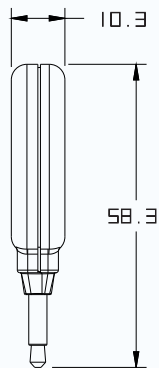
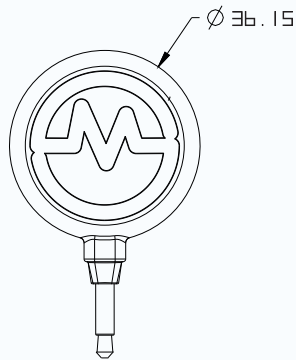
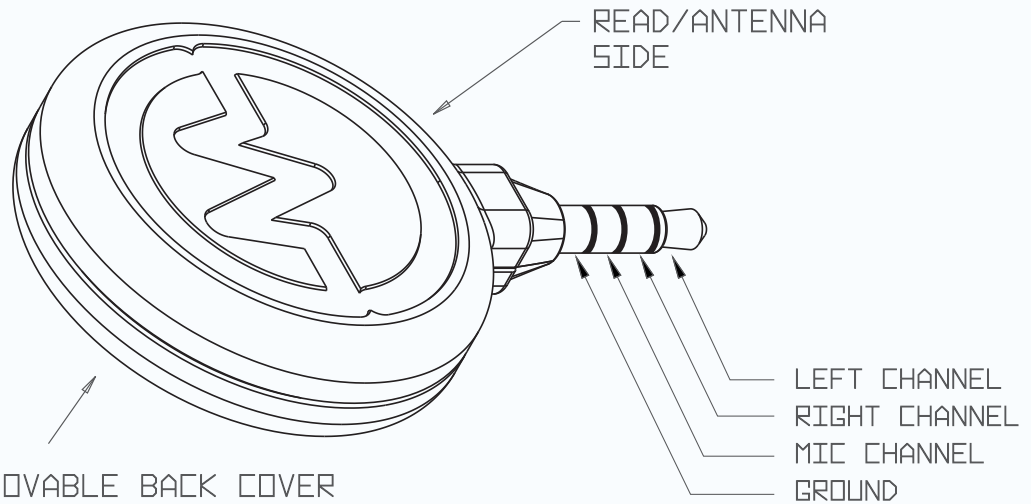
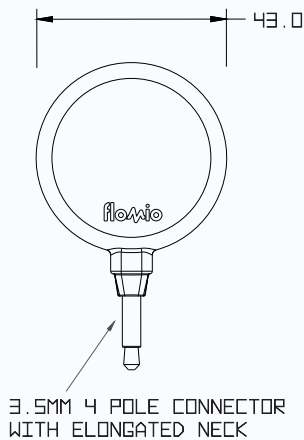




PART NO.  
**000002**

| REVISIONS |   | ECN# | REV | DESCRIPTION | DRAWN         | DATE     | CHECKED    | DATE     | APPROVED            | DATE     |
|-----------|---|------|-----|-------------|---------------|----------|------------|----------|---------------------|----------|
| -         | A |      |     | RELEASED    | Felipe Varela | 06/15/12 | Timo Ronan | 11/01/12 | Richard Grundy (KS) | 11/02/12 |



**FEATURES**

- WEIGHT:** 1oz
- DIMENSIONS:** 58.3mm X 43mm X 10.3mm
- BATTERY:** CR2032 - 3V 250mAh
- PROCESSOR:** MSP430 Low Power MCU @ 6.78MHz
- POWER CONSUMPTION:**
  - Standby (500ms interval) - 1uAs
  - Poll (3ms interval) - 9.6uAs
  - UUID Read (6ms interval) - 415uAs
- USAGE:**
  - Continuous polling @ 10Hz: ~3 months.
  - Typical Scenario (36000 polls x 1 read per hour): ~
- RF COMMUNICATION:** TI TRF7970 @13.56MHz
- RF PROTOCOLS:**
  - ISO14443A/B
  - ISO15693
  - ISO18092
- AUDIO JACK:** 3.5mm 4 pole connector with elongated neck

- AUDIO LINK:** Manchester encoded UART data stream (no modulation)
- DATA THROUGHPUT:**
  - iPhone3G & 3GS - 12 bytes/sec
  - iPhone4G & 4GS - 31 bytes/sec
  - iPad2 & iPad3 - 80 bytes/sec
- RAM BUFFER SIZE:** 412 bytes
- LED:** Red
- PCB:** 1.25" diameter in a circular design.
  - Vias: 8 mil (which will be laser cut)
  - Traces: 10 mil traces
  - Parts: 0402 w/ 0.5mm pitch,
  - Layers: 4-layer board.
  - Boards: 0.059 thickness FR4
- ANTENNA DESIGN:**
  - Multiple tuned antennas for wide selection of NFC inlays
- ENERGY HARVESTING CIRCUIT (OPTIONAL, NOT INCLUDED):**
  - Average supply: 7.4 mW per channel Vcc = 3.3V
  - 2.24mA = 7.4mW / 3.3V --> @ 10uAs polling power cost, max unsubsidized polling rate = 23Hz (theoretical).

|   |               |          |  |             |                 |       |        |
|---|---------------|----------|--|-------------|-----------------|-------|--------|
| <b>TOLERANCES:</b><br>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY. | DRAWN BY      | DATE     | DRAWING TITLE                                |             |                 |       |        |
|   | Felipe Varela | 06/15/12 | <h1 style="text-align: center;">FloJack</h1> |             |                 |       |        |
|   | CHECKED BY    | DATE     |  |             |                 |       |        |
|   | Timo Ronan    | 11/01/12 | SIZE   | DWG NO.     | ELECTRONIC FILE | REV   |        |
| APPROVED BY   | DATE          | <b>A</b> | <b>00000002</b>                              | FLOJACK_DWG | A               |       |        |
| Richard Grundy (KS)   | 11/02/12      | SCALE    | NTA  | U O M       | Millimeters     | SHEET | 1 of 3 |

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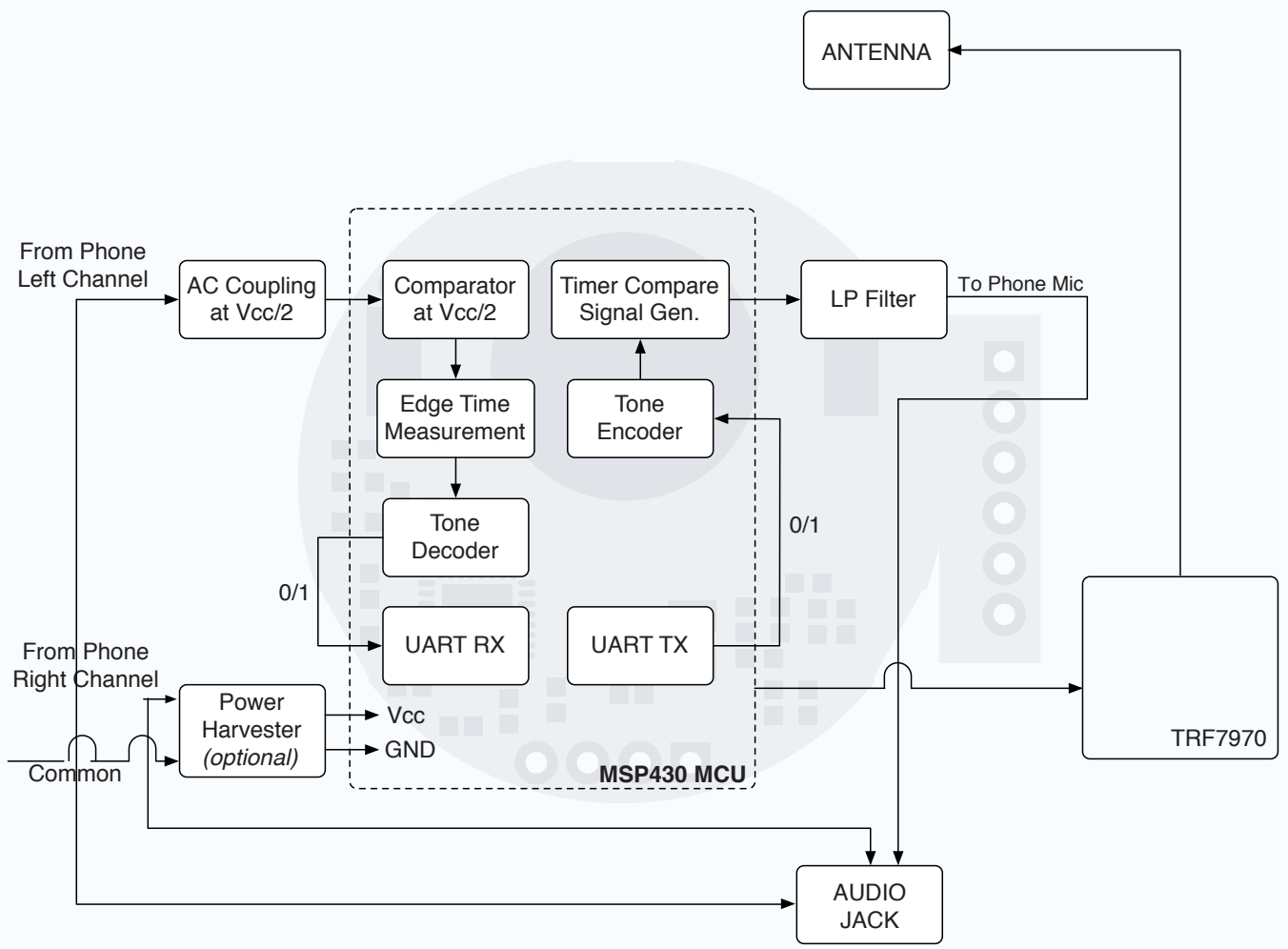
PART NO.

000002

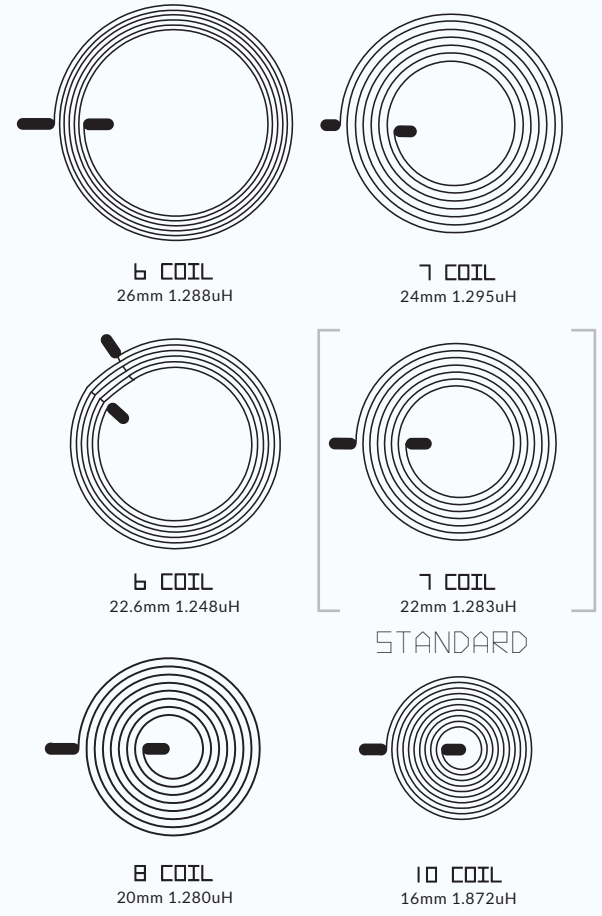
REVISIONS

| ECN# | REV | DESCRIPTION | DRAWN         | DATE     | CHECKED    | DATE     | APPROVED            | DATE     |
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BLOCK DIAGRAM



ANTENNA DESIGN



The 7 COIL (22mm 1.283uH) antenna is included with all FloJacks. However, customers can choose which antenna best suits their needs.

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| CHECKED BY:         | DATE:    |
| Timo Ronan          | 11/01/12 |
| APPROVED BY:        | DATE:    |
| Richard Grundy (KS) | 11/02/12 |

|                |                 |                |     |                 |             |
|----------------|-----------------|----------------|-----|-----------------|-------------|
| DRAWING TITLE: |                 | <b>FloJack</b> |     | ELECTRONIC FILE | REV         |
| SIZE           | DWG NO.         |                |     |                 |             |
| <b>A</b>       | <b>00000002</b> | SCALE:         | NTA | U.O.M.:         | Millimeters |
| SHEET:         |                 | 2 of 3         |     |                 |             |



PART NO.

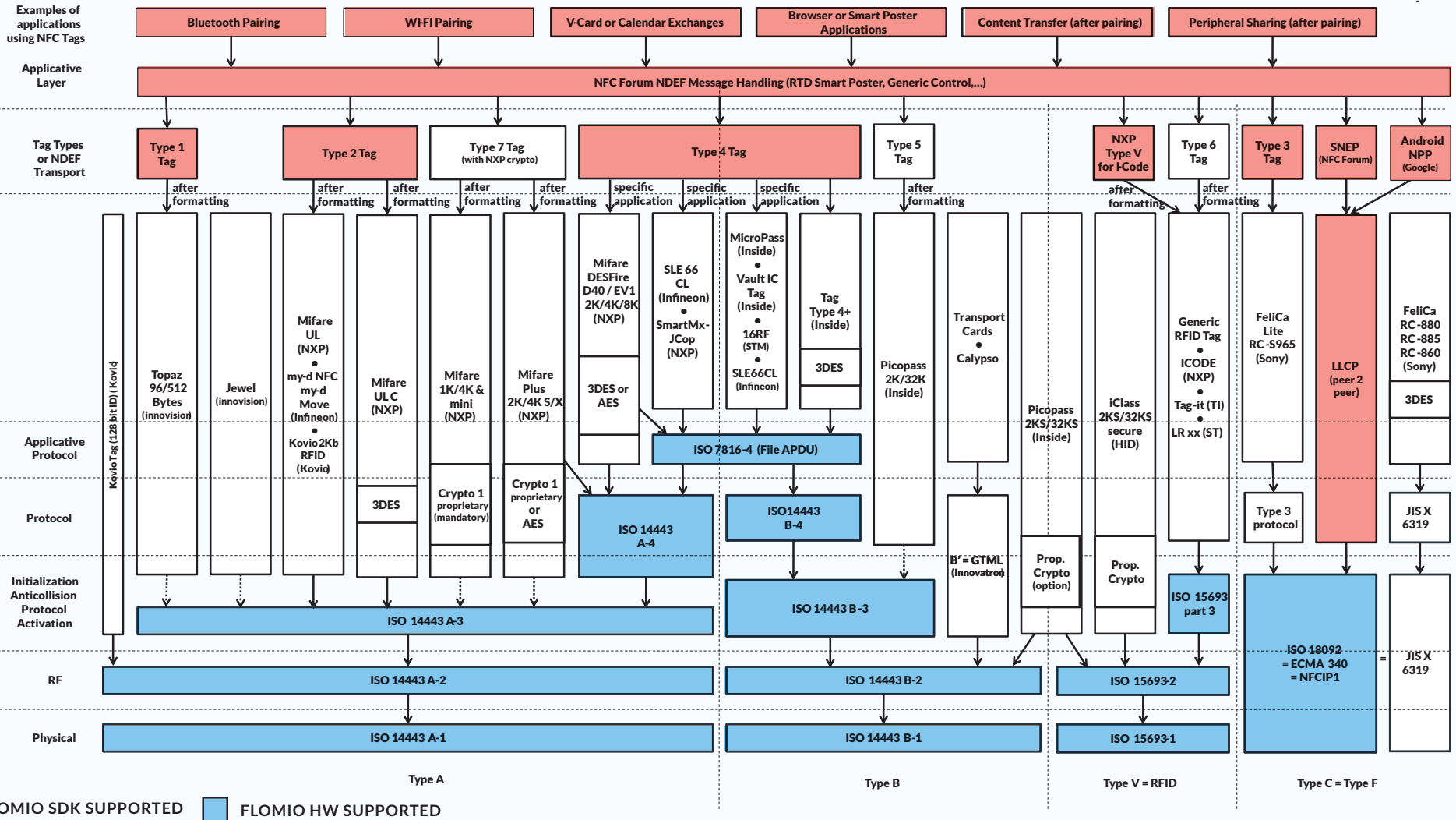
000002

REVISIONS

| ECN# | REV | DESCRIPTION | DRAWN         | DATE     | CHECKED    | DATE     | APPROVED            | DATE     |
|------|-----|-------------|---------------|----------|------------|----------|---------------------|----------|
| -    | A   | RELEASED    | Felipe Varela | 06/15/12 | Timo Ronan | 11/01/12 | Ricahrd Grundy (KS) | 11/02/12 |

FLOJACK NFC SPECTRUM

Flomio's FloJack solution consists of RF protocols (HW) and an iOS SDK to conform to the NFC Forum standards. The following chart describes the level of coverage that the FloJack has in the NFC ecosystem and the vendor specific tags that can be interacted with.



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| Felipe Varela       | 06/15/12 |
| CHECKED BY          | DATE     |
| Timo Ronan          | 11/01/12 |
| APPROVED BY         | DATE     |
| Richard Grundy (KS) | 11/02/12 |

|               |                 |                    |          |
|---------------|-----------------|--------------------|----------|
| DRAWING TITLE |                 | <b>FloJack</b>     |          |
| SIZE          | DWG NO.         | ELECTRONIC FILE    | REV      |
| <b>A</b>      | <b>00000002</b> | <b>FLOJACK_DWG</b> | <b>A</b> |
| SCALE         | UNIT            | SHEET              |          |
| NTA           | Millimeters     | 3 of 3             |          |

# SDK - IOS INTERFACE

```

@interface FJNFCAAdapter : NSObject<FJNFCAServiceDelegate>

@property (nonatomic, strong) id <FJNFCAAdapterDelegate> delegate;
@property (nonatomic) BOOL deviceHasVolumeCap;
@property (nonatomic) BOOL pollFor14443aTags;
@property (nonatomic) BOOL pollFor15693Tags;
@property (nonatomic) BOOL pollForFelicaTags;
@property (nonatomic) BOOL standaloneMode;

// Set the tag polling rate in milliseconds. Value must be in range [0, 6375] and an increment of 25.
@property (nonatomic) NSInteger pollPeriod;

- (id)init;
- (void)initializeFloJackDevice;
- (BOOL)isFloJackPluggedIn;
- (void)getFirmwareVersion;
- (FJAudioPlayer *)getFJAudioPlayer;
- (void)getHardwareVersion;
- (void)getSnifferThresh;
- (void)getSnifferCalib;
- (void)setModeReadTagUID;
- (void)setModeReadTagUIDAndNDEF;
- (void)setModeReadTagData;
- (void)setModeWriteTagWithNdefMessage:(FJNDEFMessage *)theNDEFMessage;
- (void)setModeWriteTagWithPreviousNdefMessage;
- (void)sendMessageDataToHost:(NSData *)data;
- (void)sendMessageToHost:(FJMessage *)theMessage;
- (void)sendRawMessageToHost:(UInt8[])theMessage;
- (void)setIncrementSnifferThreshold:(UInt16)incrementAmount;
- (void)setDecrementSnifferThreshold:(UInt16)decrementAmount;
- (void)sendResetSnifferThreshold; // method for last Sniffer Threshold command (no argument)
- (void)setMaxSnifferThreshold:(UInt16)maxThreshold;

@end

#pragma mark - NFC Adapter Protocol

@protocol FJNFCAAdapterDelegate<NSObject>
@required
- (void)nfcAdapter:(FJNFCAAdapter *)nfcAdapter didScanTag:(FJNFCTag *)theNfcTag;
- (void)nfcAdapter:(FJNFCAAdapter *)nfcAdapter didWriteTagAndStatusWas:(NSInteger)statusCode;
- (void)nfcAdapter:(FJNFCAAdapter *)nfcAdapter didHaveStatus:(NSInteger)statusCode;
@optional
- (void)nfcAdapter:(FJNFCAAdapter *)nfcAdapter didReceiveFirmwareVersion:(NSString *)theVersionNumber;
- (void)nfcAdapter:(FJNFCAAdapter *)nfcAdapter didReceiveHardwareVersion:(NSString *)theVersionNumber;
- (void)nfcAdapter:(FJNFCAAdapter *)nfcAdapter didReceiveSnifferThresh:(NSString *)theSnifferValue;
- (void)nfcAdapter:(FJNFCAAdapter *)nfcAdapter didReceiveSnifferCalib:(NSString *)theCalibValues;
@end

```

# FloJack Message Protocol

***Date Created: June 11, 2012***  
***Version: Rev 6.1***

## Revision History

| Date       | Version | Author | Description  |
|------------|---------|--------|--|
| 06/11/2012 | Rev 1.0 | Flomie | Initial Draft.   |
| 06/15/2012 | Rev 2.0 | Flomie | Added Definition section and detail descriptions for each opcode.          |
| 08/27/2012 | Rev 3.0 | Flomie | Added new sections.  |
| 11/02/2012 | Rev 4.0 | Flomie | Removed track changes formatting.  |
| 11/04/2012 | Rev 5.0 | Flomie | Updated document layout and formatting.                                    |
| 11/24/2012 | Rev 5.1 | Flomie | Added sections 3.18 – 3.20.  |
| 08/10/2013 | Rev 6.0 | Flomie | Added sections 3.21 – 3.23. Added Sniffer support to sections 3.1 and 3.2. |
| 08/24/2013 | Rev 6.1 | Flomie | Added Sniffer Enable to section 3.23.                                      |
|            |         |        |  |

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# 1 Introduction

## 1.1 Purpose

This purpose of this document is to describe the data communication interface of the Flomio FloJack NFC reader. The document will discuss the method of communication and the message opcodes above the driver layer.

## 1.2 Scope

This document is intended for developers that want to interface to the FloJack from a PC or mobile device. The main focus will be on the message structure and the details of each message supported.

## 1.3 Definitions

- ⤴ Accessory – FloJack NFC reader that plugs into 3.5mm 4 pole audio jack.
- ⤴ Client - any PC or mobile device that communicates to the Accessory through an audio jack interface.
- ⤴ Interface - audio jack port used by Accessory and Client to exchange data. Implements virtual UART with Manchester encoding.
- ⤴ Active mode - accessory is connected to Client that can actively exchange messages
- ⤴ Free mode - accessory is disconnected from anything and carried freely.
- ⤴ Carry mode - accessory is connected to a terminator like a key chain that grasps the audio jack tightly
- ⤴ Passive tags - NFC tags that are battery-less
- ⤴ Active peers - NFC readers that have batteries and operate in peer-to-peer mode using the Client

## 1.4 Overview

The FloJack device supports bidirectional serial communication with Client over an audio jack interface. Digital communication is accomplished by using Manchester encoded UART data stream. Manchester encoding works by sending 01 for every 1 and 10 for every 0. The Accessory transmits to the Client over the Interface using the microphone port of the four pole audio jack and receives data from the left channel port. The right channel is currently reserved for future use.

All messages sent between the Accessory and Client will use the message format defined in this document. The message format will consist of an opcode, length, data, and CRC checksum. The Client and Accessory will also support ACK/NAKING each message which is configurable by the Client.



## 2 Message Format

### 2.1 Structure:

The Accessory and Client will support a maximum message length of 256 bytes where 3 bytes are allocated for the message overhead, allowing for a total payload of 253 bytes. The message is defined as follows:

| Opcode | Length | Data/Sub-Opcode | CRC    |
|--------|--------|-----------------|--------|
| 1 Byte | 1 Byte | N Bytes         | 1 Byte |

#### 2.1.1 Opcode

The Opcode field is a 1 byte value that indicates the message being sent.

#### 2.1.2 Length

The Length field is a 1 byte value that sums the bytes for the total message. The Length field will always be a minimum of 4 bytes (3 overhead bytes + N Data bytes where N is greater than 0).

#### 2.1.3 Data/Sub-Opcode

This field is a variable length field and may contain either the payload data for the message, a sub-opcode, or both in the case of a response message. The payload structure is dependent on the value in the Opcode field and specified in the definition section of the corresponding Opcode.

#### 2.1.4 CRC

The CRC field is 1 byte checksum for the total message. The checksum is calculated by Exclusive ORing the entire message. After receiving a message, the receiving device is responsible for validating the checksum before executing. If the checksum doesn't match the message is thrown out.

## 3 Message Opcodes

### 3.1 Accessory Status

Originator: Client only.

This command allows the Client to query the device for its status. There are specific sub-opcodes for each type of status that can be queried individually or all can be requested with one request.

|                   | Opcode | Length | Sub-Opcode | CRC  |
|-------------------|--------|--------|------------|------|
| All               | 0x01   | 0x04   | 0x00       | 0x05 |
| HW Revision       | 0x01   | 0x04   | 0x01       | 0x04 |
| SW Revision       | 0x01   | 0x04   | 0x02       | 0x07 |
| Battery           | 0x01   | 0x04   | 0x03       | 0x06 |
| Sniff Threshold   | 0x01   | 0x04   | 0x04       | 0x01 |
| Sniff Calibration | 0x01   | 0x04   | 0x05       | 0x00 |
| TBD               | 0x01   | TBD    | TBD        | TBD  |

### 3.2 Accessory Status Response

This command allows the Accessory to respond to the Client's request for status.

|                              | Opcode | Length   | Sub-Opcode | Data     | CRC      |
|------------------------------|--------|----------|------------|----------|----------|
| All                          | 0x01   | Variable | 0x00       | Variable | Variable |
| HW Revision (2 bytes)        | 0x01   | 0x06     | 0x01       | Variable | Variable |
| SW Revision (2 bytes)        | 0x01   | 0x06     | 0x02       | Variable | Variable |
| Battery (1 byte)             | 0x01   | 0x05     | 0x03       | TBD      | Variable |
| Sniff Threshold              | 0x01   | 0x06     | 0x04       | Variable | Variable |
| Sniff Calibration (17 Words) | 0x01   | 0x24     | 0x05       | Variable | Variable |
| TBD                          | 0x01   | TBD      | TBD        | TBD      | TBD      |

When **All** status updates are requested the message will be returned in an extended format where the Data/Sub-Opcode field will contain all possible each Sub-Opcode and it's corresponding Data followed by the next Sub-Opcode and Data. This pattern repeats until Sub-Opcodes are represented. The Length field and CRC will be calculated based on the entire message. See table below for an example

| Opcode | Length | Sub-Opcode 1 | Data 1 | Sub-Opcode 2 | Data 2 | Sub-Opcode n | Data n | CRC |
|--------|--------|--------------|--------|--------------|--------|--------------|--------|-----|
| 0x01   | LL     | SS1          | DD1    | SS2          | DD2... | SSn          | DDn    | CC  |

### 3 3 NFC Protocol Enable/Disable

Originator: Client only.

This command allows the Client to enable select NFC Protocols in the Accessory.

| Protocol | Opcode | Length | NFC Protocol | Enable  | CRC  |
|----------|--------|--------|--------------|---------|------|
| 14443A   | 0x02   | 0x05   | 0x00         | 0x01    | 0x06 |
| 14443B   | 0x02   | 0x05   | 0x01         | 0x01    | 0x07 |
| 15693    | 0x02   | 0x05   | 0x02         | 0x01    | 0x04 |
| Felica   | 0x02   | 0x05   | 0x03         | 0x01    | 0x05 |
|          |        |        |              | Disable |      |
| 14443A   | 0x02   | 0x05   | 0x00         | 0x00    | 0x07 |
| 14443B   | 0x02   | 0x05   | 0x01         | 0x00    | 0x06 |
| 15693    | 0x02   | 0x05   | 0x02         | 0x00    | 0x05 |
| Felica   | 0x02   | 0x05   | 0x03         | 0x00    | 0x04 |

### 3 4 Polling Enable/Disable

Originator: Client only.

This command allows the Client to enable NFC Protocol polling in the Accessory.

|         | Opcode | Length | Enable/Disable | CRC  |
|---------|--------|--------|----------------|------|
| Disable | 0x03   | 0x04   | 0x00           | 0x07 |
| Enable  | 0x03   | 0x04   | 0x01           | 0x06 |

### 3 5 Polling Frequency

Originator: Client only.

This command allows the Client to configure the NFC Protocol polling rate in the Accessory.

| Opcode | Length | Range: 0x00 – 0xFF; Step Size: 25ms | CRC         |
|--------|--------|-------------------------------------|-------------|
| 0x04   | 0x04   | 0x00 – 0xFF                         | 0x00 - 0xFF |

### 3 6 Tag UID Found

Originator: Accessory only.

This command allows the Accessory to report to the Client.

| Opcode | Length | Protocol | Tag (10 Bytes) | CRC      |
|--------|--------|----------|----------------|----------|
| 0x05   | 0x0E   | Variable | Variable       | Variable |

### 3 7 ACK/NAK Enable/Disable

Originator: Client only.

This command allows the Client to configure the Accessory to support ACKing and NAKing each message. The default case is off.

|          | Opcode | Length | Enable/Disable | CRC  |
|----------|--------|--------|----------------|------|
| Disable  | 0x06   | 0x04   | 0x00           | 0x02 |
| Enable   | 0x06   | 0x04   | 0x01           | 0x03 |
| Bad ACK  | 0x06   | 0x04   | 0x80           | 0x82 |
| Good ACK | 0x06   | 0x04   | 0x81           | 0x83 |

### 3 8 Standalone

Originator: Client only.

This command allows the Client to enable Standalone operation in the Accessory.

|         | Opcode | Length | Enable/Disable | CRC  |
|---------|--------|--------|----------------|------|
| Disable | 0x07   | 0x04   | 0x00           | 0x03 |

|        |      |      |      |      |
|--------|------|------|------|------|
| Enable | 0x07 | 0x04 | 0x01 | 0x02 |
|--------|------|------|------|------|

### 3 9 Keep Alive Time

Originator: Client only.

This command allows the Client to configure the timeout period for the Accessory to operate while disconnected from the Client. A value of 0x00 will be treated as infinite and the accessory will not timeout.

| Opcode | Length | Range: 0x00 – 0xFF; Step Size: 1 minute | CRC      |
|--------|--------|---|----------|
| 0x08   | 0x04   | Variable                                | Variable |

### 3 10 Dump Log

Originator: Client only.

This command allows the Client to request from the Accessory the list of all Ids scanned while running in Free Mode.

|     | Opcode | Length | Data | CRC  |
|-----|--------|--------|------|------|
| All | 0x09   | 0x04   | 0x00 | 0x0D |
| TBD | 0x0n   | TBD    | TBD  | TBD  |

### 3 11 Dump Log Response

This command allows the Accessory to return all tag Ids scanned while running in Free mode to the Client. The log will be cleared after sending the log to the Client.

|     | Opcode | Length   | Data     | CRC      |
|-----|--------|----------|----------|----------|
| All | 0x09   | Variable | Variable | Variable |
| TBD | 0x0n   | TBD      | TBD      | TBD      |

### 3 12 LED Control

Originator: Client only.

This command allows the Client to configure type of LED display actions of the Accessory.

|                    | Opcode | Length | Sub-Opcode | LED:<br>0x01 – LED 1<br>0x02 – LED 2<br>0x03 – LED 3 | Action:<br>0x00: Blink<br>0x01: Heartbeat<br>0x02: Pulse | Data (1 Byte):<br>Quantity<br>Rate<br>Rate | CRC      |
|--------------------|--------|--------|------------|--|--|--|----------|
| Idle               | 0x0A   | 0x07   | 0x00       | Variable   | Variable   | Variable                                   | Variable |
| On Scan            | 0x0A   | 0x07   | 0x01       | Variable   | Variable   | Variable                                   | Variable |
| Validation         | 0x0A   | 0x07   | 0x02       | Variable   | Variable   | Variable                                   | Variable |
| Interface Activity | 0x0A   | 0x07   | 0x03       | Variable   | Variable   | Variable                                   | Variable |

### 3 13 TI Host Commands

Originator: Client only.

This command allows the Client to send TI TRF7970 EVM host commands.

|  | Opcode | Length | Data     | CRC      |
|--|--------|--------|----------|----------|
|  | 0x0B   | TBD    | Variable | Variable |

### 3 14 TI Host Commands Response

Originator: Client only.

This command allows the Accessory to reply to each TI TRF7970 EVM host command received.

|  | Opcode | Length | Data     | CRC      |
|--|--------|--------|----------|----------|
|  | 0x0B   | TBD    | Variable | Variable |

### 3 15 Communication Config

Originator: Client only.

This command allows the Client to set communication parameters for the Accessory.

|              | Opcode | Length | Sub-Opcode | Data     | CRC      |
|--------------|--------|--------|------------|----------|----------|
| Byte Delay   | 0x0C   | 0x05   | 0x00       | Variable | Variable |
| Ping Disable | 0x0C   | 0x05   | 0x01       | 0x00     | 0x08     |
| Ping Enable  | 0x0C   | 0x05   | 0x01       | 0x01     | 0x09     |

### 3 16 Ping request

Originator: Accessory only.

This command allows the Accessory to query the Client to confirm connection is still active.

|      | Opcode | Length | Sub-Opcode | CRC  |
|------|--------|--------|------------|------|
| Ping | 0x0D   | 0x04   | 0x00       | 0x09 |

### 3 17 Ping response

Originator: Client only.

This command allows the Client to respond to the Ping request from the Accessory.

|      | Opcode | Length | Sub-Opcode | CRC  |
|------|--------|--------|------------|------|
| Pong | 0x0D   | 0x04   | 0x01       | 0x08 |

### 3 18 Operation Mode

Originator: Client only.

This command allows the Client to configure the Accessory's for one of the following modes of operation:

UID Only: Accessory will only send scanned UID to Client. (Can be configured to disable redundant scans.)

Read Only: Accessory will send scanned UID along with all data blocks read.

Write Only: Accessory will write each tag with preconfigured data. (Can be configured to check for

override.)

Read/Write: Accessory will send scanned UID to Client and wait for read/write action or until it detects a new tag.

| Mode       | Opcode | Length | Sub-Opcode 1 | Sub-Opcode 2                                       | CRC          |
|------------|--------|--------|--------------|--|--------------|
| UID Only   | 0x0E   | 0x05   | 0x00         | Redundant Scans<br>Disabled: 0x00<br>Enabled: 0x01 | 0x0B<br>0x0A |
| Read Only  | 0x0E   | 0x04   | 0x01         | N/A  | 0x0B         |
| Write Only | 0x0E   | 0x05   | 0x02         | Override Data<br>Disabled: 0x00<br>Enable: 0x01    | 0x09<br>0x08 |
| Read/Write | 0x0E   | 0x04   | 0x03         | N/A  | 0x09         |

### 3 19 Block Read/Write

Originator: Client only.

This command allows the Client to issue block read and write commands to the Accessory.

|                  | Opcode | Length   | Sub-Opcode | Offset   | Number of Bytes | Data     | CRC      |
|------------------|--------|----------|------------|----------|-----------------|----------|----------|
| Read Block       | 0x0F   | Variable | 0x00       | Variable | Variable        | N/A      | Variable |
| Write Block      | 0x0F   | Variable | 0x01       | Variable | Variable        | Variable | Variable |
| Continuous Write | 0x0F   | Variable | 0x02       | Variable | Variable        | Variable | Variable |

### 3 20 Block Read/Write Response

Originator: Accessory only.

This command allows the Accessory to respond to the Client with the result of the block read and write commands request.

|             | Opcode | Length   | Sub-Opcode | Offset   | Number of Bytes                                      | Data     | CRC      |
|-------------|--------|----------|------------|----------|--|----------|----------|
| Read Block  | 0x0F   | Variable | 0x00       | Variable | Variable   | Variable | Variable |
| Write Block | 0x0F   | Variable | 0x01       | Variable | Failure: 0x00<br>Success:<br>Number of Bytes Written | N/A      | Variable |



|                  |      |          |      |          |  |                    |          |
|------------------|------|----------|------|----------|--|--------------------|----------|
| Continuous Write | 0x0F | Variable | 0x02 | Variable | Failure: 0x00<br>Success:<br>Number of Bytes Written | UID of Tag Written | Variable |
|------------------|------|----------|------|----------|--|--------------------|----------|

### 3 21 Tag Write

Originator: Client only.

This command allows the Client to issue a tag write command to the Accessory.

|           | Opcode | Length   | ??? | ??? | ??? | Data | CRC      |
|-----------|--------|----------|-----|-----|-----|------|----------|
| Tag Write | 0x10   | Variable | ??? | ??? | ??? | ???  | Variable |
|           |        |          |     |     |     |      |          |
|           |        |          |     |     |     |      |          |

### 3 22 Tag Write Response

Originator: Accessory only.

This command allows the Accessory to respond to the Client with the result of the tag write command request.

|           | Opcode | Length   | ??? | ??? | ??? | Data | CRC      |
|-----------|--------|----------|-----|-----|-----|------|----------|
| Tag Write | 0x10   | Variable | ??? | ??? | ??? | ???  | Variable |
|           |        |          |     |     |     |      |          |
|           |        |          |     |     |     |      |          |

### 3 23 Sniffer Configuration

Originator: Client only.

This command allows the Client modify sniffer configuration commands on the Accessory.

|                     | Opcode | Length | Sub-Opcode | Value (16 bit)                          | CRC      |
|---------------------|--------|--------|------------|---|----------|
| Increment Threshold | 0x11   | 0x06   | 0x00       | Variable                                | Variable |
| Decrement Threshold | 0x11   | 0x06   | 0x01       | Variable                                | Variable |
| Reset Threshold     | 0x11   | 0x04   | 0x02       | N/A                                     | 0x17     |
| Set Max Threshold   | 0x11   | 0x06   | 0x03       | Variable                                | Variable |
| Sniffer Enable      | 0x11   | 0x05   | 0x04       | 0x00: Off<br>0x01: On<br>0x02: Advanced | Variable |