

MOTION Blinds WLAN Integration Guide

Scope and Purpose.....	3
Definition.....	3
The integration process.....	6
Interface.....	6
Get device list.....	6
Reference.....	6
Heartbeat.....	8
Reference.....	8
Child-device control.....	9
Reference.....	12
Child-device status report.....	21
Reference.....	23
Reference (for TDBU blinds only).....	23
Child-device status query.....	24
Reference.....	26
Encryption and decryption algorithm.....	27

Version Record

Date	Version	Description
2019-12-30	v0.99	First release
2020-11-04	v1.02	TDBU blinds feature added, fixed other wrong descriptions

Scope and Purpose

This guide introduces how to integrate motorized window covering products (For instance, Wi-Fi bridge & 433MHz Radio motors) into a 3rd party automation system via WLAN access.

Note: The 'Motion' APP must configure all of the setups include Bridge pairing and blinds adding. The 3rd party is unable to add/edit/delete the Wi-Fi bridge and the child devices/blinds. It only has child devices control permission via WLAN.

Definition

Client/Server

Client: The 3rd party automation system

Server: Wi-Fi bridge

Server UDP multicast address

Server receive: [238.0.0.18:32100]

Server sending: [238.0.0.18:32101]

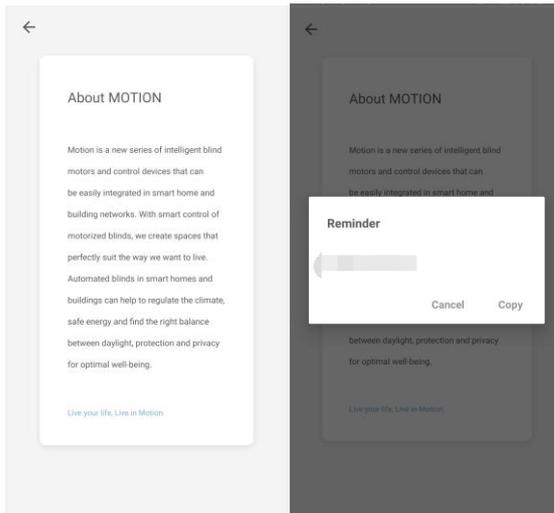
messageID/msgID

After each interface operation, messageID/msgID should be increased, otherwise **Server** will not respond.

KEY/token/AccessToken:

KEY is a 16-byte length string. It assigns by Motion APP. **KEY** and **token** use to create a 16-byte length **AccessToken**, **Server** responses only when it receives the correct **AccessToken**, the **AccessToken** algorithm reference is at the end of the document.

Please quickly tap the 'Motion APP About' page 5 times to get **KEY**.



token is a 16-byte length string. The **Client** can capture **token** in the interface 'Device discovering' or 'Heartbeat.'

Accesstoken calculation logic & reference

Please use the URL below to verify your encryption.

<https://www.devglan.com/online-tools/aes-encryption-decryption>

Fill **token** in 'Enter text to be Encrypted,' fill **KEY** in 'Enter Secret Key.' ('Select Mode' == 'ECB' ; 'Key Size in Bits' == '128'; 'Output Text Format' == 'Hex')

For example

token : 37412C478E0FBEAB

KEY : 74ae544c-d16e-4c

Accesstoken : 8570A96BC18ADB21D1FC155B24ECFD73

AES Online Encryption

Enter text to be Encrypted

37412C478E0FBEAB

OR

Select Mode

ECB

Key Size in Bits

128

Enter Secret Key

74ae544c-d16e-4c

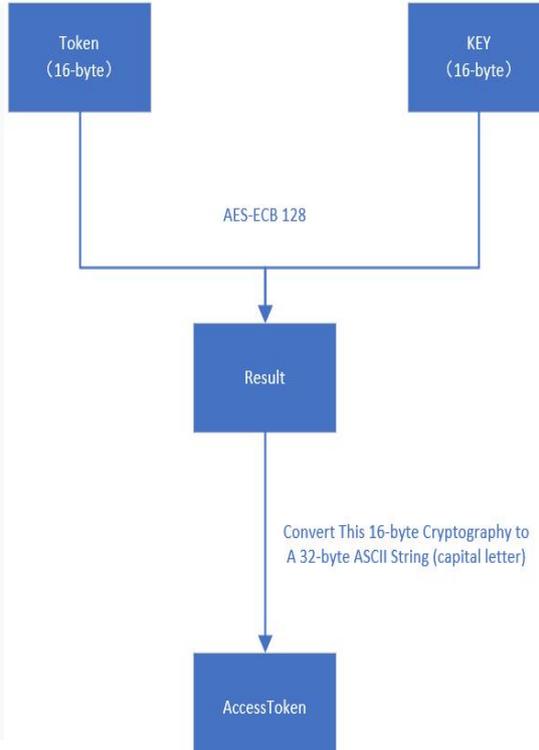
Output Text Format: ©Base64 ©Hex

Encrypt

Sell your handmade goods. Start free trial shopify

AES Encrypted Output:

8570A96BC18ADB21D1FC155B24ECFD7358B74E6E
CD4FE6306385732B841E5F28



The integration process

1. Device discovering using 'Get device list'.
2. Calculate 'Accesstoken' using **KEY** and **token**.
3. Control child devices using 'Child device control', 'Child device status query', and 'Child device status report'.

Interface

Get device list

Get device list from Wi-Fi Bridge, includes Wi-Fi Bridge and child devices.

1. **Client** discovers Wi-Fi bridge & child devices using UDP unicast [Client_IP:32100] or UPD multicast [238.0.0.18:32100].
2. **Server** uploads lists by UDP unicast [Client_IP:32101].

Interface parameters:

Name	Type	Value	Description
msgType	String	GetDeviceList	Get device list
msgID	String		Message-ID (Timestamp)

Interface response

Name	Type	Value	Description
msgType	String	GetDeviceListAck	Upload device list
mac	String		Wi-Fi Bridge MAC address
deviceType	String		10000000: 433Mhz radio motor 02000001: Wi-Fi Bridge
ProtocolVersion	String		WLAN access protocol version
token	String		Token
data	JSONArray		Child device list

JSONArray

Name	Type	Value	Description
mac	String		Child device mac
deviceType	String		10000000: 433Mhz radio motor

Reference

Request data

```
//From Client_IP:PORT to 238.0.0.18:32100 or Form Client_IP:PORT to Server_IP:32100
{
  "msgType":"GetDeviceList",
  "msgID":"20200321134209916"
}
```

Response data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType":"GetDeviceListAck",
  "mac":"500291b691fd",
  "deviceType":"02000001",
  "ProtocolVersion":"0.9",
  "token":"37412C478E0FBEAB",
  "data":[
    {
      "mac":"500291b691fd",
      "deviceType":"02000001"
    },
    {
      "mac":"500291b691fd005f",
      "deviceType":"10000000"
    },
    {
      "mac":"500291b691fd0060",
      "deviceType":"10000000"
    }
  ]
}
```

Heartbeat

Keep alive, **Server** heartbeats per 30~60 seconds using UPD multicast [238.0.0.18:32101].

Interface parameters:

Name	Type	Value	Description
msgType	String	Heartbeat	
mac	String		Wi-Fi Bridge MAC address
deviceType	String		Device application type 02000001: Wi-Fi Bridge 10000000: 433Mhz radio motor
token	String		Token
data	JsonArray		Info

JsonArray

Name	Type	Value	Description
currentState	enum	1 2 3	1 : Working 2 : Pairing 3 : Updating
numberOfDevices	Int		Number of Child devices
RSSI	Int		Wi-Fi connection strength

Reference

Response data

```
// From Server_IP:32100 to 238.0.0.18:32101
{
  "msgType": "Heartbeat",
  "mac": "b4e62db27481",
  "deviceType": "02000001",
  "token": "37412C478E0FBEB",
  "data": {
    "currentState": 1,
    "numberOfDevices": 3,
    "RSSI": -21
  }
}
```

Child-device control

Client controls child-devices using **'WriteDevice'** message. (UDP unicast [Client_IP:32100] or UPD multicast [238.0.0.18:32100])

Server response using **'WriteDeviceAck'**, and returns the child-device current status. (UDP unicast [Client_IP])

Interface parameters:

Name	Type	Value	Description
msgType	String	WriteDevice	Child-device control
mac	String		Message-ID (Timestamp)
deviceType	String		02000001: Wi-Fi Bridge 10000000: 433Mhz radio motor
AccessToken	String		
msgID	String		Timestamp
data	JSONArray		Control command

JSONArray

Name	Type	Value	Description
operation	enum	0 1 2 3 5	0: Close/Down 1: Open/Up 2: Stop 5: Status query
targetPosition	Int		0-100
targetAngle	Int		0-180

JSONArray (for TDBU Blinds only)

Name	Type	Value	Description
operation_T operation_B	enum	0 1 2 3 5	0: Close/Down 1: Open/Up 2: Stop 5: Status query
targetPosition_T targetPosition_B	Int		0-100

Interface response

Name	Type	Value	Description
msgType	String	WriteDeviceAck	
mac	String		Wi-Fi Bridge MAC address
deviceType	String		10000000: 433Mhz radio motor
msgID	String		Timestamp
data	JsonArray		

JsonArray

Name	Type	Value	Description
type	Int		1:Roller Blinds 2:Venetian Blinds 3:Roman Blinds 4:Honeycomb Blinds 5:Shangri-La Blinds 6:Roller Shutter 7:Roller Gate 8:Awning 10:Day&night Blinds 11:Dimming Blinds 12:Curtain 13:Curtain(Open Left) 14:Curtain(Open Right)
operation	enum	0 1 2 5	0: Close/Down 1: Open/Up 2: Stop 5: Status query
currentPosition	Int		0-100
currentAngle	Int		0-180
currentState	enum	0 1 2 3 4	0: No limits 1: Top-limit detected 2: Bottom-limit detected 3: Limits detected 4: 3 rd -limit detected
voltageMode	enum	0 1	0: AC Motor 1: DC Motor
batteryLevel	Int		Power voltage (DC motor only)
wirelessMode	enum	0 1 2 3	0: Uni-direction 1: Bi-direction 2: Bi-direction (mechanical limits) 3:Others
RSSI	Int		Radio signal strength

JSONArray (for TDBU blinds only)

Name	Type	Value	Description
type	Int		9:TDBU
operation_T operation_B	enum	0 1 2 5	0: Close/Down 1: Open/Up 2: Stop 5: Status query
exist_subid			
currentPosition_T currentPosition_B	Int		0-100
currentState_T currentState_B	enum	0 1 2 3 4	0: No limits 1: Top-limit detected 2: Bottom-limit detected 3: Limits detected 4: 3 rd -limit detected
voltageMode	enum	0 1	0: AC Motor 1: DC Motor
batteryLevel_T batteryLevel_B	Int		Power voltage (DC motor only)
wirelessMode	enum	0 1 2 3	0: Uni-direction 1: Bi-direction 2: Bi-direction (mechanical limits) 3:Others
RSSI	Int		Radio signal strength

Reference

Percentage control

Only bi-directional devices supported (wireless Mode == 1 required).

Request data

```
// From Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT -> Server_IP:32100
{
  "msgType": "WriteDevice",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "AccessToken": "0D5D443049491C20988B46AC54323BA2",
  "msgID": "20200331103919505",
  "data": {
    "targetPosition": 44
  }
}
```

Respond data

```
// Form Server_IP:32100 to Client_IP:PORT
{
  "msgType": "WriteDeviceAck",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "msgID": "20200331103919505",
  "data": {
    "type": 13,
    "operation": 2,
    "currentPosition": 59,
    "currentAngle": 180,
    "currentState": 3,
    "voltageMode": 0,
    "batteryLevel": 811,
    "wirelessMode": 1,
    "RSSI": -73
  }
}
```

Percentage control (for TDBU blinds only)

Only bi-directional devices supported (wireless Mode == 1 required).

Request data

```
// Form Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT to Server_IP:32100
{
  "msgType" : "WriteDevice",
  "mac" : "b4e62db27481005d",
  "deviceType" : "10000001"
  "AccessToken" : "0D5D443049491C20988B46AC54323BA2",
  "msgID" : "20201103151055138",
  "data" : {
    "targetPosition_B" : 75,
    "targetPosition_T" : 35
  },
}
```

Respond data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType":"WriteDeviceAck",
  "mac":"b4e62db27481005d",
  "deviceType":"10000001",
  "msgID":"20201103151055138",
  "data":{
    "type":9,
    "exist_subid":1,
    "operation_T":2,
    "operation_B":2,
    "currentPosition_T":35,
    "currentPosition_B":95,
    "currentState_T":3,
    "currentState_B":3,
    "voltageMode":1,
    "batteryLevel_T":836,
    "batteryLevel_B":836,
    "wirelessMode":1,
    "RSSI":-40
  }
}
```

Rotation/Angle control

Only bi-directional devices supported (wireless Mode == 1 required).

Request data

```
// Form Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT to Server_IP:32100
{
  "msgType": "WriteDevice",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "AccessToken": "0D5D443049491C20988B46AC54323BA2",
  "msgID": "20200331105628663",
  "data": {
    "targetAngle": 78
  }
}
```

Respond data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType": "WriteDeviceAck",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "msgID": "20200331105628663",
  "data": {
    "type": 13,
    "operation": 0,
    "currentPosition": 44,
    "currentAngle": 0,
    "currentState": 3,
    "voltageMode": 0,
    "batteryLevel": 811,
    "wirelessMode": 1,
    "RSSI": -68
  }
}
```

Open/Up

Request data

```
// From Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT to Server_IP:32100
{
  "msgType": "WriteDevice",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "AccessToken": "0D5D443049491C20988B46AC54323BA2",
  "msgID": "20200331105646317",
  "data": {
    "operation": 1
  }
}
```

Respond data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType": "WriteDeviceAck",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "msgID": "20200331105646317",
  "data": {
    "type": 13,
    "operation": 2,
    "currentPosition": 47,
    "currentAngle": 77,
    "currentState": 3,
    "voltageMode": 0,
    "batteryLevel": 811,
    "wirelessMode": 1,
    "RSSI": -67
  }
}
```

Open/Up (for TDBU blinds only)

Request data

```
// From Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT to Server_IP:32100
{
  "msgType" : "WriteDevice",
  "mac" : "b4e62db27481005d",
  "deviceType" : "10000001",
  "AccessToken" : "0D5D443049491C20988B46AC54323BA2",
  "msgID" : "20201104095555138",
  "data" : {
    "operation_B" : 1,
    "operation_T" : 1
  }
}
```

Respond data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType":"WriteDeviceAck",
  "mac":"b4e62db27481005d",
  "deviceType":"10000001",
  "msgID":"20201104095555138",
  "data":{
    "type":9,
    "exist_subid":1,
    "operation_T":2,
    "operation_B":2,
    "currentPosition_T":21,
    "currentPosition_B":53,
    "currentState_T":3,
    "currentState_B":3,
    "voltageMode":1,
    "batteryLevel_T":835,
    "batteryLevel_B":835,
    "wirelessMode":1,
    "RSSI":-42
  }
}
```

Close/Down

Request data

```
// From Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT to Server_IP:32100
{
  "msgType": "WriteDevice",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "AccessToken": "0D5D443049491C20988B46AC54323BA2",
  "msgID": "20200331105735705",
  "data": {
    "operation": 0
  }
}
```

Respond data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType": "WriteDeviceAck",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "msgID": "20200331105735705",
  "data": {
    "type": 13,
    "operation": 2,
    "currentPosition": 0,
    "currentAngle": 0,
    "currentState": 3,
    "voltageMode": 0,
    "batteryLevel": 811,
    "wirelessMode": 1,
    "RSSI": -68
  }
}
```

Close/Down (for TDBU blinds only)

Request data

```
// From Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT to Server_IP:32100
{
  "msgType" : "WriteDevice",
  "mac" : "b4e62db27481005d",
  "deviceType" : "10000001",
  "AccessToken" : "0D5D443049491C20988B46AC54323BA2",
  "msgID" : "20201104100955213",
  "data" : {
    "operation_B" : 0,
    "operation_T" : 0
  }
}
```

Respond data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType":"WriteDeviceAck",
  "mac":"b4e62db27481005d",
  "deviceType":"10000001",
  "msgID":"20201104100955213",
  "data":{
    "type":9,
    "exist_subid":1,
    "operation_T":2,
    "operation_B":2,
    "currentPosition_T":0,
    "currentPosition_B":0,
    "currentState_T":3,
    "currentState_B":3,
    "voltageMode":1,
    "batteryLevel_T":835,
    "batteryLevel_B":835,
    "wirelessMode":1,
    "RSSI":-37
  }
}
```

Stop

Request data

```
// From Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT to Server_IP:32100
{
  "msgType": "WriteDevice",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "AccessToken": "0D5D443049491C20988B46AC54323BA2",
  "msgID": "20200331105833122",
  "data": {
    "operation": 2
  }
}
```

Respond data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType": "WriteDeviceAck",
  "mac": "b4e62db27481001f",
  "deviceType": "10000000",
  "msgID": "20200331105833122",
  "data": {
    "type": 13,
    "operation": 2,
    "currentPosition": 100,
    "currentAngle": 180,
    "currentState": 3,
    "voltageMode": 0,
    "batteryLevel": 811,
    "wirelessMode": 1,
    "RSSI": -70
  }
}
```

Stop (for TDBU blinds only)

Request data

```
// From Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT to Server_IP:32100
{
  "msgType" : "WriteDevice",
  "mac" : "b4e62db27481005d",
  "deviceType" : "10000001",
  "AccessToken" : "0D5D443049491C20988B46AC54323BA2",
  "msgID" : "20201104101726121",
  "data" : {
    "operation_B" : 2,
    "operation_T" : 2
  }
}
```

Respond data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType":"WriteDeviceAck",
  "mac":"b4e62db27481005d",
  "deviceType":"10000001",
  "msgID":"20201104101726121",
  "data":{
    "type":9,
    "exist_subid":1,
    "operation_T":2,
    "operation_B":2,
    "currentPosition_T":68,
    "currentPosition_B":100,
    "currentState_T":3,
    "currentState_B":3,
    "voltageMode":1,
    "batteryLevel_T":834,
    "batteryLevel_B":834,
    "wirelessMode":1,
    "RSSI":-43
  }
}
```

Child-device status report

The child-device reports status after it stops running(UPD multicast [238.0.0.18:32101]).

Only bi-directional motors supported(wireless Mode == 1 required).

Interface parameters:

Name	Type	Value	Description
msgType	String	Report	Status report
mac	String		Message-ID (Timestamp)
deviceType	String		
msgID	String		Timestamp
data	JSONArray		

JSONArray

Name	Type	Value	Description
type	Int		1:Roller Blinds 2:Venetian Blinds 3:Roman Blinds 4:Honeycomb Blinds 5:Shangri-La Blinds 6:Roller Shutter 7:Roller Gate 8:Awning 9:TDBU 10:Day&night Blinds 11:Dimming Blinds 12:Curtain 13:Curtain(Open Left) 14:Curtain(Open Right)
operation	enum	0 1 2 5	0: Close/Down 1: Open/Up 2: Stop 5: Status query
currentPosition	Int		0-100
currentAngle	Int		0-180
currentState	enum	0 1 2 3 4	0: Not limit 1: Top-limit detected 2: Bottom-limit detected 3: Limits detected 4: 3 rd -limit detected
voltageMode	enum	0 1	0: AC Motor

			1: DC Motor
batteryLevel	Int		Power voltage (DC motor only)
wirelessMode	enum	0 1 2 3	0: Uni-direction 1: Bi-direction 2: Bi-direction (mechanical limits) 3:Others
RSSI	Int		Radio signal strength

JSONArray (for TDBU blinds only)

Name	Type	Value	Description
type	Int		9:TDBU
operation	enum	0 1 2 5	0: Close/Down 1: Open/Up 2: Stop 5: Status query
exist_subid			
currentPosition_T currentPosition_B	Int		0-100
currentAngle_T currentAngle_B	Int		0-180
currentState_T currentState_B	enum	0 1 2 3 4	0: Not limit 1: Top-limit detected 2: Bottom-limit detected 3: Limits detected 4: 3 rd -limit detected
voltageMode	enum	0 1	0: AC Motor 1: DC Motor
batteryLevel_T batteryLevel_B	Int		Power voltage (DC motor only)
wirelessMode	enum	0 1 2 3	0: Uni-direction 1: Bi-direction 2: Bi-direction (mechanical limits) 3:Others
RSSI	Int		Radio signal strength

Reference

```
// From Server_IP:32100 to 238.0.0.18:32101
{
  "msgType":"Report",
  "mac":"b4e62db274810049",
  "deviceType":"10000000",
  "msgID":"20201104110407805",
  "data":{
    "type":2,
    "operation":2,
    "currentPosition":75,
    "currentAngle":180,
    "currentState":3,
    "voltageMode":1,
    "batteryLevel":782,
    "wirelessMode":1,
    "RSSI":-50
  }
}
```

Reference (for TDBU blinds only)

```
// From Server_IP:32100 to 238.0.0.18:32101
{
  "msgType":"Report",
  "mac":"b4e62db27481005d",
  "deviceType":"10000001",
  "msgID":"20201104103250515",
  "data":{
    "type":9,
    "exist_subid":1,
    "operation_T":2,
    "operation_B":2,
    "currentPosition_T":9,
    "currentPosition_B":47,
    "currentState_T":3,
    "currentState_B":3,
    "voltageMode":1,
    "batteryLevel_T":834,
    "batteryLevel_B":834,
    "wirelessMode":1,
    "RSSI":-39
  }
}
```

Child-device status query

Client query using **'ReadDevice'** message. (UDP unicast [Server_IP:32100] or UDP multicast [238.0.0.18:32100])

Server response using **'ReadDeviceAck'**, and returns the child-device current status. (UDP unicast [Client_IP:32101])

Only bi-directional devices supported (wireless Mode == 1).

Interface parameters:

Name	Type	Value	Description
msgType	String	ReadDevice	Child-device control
mac	String		
deviceType	String		10000000: 433Mhz radio motor
msgID	String		Timestamp

Interface response

Name	Type	Value	Description
msgType	String	ReadDeviceAck	Status report
mac	String		
deviceType	String		10000000: 433Mhz radio motor
msgID	String		Timestamp
data	JSONArray		

JSONArray

Name	Type	Value	
type	Int		1:Roller Blinds 2:Venetian Blinds 3:Roman Blinds 4:Honeycomb Blinds 5:Shangri-La Blinds 6:Roller Shutter 7:Roller Gate 8:Awning 10:Day&night Blinds 11:Dimming Blinds 12:Curtain 13:Curtain(Open Left) 14:Curtain(Open Right)
operation	enum	0 1 2 5	0: Close/Down 1: Open/Up 2: Stop

			5: Status query
currentPosition	Int		0-100
currentAngle	Int		0-180
currentState	enum	0 1 2 3 4	0: Not limit 1: Top-limit detected 2: Bottom-limit detected 3: Limits detected 4: 3 rd -limit detected
voltageMode	enum	0 1	0: AC Motor 1: DC Motor
batteryLevel	Int		Power voltage (DC motor only)
wirelessMode	enum	0 1 2 3	0: Uni-direction 1: Bi-direction 2: Bi-direction (mechanical limits) 3:Others
RSSI	Int		Radio signal strength

JSONArray (for TDBU blinds only)

Name	Type	Value	Description
type	Int		9:TDBU
operation_T operation_B	enum	0 1 2 5	0: Close/Down 1: Open/Up 2: Stop 5: Status query
exist_subid			
currentPosition_T currentPosition_B	Int		0-100
currentState_T currentState_B	enum	0 1 2 3 4	0: No limits 1: Top-limit detected 2: Bottom-limit detected 3: Limits detected 4: 3 rd -limit detected
voltageMode	enum	0 1	0: AC Motor 1: DC Motor
batteryLevel_T batteryLevel_B	Int		Power voltage (DC motor only)
wirelessMode	enum	0 1 2 3	0: Uni-direction 1: Bi-direction 2: Bi-direction (mechanical limits) 3:Others
RSSI	Int		Radio signal strength

Reference

Request data

```
// From Client_IP:PORT to 238.0.0.18:32100 or From Client_IP:PORT to Server_IP:32100
{
  "msgType": "ReadDevice",
  "mac": "b4e62db274810049",
  "deviceType": "10000000",
  "msgID": "20201104105826121"
}
```

Respond data

```
// From Server_IP:32100 to Client_IP:PORT
{
  "msgType": "ReadDeviceAck",
  "mac": "b4e62db274810049",
  "deviceType": "10000000",
  "msgID": "20201104105826121",
  "data": {
    "type": 2,
    "operation": 2,
    "currentPosition": 75,
    "currentAngle": 180,
    "currentState": 3,
    "voltageMode": 1,
    "batteryLevel": 782,
    "wirelessMode": 1,
    "RSSI": -48
  }
}
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