



## PAUMAX OY · AINA WIRELESS INC

AINA WIRELESS • TEHDASKATU 6, 3RD FLOOR • FI-24100 • SUOMI-FINLAND • [WWW.AINA-WIRELESS.COM](http://WWW.AINA-WIRELESS.COM)

AINA WIRELESS INC • 867 BOYLSTON ST. 5TH FLOOR • BOSTON (MA) 02116 • USA

☐ +358 (40) 322 6717 ✉ [INFO@AINA-WIRELESS.COM](mailto:INFO@AINA-WIRELESS.COM)

# COMMUNICATION PROTOCOL AINA WIRELESS

## SMART BUTTON

Version 0.1

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## 1. Scope

This document defines wireless device control protocol. The protocol aims to provide secured control link from wireless device to application with high level acknowledgement, minimal latency and minimal radio air time.

## 2. Features and functionality

Smart button, when BLE communication is enabled in phone and application, operates as a BLE peripheral device and provides custom Characteristics for a phone's application. The application subscribes to receive Notifications from the smart button to enable instant message delivery, such as Push-to-Talk (PTT) keying and writes characteristics in order to control smart button's features, such as double tap activation and led control.



### 3. BLE Friendly name, services and characteristics

BLE connection allows two-way communication with compatible phone. Buttons and other state information is available for phone and phone can set certain features on/off as required. Smart button will use a unique generated service identification number.

SERVICE 128b UUID: **127FACE1-CB21-11E5-93D0-0002A5D5C51B**

When scanning LE devices with PC or phone, you see a list of available BLE devices and their friendly names. Friendly name of the smart button starts with **ASB** following by 6-digit unique address, for example **ASB99C2F0**.

#### 3.1. Button mask

This characteristic shows smart button's button press status. It is defined as 8-bit unsigned integer, with following bit definitions:

BUTTON	Bit[0...7]	Hex value
PTT1	0	0x01
EMERG	1	0x02
PTT2	2	0x04
DOWN	3	0x08
UP	4	0x10
LEFT	5	0x20
RIGHT	6	0x40
HEARTBEAT	7	0x80

READ/NOTIFY 16b UUID: **0xBEEF**

Button status bits reflect the current pressed state of the buttons. Displaying the button status will not disable its normal operation regardless what the subscriber will do with the button status information received here. Heartbeat bit will toggle every ~250ms when any button is pressed.

### 3.2. Led mask

This characteristic allows the control of smart button's leds. It is an 8-bit unsigned integer, with following bit definitions:

LED	Bit[0...7]	Hex value
RED (SOLID ON)	0	0x01
GREEN (SOLID ON)	1	0x02
AMBER (SOLID ON)	2	0x04
RED (SLIDE ON)	3	0x08
GREEN (SLIDE ON)	4	0x10
AMBER (SLIDE ON)	5	0x20
RESERVED 1	6	0x40
RESERVED 2	7	0x80

READ/WRITE/NOTIFY 16b UUID: **0xDEAD**

Led status bits reflect the current state of the leds. Only one led at the time can be turned on, so there is no need to turn led off when changing led color, this is handled by the smart button. Leds can be turned on immediately (Solid on) or led can slide on (ramp up). When turning led off, it will follow the turning on state (Solid on → solid off & slide on → slide off).

### 3.3. Config mask

This characteristic allows the control of various smart button's features. It is an 8-bit unsigned integer, with following bit definitions:

FEATURE	Bit[0...7]	Hex value
RESERVED 1	0	0x01
RESERVED 2	1	0x02
RESERVED 3	2	0x04
RESERVED 4	3	0x08
RESERVED 5	4	0x10
RESERVED 6	5	0x20
RESERVED 7	6	0x40
RESERVED 8	7	0x80

READ/WRITE 16b UUID: **0x50DA**

Config status bits reflects the current choices of the features.

### 3.4. Status mask

This characteristic shows the status' of smart button. It is an 8-bit unsigned integer, with following bit definitions:

FEATURE	Bit[0...7]	Hex value
RESERVED 1	0	0x01
RESERVED 2	1	0x02
RESERVED 3	2	0x04
RESERVED 4	3	0x08
RESERVED 5	4	0x10
RESERVED 6	5	0x20
RESERVED 7	6	0x40
LOW BATTERY	7	0x80

READ/WRITE 16b UUID: **0x57A7**

LOW BATTERY; this bit is set when battery voltage level drops below 2.3 V.

### 3.5. Accelerometer mask

This characteristic shows the status' of smart button. It is an array of 8-bit unsigned integers, with following definitions:

FEATURE	Array[0...7]	Possible value
RESERVED 1	0	0 – 255
RESERVED 2	1	0 – 255
RESERVED 3	2	0 – 255
RESERVED 4	3	0 – 255
RESERVED 5	4	0 – 255
RESERVED 6	5	0 – 255
RESERVED 7	6	0 – 255
RESERVED 8	7	0 – 255

READ/WRITE 16b UUID: **0x8652**



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### 3.6. SW version characteristic

This characteristic will allow to read the smart button's internal SW version (array of 8-bit unsigned integers).

READ 16b UUID: **0xC0FF**