# SunVote ARS
# SDK User Manual
# Ver1.1

**Sunsky Electronic Design & Development Co., LTD.**

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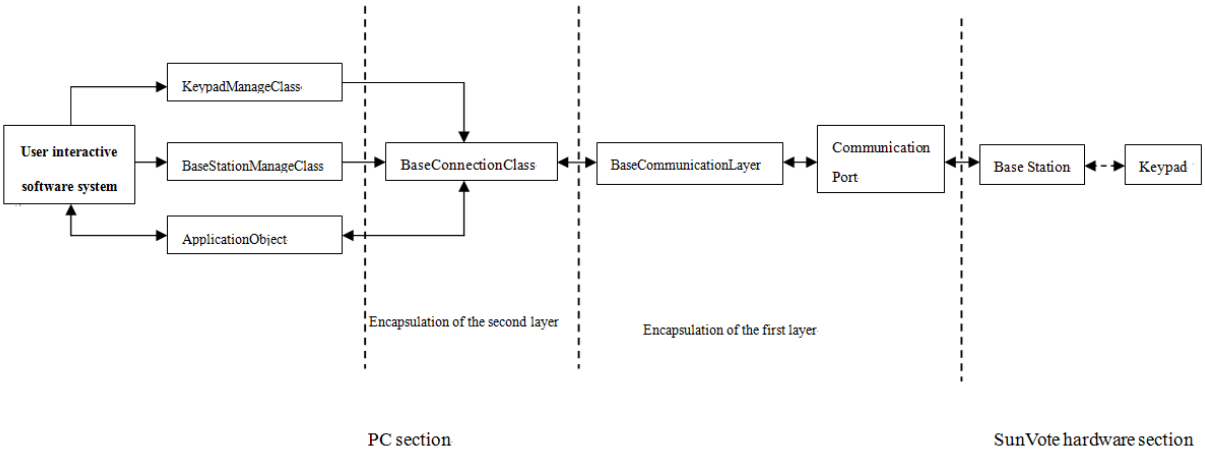
## Directory

# 1 SunVote ARS SDK Block Diagram




Description:

1. BaseStationManage Class is for base station property settings and operations.
2. KeypadManage Class is for keypad property settings and operations.
3. Application Object is for interactive response property settings and operations.
4. The Base Communication Layer packages and encrypts the data from BaseManage Class, KeypadManage Class and ApplicationObject, then send the data to base station via the communication port.
5. Base stations decode the data, and then send commands to keypads;
6. Base stations obtain the keypads' response results, package the data, and then send it to the application system;
7. Set BaseConnection property firstly before using the objects (except for the BaseConnection).When identical objects set the same BaseConnection, subject to the last setting.

# 2 BaseConnection

## 2.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | DemoMode | Boolean | True | Enable DemoMode to simulate running without SunVote hardware, for demonstrations or tests without equipments. It only | Randomly generated simulation data |

| | | | | | |
|---|---|---|---|---|---|
| | | | | supports the following two KeyStatus () events randomly generated by Start ().<br>Simulated key will be modified.<br>1. Press a key to sign in<br>2. Choices | |
| | | | Fals e | Disable Demo Mode | |
| 2 | DemoKeyIDs | String | X | Custom, set the keypad number in a demonstration.<br>e.g. ‘1, 3-5' means keypad no. 1, 3, 4, 5 are in the demonstration. | Keypad number string, ‘,’indicating separated keypad no. while ‘-’ indicating consecutive keypad no. |
| 3 | BaseIP | String | X | Custom, set the IP address of the base station.<br>Separate multi-address with ‘,’.<br>e.g.<br>'200 .200.100.251, 200.200.100.252' means two base stations are connected | Enabled only when the connection type of the base station is TCP/IP. |
| 4 | IsWriteErrorLog | Boolean | Fals e | Not logged | No error log file generated |
| | | | True | Logged | Generated error log file automaticall y. |

## 2.2 Method

### 2.2.1 Open Connection

| | |
|---|---|
| **Method** | Open (Mode:Long,BaseIDs:String) |
| **Use** | Open base station according to Mode. |
| **Parameter Description** | Mode: indicating base station connection type, meanings as below:<br>=1: USB connection;<br>= 2: TCP / IP connection; Set Base station IP address firstly<br>BaseIDs: Base station number string, sort by size, from smallest to largest.<br>e.g. '1, 3-5' indicating base station no 1,3,4,5 should be connected. |
| **Return Value** | Base station online event<br>BaseOnline(BaseID:Long, BaseState:Long) |
| Notes | Running when the system starts, the method only runs once if there is no parameter modified. After starting, the connection status is monitored in real- time, it will reconnect automatically when any disconnection is detected. |

### 2.2.2 Close Connection

| | |
|---|---|
| **Method** | Close( ) |
| **Use** | Close the connection |
| **Parameter Description** | No parameter |
| **Return Value** | Base station online event<br>BaseOnline(BaseID:Long, BaseState:Long) |
| **Notes** | Running when the users exit the application system. |

## 2.3 Event

### 2.3.1 Base Station Online

| | |
|---|---|
| **Event** | BaseOnline(BaseID:Long, BaseState:Long) |
| **Use** | This event will response when the Open, Close methods are called, and then return the Base station status. |

| | |
|---|---|
| **Parameter Description** | BaseID：Base station number<br>BaseState：Connection status<br>=1：Successful connection<br>=0：Connection failed or closed<br>=-1：Connection type not supported<br>=-2：Invalid BaseID<br>=-3： Port error. No valid port is found or the port is occupied.<br>=-4: Base station disconnected(Generated by SDK monitor automatically, it will reconnect) |
| **Notes** | The event will return the connection status one by one when multiple base stations are connected.<br>1、BaseOnline(1,1)： Base station no.1 is connected<br>2、BaseOnline(3,0)： Base station no.3 is disconnected<br>3、BaseOnline(0, -1) :Connection failed, unsupported connection type.4、BaseOnline(0, -2)： Invalid BaseID<br>5、BaseOnline(0, -3)： Port error |

## 3 BaseStationManage

### 3.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |

### 3.2 Method

Base station number =’0’, indicating all base stations execute the command. When ID=’0’, the command will be broadcasted, press the specified key to set multiple base stations, no need to press any key for single base station.

#### 3.2.1 Read Basic Characteristics of Voting System

| | |
|---|---|
| **Method** | GetBasicFeature(BaseID:Long) |

| | |
|---|---|
| **Use** | Read Voting system basic characteristics. |
| **Parameter Description** | BaseID： =0, Unspecified (all currently connected base stations)<br>>0,Specifed BaseID |
| **Return Value** | Voting system basic characteristics event.<br>BasicFeature(BaseID:Long,KeyReportMode:Long,KeyOffTime:Long,BackLightMode:Long,BuzzerMode:Long,CommitMode:Long) |
| **Notes** | |

### 3.2.2 Write Basic Characteristics of Voting System

| | |
|---|---|
| **Method** | SetBasicFeature(BaseID:Long,KeyReportMode:Long,KeyOffTime:Long, BackLightMode:Long,BuzzerMode:Long ,CommitMode:Long) |
| **Use** | Set voting system basic characteristics. |
| **Parameter Description** | BaseID： Base station number, specified<br>KeyReportMode：Keypad status reporting mode<br>=0：No report<br>=1, report while standby,<br>=2, report while voting,<br>=3 report while standby or voting.<br>KeyOffTime： Keypad shutdown time:<br>=Custom, time ranging from 1 to 254 minutes.<br>=0：Use the default hardware value.<br>=255： Do not shut down<br>BackLightMode： LCD backlight mode:<br>=0： Backlight off<br>=1：Press any key to light up, delayed off.<br>=2：Delayed off if the result is submitted successfully, or keep light up until the vote stops. |

| | |
|---|---|
| | =3：Always on<br>BuzzerMode： Buzzer mode:<br>=0：Off<br>=1： On<br>CommitMode<br>=0： Press submit key or OK key to submit<br>=1： Delayed auto-commit. (Effective for single choice, voting, grade, judge) |
| **Return Value** | Voting system basic characteristic event.<br>BasicFeature(BaseID:Long,KeyReportMode:Long,KeyOffTime:Long,BackLightMode:Long,BuzzerMode:Long,CommitMode:Long) |
| **Notes** | |

### 3.2.3 Read Base Station Configuration

| | |
|---|---|
| **Method** | GetConfig(BaseID:Long) |
| **Use** | Obtain base station configuration information |
| **Parameter Description** | BaseID： =0 ,Unspecified (all currently connected base stations)<br>>0 ,Specified BaseID |
| **Return Value** | Base station configuration event.<br>BaseConfig(BaseID:Long,BaseChannel:Long,KeyIDMin:Long,KeyIDMax:Long,RFPower:Long) |
| **Notes** | |

### 3.2.4 Write Base Station Configuration

| | |
|---|---|
| **Method** | SetConfig(BaseID:Long,BaseNewID:Long,BaseChannel:Long,KeyIDMin:Long,KeyIDMax:Long,RFPower:Long) |
| **Use** | Configure base station |
| **Parameter Description** | BaseID：Original Base station ID(0-8), 0 means unspecified(single base station currently connected)<br>BaseNewID： New Base station ID(1-8) |

| | |
|---|---|
| | BaseChannel： Base station channel 433M (1 ~ 8), 2.4G (1-32)<br>KeyIDMin：The beginning of the keypad no. or marking only,<br>Easily view range of the keypad NO. Unset this value is OK.<br>KeyIDMax：The ending of the keypad no.<br>Easily view range of the keypad NO. Unset this value is OK.<br>RFPower：Base station RF power level:<br>=0，Default value =Full power<br>=1， Full power<br>=2， Medium power<br>=3， Low power |
| **Return Value** | Base station configuration event. |
| **Notes** | If the user resets the base station ID, it's required to call the BaseConnection method again for the base station normal operation. |

### 3.2.5 Read Base Station Hardware Information

| | |
|---|---|
| **Method** | GetModelInfo(BaseID:Long) |
| **Use** | Read base station hardware information |
| **Parameter Description** | BaseID：=0,Unspecified (all currently connected base stations)<br>>0,Specified BaseID |
| **Return Value** | Base station hardware information event<br>BaseModelInfo(BaseID:Long,HModel:Long,HVer:Long,SVer:Long,HSerial:String) |
| **Notes** | |

### 3.2.6 Start pairing

| | |
|---|---|
| **Method** | StartMatch(BaseID: Long):String |
| **Use** | Set base station as pairing mode |

| | |
|---|---|
| **Parameter Description** | BaseID：Base station ID, specified base station ID required. |
| **Return Value** | String： Character string<br>-1：BaseConnection attributes Unset<br>0： Pairing is started |
| **Notes** | When the base station is in pairing mode, no other function could be started. Only one base station allowed in paring mode at one time，after paring, the keypad will return the paring status event. |

### 3.2.7 Exit Pairing

| | |
|---|---|
| **Method** | StopMatch( ):String |
| **Use** | Exit pairing mode |
| **Parameter Description** | No parameter |
| **Return Value** | String：Character string<br>-1：BaseConnection attributes Unset<br>0： Exit successfully. |
| **Notes** | |

### 3.2.8 Read Base Station SoftwareDog

| | |
|---|---|
| **Method** | GetSoftDog(BaseID:Long,Password:String) |
| **Use** | Read base station software dog information |
| **Parameter Description** | BaseID：=0, Unspecified (all currently connected base stations)<br>>0,Specified BaseID<br>Password: User password<br>(8 bytes, 8 bytes. Only ASCII characters supported. |
| **Return Value** | Base station software dog event.<br>BaseSoftDog (BaseID:Long,UserPart1:String,UserPart2:String) |

| | |
|---|---|
| **Notes** | |

### 3.2.9 Write Base Station SoftwareDog

| | |
|---|---|
| **Method** | SetSoftDog(BaseID:Long,PassWord:String,UserPart1:String,UserPart2:String) |
| **Use** | Set base station software dog information |
| **Parameter Description** | BaseID: Base station number, specified;<br>Password: 8 bytes. Only ASCII characters supported.<br>UserPart1： User-defined information 1,16 bytes, ASC characters only;<br>UserPart2： User-defined information 2, 16 bytes, only ASCII character supported. |
| **Return Value** | Event: Base station SoftwareDog<br>BaseSoftDog (BaseID:Long,UserPart1:String,UserPart2:String) |
| **Notes** | |

### 3.2.10 Start Channel Evaluation

| | |
|---|---|
| **Method** | StartChannelEvaluate (BaseID:Long) :String |
| **Use** | Evaluate the communication channel to judge whether there is serious interference |
| **Parameter Description** | BaseID：=0, Unspecified (single base station connected)<br>>0,Specified BaseID |
| **Return Value** | String： Character string<br>-1：BaseConnection attributes Unset<br>0： Started |
| **Notes** | only effective for wireless base stations<br>**Note:** Computer keeps waiting for the evaluation results in evaluation mode, no other operation could be run at this moment, please remember to exit the evaluation mode in the end. |

### 3.2.11 Exit Channel Evalutation

| | |
|---|---|
| **Method** | StopChannelEvaluate ( ):String |
| **Use** | exit evaluation mode |
| **Parameter Description** | |
| **Return Value** | String： Character string<br>-1：BaseConnection attributes Unset<br>0：Exit successfully |
| **Notes** | |

### 3.2.12 Read Base Station IP

| | |
|---|---|
| **Method** | GetIPAddress (BaseID:Long) |
| **Use** | Get base station IP address |
| **Parameter Description** | BaseID： =0, Unspecified (all currently connected base stations)<br>>0,Specified BaseID， |
| **Return Value** | Base station IP address event.<br>BaseIPAddress (BaseID:Long, Address:String) |
| **Notes** | |

### 3.2.13 IP Write Base Station IP

| | |
|---|---|
| **Method** | SetIPAddress (BaseID:Long; Address: String) |
| **Use** | Set base station IP address |
| **Parameter Description** | BaseID： Base station number, specified<br>Address： IP address (200.200.100.251), each base station has a unique IP. |
| **Return Value** | Base station IP address event.<br>BaseIPAddress (BaseID:Long, Address:String) |
| **Notes** | |

### 3.2.14 MAC Read Base Station MAC

| | |
|---|---|
| **Method** | GetMACAddress (BaseID:Long) |

| | |
|---|---|
| **Use** | Get base station MAC address |
| **Parameter Description** | BaseID： =0，Unspecified (all currently connected base stations)<br>>0，Specified BaseID， |
| **Return Value** | Base station MAC address event.<br>BaseMACAddress (BaseID:Long, Address:String) |
| **Notes** | |

### 3.2.15 MAC Write Base Station MAC

| | |
|---|---|
| **Method** | SetMACAddress (BaseID:Long; Address: String) |
| **Use** | Set base station MAC address |
| **Parameter Description** | Base station number, specified<br>Address：MAC address (1E-30-6E-A2-45-02), each base station has a unique MAC address. |
| **Return Value** | Base station MAC address event.<br>BaseMACAddress (BaseID:Long, Address:String) |
| **Notes** | |

### 3.2.16 Read Base Station Additional Configuration

| | |
|---|---|
| **Method** | GetAddConfig (BaseID:Long) |
| **Use** | Get base station additional configuration |
| **Parameter Description** | BaseID： =0，Unspecified (all currently connected base stations)<br>>0，Specified BaseID， |
| **Return Value** | Base station additional configuration event.<br>BaseAddConfig (BaseID:Long) |
| **Notes** | |

### 3.2.17 Write Base Station Additional Configuration

| | |
|---|---|
| **Method** | SetAddConfig (BaseID:Long, MatchMode: Long,BaseName: String) |
| Use | Set base station additional configuration |
| **Parameter Description** | BaseID:Base station number, specified<br>Match Mode:<br>1-Fixed Match<br>2- Dynamic Match<br>3-No Match Mode<br>Base Name: 12Bytes,Support ASC characters only |

| | |
|---|---|
| **Return Value** | Base station additional configuration.event.<br>BaseAddConfig (BaseID:Long, MatchMode: Long,BaseName: String) |
| **Notes** | |

### 3.2.18 Read Base Station Enable Mobile Base Station

| | |
|---|---|
| **Method** | GetEnabledMobileBase (BaseID:Long) |
| **Use** | Set base station enable mobile base station |
| **Parameter Description** | BaseID： =0，Unspecified (all currently connected base stations)<br>>0，Specified BaseID， |
| **Return Value** | Base station enable mobile base station event.<br>BaseEnabledMobileBase (BaseID:Long) |
| **Notes** | |

### 3.2.19 Write Base Station Enable Mobile Base Station

| | |
|---|---|
| **Method** | SetEnabledMobileBase (BaseID: Long, Enabled: Boolarn); |
| **Use** | Set base station enable mobile base station |
| **Parameter Description** | BaseID:Base station number, specified<br>Enabled:Enable mobile base station to transmit or not |
| **Return Value** | Base station enable mobile base station event.<br>BaseEnabledMobileBase (BaseID:Long, Enabled: Boolarn) |
| **Notes** | |

## 3.3 Event

### 3.3.1 Base Station Configuration

| | |
|---|---|
| **Event** | BaseConfig(BaseID:Long,BaseChannel:Long,KeyIDMin:Long,KeyIDMax:Long,RFPower:Long) |
| **Use** | This event will respond when the GetConfig, SetConfig methods are called, and then return the base station configuration information. |
| **Parameter Description** | BaseID： Base station number, custom, a positive integer<br>BaseChannel： Base station channel, custom, range from 1 to 32<br>KeyIDMin： 1~3200<br>The beginning of the keypad NO.<br>KeyIDMax： The ending of the keypad no., custom , ranging from |

| | |
|---|---|
| | KeyIDMin to KeyIDMin+X(1≤X≤400)<br>RFPower： Base station RF power level:<br>=0：default value<br>=1： Full power<br>=2： Medium power<br>=3： Low power |
| **Notes** | Each time return one base station configuration information |

### 3.3.2 Base Station Hardware Information

| | |
|---|---|
| **Event** | BaseModelInfo(BaseID:Long,HModel:Long,HVer:Long,SVer:Long,HSerial:String) |
| **Use** | This event will respond when the GetModelInfo method is called, and then return the base station configuration information. |
| **Parameter Description** | BaseID： Base station number<br>HModel： Hardware type code<br>HVer： Hardware version code<br>SVer： Software version code<br>HSerial： Hardware serial number |
| **Notes** | |

### 3.3.3 Pairing Status

| | |
|---|---|
| **Event** | MatchStatus(KeyID:Long,HModel:Long,HVer:Long,SVer:Long,HSerial:String) |
| **Use** | This event will respond when the StartMatch and StopMatch methods are called, and then return the keypad pairing status. |
| **Parameter Description** | KeyID： Keypad number<br>HModel： Hardware type code<br>HVer： Hardware version code<br>SVer： Software version code<br>HSerial： Hardware serial number |
| **Notes** | |

### 3.3.4 Base Station SoftwareDog

| | |
|---|---|
| **Event** | BaseSoftDog (BaseID:Long,UserPart1:String,UserPart2:String) |
| **Use** | This event will respond when the GetSoftDog, SetSoftDog methods are called, and then return the UserPart1 and UserPart2. |
| **Parameter Description** | BaseID： Base station number<br>UserPart1: information of user Part 1<br>UserPart2： information of user Part 2 |
| **Notes** | If password is incorrect, UserPart1 = UserPart2 = "-1" |

### 3.3.5 Channel Evaluation

| | |
|---|---|
| **Event** | ChannelEvaluate (BaseID:Long, ChannelNo:Long ,RssiMax: Long, RssiAvg: Long) |
| **Use** | Return evaluation results of each channel |
| **Parameter Description** | BaseID： Base station number<br>ChannelNo： Channel Number<br>RssiMax： The maximum background interference to RF signal, unit -dBm, smaller values indicating stronger interference<br>RssiAvg：The average value of background interference to RF signals, unit –dBm (smaller values indicating stronger interference) |
| **Notes** | |

### 3.3.6 Basic Characteristics of Voting System

| | |
|---|---|
| **Event** | BasicFeature(BaseID:Long,KeyReportMode:Long,KeyOffTime:Long,BackLightMode:Long,BuzzerMode:Long,CommitMode:Long) |
| **Use** | This event will respond when the GetBasicFeature and SetBasicFeature methods are called, and then return the voting system basic characteristics. |
| **Parameter Description** | BaseID： Base station number<br>KeyReportMode： Keypad status reporting mode<br>=0, no report |

| | |
|---|---|
| | =1, report while standby,<br>=2, report while voting,<br>=3 report while standby or voting.<br>KeyOffTime： Keypad shutdown time:<br>=X： Custom, range from 1 to 254 (Unite: minutes)<br>=0： Use the hardware default vaule<br>=-1 :; Do not shut down<br>BackLightMode： LCD backlight mode:<br>=0；Backlight off<br>=1： Press any key to light up, delayed off.<br>=2： Delayed off if the result is submitted successfully, or keep light up until the vote stops.<br>=3： Always on<br>BuzzerMode：Buzzer mode:<br>=0：Buzzer off<br>=1：Buzzer on<br>CommitMode: Commit mode<br>=0： Press submit button or OK button to submit<br>=1： Delayed auto-commit. |
| **Notes** | Each time return one base station basic characteristic of voting system |

### 3.3.7 Base Station IP Address

| | |
|---|---|
| **Event** | BaseIPAddress (BaseID:Long, Address:String) |
| **Use** | Get base station IP address |
| **Parameter Description** | BaseID：Base station number<br>Address：IP address |
| **Notes** | |

### 3.3.8 Base Station MAC Address

| | |
|---|---|
| **Event** | BaseMACAddress (BaseID:Long, Address:String) |

| | |
|---|---|
| **Use** | Get base station MAC address |
| **Parameter Description** | BaseID：Base station number<br>Address：MAC address |
| **Notes** | |

### 3.3.9 Base Station Additional Configuration

| | |
|---|---|
| **Event** | BaseAddConfig( BaseID: Long,MatchMode: Long,BaseName: String) |
| **Use** | Get base station additional configuration |
| **Parameter Description** | BaseID：Base station Number<br>MatchMode：Pairing Mode<br>BaseName：Base Station Name |
| **Notes** | |

### 3.3.10 Base Station Enable Mobile Base Station

| | |
|---|---|
| **Event** | BaseEnabledMobileBase ( BaseID: Long, Enabled: Boolarn) |
| **Use** | Enable mobile base station or not |
| **Parameter Description** | BaseID：Base station number<br>Enabled：Enable mobile base station to transmit or not |
| **Notes** | |

## 4 KeypadManage

### 4.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |

### 4.2 Method

The general requirement is to hold down its specified key to read and write, such as "OK" key.

### 4.2.1 Remote Shutdown

| | |
|---|---|
| **Method** | RemoteOff (KeyID: Long) |
| **Use** | Use remote control to turn off the keypad |
| **Parameter Description** | KeyID： To be closed keypad ID string, means the following:<br>=0： Turn off all keypads;<br>>0： ID Specified keypad ID |
| **Return Value** | No return value |
| **Notes** | Call this method several times to ensure the keypad is closed successfully. |

### 4.2.2 Read Keypad Configuration

| | |
|---|---|
| **Method** | GetConfig( ) |
| **Use** | read keypad configuration information |
| **Parameter Description** | None |
| **Return Value** | Return keypad configuration event.<br>KeyConfig(KeyID:Long,OffTime:Long) |
| **Notes** | |

### 4.2.3 Write Keypad Configuration

| | |
|---|---|
| **Method** | SetConfig(KeyID:Long,OffTime:Long) |
| **Use** | set the keypad shutdown time, keypad ID |
| **Parameter Description** | KeyID： New keypad ID (1-3600)<br>OffTime： keypad auto shutdown time ,unite minute, means the following:<br>= X: (0 ≤ X ≤ 255, X is a positive integer), user-specified, X = 0 use the hardware default value, X = 255, the keypad never automatically shutdown |

| | |
|---|---|
| **Return Value** | Return keypad configuration event<br>KeyConfig(KeyID:Long,OffTime:Long) |
| **Notes** | keypad auto-off time, in minutes, X = 255: does not automatically shutdown |

### 4.2.4 Read Keypad Hardware Information

| | |
|---|---|
| **Method** | GetModelInfo( ) |
| **Use** | read keypad hardware configuration information |
| **Parameter Description** | No parameter |
| **Return Value** | Return Keypad hardware information event.<br>KeyModelInfo(KeyID:Long,HModel:Long,HVer:Long,SVer:Long,HSerial:String) |
| **Notes** | |

### 4.2.5 Start Keypad Communication Test

| | |
|---|---|
| **Method** | StartCommTest(KeyID:Long) :String |
| **Use** | Test two-way communication success rate and signal strength of the specified keypad and base station, only for wireless keypads. |
| **Parameter Description** | KeyID： Keypad ID |
| **Return Value** | String： Character string<br>= -1：BaseConnection attributes Unset<br>= 0： Started<br>Event: Keypad channel test event |
| **Notes** | Automatically stop after 100 test commands sent |

### 4.2.6 Stop Keypad Communication Test

| | |
|---|---|
| **Method** | StopCommTest ( ):String |
| **Use** | Stop keypad channel test |
| **Parameter Description** | None |
| **Return Value** | String： Character string<br>-1：BaseConnection attributes Unset<br>0：Stop successfully. |
| **Notes** | |

### 4.2.7 Display Keypad Information

| | |
|---|---|
| **Method** | ShowKeyInfo (KeyID:long,ShowMode:Long) |
| **Use** | Show keypad hardware information |
| **Parameter Description** | KeyID: Keypad ID<br>=0： All keypads;<br>>0： Specified keypad ID；<br>ShowMode: Display mode<br>=1： Large fonts (currently only supports large fonts) |
| **Return Value** | |
| **Notes** | |

## 4.3 Event

### 4.3.1 Keypad Configuration

| | |
|---|---|
| **Event** | KeyConfig(KeyID:Long,OffTime:Long) |
| **Use** | Return keypad configuration information: Key ID, OffTime |

| | |
|---|---|
| **Parameter Description** | KeyID: Keypad number<br>OffTime: Shutdown time |
| **Notes** | KeyConfig(1,10)： Keypad no. 1, Turn off in 10 minutes<br>KeyConfig(12,30)： Keypad no. 12, Turn off in 30 minutes<br>KeyConfig(1,255)： Keypad no. 1, never shut down |

### 4.3.2 Keypad Hardware Information

| | |
|---|---|
| **Event** | KeyModelInfo(KeyID:Long,HModel:Long,HVer:Long,SVer:Long,HSerial:String) |
| **Use** | Return keypad hardware information |
| **Parameter Description** | KeyID： Keypad number<br>HModel： Hardware type code<br>HVer： Hardware version code<br>SVer： Software version code<br>HSerial： Hardware serial number |
| **Notes** | |

### 4.3.3 Keypad Channel Test

| | |
|---|---|
| **Event** | KeyCommTest (KeyID:Long, SendTimes:Long, ReceiveTimes:Long,BaseRSSI:Long, KeyRSSI:Long) |
| **Use** | Return keypad channel test response |
| **Parameter Description** | KeyID： Keypad number<br>SendTimes：the number of sending<br>ReceiveTimes： The number of receiving<br>BaseRSSI：Indicating the strength of wireless signal sent from keypad to base station. the smaller value means stronger signal, unit -dBm;<br>KeyRSSI： Indicating the strength of wireless signal sent from base |

| | |
|---|---|
| | station to keypad. unit -dBm; |
| **Notes** | |

# 5 Application Objects

## 5.1 Sign In

### 5.1.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 2 | Mode | Long | 0 | Press a key to sign in | Press the sign-in key or the specified key to sign in |
| | | | 1 | Sign in with a code | Enter numbers, user ID or password |
| | | | 2 | Sign in with IC card (not supported currently) | |
| 3 | StartMode | Long | 0 | Continue | The attributes of StartSignin must be the same as the previous ones. |
| | | | 1 | Re-registration | |
| | | | 2 | Resubmit registration info(not support background signin) | The attributes of StartSignin must be the same as the previous ones. |
| 4 | BackgroundSignIn | Boolean | True | Enable background signin and authorization management to allow tardy representatives to signin, Enable it before Start () called. | Background signin mode has the same attributes as the signin object "2: signin mode" |
| | | | False | Disable background signin | |

### 5.1.2 Method

#### 5.1.2.1 Start Signin

| | |
|---|---|
| **Method** | Start ( ):String |
| **Use** | start signin |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>-1：Start failed. Base connection attributes unset.<br>0： Started； |
| **Notes** | Receipt of data will generate the KeyStatus event. |

#### 5.1.2.2 Stop Signin

| | |
|---|---|
| **Method** | Stop ( ):String |
| **Use** | stop signin |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>=-1: Stop failed. Base connection attributes unset.<br>=0：Stopped |
| **Notes** | If enabled, the background signin is still effective after signin stops. Call Exit Background Signin () method to stop it. If the base station connection fails after signin stops, reconnect the base station, the system will connect automatically, and recovery to the stopped status. |

#### 5.1.2.3 Keypad Authorization

| | |
|---|---|
| **Method** | SetAuthorize(KeyID:Long，AuthMode:Long) |
| **Use** | For keypad authorization |
| **Parameter Description** | KeyID： Keypad ID (specify)<br>AuthMode： Authorization mode<br>=1： Successful authorization<br>=2： Authorization error (signin code error or other reason) |
| **Return Value** | keypad authorization event |
| **Notes** | If background signin is enabled, call this method to set authorization status. |

#### 5.1.2.4 Exit Background Signin

| | |
|---|---|
| **Method** | StopBackgroundSignIn( ) |
| **Use** | Exit background signin and authorization management |
| **Parameter Description** | No parameter |
| **Return Value** | No return value |
| **Notes** | When background signin is enabled, run this method to exit background signin and authorization management, but the signin is not stopped .Usually, make signin stop first, and then background signin exits. |

### 5.1.3 Event

#### 5.1.3.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus (BaseTag:string,KeyID:Long, ValueType:Long, KeyValue:String) |
| **Use** | This event will respond when the Start Signin method is called, and return keypad ID, VauleType and KeyVaule. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： Keypad ID<br>ValueType： key value types (corresponding to the signin mode)<br>KeyValue： key values |
| **Notes** | |

#### 5.1.3.2 Background Signin Status

| | |
|---|---|
| **Event** | BackgroundSignInStatus (BaseTag:string, State:Long) |
| **Use** | This event will respond when the StartBackgroundSignin and StopBackgroundSignin methods are called, and return background signin status. |
| **Parameter Description** | BaseTag： Base station tag<br>State: Background signin status<br>=0: Exit<br>=1: Start |
| **Notes** | |

#### 5.1.3.3 Keypad Authorization Response

| | |
|---|---|
| **Event** | KeyAuthorize(BaseTag:string,KeyID:Long，AuthMode:Long) |
| **Use** | SetAuthorize（ ）,Response to SetAuthorize method. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID: Keypad number<br>AuthMode: Authorization mode in the authorization instruction |
| **Notes** | |

### 5.2 Choices

#### 5.2.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 2 | Options Mode | Long | 0 | Display letters | ABCD… |
| | | | 1 | Display figures | 1234… |
| 3 | ModifyMode | Long | 0 | Unmodifiable | The first press effective, |
| | | | 1 | Modifiable | The last press effective. |
| 4 | Secrecy Mode | Long | 0 | Unclassified | |
| | | | 1 | Classified | After pressed tip, the key value displayed on the LCD will disappear in a short delayed time. |
| 5 | LessEnabled | Long | 0 | Less items can be submitted | The selected choices can be less than the number of answers. |
| | | | 1 | Sufficient items are required to submit. | |
| 6 | Options | Long | M | number of options | 1≤M≤10 |
| 7 | OptionalN | Long | N | Selectable number | 1≤N≤M |

| | | | | | |
|---|---|---|---|---|---|
| 8 | StartMode | Long | 0 | Continue | The attributes of Start Choices must be the same as the previous ones. |
| | | | 1 | Empty then re-start | |
| | | | 2 | Re-submit and continue to start | The attributes of Start Choices must be the same as the previous ones. |

Remarks：

StartMode:

- The attributes of Start Choices must be the same as the previous ones. If the previous data is sent successfully, no need to send again.
- Empty then re-start: Keypads reset the last voting data and start a new vote.
- Re-submit and continue to start:
- Re-send the last voting result.
- Voted keypads in modifiable mode can continue to vote.

### 5.2.2 Method

#### 5.2.2.1 Start Choices

| | |
|---|---|
| **Method** | Start( ):String |
| **Use** | Start choice |
| **Parameter Description** | No parameter |
| **Return Value** | String：Character string<br>-1：Start failed. Base connection attributes unset.<br>0： Started |
| **Notes** | Receipt of data will generate the KeyStatus event. |

#### 5.2.2.2 Stop Choices

| | |
|---|---|
| **Method** | Stop( ):String |
| **Use** | Stop choice |
| **Parameter Description** | No parameter |
| **Return Value** | String：Character string<br>-1: Stop failed. Base connection attributes unset.<br>0： Stopped |
| **Notes** | If the base station connection fails after choice stops, reconnect the base |

| | |
|---|---|
| | station, the system will connect automatically, and recovery to the stopped status. |

### 5.2.3 Event

#### 5.2.3.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus (BaseTag:string,KeyID:Long,KeyValue:String,KeyTime: Double ) |
| **Use** | This event will respond when the Start Choices method is called, and return keypad ID, KeyVaule and KeyTime. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： keypad ID<br>KeyValue：key values(A-J represents 1-10 options)<br>KeyTime : key-press time (unit: second, the smallest precise time is 20ms) |
| **Notes** | KeyStatus (12,"AC",3.24):means keypad No.12, KeyValue is AC, KeyTime is 3.24 seconds. |

Remarks:

- If the option mode of a vote is selected as digit, the keypad LCD will show digits when pressed, but the programs still return value in letters.
- Optional(Selectable Number) and Options(Option Number)
  （1） Optional > Options: Selectable number subjects to the number of options.
  （2） Optional < Options: Selectable number subjects to the number of optional.

### 5.2.4 Judge

#### 5.2.4.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 2 | Mode | Long | 1 | True/False | True/False |
| | | | 2 | right/wrong | Yes/No |
| | | | 3 | Yes/No/Abstain | Yes/No/Abstain |
| 3 | ModifyMode | Long | 0 | Unmodifiable | The first press effective |
| | | | 1 | Modifiable | The last press effective. |

| | | | | | |
|---|---|---|---|---|---|
| 4 | SecrecyMode | Long | 0 | Unclassified | |
| | | | 1 | Classified | After pressed tip, the key value displayed on the LCD will disappear in a short delayed time. |
| 7 | StartMode | Long | 0 | Continue | The attributes of Start Judge must be the same as the previous ones. |
| | | | 1 | Empty then re-start | |
| | | | 2 | Re-submit and continue to start | |

### 5.2.5 Method

#### 5.2.5.1 Start Judge

| | |
|---|---|
| **Method** | Start( ):String |
| **Use** | Start to judge |
| **Parameter Description** | None |
| **Return Value** | String：Character string<br>-1：Start failed. Base connection attributes unset.<br>0： Started |
| **Notes** | Receipt of data will generate the KeyStatus event. |

#### 5.2.5.2 Stop Judge

| | |
|---|---|
| **Method** | Stop ( ):String |
| **Use** | Stop judging |
| **Parameter Description** | No parameter |
| **Return Value** | String：Character string<br>=-1: Stop failed. Base connection attributes unset.<br>=0： Stopped |
| **Notes** | |

### 5.2.6 Event

#### 5.2.6.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus (BaseTag:string,KeyID:Long, KeyValue:String) |
| **Use** | This event will respond when the Start Judge method is called, and return keypad ID and KeyVaule. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID: ID keypad ID<br>KeyValue: key values |
| **Notes** | Determined by input mode or custom input mode |

## 5.3 Grade

### 5.3.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 3 | ModifyMode | Long | 0 | Unmodifiable | The first press effective. |
| | | | 1 | Modifiable | The last press effective. |
| 4 | SecrecyMode | Long | 0 | Unclassified | |
| | | | 1 | Classified | After pressed tip, key value displayed on the LCD will disappear in a short delayed time. |
| 5 | Numerical Grade | Long | X | 2 <= X <= 255 | 2~10 now supports 2 to 10 |
| 6 | StartMode | Long | 0 | Continue | The attributes of Start Grade must be the same as the previous ones. |
| | | | 1 | Empty then re-start | |
| | | | 2 | Re-submit and continue to start | The attributes of Start Grade must be the same as the previous ones. |

### 5.3.2 Method

#### 5.3.2.1 Start Grade

| | |
|---|---|
| **Method** | Start( ):String |
| **Use** | Start to grade |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>=-1：Start failed, base connection attributes unset.<br>=0： Started； |
| **Notes** | Receipt of data will generate the KeyStatus event. |

#### 5.3.2.2 Stop Grade

| | |
|---|---|
| **Method** | Stop ( ):String |
| **Use** | Stop grading |
| **Parameter Description** | No parameter |
| **Return Value** | String：Character string<br>=-1: Stop failed, base connection attributes unset.<br>=0：Stopped |
| **Notes** | |

### 5.3.3 Event

#### 5.3.3.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus (BaseTag:string,KeyID:Long, KeyValue:String) |
| **Use** | This event will respond when the Start Grade method is called, and return keypad ID and KeyVaule. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： keypad ID<br>KeyValue： key values |
| **Notes** | Keys are determined by input mode or custom input mode |

## 5.4 Sequence

### 5.4.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 2 | OptionsMode | Long | 0 | Display letters | ABCD… |
| | | | 1 | Display figures | 1234… |
| 3 | ModifyMode | Long | 0 | Unmodifiable | The first press effective |
| | | | 1 | Modifiable | The last press effective |
| 4 | SecrecyMode | Long | 0 | Unclassified | |
| | | | 1 | Classified | After pressed tip, key value displayed on the LCD will disappear in a short delayed time. |
| 5 | LessEnabled | Long | 0 | Less items can be submitted | |
| | | | 1 | Sufficient items are required to submit. | |
| | | | 2 | Allow repeated input | |
| 6 | OptionalN | Long | M | number of options | 1≤M≤10 |
| 7 | OptionalCount | Long | N | Selectable number | 1≤N≤M |
| 7 | StartMode | Long | 0 | Continue | The attributes of Start Sequence must be the same as the previous ones. |
| | | | 1 | Empty then re-start | |
| | | | 2 | Re-submit and continue to start | |

### 5.4.2 Method

#### 5.4.2.1 Start Sequence

| | |
|---|---|
| **Method** | Start( ):String |
| **Use** | Start to sequence |

| | |
|---|---|
| **Parameter Description** | None |
| **Return Value** | String： Character string<br>=-1：Start failed, base connection attributes unset.<br>=0： Started； |
| **Notes** | Receipt of data will generate the KeyStatus event. |

#### 5.4.2.2 Stop Sequence

| | |
|---|---|
| **Method** | Stop( ):String |
| **Use** | Stop sequence |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>=-1: Stop failed, base connection attributes unset.<br>=0： Stopped |
| **Notes** | |

### 5.4.3 Event

#### 5.4.3.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus (BaseTag:string,KeyID:Long,KeyValue:String,KeyTime:Double) |
| **Use** | This event will respond when the Start Choices method is called, and return keypad ID, KeyVaule and KeyTime. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： ID keypad ID<br>KeyValue： key values(A-J represents 1-10 options)<br>KeyTime： key-press time (in second, the smallest precise time is 20ms) |
| **Notes** | KeyStatus (12,”ACB”,3.24)：means keypad No. 12, KeyValue is "ACB", KeyTime is 3.24 seconds |

Remarks:

- If the option mode of a vote is selected as digit, the keypad LCD will show digits when pressed, but the programs still return value in letters.
- Optional(Selectable Number) and Options(Option Number)

  Optional > Options: Selectable number subjects to the number of options

  Optional < Options: Selectable number subjects to the number of optional.

### 5.4.4 Number

#### 5.4.4.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 2 | Mode | Long | 0 | no rules, enter up to 8 digits, decimal point counted as a digit | |
| | | | 1 | integer score from 0 to 100, with upper and lower bound, and default value | |
| 3 | ModifyMode | Long | 0 | Unmodifiable | The first press effective |
| | | | 1 | Modifiable | The last press effective |
| 4 | SecrecyMode | Long | 0 | Unclassified | |
| | | | 1 | Classified | After pressed tip, key value displayed on the LCD will disappear in a short delayed time. |
| 6 | Default | Long | X | (Min~Max) effective if Mode=1,default score value(Min~Max) | |
| 7 | Min | Long | X | (0-100) effective if Mode=1,minimum score(0-100) | |
| 8 | Max | Long | X | (0-100) effective if Mode=1,maximum score(0-100) | |
| 9 | StartMode | Long | 0 | Continue | The attributes of Start Number must be the same as the previous |
| | | | 1 | Empty then re-start | |

| | | | | | |
|---|---|---|---|---|---|
| | | | 2 | Re-submit and continue to start | ones. |

### 5.4.5 Method

#### 5.4.5.1 Start Number

| | |
|---|---|
| **Method** | Start ( ):String |
| **Use** | Start to input numbers |
| **Parameter Description** | None |
| **Return Value** | String： Character string<br>-1：Start failed, base connection attributes unset.<br>0： Started ; |
| **Notes** | |

#### 5.4.5.2 Stop Number

| | |
|---|---|
| **Method** | Stop( ):String |
| **Use** | Stop inputting numbers |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>=-1: Stop failed, base connection attributes unset.<br>=0： Stopped |
| **Notes** | |

### 5.4.6 Event

#### 5.4.6.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus(BaseTag:string,KeyID:Long,KeyValue:String, KeyTime:Double) |
| **Use** | This event will respond when the Start Number method is called, and return keypad ID and KeyVaule |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID: keypad ID<br>KeyValue： key values<br>KeyTime : key-press time (unit: second, the smallest precise time is 20ms) |
| **Notes** | KeyStatus (12, "99.01", 6) means keypad No.12, KeyValue is 99.01, KeyTime is 6 seconds. |

Remarks：Up to 10 digits, the decimal point counted as one digit.

## 5.5 RushAnswer

### 5.5.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 2 | StartMode | Long | 0 | Continue | The attributes of Start RusnAnswer must be the same as the previous ones. |
| | | | 1 | Empty then re-start | |
| | | | 2 | Re-submit and continue to start | |

### 5.5.2 Method

#### 5.5.2.1 Start RushAnswer

| | |
|---|---|
| **Method** | Start( ):String |
| **Use** | Start rush answer |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>-1：Start failed, base connection attributes unset.<br>0： Started； |
| **Notes** | Receipt of data will generate the KeyStatus event. |

#### 5.5.2.2 Stop RushAnswer

| | |
|---|---|
| **Method** | Stop( ):String |
| **Use** | Stop rush answer |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>-1: Stop failed, base connection attributes unset.<br>0： Stopped |
| **Notes** | |

### 5.5.3 Event

#### 5.5.3.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus(BaseTag:string,KeyID:Long,KeyValue:String,KeyTime: Double ) |
| **Use** | This event will respond when the Start RushAnswer method is called, and return keypad ID, KeyVaule and KeyTime. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： keypad ID<br>KeyValue： key values (1)<br>KeyTime : key-press time (unit: second, the smallest precise time is 20ms) |
| **Notes** | KeyStatus (12, "1", 3.24 ) means keypad No.12 is the fastest responder, its KeyTime is 3.24 seconds. |

## 5.6 SMS ( Message )

SMS alerts supporting the base station sends message to several keypads

### 5.6.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseManage object | |
| 2 | DownloadErrorKeyIDs | String | X | -2:Invalid download<br>-1: Base connection attributes unset.<br>0: Downloaded All failed<br>String: Otherwise，keypad ID strings of the failed ones.<br>Read-only attribute, automatically set when the download is stopped. | Keypad number string, separated by “,” |
| 3 | DownloadSuccessKeyIDs | String | X | -2: Invalid download<br>-1: Base connection attributes unset.<br>0： All download Success<br>String: Otherwise, Downloaded keypad ID string. | Keypad number string, separated by “,” |

| | | | | | |
|---|---|---|---|---|---|
| | | | | Read-only attribute, automatically set when the download is stopped. | |

### 5.6.2 Method

#### 5.6.2.1 Start SMS

| | |
|---|---|
| **Method** | Start (KeyIDs: String, Text:String):String |
| **Use** | Send instant message to keypads |
| **Parameter Description** | KeyIDs: KeyIDs: keypad number string, KeyIDs = "0" means sending to all keypads.<br>Text: 64 Chinese characters, that is 128 characters in maximum |
| **Return Value** | 0： Started<br>-1: Base connection failed.<br>-2: Invalid Keypad ID string<br>-3: Information overload |
| **Notes** | KeyIDs<>0， Return keypad sending state one by one and return.<br>Use Stop () method to stop sending. |

#### 5.6.2.2 Stop SMS

| | |
|---|---|
| **Method** | Stop( ) |
| **Use** | stop sending text message |
| **Parameter Description** | None |
| **Return Value** | None |
| **Notes** | |

### 5.6.3 Event

#### 5.6.3.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus (KeyID:Long, SendStatus:Long,) |
| **Use** | This event will respond to the calling of Start SMS method, and return keypad received status in the sequence of received time: NO. 1 received successfully, NO. 2 received successfully, NO. 3 received fail. |

| | |
|---|---|
| **Parameter Description** | KeyID： Keypad number. (= 0 download status,> 0 specified keypad status)<br>SendStatus： message sending status<br>= 1： Sent<br>=-1：Fail to send<br>= 0： End to send. |
| **Notes** | KeyStatus (1,-1)： Means keypad No.1 fails to receive the information<br>KeyStatus (2,1,)：Means keypad No.2 received the information<br>KeyStatus (0,0)：Means the sending is stopped, the successful/fail<br>keypad ID string is available. |

### 5.7 BusinessResearch (Hardware not supported Current)

#### 5.7.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseManage object | |
| 2 | NumberBegin | Long | X | Custom: Beginning number of vote items, range from1 to 65535. | The number could not exceed the downloaded number 1 ≤ X ≤ Y ≤ 65535 |
| 3 | NumberEnd | Long | X | Custom: Ending number of vote items, range from1 to 65535. | |
| 4 | StartMode | Long | 0 | Continue | The attributes of Start BussinessResearch must be the same as the previous ones. |
| | | | 1 | Empty then re-start | |
| | | | 2 | Re-submit and continue to start | |
| 5 | BatchMode | Long | 0 | consecutively numbered | consecutively or randomly numbered |
| | | | 1 | randomly numbered | |
| 6 | SecrecyMode | Long | 0 | Unclassified | After pressed tip, |

| | | | | | |
|---|---|---|---|---|---|
| | | | 1 | Classified | the key value displayed on the LCD will disappear in a short delayed time. |
| 7 | LessMode | Long | 0 | Less items can be submitted | Determine if all items must be selected before submission. |
| | | | 1 | Sufficient items are required to submit. | |
| 8 | Download ErrorKeyIDs | String | X | -2:Invalid download<br>-1: Base connection attributes unset.<br>0: Downloaded All failed<br>String: Otherwise，keypad ID strings of the failed ones.<br>Read-only attribute, automatically set when the download is stoped. | Keypad number string, separated by “,” |
| 9 | Download SuccessKeyIDs | String | X | -2:Invalid download<br>-1: Base connection attributes unset.<br>0： All download Success<br>String: Otherwise, Downloaded keypad ID string<br>Read-only attribute, automatically set when the download is stopped. | Keypad number string, separated by “,” |

### 5.7.2 Method

#### 5.7.2.1 Start Questionnaire Download

| | |
|---|---|
| **Method** | StartDownloadItems (KeyIDs:String ,DataBuf: OleVariant):String |
| **Use** | start downloading the questionnaire |
| **Parameter Description** | KeyIDs: String： To be downloaded keypad number string, separated by “,”, or said multiple consecutive keypad by "-"<br>DataBuf: OleVariant：DataBuf(M,N ) . Download data, two-dimensional array of characters DataBuf (M, N).<br>M: Number of Item names (0-X). X: If item names are less than seven Chinese characters, 4096 items can be stored together. If item names are below the average of 32 Chinese characters, about 1000 items can be stored.<br>N:2 (0 = rule type 1 = rule number, 2 = item name string)<br>Rule Type:<br>5 = single choice, rule number: Maximum options, up to 1 out of 8<br>6 = multiple choice, rule number: Maximum options, up to 8 out of 8<br>7 = sequence, rule number: up to 8 out of 8<br>8=grade, rule number: Maximum 8 grades<br>9 = blank filling, rule number: 1 any letters,2 digits(not support)<br>10 = Judge, rule number: 1 yes/no, 2 true/false<br>For example:：DataBuf(1,2) 2 items<br>DataBuf(0，0)= “5” (single choice)<br>DataBuf(0，1)= “3” (choose 1 out of 3)<br>DataBuf(0，2)= "Item 1" (name)<br>DataBuf(1，0)= “6” (multiple choice)<br>DataBuf(1，1)= “4” (choose 4 out of 4)<br>DataBuf(1，2)= "Item 2" (name) |
| **Return Value** | String： character string<br>=-1：Start failed, base connection attributes unset.<br>=0： Started |
| **Notes** | Keypad StatusDataDownload。<br>The keypad state ——event Keypad StatusDataDownload will be generated after start. |

#### 5.7.2.2 Start Random Items Index Download

| | |
|---|---|
| **Method** | StartDownloadRandomItems(KeyIDs: String ,DataBuf: OleVariant):String |
| **Use** | Download the specified item number list. |
| **Parameter Description** | KeyIDs: To be downloaded keypad number string, separated by “,”, or said multiple consecutive keypad by "-"<br>DataBuf: Download data one-dimensional array of characters DataBuf (M).<br>M: Random item number (0-X). X-item name number -1.<br>For example: DataBuf (1) random item number is 2, to vote for item 1,3. |

| | |
|---|---|
| | DataBuf(0) =“1”<br>DataBuf(1)= “3” |
| **Return Value** | String： Start download status<br>0: Started<br>-1: Base connection attributes unset.<br>-2: invalid keypad ID string.<br>-3: Failed to download the random item index or index exceeds the maximum range. |
| **Notes** | The random item list actually is an index of the batch item list, operating on specified items in the batch list, so the batch item list must be downloaded firstly. |

#### 5.7.2.3 Stop Questionnaire Download

| | |
|---|---|
| **Method** | StopDownload( ) |
| **Use** | stop downloading data |
| **Parameter Description** | None |
| **Return Value** | None |
| **Notes** | |

#### 5.7.2.4 Start BusinessResearch

| | |
|---|---|
| **Method** | Start( ):String |
| **Use** | To start a business research |
| **Parameter Description** | None |
| **Return Value** | String： Character string<br>=-1：Start failed, base connection attributes unset.<br>=0：Started |
| **Notes** | Receipt of data will generate the KeyStatus event. |

#### 5.7.2.5 Stop BusinessResearch

| | |
|---|---|
| **Method** | Stop( ):String |
| **Use** | stop a business research |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>=-1: Stop failed, base connection attributes unset.<br>=0： Stopped |

| | |
|---|---|
| **Notes** | If the base station connection fails after BusinessResearch stops, reconnect the base station, the system will connect automatically, and recovery to the stopped status. |

### 5.7.3 Event

#### 5.7.3.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus(BaseTag:string,KeyID:Long,CommitOK:Long,KeyValue:String) |
| **Use** | This event will respond when the Start BusinessResearch method is called, and return keypad ID, CommitOK and KeyVaule. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： ID keypad ID<br>CommitOK：KeyValue submission status (0: not submitted, 1: submitted)<br>KeyValue：key values |
| **Notes** | |

#### 5.7.3.2 Download Status

| | |
|---|---|
| **Event** | DataDownload (KeyID:Long,DownloadStatus:Long,DownloadInfo: String) |
| **Use** | This event will respond to the calling of StartQuestionnairDownload method, and return keypad download status in the sequence of download time: NO. 1 downloaded successfully, NO. 2 downloaded successfully, NO. 3 failed to download. |
| **Parameter Description** | KeyID: Keypad Number. (= 0, download status ,> 0 specified Keypad Status)<br>DownloadStatus： download status<br>= 1： Download successfully.<br>=-1： Download failed<br>= 0： Download complete<br><br>DownloadInfo :Download information (BEGIN, current page/total, STOP) |
| **Notes** | DataDownload (2,1, “1/4”), Means keypad NO. 2 succeed to download the first page.<br>DataDownload (3,-1, “1/4”), Means keypad NO.3 fail to download the first page.<br>DataDownload (2,1, “STOP”),means keypad No. 2 downloaded successfully<br>DataDownload (0,0, “STOP”) means all keypads downloaded successfully<br>Download failure is often caused by offline keypad or internal FLASH problem. Try to re-downlaod after the download task is over.<br>When the last keypad is downloaded, internal download automatically |

| | |
|---|---|
| | stops and EventDataDownload (0, 0,"STOP") will be generated, indicating end of the download task, and then successful/fail keypad ID string is available. |

### 5.8 Request

#### 5.8.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 2 | Enabled | Boolean | False | Stop | No event generated. |
| | | | True | Start | Receipt of data will generate event. |

#### 5.8.2 Event

##### 5.8.2.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus (BaseTag:string,KeyID:Long,ReqType:Long, ReqData:Long) |
| **Use** | This event will respond to keypad request, and return KeyID, request mode data. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： keypad ID<br>ReqType： Request mode<br>=1： Service request<br>=2： Speech request<br>=3: Put up a question<br><br>ReqData：Request data, set as 1 currently. |
| **Notes** | KeyStatus (12,2, 1)， means keypad No. 12 requests for a speech |
| **Remarks** | |

#### 5.8.2.2 Chairman Control Instruction

| | |
|---|---|
| **Event** | ChairControl (BaseTag:string,KeyID:Long,ReqType:Long, ReqInfo: String) |
| **Use** | This event will respond to keypad request, and return KeyID, request mode data. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： keypad ID<br>ReqType： Request mode<br>=1： Common key code, sending seat number only<br>ReqInfo： Button key codes |
| **Notes** | KeyStatus (12,1, 1)， Means keypad no. 12's key code is 1. |
| **Remarks** | |

### 5.9 HardwareMonitor

#### 5.9.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 2 | Enabled | Boolean | False | Stop | No event generated. |
| | | | True | Start | Generates KeyStatus event, it will slow down response time of other applications. Recommend to enable it when less keypad and no other applications started. And firstly set KeyReportMode as report in the base station voting basic characteristic. |

#### 5.9.2 Event

##### 5.9.2.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus (BaseTag:string,KeyID:Long,InputStatus:Long,ChargeStatus:Long,BatteryVoltage:Double, RfIntensity:Long) |

| | |
|---|---|
| **Use** | Return Keypad ID,InputStatus, ChargeStatus, BatteryVoltage, RfIntensity, and offline state. Generally enable the keypad status report setting of Basic Characteristics of Voting System. Not receiving data in about 10 seconds is offline. And only received state keypad can produce offline state. Initially all keypads are offline. Only state change generates event. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： keypad ID<br>InputStatus： input status, key value submission status (0: no key-press since the beginning, 1: uncommitted, 2: committed, -1:Offline or failure)<br>ChargeStatus： charging status (0: not charging, 1: charging)<br>BatteryVoltage： battery voltage, in volts<br>RfIntensity： RF receiving signal strength, in –dBm |
| **Notes** | No key is pressed on keypad no.12 since the beginning, not charging, battery voltage is 3.6V, RF receiving signal strength is -10 dBm. . |
| **Remarks** | Only online state is received, InputStatus: = 0, and other parameters are -1. |

### 5.10 HardwareTest

#### 5.10.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseConnection object | |
| 2 | Mode | Long | 0 | Status report | Keypad monitor status |
| | | | 1 | Single choice simulation to choose 1 out of 3 | keypad 1votes A,<br>Keypad 2 votes B,<br>Keypad 3 votes C,<br>Keypad 4 votes A,<br>Keypad 5 votes B<br>... And so on |
| 3 | FirstCommitTime | Long | X | 0~255 seconds | The first random simulated key-press time after start simulation (0: indicating report status immediately) |
| 4 | IntervalCommitTime | Long | X | 0~255 seconds | the time interval to resubmit since the last submitted (0, not resubmit, submit once only) |
| 5 | StartMode | Long | 0 | Continue | The attributes of Start |

| | | | | | |
|---|---|---|---|---|---|
| | | | 1 | Empty then re-start | HardwareTest must be the same as the previous ones. |
| | | | 2 | Re-submit<br>and continue to start | |

### 5.10.2 Method

#### 5.10.2.1 Start Simulation Test

| | |
|---|---|
| **Method** | Start ( ):String |
| **Use** | start a simulation test |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>-1：Start failed, base connection attributes unset.<br>0： Started |
| **Notes** | Mode=0， EventKeyMonitorStatus<br>Mode=1， EventKeyTestStatus<br>Mode=0, the received data will generate event EventKeyMonitorStatus<br>Mode=1, the received data will generate event EventKeyTestStatus |

#### 5.10.2.2 Stop HardwareTest

| | |
|---|---|
| **Method** | Stop ( ):String |
| **Use** | stop simulation test |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>-1: Stop failed, base connection attributes unset.<br>0：Stopped |
| **Notes** | |

### 5.10.3 Event

#### 5.10.3.1 Key Test

| | |
|---|---|
| **Event** | KeyTestStatus (BaseTag:string,KeyID:Long,KeyValue:String) |
| **Use** | This event will respond when the StartSimulationTest method is called, and return keypad ID and KeyVaule. |

| | |
|---|---|
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： ID Keypad ID<br>KeyValue： Key values |
| **Notes** | KeyTestStatus (12,1)： means the KeyValue of keypad no.12 is 1 |

#### 5.10.3.2 Keypad Status Test

| | |
|---|---|
| **Event** | KeyMonitorStatus (BaseTag:string,KeyID:Long,InputStatus:Long, ChargeStatus:Long, BatteryVoltage:Double, RfIntensity:Long) |
| **Use** | This event will repond when StartMonitor method is called, and return KeyID, InputState, ChargeState, BatteryVoltage and RfIntensit. |
| **Parameter Description** | BaseTag： Base station tag<br>KeyID： keypad ID<br>InputStatus： input status, key value submission status (0: no key-press since the beginning, 1: uncommitted, 2: committed)<br>ChargeStatus： charging status (0: not charging, 1: charging)<br>BatteryVoltage： battery voltage, in volts<br>RfIntensity： RF receiving signal strength, in -dBm |
| **Notes** | KeyStatus (12,0,0,3.6,1) , Means no key is pressed on keypad no.12 since the beginning, not charging, battery voltage is 3.6V, RF receiving signal strength is -1 dBm |

### 5.11 Vote

#### 5.11.1 Attributes

| No. | Attribute Name | Type | Assignment | Assignment Meaning | Remarks |
|---|---|---|---|---|---|
| 1 | BaseConnection | BaseConnection | X | BaseManage object | |
| 2 | Mode | Long | 0 | 3-key vote | Yes/No/Abstain |
| | | | 1 | 2-key vote | Yes/No |
| 3 | Modify Mode | Long | 0 | Unmodifiable | The first press effective |
| | | | 1 | Modifiable | The last press effective |
| 4 | Secrecy Mode | Long | 0 | Unclassified | |
| | | | 1 | Classified | After pressed tip, key value displayed on the LCD will disappear in a short delayed time. |

| | | | | | |
|---|---|---|---|---|---|
| 5 | StartMode | Long | 0 | Continue | The attributes of Start Vote must be the same as the previous ones. |
| | | | 1 | Empty then re-start | |
| | | | 2 | Re-submit and continue to start | The attributes of Start Vote must be the same as the previous ones. |

### 5.11.2 Method

#### 5.11.2.1 Start Vote

| | |
|---|---|
| **Method** | Start( ):String |
| **Use** | start a vote |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>-1：Start failed, base connection attributes unset.<br>0： Started |
| **Notes** | |

#### 5.11.2.2 Stop Vote

| | |
|---|---|
| **Method** | Stop ():String |
| **Use** | stop a vote |
| **Parameter Description** | No parameter |
| **Return Value** | String： Character string<br>=-1: Stop failed, base connection attributes unset.<br>=0： Stopped |
| **Notes** | If the base station connection fails after choice stops, reconnect the base station, the system will connect automatically, and recovery to the stopped status. |

#### 5.11.2.3 Show Vote Results

| | |
|---|---|
| **Method** | ShowResult (KeyID, PassStatus, NoKey, Yes, No, Abs: Long) |
| **Use** | display vote results |
| **Parameter Description** | KeyID： To be showed keypad ID, the meanings defined as below:<br>=0：All keypads<br>>0： specified Keypad ID<br>PassStatus：Passing status<br>=0： Not show |

| | |
|---|---|
| | =1： Passed<br>=2： Not pass<br>NoKey： Unvoted number<br>Yes： In favor number<br>No： Opposed number<br>Abs： Abstained number |
| **Return Value** | No return value |
| **Notes** | Generally it's called when the vote is stopped, participant (0-65534, -1 means not show), such as a 2-key vote, abstained number is set to -1, Indicating abstained number not show |

### 5.11.3 Event

#### 5.11.3.1 Keypad Status

| | |
|---|---|
| **Event** | KeyStatus (BaseTag:string,KeyID:Long, KeyValue:String) |
| **Use** | This event will respond when StartVote method is called, and return KeyID and KeyValue. |
| **Parameter Description** | BaseTag： Base station tag(currently only supports the base station number)<br>KeyID: ID keypad ID<br>KeyValue: key values |
| **Notes** | Meaning of keys: 1: Yes, 2: No, 3: Abstain<br>KeyStatus (12,"1")： means keypad no.l2 votes in favour. |

## 5.12 Others

### 5.12.1 Attributes Startup Mode - Explanatory

- The attributes of Start must be the same as the previous ones. If the previous data is sent successfully, no need to send again.
- Empty then re-start: reset the last voting data and start a new vote.
- Re-submit and continue to start：
  - re-send the last vote data;
  - Voted keypads in modifiable mode can continue to vote.