

System environment	Platform	Compile environment
Android 6.0 and above	ARM 64, ARM 32	Android Studio, IntelliJ

2.3 Feature Introduction

2.3.1 Terminal Management Module

- This class handles SDK initialization and provides access to operation classes for each module.
- The operation class object is: TerminalManager.

2.3.2 Certificate Management Module

- This module provides certificate management functionalities.
- The operation class object is: ICertificationManager.
- Example to obtain the operation class:

JAVA: TerminalManager.INSTANCE.getCertificationManager()

Kotlin: TerminalManager.certificationManager()

2.3.3 Device Management Module

- This module handles device-related functionalities.
- The operation class object is: IDeviceManager.
- Example to obtain the operation class:

JAVA: TerminalManager.INSTANCE.getDeviceManager()

Kotlin: TerminalManager.deviceManager()

2.3.4 Device Information Management Module

- This module provides functionalities for retrieving device information.
- The operation class object is: IDeviceInfoManager.
- Example to obtain the operation class:

JAVA: `TerminalManager.INSTANCE.getDeviceInfoManager()`

Kotlin: `TerminalManager.deviceInfoManager()`

2.3.5 Location Management Module

➤ This module handles location-related functionalities.

➤ The operation class object is: `ILocationManager`.

➤ Example to obtain the operation class:

JAVA: `TerminalManager.INSTANCE.getLocationManager()`

Kotlin: `TerminalManager.locationManager()`

2.3.6 Network Management Module

➤ This module handles network-related functionalities.

➤ The operation class object is: `INetworkManager`.

➤ Example to obtain the operation class:

JAVA: `TerminalManager.INSTANCE.getNetworkManager()`

Kotlin: `TerminalManager.networkManager()`

2.3.7 Resource Management Module

➤ This module handles resource management functionalities.

➤ The operation class object is: `IResourceManager`.

➤ Example to obtain the operation class:

JAVA: `TerminalManager.INSTANCE.getResourceManager()`

Kotlin: `TerminalManager.resourceManager()`

2.4 Importing the TerminalManagerService SDK

Local Dependency: Place the `TerminalManagerLib-release-x.x.x.aar` file in the `libs` directory of your Android Studio project.

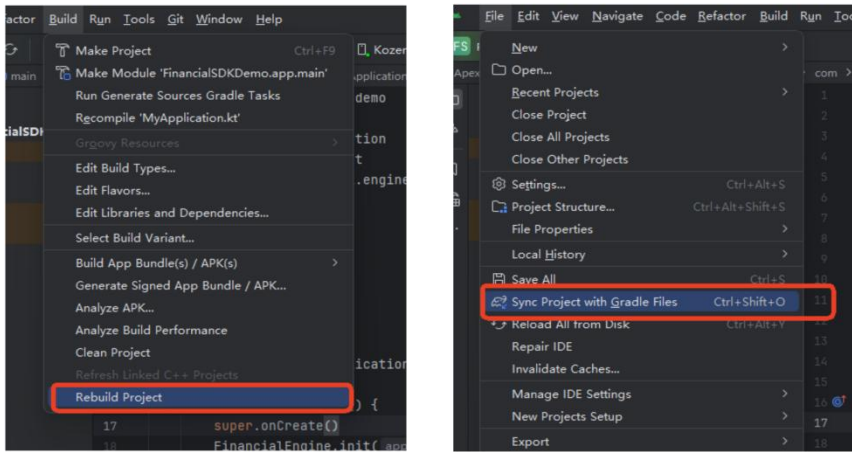
Add the following code to the `build.gradle` file:

gradle

复制

```
dependencies {  
    implementation(files("libs/TerminalManagerLib_x.x.x_release.aar"))  
}
```

After importing the `.aar` file, sync and rebuild the project.



2.5 Initializing the TerminalManagerService SDK

Please initialize the TerminalManagerService SDK in your Application. Example:

```
kotlin
class MyApplication : Application() {
    override fun onCreate() {
        super.onCreate()
        val terminal = TerminalManager
        terminal.init(
            applicationContext
        ) { result, error ->
            Log.d("Application", "[terminal-manager] init result=$result, error=$error")
        }
    }
}
```

If the initialization is successful, the callback will return result=true; if it fails, the callback will return result=false. After the Terminal Management SDK is successfully initialized, use TerminalManager to obtain the operation objects for each module.

If the Terminal Management service is disconnected during use, the InitCallBack will also be triggered, with result=false. Upon receiving this callback, reinitialize the Terminal Management SDK.

● 3. API Interface Introduction

void init(Context context, InitCallBack callBack)	Terminal manager SDK initialization
ICertificationManager getCertificationManager()	Certification module
IDeviceInfoManager getDeviceInfoManager()	Device information module
IDeviceManager getDeviceManager()	Device module
ILocationManager getLocationManager()	Location module
INetworkManager getNetworkManager()	Network module
IResourceManager getResourceManager()	Resource module

ILogManager getLogManager()	Log module
IPerceptionInfoManager getPerceptionInfoManager()	Perception Info module

➤ 3.1 Terminal manager SDK initialization

3.1.1 Initialize the TerminalManagerService instance

Prototype	void init(Context context, InitCallBack callBack)
Function	Initialize the TerminalManagerService instance
Parameters	Parameters: context – android context callback – initialization callback
Return value	
Notes	

-- TerminalManagerService instance callback – InitCallBack --

void onInitResult(boolean result, String error)	Initialization results
---	------------------------

3.1.2 Initialization results

Prototype	void onInitResult(boolean result, String error)
Function	Initialization results
Parameters	Parameters: result – Initialization result (true or false) error – error message
Return value	
Notes	

➤ 3.2 Certification module

-- Get Certification module – getCertificationManager--

int deleteAppSignature(String certData)	Delete the app signature certificate
List<String> getAppSignatureInfo()	Get the app signature certificate information
int updateAppSignature(String certData)	Update the app signature certificate

3.2.1 Updates the application's signature certificate

Prototype	int updateAppSignature(String certData)
Function	Updates the application's signature certificate.

Parameters	Parameters: certData- Certificate Data
Return value	Return: - 0: Success - Others: Failure (specific error codes refer to CertificationError).
Notes	For failure cases, refer to CertificationError for detailed error codes.

3.2.2 Deletes the application's signature certificate

Prototype	int deleteAppSignature(String certData)
Function	Deletes the application's signature certificate.
Parameters	Parameters: certData- Certificate Data to Be Deleted
Return value	Return: - 0: Success - Others: Failure (specific error codes refer to CertificationError).
Notes	For failure cases, refer to CertificationError for detailed error codes.

3.2.3 Get the application's signature certificate information

Prototype	List<String> getAppSignatureInfo()
Function	Get the application's signature certificate information.
Parameters	
Return value	Return: Certificate Details List
Notes	

➤ 3.3 Device information module

-- Get device information module - getDeviceInfoManager--

String getEmvKernelVersion()	EMV kernel version number
String getHardwareVersion()	Get hardware version number
String[] getImei()	Get IMEI number; if multiple exist, return multiple
String[] getImsi()	Get IMSI number; if multiple exist, return multiple
String getKernelVersion()	Get Linux kernel version number
String getMcuVersion()	Get MCU version number
String getOsVersion()	Get Android version number
String getSdkServiceVersion()	Get SDK service version number
String getSerialNo()	Get device serial number
String getDeviceModel()	Get device model

String getVendorName()	Get vendor name(XC, Kozen)
String getCSN()	Get customer serial number
String getTUSN()	Get TUSN(Only for the China region)

3.3.1 Get the SDK service version number

Prototype	String getSdkServiceVersion()
Function	Get the SDK service version number.
Parameters	
Return value	Return: The SDK service version number.
Notes	

3.3.2 Get Terminal serial number

Prototype	String getSerialNo()
Function	Get Terminal serial number
Parameters	
Return value	Return: The device serial number.
Notes	

3.3.3 Get the IMSI number

Prototype	String[] getImsi()
Function	Retrieves the IMSI number; if multiple exist, returns multiple.
Parameters	
Return value	Return: The IMSI number(s).
Notes	

3.3.4 Get the IMEI number

Prototype	String[] getImei()
Function	Retrieves the IMEI number; if multiple exist, returns multiple.
Parameters	
Return value	Return: The IMEI number(s).
Notes	

3.3.5 Get the equipment supplier name (XC, Kozen)

Prototype	String getVendorName()
Function	Get the equipment supplier name (XC, Kozen)
Parameters	
Return value	Return:

	Equipment supplier name
Notes	

3.3.6 Get the device model

Prototype	String getDeviceModel()
Function	Get the device model.
Parameters	
Return value	Return: The device model.
Notes	

3.3.7 Get the OS version number

Prototype	String getOsVersion()
Function	Get the OS version number.
Parameters	
Return value	Return: If KozenOS is supported, return the KozenOS version number; if it is not supported, return the Android version number.
Notes	

3.3.8 Get the Linux kernel version number

Prototype	String getKernelVersion()
Function	Get the Linux kernel version number.
Parameters	
Return value	Return: The kernel version number.
Notes	

3.3.9 Get the MCU version number

Prototype	String getMcuVersion()
Function	Retrieves the MCU version number.
Parameters	
Return value	Return: The MCU version number.
Notes	

3.3.10 Get the hardware version number

Prototype	String getHardwareVersion()
Function	Get the hardware version number.
Parameters	
Return value	Return:

	The hardware version number.
Notes	

3.3.11 Get the EMV kernel version number

Prototype	String getEmvKernelVersion()
Function	Get the EMV kernel version number.
Parameters	
Return value	Return: The EMV kernel version number.
Notes	

3.3.12 Get TUSN (Only for the China region)

Prototype	String getTUSN()
Function	Get TUSN (Only for the China region)
Parameters	
Return Value	Return:TUSN
Notes	Returns the unique terminal serial number.

3.3.13 Get customer serial number

Prototype	String getCSN()
Function	Get customer serial number
Parameters	
Return Value	Return:CSN
Notes	Returns the customer serial number

➤ 3.4 Device module

-- Get device module - getDeviceManager--

int cancelPCIReboot()	Cancel scheduled reboot
long getSystemTime()	Return the timestamp of the current system time
String getTimeZone()	Get the current time zone
void reboot()	Reboot the device
int setPCIReboot(long time)	Schedule a reboot
int setSystemTime(long time)	Set the system time
int setTimeZone(String timeZone)	Set the time zone
void shutdown()	Shut down the device
void forcePermission(boolean isOpen)	Forced permission request
Void setSilentInstall(boolean isOpen)	Silent app installation

int setScreenTimeOut(long timeOut)	Set screen timeout duration
int sleep(boolean isConfirm)	Turn off (sleep) the screen
int wakeUp(WakeUpType type, boolean enable)	Enable or disable various device wake-up

3.4.1 Sets the system time

Prototype	int setSystemTime(long time)
Function	Sets the system time.
Parameters	time – Timestamp.
Return value	Return: 0: Success, Others: Failure (refer to DeviceError).
Notes	

3.4.2 Returns the current system time as a timestamp

Prototype	long getSystemTime()
Function	Returns the current system time as a timestamp.
Parameters	
Return value	Return: The timestamp.
Notes	

3.4.3 Sets the time zone

Prototype	int setTimeZone(String timeZone)
Function	Sets the time zone.
Parameters	timeZone – Time zone ID, supports two formats: 1. Region/City (e.g., Europe/Moscow) 2. GMT (e.g., GMT+9).
Return value	Return: 0: Success, Others: Failure (refer to DeviceError).
Notes	

3.4.4 Get the current time zone

Prototype	String getTimeZone()
Function	Retrieves the current time zone.
Parameters	
Return value	Return: The time zone.
Notes	

3.4.5 Reboots the device

Prototype	void reboot()
Function	Reboots the device
Parameters	
Return value	
Notes	

3.4.6 Shuts down the device

Prototype	void shutdown()
Function	Shuts down the device.
Parameters	
Return value	
Notes	

3.4.7 Schedules a timed reboot

Prototype	int setPCIR reboot(long time)
Function	Schedules a timed reboot.
Parameters	time – Device will reboot after running for this duration (e.g., 1000 * 60 * 60 for 1 hour).
Return value	Return: 0: Success, Others: Failure (refer to DeviceError).
Notes	1. The policy will automatically run after reboot unless canceled by cancelPCIR reboot. 2. A reboot prompt will be shown before rebooting. 3. It is recommended not to exceed 24 hours. 4. If the set time is less than the device's uptime, it will reboot immediately.

3.4.8 Cancels the scheduled reboot

Prototype	int cancelPCIR reboot()
Function	Cancels the scheduled reboot.
Parameters	
Return value	Return: 0: Success, Others: Failure (refer to DeviceError).
Notes	

3.4.9 Enable or disable silent installation

Prototype	void setSilentInstall(boolean isOpen)
Function	Enable or disable silent installation
Parameters	Parameters: isOpen – true: Do not show app installation prompt (silent install) false: Show installation prompt
Return Value	

Notes	When enabled, applications can be installed silently without prompting the user.
-------	--

3.4.10 Enforce runtime permission checks

Prototype	void forcePermission(boolean isOpen)
Function	Enforce runtime permission checks
Parameters	Parameters: isOpen – true: The app must request permission to access a module false: No permission enforcement
Return Value	
Notes	When enabled, modules cannot be accessed unless the app has explicitly been granted the required permissions.

3.4.11 Enforce runtime permission checks

Prototype	int setScreenTimeOut(long timeOut)
Function	Set the screen timeout duration in seconds
Parameters	Parameters: timeOut – 0: Always on 1800: Maximum value (30 minutes)
Return Value	Return: 0 – Success 1 – FailureOthers , See DeviceError for details
Notes	This method sets how long the screen stays on before turning off due to inactivity.

3.4.12 Turn off the screen (sleep mode)

Prototype	int sleep(boolean isConfirm)
Function	Turn off the screen (sleep mode)
Parameters	Parameters: isConfirm – Whether to show a confirmation dialog before sleeping true – Show confirmation dialog false – Enter sleep directly
Return Value	Return: 0 – Success 1 – Failure
Notes	After calling this method, the screen will enter sleep mode in 5 seconds. The user can tap the screen to wake it up.This setting only takes effect for the next sleep.

3.4.13 Enable or disable various device wake-up methods

Prototype	int wakeUp(WakeUpType type, boolean enable)
Function	Enable or disable various device wake-up methods
Parameters	Parameters:

	type – Wake-up method enum value (see WakeUpType)enable true: Enable the wake-up method false: Disable the wake-up method
Return Value	Return: 0 – Success 1 – FailureOthers , See DeviceError for details
Notes	This method configures whether a specific device wake-up method is enabled or disabled.

➤ 3.5 Location module

Declaration on Location Interface

Our location interface is designed solely to provide location-related services to applications.

- It does not actively collect device information such as SN, IMEI, or hardware identifiers.
- It does not transmit any device information or location data to external servers without explicit application request and authorization.
- All data access is limited to the scope necessary for location service functionality.

This ensures that the interface complies with user privacy protection and security requirements.

-- Get Location module – getLocationManager--

int addToBlockOpenAppList(String pkgName)	Add an APK to a block list
List<String> getBlockOpenAppList()	Get the list of blocked APKs
boolean isInBlockOpenAppList(String pkgName)	Check if an APK is in block
void onDestroy()	Destroy location and geofencing resources
int open()	Start the location module and initialize related resources.
int open(String key)	Start the location module and initialize related resources by key.
int open(LocationConstant.LocationType locationType)	Enable the positioning module, specify the positioning method, and initialize the related resources.
int open(String key, LocationConstant.LocationType locationType)	Enable the positioning module, specify the positioning key and method, and initialize the related resources.
int registerGeoFenceCreateListener(IGeoFenceCreateListener listener)	Register a listener for geofence creation results
int registerLocationListener(ILocationChangedListener listener)	Register a location callback listener
int removeAllGeoFence()	Remove all geofences
int removeFromBlockOpenAppList(String pkgName)	Remove an APK from the blocked list
int setGeoFenceResultAction(String action, String pkgName)	Set the action to receive geofence status broadcasts.
int setLocationOption(LocationClientOption locationClientOption)	Set location parameters
int startOnceLocation()	Start a single location request
int stopLocation()	Stop location services

int unregisterLocationListener()	Remove the location listener
int addGeoFence(double longitude, double latitude, float radius, String customId)	Create a circular geofence

3.5.1 Enables the location module and initializes related resources

Prototype	int open()
Function	Enables the location module and initializes related resources.
Parameters	
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	

3.5.2 Enables the location module and initializes related resources by key

Prototype	int open(String key)
Function	Enables the location module and initializes related resources.
Parameters	key – The API key for location. By default, the system-signed key is used.
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	If the system-signed key fails (location fails with error code ERROR_CODE_FAILURE_AUTH), Please contact Kozen FAE to generate a special API key. Then call onDestroy first, and use this API to reinitialize the location module by passing the API key.

3.5.3 Set location parameters

Prototype	int setLocationOption(LocationClientOption locationClientOption)
Function	Set location parameters. Must be used after open is successful.
Parameters	locationClientOption – Location parameters.
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	Default configuration parameters: 1. High-accuracy mode; 2. Location request interval is 2000ms; 3. Network location timeout is 30s; 4. No reverse geocoding address information; 5. Reverse geocoding language is selected based on the region; 6. Signal selection is network plus GPS

3.5.4 Start a single location request

Prototype	int startOnceLocation()
Function	Start a single location request. Must be used after open is successful.
Parameters	

Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	The location request will automatically stop after completion. You can also call stopLocation to terminate the location request during the process

3.5.5 Registers a location callback listener

Prototype	int registerLocationListener(ILocationChangedListener listener)
Function	Registers a location callback listener
Parameters	listener – Callback interface for location updates.
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	Must be used after open is successful. Only one listener can be registered globally; new registrations will overwrite previous ones. Call unregisterLocationListener to remove the listener when it is no longer needed

3.5.6 Removes the location listener

Prototype	int unregisterLocationListener()
Function	Removes the location listener.
Parameters	
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	Must be used after open is successful.

3.5.7 Stop the location service

Prototype	int stopLocation()
Function	Stop the location service.
Parameters	
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	Must be used after open is successful.

3.5.8 Creates a circular geofence

Prototype	int addGeoFence(double longitude, double latitude, float radius, String customId)
Function	Creates a circular geofence.
Parameters	longitude – Longitude of the geofence center; latitude – Latitude of the geofence center; radius – Radius of the geofence (minimum 100 meters); customId – Custom geofence ID, must be unique.
Return value	0: Operation successful;

	Others: Operation failed. Refer to LocationError for specific error codes.
Notes	Must be used after open is successful.

3.5.9 Registers a listener for geofence creation results

Prototype	int registerGeoFenceCreateListener(IGeoFenceCreateListener listener)
Function	Registers a listener for geofence creation results.
Parameters	listener – Callback interface for geofence creation.
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	Must be used after open is successful.

3.5.10 Set the action for receiving geofence status broadcasts

Prototype	int setGeoFenceResultAction(String action, String pkgName)
Function	Set the action for receiving geofence status broadcasts.
Parameters	action – Broadcast action; pkgName – Package name for receiving the broadcast.
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	Multiple settings will use the last one. Must be used after open is successful.

3.5.11 Removes all geofences

Prototype	int removeAllGeoFence()
Function	Removes all geofences.
Parameters	
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	Must be used after open is successful.

3.5.12 Add an APK to a block list

Prototype	int addToBlockOpenAppList(String pkgName)
Function	Add an APK to a block list
Parameters	pkgName – Package name of the APK.
Return value	0: Operation successful; Others: Operation failed. Refer to LocationError for specific error codes.
Notes	

3.5.13 Remove an APK from the blocked list

Prototype	int removeFromBlockOpenAppList(String pkgName)
Function	Remove an APK from the blocked list
Parameters	pkgName – Package name of the APK.
Return value	0: Operation successful;

	Others: Operation failed. Refer to LocationError for specific error codes.
Notes	

3.5.14 Check if an APK is in block

Prototype	boolean isInBlockOpenAppList(String pkgName)
Function	Check if an APK is in block
Parameters	pkgName – Package name of the APK.
Return value	true: APK is disabled; false: APK is not disabled.
Notes	

3.5.15 Retrieves the list of blocked APKs

Prototype	List<String> getBlockOpenAppList()
Function	Retrieves the list of blocked APKs.
Parameters	
Return value	Returns the list of disabled APK package names.
Notes	

3.5.16 Disables the geofence feature

Prototype	void onDestroy()
Function	Destroys the location and geofence resources.
Parameters	
Return value	
Notes	Call this method when the location module is no longer needed.

3.5.17 Enable the location module and initialize with the specified method

Prototype	int open(LocationConstant.LocationType locationType)
Function	Enable the location module and initialize with the specified method
Parameters	Parameters: locationType – The desired location method (from LocationConstant.LocationType)
Return Value	Return: 0 – Operation succeeded Others – Operation failed (see LocationError for detailed error codes)
Notes	Initializes the location module and allocates necessary resources according to the specified method.

3.5.18 Enable the location module and initialize with the specified key and method

Prototype	int open(String key, LocationConstant.LocationType locationType)
Function	Enable the location module and initialize with the specified key and method
Parameters	Parameters:

	<p>key – API key for location services.</p> <p>By default, the system–signed key is used.</p> <p>If the system key fails (error code <code>ERROR_CODE_FAILURE_AUTH</code>), contact support for a special API key.</p> <p>After obtaining the key, call <code>onDestroy()</code> first, then re-initialize using this API with the new key.</p> <p>locationType – The desired location method (from <code>LocationConstant.LocationType</code>)</p>
Return Value	<p>Return:</p> <p>0 – Operation succeeded</p> <p>Others – Operation failed (see <code>LocationError</code> for detailed error codes)</p>
Notes	This method starts the location module and allocates necessary resources for the specified location method.

-- Location changed listener – `ILocationChangeListener`--

<code>void onLocationChanged(MapLocation mapLocation, int errorCode, String errorDetail)</code>	Location changed callback
---	---------------------------

3.5.19 Location changed callback

Prototype	<code>void onLocationChanged(MapLocation mapLocation, int errorCode, String errorDetail)</code>
Function	Location changed callback
Parameters	<p>mapLocation – Location result information;</p> <p>errorCode – Error code;</p> <p>errorDetail – Detailed error information.</p>
Return value	
Notes	This method is called when the location is completed.

-- GeoFence create listener – `GeoFenceCreateListener` --

<code>void onGeoFenceCreateFinished(List<GeoFence> geoFenceList, int errorCode, String customId)</code>	Callback for geofence creation completion
---	---

3.5.20 Callback for geofence creation completion

Prototype	<code>void onGeoFenceCreateFinished(List<GeoFence> geoFenceList, int errorCode, String customId)</code>
Function	Callback for geofence creation completion.
Parameters	geoFenceList – List of created geofences (only available if creation is successful, otherwise empty);

	errorCode – Error code; customId – Custom business ID associated with this operation.
Return value	
Notes	

➤ 3.6 Network module

-- Get network module – getNetworkManager--

int addApn(ApnConfiguration config)	Add an APN
int enableApn(String name)	Enable an APN

3.6.1 Adds an APN configuration

Prototype	int addApn(ApnConfiguration config)
Function	Adds an APN configuration.
Parameters	config – The APN configuration to add.
Return value	Return: 0: Success Others: Failure (refer to NetworkError).
Notes	

3.6.2 Enables an APN configuration

Prototype	int enableApn(String name)
Function	Enables an APN configuration.
Parameters	name – The name of the APN. Pass null to disable the currently used APN.
Return value	Return: 0: Success Others: Failure (refer to NetworkError).
Notes	

➤ 3.7 Resource module

-- Get resource module – getResourceManager--

int installOrUpdate(String path)	Install or update an app
int unInstall(String pkgName)	Uninstall an app
int updateCustomRes(String path)	Update the resource package
int updateOTA(String path)	Update the device system version / MCU firmware version

int installOrUpdateWithListener(String path, OnAppUpdateListener listener)	Install or update an app with listener
int updateCustomResWithListener(String path, OnUpdateCustomResListener listener)	Update the resource package with listener
int updateOTAWithListener(String path, OnUpdateOTAListener listener)	Update the device system version / MCU firmware version with listener

3.7.1 Installs or updates an app

Prototype	int installOrUpdate(String path)
Function	Installs or updates an app.
Parameters	path – The path of the app installation package.
Return value	Return: 0: Success Others: Failure (refer to ResourceError).
Notes	

3.7.2 Uninstalls an app

Prototype	int unInstall(String pkgName)
Function	Uninstalls an app.
Parameters	pkgName – The package name of the app to uninstall.
Return value	Return: 0: Success, Others: Failure (refer to ResourceError).
Notes	

3.7.3 Updates the device system version or MCU firmware version

Prototype	int updateOTA(String path)
Function	Updates the device system version or MCU firmware version.
Parameters	path – The path of the update package (supports /storage/emulated/0/ or /sdcard/). – .zip: Recognized as a system version package. – .bin: Recognized as an MCU firmware package.
Return value	Return: 0: Package verification successful, starting upgrade. Others: Failure (refer to ResourceError).
Notes	

3.7.4 Updates the resource package

Prototype	int updateCustomRes(String path)
Function	Updates the resource package.
Parameters	path – The path of the resource package.
Return value	Return: 0: Package verification successful, starting resource update. Others: Failure (refer to ResourceError).

Notes	
-------	--

3.7.5 Install or update an app with listener

Prototype	int installOrUpdateWithListener(String path, OnAppUpdateListener listener)
Function	Install or update an app with listener
Parameters	Parameters: path – Path to the app package (either a file URI string or absolute accessible file path) listener – Callback for app installation result (see OnAppUpdateListener)
Return Value	Return: 0 – API call successful Others – API call failed (see CommonError for details)
Notes	

3.7.6 Update the resource package with listener

Prototype	int updateCustomResWithListener(String path, OnUpdateCustomResListener listener)
Function	Update the resource package with listener
Parameters	Parameters: path – Path to the resource package (either a file URI string or absolute accessible file path) listener – Callback for update result (see OnUpdateCustomResListener)
Return Value	Return: 0 – API call successful Others – API call failed (see CommonError for details)
Notes	

3.7.7 Update the device system version / MCU firmware version with listener

Prototype	int updateOTAWithListener(String path, OnUpdateOTAListener listener)
Function	Update the device system version / MCU firmware version with listener
Parameters	Parameters: path – Path to the OTA package (either a file URI string or absolute accessible file path) listener – Callback for update result (see OnUpdateOTAListener)
Return Value	Return: 0 – API call successful Others – API call failed (see CommonError for details)
Notes	

-- Upgrade listener – OnAppUpgradeListener--

void onError(String msg, int code)	Upgrade error/failure
void onSuccess()	Upgrade successful

3.7.8 Upgrade error/failure

Prototype	void onError(String msg, int code)
Function	Upgrade failed
Parameters	msg – Error message code – Error code (refer to ResourceError)
Return value	
Notes	

3.7.9 Upgrade successful

Prototype	void onSuccess()
Function	Upgrade successful
Parameters	
Return value	
Notes	

-- Upgrade listener – OnUpdateCustomResListener --

void onError(String msg, int code)	Upgrade error/failure
void onSuccess(String resultPath)	Upgrade successful

3.7.10 Upgrade error/failure

Prototype	void onError(String msg, int code)
Function	Upgrade failed
Parameters	msg – Error message code – Error code (refer to ResourceError)
Return value	
Notes	

3.7.11 Upgrade successful

Prototype	void onSuccess()
Function	Upgrade successful
Parameters	
Return value	
Notes	

-- Upgrade listener – OnUpdateOTALListener --

void onError(String msg, int code)	Upgrade error/failure
void onSuccess()	Upgrade successful
void onUpdateInProgress(int percent)	Callback for upgrade progress

3.7.12 Upgrade error/failure

Prototype	void onError(String msg, int code)
Function	Upgrade failed
Parameters	msg – Error message code – Error code (refer to ResourceError)
Return value	
Notes	

3.7.13 Upgrade successful

Prototype	void onSuccess()
Function	Upgrade successful
Parameters	
Return value	
Notes	

3.7.14 Callback for upgrade progress

Prototype	void onUpdateInProgress(int percent)
Function	Firmware or application update progress callback
Parameters	Parameters: percent – Update progress percentage (0 – 100)
Return Value	
Notes	This method is called to report the current progress of an ongoing update.

➤ 3.8 Device Log module

-- Get device log module – getDeviceLogsManager--

String getDeviceLogsPath()	Get the device logs directory path
----------------------------	------------------------------------

3.8.1 Get the device log file path

Prototype	String getDeviceLogsPath()
Function	Get the device log file path
Parameters	
Return Value	Return: Log file path as a String
Notes	This method returns the file system path where device logs are stored

➤ 3.9 Perception Info module

-- Get Certification module - getCertificationManager--

android.os.ParcelFileDescriptor collectPerceptionData()	Get perception data in file stream format
ArrayList<String> getBatteryCurrentMaxCapacity()	Get the current max capacity list of the main battery
ArrayList<String> getBatteryCycleCount()	Get the cycle count list of the main battery
ArrayList<String> getBatteryDesignCapacity()	Get the factory design capacity list of the main battery
ArrayList<String> getBatteryHealthPercent()	Get the battery health percentage list
ArrayList<String> getBatteryHealthStatus()	Get the battery health status list
ArrayList<String> getPrintDistance()	Get the print distance list
ArrayList<String> getSmallBatteryVoltage()	Get the small battery voltage list

3.9.1 Get perception data as a file stream

Prototype	android.os.ParcelFileDescriptor collectPerceptionData()
Function	Get perception data as a file stream
Parameters	
Return Value	Return: File descriptor for perception data; null if no data (file size < 2MB or not found)
Notes	Returns a file descriptor containing buried point (analytics) data.

3.9.2 Get large battery cycle count list

Prototype	ArrayList<String> getBatteryCycleCount()
Function	Get large battery cycle count list
Parameters	
Return Value	Return: List of cycle counts in the format: "yyyyMMdd,count" (e.g., "20250630,100")
Notes	Each item represents the total charge cycle count on a specific date.

3.9.3 Get large battery design capacity list

Prototype	ArrayList<String> getBatteryDesignCapacity()
Function	Get large battery design capacity list
Parameters	
Return Value	Return: List in the format: "yyyyMMdd,capacity" (e.g., "20250630,2800")
Notes	Represents the designed capacity of the battery on a given date.

3.9.4 Get current max capacity of large battery

Prototype	ArrayList<String> getBatteryCurrentMaxCapacity()
Function	Get current max capacity of large battery

Parameters	
Return Value	Return: List in the format: "yyyyMMdd,capacity" (e.g., "20250630,2750")
Notes	Indicates the actual current maximum charge capacity over time.

3.9.5 Get battery health percentage list

Prototype	ArrayList<String> getBatteryHealthPercent()
Function	Get battery health percentage list
Parameters	
Return Value	Return: List in the format: "yyyyMMdd,healthPercent" (e.g., "20250630,100")
Notes	Battery health percentage over time.

3.9.6 Get battery health status list

Prototype	ArrayList<String> getBatteryHealthStatus()
Function	Get battery health status list
Parameters	
Return Value	Return: List in the format: "yyyyMMdd,status" (e.g., "20250630,0")
Notes	Health status values may refer to different health categories

3.9.7 Get small battery voltage list

Prototype	ArrayList<String> getSmallBatteryVoltage()
Function	Get small battery voltage list
Parameters	
Return Value	Return: List in the format: "yyyyMMdd,voltage" (e.g., "20250630,24")
Notes	Voltage data for the small/internal battery.

3.9.8 Get print distance history list

Prototype	ArrayList<String> getPrintDistance()
Function	Get print distance history list
Parameters	
Return Value	Return:List in the format: "yyyyMMdd,distance" (e.g., "20250630,45000")
Notes	Represents cumulative printing distance (in meters) by date.

● 4. Error Code Definition

4.1 CertificationError

Error Code	Error Description	Error Value
CERTIFICATION_ERROR_INIT	Certification manager service initialization exception	-10000
CERTIFICATION_ERR_PARA_ERROR	Parameter exception	-10001
CERTIFICATION_CERT_LIST_CHECK_FAIL_ERROR	Certificate chain validation exception	-10002
CERTIFICATION_OTHER_ERROR	Other exceptions	-19999

4.2 DeviceError

Error Code	Error Description	Error Value
DEVICE_ERROR_INIT	Device manager service initialization exception	-20000
DEVICE_OTHER_ERROR	Other exceptions	-20001
DEVICE_PARAMETERS_INVALID	Invalid parameters	-20002

4.3 LocationError

Error Code	Error Description	Error Value
MANAGER_SERVICE_DISCONNECT	Device management service is not connected, please initialize the device management service first.	-30001
ERROR_INIT	Positioning module is not open or initialized.	-30002
ERROR_POSITIONING_PROGRESS	Positioning is in progress. If positioning is in progress, repeated positioning is prohibited. Stop positioning first and then restart it.	-30003
ERROR_UNKNOWN	Unknown error.	-30004
ERROR_PARAMETERS_INVALID	Invalid parameters.	-30005
ERROR_MISS_PERMISSIONS	Missing location permissions.	-30006
ERROR_CODE_INVALID_PARAMETER	Some important parameters are empty.	-31001
ERROR_CODE_FAILURE_WIFI_INFO	Positioning failed because the device only scanned a single WiFi, and the location information cannot be accurately calculated.	-31002
ERROR_CODE_FAILURE_LOCATION_PARAMETER	The obtained request parameters are empty, possibly due to an exception during the process.	-31003
ERROR_CODE_FAILURE_CONNECTION	Network connection exception. Detailed information can be obtained	-31004

	through AMapLocation.getLocationDetail().	
ERROR_CODE_FAILURE_PARSER	XML parsing error.	-31005
ERROR_CODE_FAILURE_LOCATION	Positioning result error.	-31006
ERROR_CODE_FAILURE_AUTH	KEY error.	-31007
ERROR_CODE_UNKNOWN	Other errors.	-31008
ERROR_CODE_FAILURE_INIT	Initialization exception.	-31009
ERROR_CODE_SERVICE_FAIL	Positioning service startup failed. Please check if the service is configured and if the service tag in the manifest is placed inside the application tag.	-31010
ERROR_CODE_FAILURE_CELL	Incorrect base station information. Please check if the SIM card is installed.	-31011
ERROR_CODE_FAILURE_LOCATION_PERMISSION	Missing location permissions. Please check if location permissions are configured and enable location permissions in security software and settings.	-31012
ERROR_CODE_FAILURE_NOWIFIANDAP	Network positioning failed. Please check if the device has a SIM card inserted, mobile network is enabled, or the WiFi module is turned on.	-31013
ERROR_CODE_FAILURE_NOENOUGHSAATELLITES	Satellite positioning failed due to insufficient available satellites.	-31014
ERROR_CODE_FAILURE_SIMULATION_LOCATION	The location may be simulated.	-31015
ERROR_CODE_AIRPLANEMODE_WIFIOFF	Positioning failed. Airplane mode is on and the WiFi switch is off. Please turn off airplane mode or turn on the WiFi switch.	-31018
ERROR_CODE_NOGL_WIFIOFF	Positioning failed. No SIM card detected and the WiFi switch is off. Please turn on the WiFi switch or insert a SIM card.	-31019
ERROR_CODE_FAILURE_COARSE_LOCATION	Positioning failed due to an exception under coarse permissions.	-31020
GEO_ERROR_CODE_INVALID_PARAMETER	Parameter error.	-32001
GEO_ERROR_CODE_FAILURE_CONNECTION	Network connection exception.	-32004
GEO_ERROR_CODE_FAILURE_PARSER	Data parsing failed (possibly due to connecting to a network that requires login but not logged in).	-32005
GEO_ERROR_CODE_FAILURE_AUTH	Authentication failed.	-32007
GEO_ERROR_CODE_UNKNOWN	Other unknown errors.	-32008
GEO_ERROR_NO_VALIDFENCE	No valid geofence available.	-32016

GEO_ERROR_CODE_EXISTS	The same fence already exists and does not need to be added again. Applies when the geofence's customID is the same.	-32017
-----------------------	--	--------

4.4 NetworkError

Error Code	Error Description	Error Value
NETWORK_ERROR_INIT	Network module initialization error	-40000
NETWORK_OTHER_ERROR	Other exceptions	-40001
NETWORK_PARAMETERS_INVALID	Invalid parameters	-40002

4.5 ResourceError

Error Code	Error Description	Error Value
RESOURCE_ERROR_INIT	Resource module initialization error	-50000
RESOURCE_OTHER_ERROR	Other error	-50001
RESOURCE_REGISTER_UPGRADE_LISTENER_ERROR	Failed to register MCU upgrade listener	-50002
RESOURCE_MCU_UPGRADE_FILE_PATH_ERROR	MCU upgrade file path error	-50003
RESOURCE_MCU_UPGRADE_FILE_ERROR	MCU upgrade file error	-50004
RESOURCE_MCU_UPGRADE_ERROR	MCU upgrade error	-50005
RESOURCE_APP_UPGRADE_ERROR	App upgrade error	-50006
RESOURCE_APP_UPGRADE_ERROR_ABORTED	App upgrade error — aborted	-50007
RESOURCE_APP_UPGRADE_ERROR_BLOCKED	App upgrade error — blocked	-50008
RESOURCE_APP_UPGRADE_ERROR_CONFLICT	App upgrade error — conflict	-50009
RESOURCE_APP_UPGRADE_ERROR_INCOMPATIBLE	App upgrade error — incompatible	-50010
RESOURCE_APP_UPGRADE_ERROR_INVALID	App upgrade error — invalid	-50011
RESOURCE_APP_UPGRADE_ERROR_STORAGE	App upgrade error — storage error	-50012
RESOURCE_ERROR_INIT	Resource module initialization error	-50000

● 5. Entity Class Definition

5.1 com.kozen.terminalmanager.Const

Constant Name	Type	Value
FUN_ERROR	int	-1
FUN_SUCC	int	0
TERMINAL_MANAGER_SERVICE_ACTION	String	"android.intent.action.XC_TERMINAL_MANAGER_SERVICE"
TERMINAL_MANAGER_SERVICE_CLASS	String	"com.kozen.terminalmanager.service.TerminalManagerService"
TERMINAL_MANAGER_SERVICE_PACKAGE	String	"com.kozen.terminalmanager.service"

5.2 com.kozen.terminalmanager.location.constant.LocationConstant

Constant Name	Type	Value
GEO_BUNDLE_KEY_CUSTOMID	String	"customId"
GEO_BUNDLE_KEY_FENCESTATUS	String	"event"
GEO_BUNDLE_KEY_LOCERRORCODE	String	"location_errorcode"
GEO_STATUS_IN	int	1
GEO_STATUS_LOCFAIL	int	4
GEO_STATUS_OUT	int	2
GPS_ACCURACY_BAD	int	0
GPS_ACCURACY_GOOD	int	1
GPS_ACCURACY_UNKNOWN	int	-1
GPS_STATUS_MODE_SAVING	int	3
GPS_STATUS_NOGPSPERMISSION	int	4
GPS_STATUS_NOGPSPROVIDER	int	1
GPS_STATUS_OFF	int	2
GPS_STATUS_OK	int	0
LOCATION_PROVIDER_GPS	String	"gps"
LOCATION_PROVIDER_LBS	String	"lbs"
LOCATION_TYPE_CELL	int	6
LOCATION_TYPE_COARSE_LOCATION	int	11
LOCATION_TYPE_FIX_CACHE	int	4
LOCATION_TYPE_GPS	int	1
LOCATION_TYPE_LAST_LOCATION_CACHE	int	9
LOCATION_TYPE_OFFLINE	int	8
LOCATION_TYPE_SAME_REQ	int	2
LOCATION_TYPE_WIFI	int	5
TRUSTED_LEVEL_BAD	int	4
TRUSTED_LEVEL_HIGH	int	1
TRUSTED_LEVEL_LOW	int	3
TRUSTED_LEVEL_NORMAL	int	2

5.3 LocationConstant.GeoLanguage

Enum Constant	TYPE	Description
DEFAULT	ENUM	Returns reverse geocoding info in local language
EN	ENUM	Always returns reverse geocoding info in English
ZH	ENUM	Always returns reverse geocoding info in Chinese

5.4 LocationConstant.LocationMode

Enum Constant	TYPE	Description
Battery_Saving	ENUM	Low-power positioning mode
Device_Sensors	ENUM	Device-only positioning mode
Hight_Accuracy	ENUM	High-accuracy positioning mode

5.5 LocationConstant.SignalMode

Enum Constant	TYPE	Description
BEIDOU_FIRST	ENUM	In high-accuracy positioning mode, performs a single location operation and prioritizes returning BeiDou satellite positioning information.
DEFAULT	ENUM	In high-accuracy positioning mode, performs a single location operation, and the system returns the first available positioning result.
GPS_FIRST	ENUM	In high-accuracy positioning mode, performs a single location operation and prioritizes returning GPS satellite positioning information

5.6 ApnConfiguration

Constant Name	TYPE	Description
apn	String	APN name.
authType	int	Authentication type.
current	boolean	Enable current APN.
mcc	String	Mobile Country Code (MCC).
mmsc	String	MMSC URL.
mmsPort	String	MMS proxy port.
mmsProxy	String	MMS proxy address.
mnc	String	MNC Mobile Network Code (MNC).
name	String	Entry name.
numeric	String	Operator Network Identification.
password	String	APN password.
port	String	Proxy port.
protocol	String	The protocol to use to connect to this APN.
proxy	String	Proxy address.
roaming_protocol	String	The protocol to use to connect to this APN when roaming.
server	String	Server address.
type	String	Comma-delimited list of APN types.
user	String	APN username.

5.7 com.kozen.terminalmanager.device.constant.WakeUpType

Enum Constant	TYPE	Description
TAP_OR_INSERT_CARD	ENUM	Wake up by IC card insertion or NFC card tapping
SCREEN_DOUBLE_TAP	ENUM	Wake up by screen double tap
LIFT_TO_WAKE	ENUM	Lift to wake screen

● 6. Access permission

Permission Name	Related Module	Tooltips
-----------------	----------------	----------

android.permission.SUPER_PERMISSIONS_DEVICE	DeviceManager	Read and modify system time, timezone, and other system settings
android.permission.SUPER_PERMISSIONS_RESOURCE	ResourceManager	Install or update resource packages (e.g., fonts, images, applications)
android.permission.SUPER_PERMISSIONS_LOCATION	LocationManager	Get device location (GPS / Cell tower)
android.permission.SUPER_PERMISSIONS_DEVICE_INFO	DeviceInfoManager	Collect device info (SN, IMEI, hardware)
android.permission.SUPER_PERMISSIONS_NETWORK	NetworkManager	Manage network access and firewall rules