Communication process with the RFXCOM Receiver & Transmitter

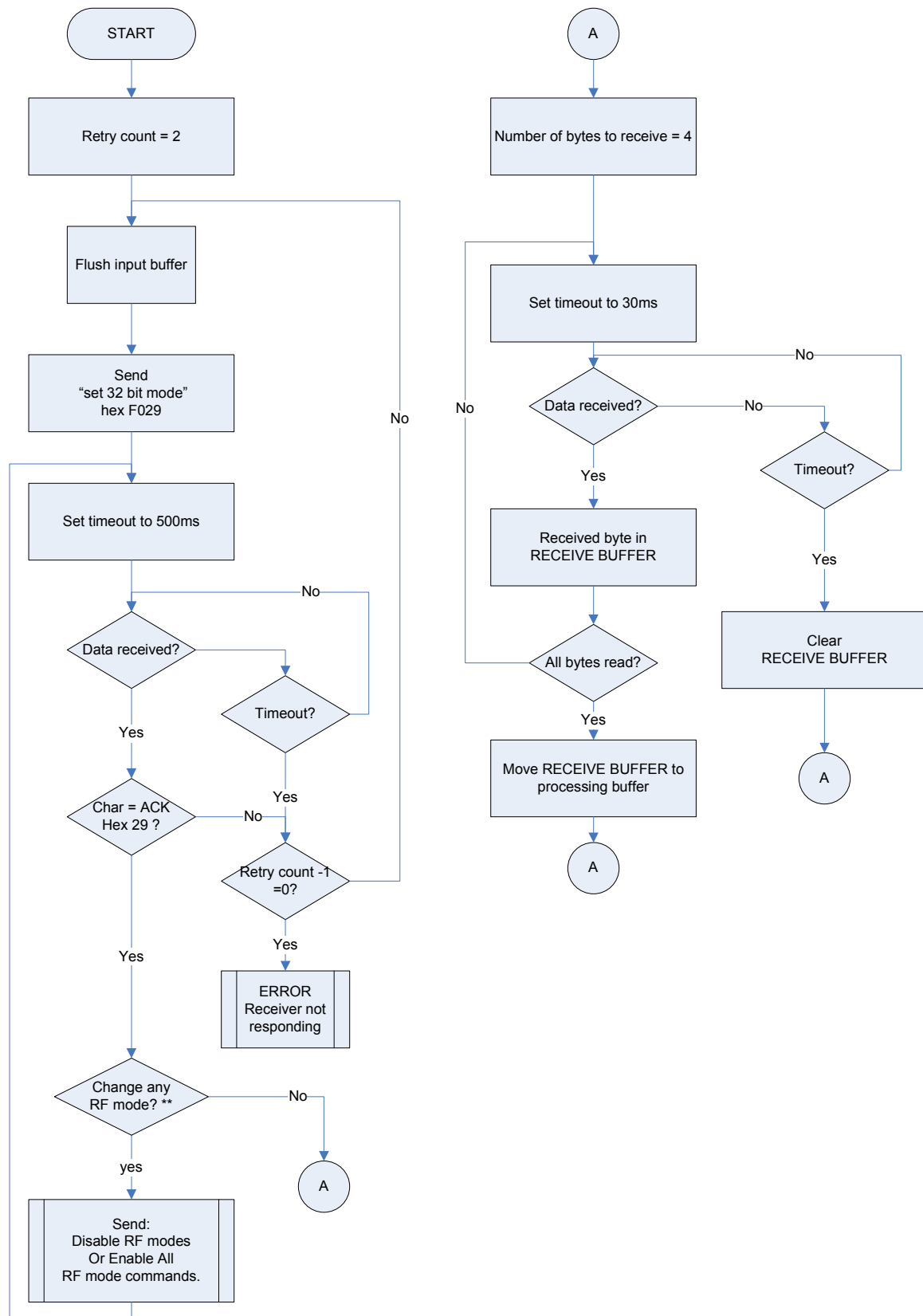www.rfxcom.com

Table of Contents

1. Communication with the Receiver

1.1.   In Variable length mode.

```
┌─────────┐
│  START  │
└─────────┘
     │
┌──────────────┐
│ Retry count = 2 │
└──────────────┘
     │
┌──────────────┐
│ Flush input buffer │
└──────────────┘
     │
┌──────────────────────┐
│ Send                 │
│ "set variable length │
│ mode"                │
│ hex F02C             │
└──────────────────────┘
     │
┌──────────────────────┐
│ Set timeout to 500ms │
└──────────────────────┘
     │
  ◇ Data received? ──No──→ ◇ Timeout? ──Yes──→ ◇ Retry count -1 =0? ──No──→
     │ Yes                                           │ Yes
  ◇ Char = ACK Hex 2C ? ──No──→                 ┌──────────────┐
     │ Yes                                       │ ERROR        │
                                                 │ Receiver not │
                                                 │ responding   │
                                                 └──────────────┘
  ◇ Change any RF mode? ** ──No──→ ( A )
     │ yes
┌──────────────────────┐
│ Send:                │
│ Disable RF modes     │
│ Or Enable All        │
│ RF mode commands.    │
└──────────────────────┘
```

```
( A )
  │
┌──────────────────────┐
│ Read 1 byte          │
│ (packet length in bits) │
└──────────────────────┘
  │
◇ Char received? ──No──↑
  │ Yes
┌──────────────────────┐
│ Mask with hex 7F     │
│ to eliminate the slave indicator. │
│ Save PACKET LENGTH   │
└──────────────────────┘
  │
┌──────────────────────┐
│ Divide by 8 to get   │
│ number of bytes to read │
└──────────────────────┘
  │
◇ Remainder = 0 ──Yes──→
  │ No
┌──────────────────────┐
│ Number of bytes      │
│ to read + 1          │
└──────────────────────┘
  │
┌──────────────────────┐
│ Set timeout to 30ms  │
└──────────────────────┘
  │
◇ Data received? ──No──→ ◇ Timeout? ──Yes──→ ┌──────────────┐
  │ Yes                                        │ Clear        │
┌──────────────────────┐                       │ RECEIVE BUFFER │
│ Received byte in     │                       └──────────────┘
│ RECEIVE BUFFER       │                              │
└──────────────────────┘                           ( A )
  │
◇ All bytes read? ──→
  │
┌──────────────────────┐
│ Move PACKET LENGTH and │
│ RECEIVE BUFFER to     │
│ processing buffers    │
└──────────────────────┘
  │
( A )
```

** The RF modes are saved in non-volatile memory in the receiver. Setting is therefore needed only once.

1.2. In 32 bit mode.

```
    ┌──────────┐
    │  START   │
    └──────────┘
         │
         ▼
┌──────────────────┐
│  Retry count = 2 │
└──────────────────┘
         │
         ▼
┌──────────────────┐
│ Flush input buffer│
└──────────────────┘
         │
         ▼
┌──────────────────┐
│      Send        │
│ "set 32 bit mode"│
│    hex F029      │
└──────────────────┘
         │
         ▼
┌──────────────────┐
│ Set timeout to   │
│     500ms        │
└──────────────────┘
         │
         ▼
    ◇ Data received? ◇ ──No──► ◇ Timeout? ◇
         │ Yes                      │ Yes
         ▼                          ▼
    ◇ Char = ACK     ◇ ──No──► ◇ Retry count -1 = 0? ◇
    ◇ Hex 29 ?       ◇              │ Yes
         │ Yes                      ▼
         ▼                    ┌──────────────┐
    ◇ Change any     ◇        │    ERROR     │
    ◇ RF mode? **    ◇ ──No──►│  Receiver not│
         │ yes                │  responding  │
         ▼                    └──────────────┘
┌──────────────────┐
│     Send:        │
│ Disable RF modes │
│  Or Enable All   │
│ RF mode commands.│
└──────────────────┘
```

```
    ( A )
      │
      ▼
┌──────────────────────────┐
│ Number of bytes to receive = 4│
└──────────────────────────┘
      │
      ▼
┌──────────────────┐
│ Set timeout to 30ms│
└──────────────────┘
      │
      ▼
 ◇ Data received? ◇ ──No──► ◇ Timeout? ◇ ──No──┐
      │ Yes                      │ Yes
      ▼                          ▼
┌──────────────────┐      ┌──────────────┐
│  Received byte in│      │    Clear     │
│  RECEIVE BUFFER  │      │RECEIVE BUFFER│
└──────────────────┘      └──────────────┘
      │                          │
      ▼                          ▼
 ◇ All bytes read? ◇            ( A )
      │ Yes
      ▼
┌──────────────────┐
│ Move RECEIVE BUFFER to│
│ processing buffer│
└──────────────────┘
      │
      ▼
    ( A )
```
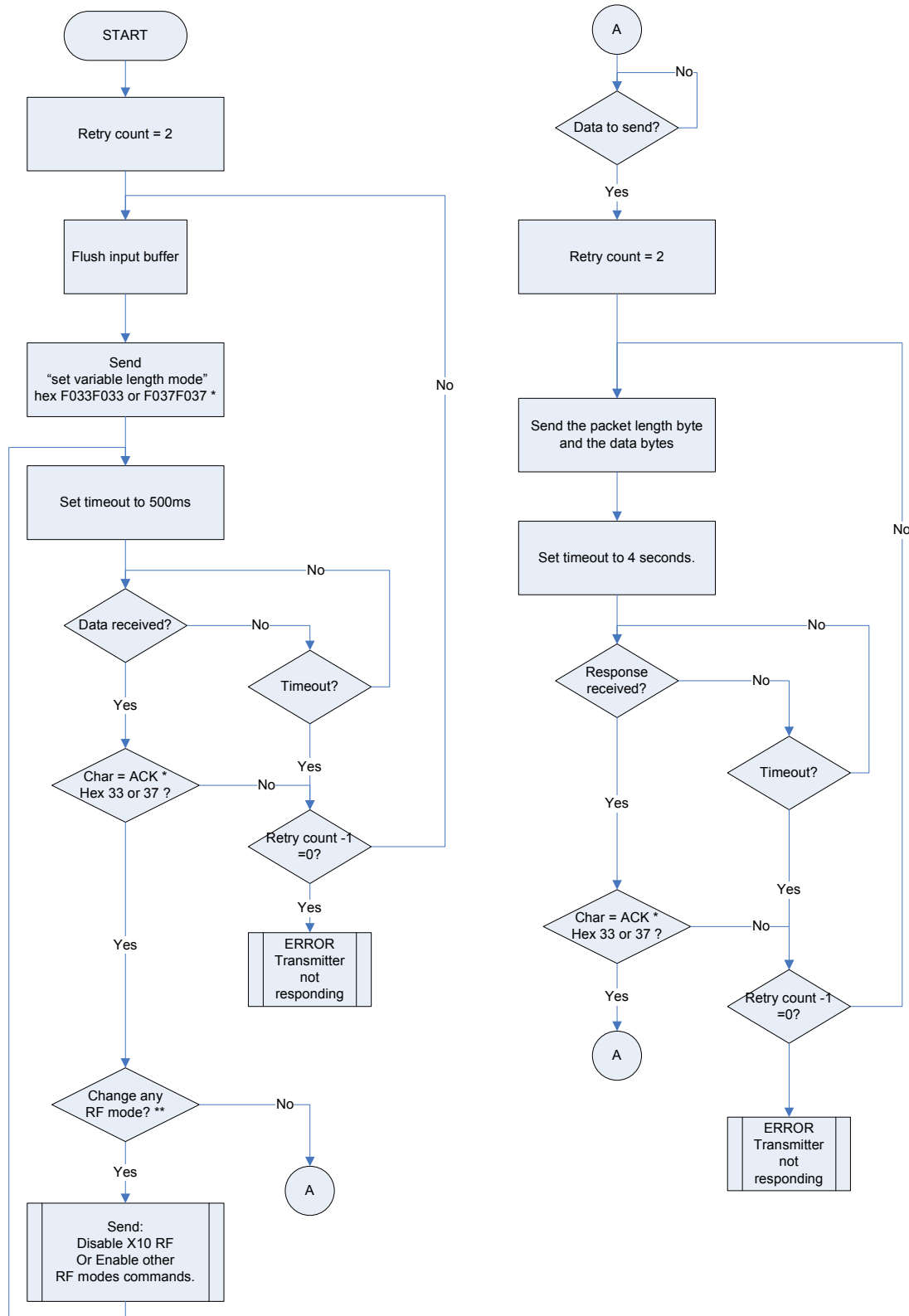
** The RF modes are saved in non-volatile memory in the receiver. Setting is therefore needed only once.
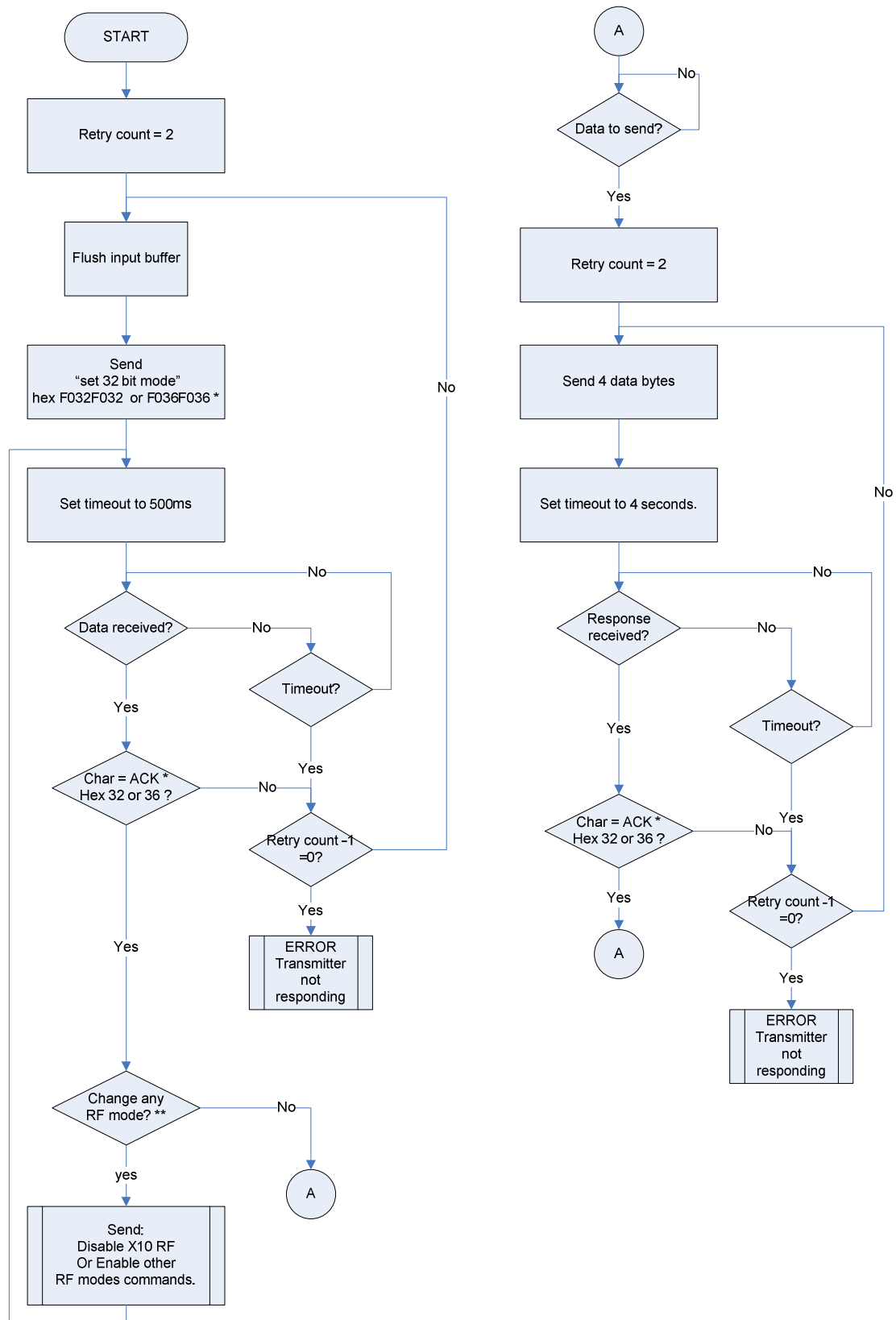
2. Communication with the Transmitter.

2.1.   In Variable length mode

```
                    START                                    ( A )
                      │                                        │
                      ▼                                      ┌─┘ No
              ┌───────────────┐                         ◇ Data to send? ◇──┐
              │ Retry count = 2│                              │            │
              └───────┬───────┘                             Yes            │
                      │                                        │            │
                      │                                ┌───────────────┐    │
              ┌───────────────┐                        │ Retry count = 2│   │
              │Flush input buffer│                      └───────┬───────┘    │
              └───────┬───────┘                                 │            │
                      │                                ┌───────────────────┐ │
              ┌───────────────┐                        │ Send the packet   │ │
              │     Send      │                        │ length byte       │ │
              │"set variable  │                        │ and the data bytes│ │
              │ length mode"  │                        └─────────┬─────────┘ │
              │hex F033F033 or│                                  │           │
              │  F037F037 *   │                        ┌───────────────────┐ │
              └───────┬───────┘                        │Set timeout to     │ │
                      │                                 │4 seconds.         │ │
              ┌───────────────┐                        └─────────┬─────────┘ │
              │Set timeout to │                                  │           │
              │    500ms      │                          ◇ Response ◇── No   │
              └───────┬───────┘                          ◇ received?◇        │
                      │                                    │                 │
              ◇ Data received?◇── No                      Yes    ◇Timeout?◇  │
                      │                                    │                 │
                     Yes                            ◇Char = ACK*◇── No        │
              ◇ Char = ACK *  ◇── No                ◇Hex 33 or 37?◇          │
              ◇ Hex 33 or 37 ?◇                           │      ◇Retry count-1│
                      │                                   Yes      =0?◇        │
                     Yes                                   │                  │
              ◇ Change any    ◇── No                      ( A )        ERROR   │
              ◇ RF mode? **   ◇                                     Transmitter│
                      │                                                not     │
                     Yes                                           responding  │
              ┌───────────────┐
              │    Send:       │
              │ Disable X10 RF │
              │Or Enable other │
              │RF modes commands│
              └───────────────┘
```

* The mode command and corresponding ACK depends on the configuration. The 1ˢᵗ is with and the 2ⁿᵈ is without an RFXCOM receiver connected by the handshake cable.
** The RF modes are saved in non-volatile memory in the transmitter. Setting is therefore needed only once.

2.2.   In 32 bit mode. (no longer supported in the latest versions)

```
              START                                        A
                │                                          │
                ▼                                          ▼───────► No
      ┌──────────────────┐                        ◇ Data to send? ◇
      │  Retry count = 2 │                                 │
      └──────────────────┘                                Yes
                │                                          │
                ▼                                          ▼
      ┌──────────────────┐                        ┌──────────────────┐
      │ Flush input      │                        │  Retry count = 2 │
      │ buffer           │                        └──────────────────┘
      └──────────────────┘                                 │
                │                                           ▼
                ▼                                  ┌──────────────────┐
      ┌──────────────────┐                         │ Send 4 data bytes│
      │     Send         │                         └──────────────────┘
      │ "set 32 bit mode"│                                  │
      │ hex F032F032  or │          No                      ▼
      │ F036F036 *       │                         ┌──────────────────┐
      └──────────────────┘                         │ Set timeout to 4 │  No
                │                                   │ seconds.         │
                ▼                                   └──────────────────┘
      ┌──────────────────┐                                  │
      │ Set timeout to   │                                  ▼          No
      │ 500ms            │                         ◇ Response received? ◇
      └──────────────────┘                                  │
                │          No                              Yes
                ▼                                           │
      ◇ Data received? ◇── No                               ▼       Yes
                │              ◇ Timeout? ◇         ◇ Char = ACK *    ◇── No
               Yes                 │                │ Hex 32 or 36 ?  ◇
                │                 Yes                        │
                ▼                  │                        Yes
      ◇ Char = ACK *   ◇── No      ▼                         ▼
      ◇ Hex 32 or 36 ? ◇   ◇ Retry count -1         ◇ Retry count -1 ◇── No
                │          ◇     =0?  ◇                 =0?
               Yes              │                        │
                │             Yes                       Yes
                │              ▼                          ▼
                │      ┌──────────────┐          ┌──────────────┐
                │      │   ERROR      │          │    ERROR     │
                │      │ Transmitter  │          │ Transmitter  │
                │      │ not          │          │ not          │
                │      │ responding   │          │ responding   │
                ▼      └──────────────┘          └──────────────┘
      ◇ Change any     ◇── No ──►  A
      ◇ RF mode? **    ◇
                │
               yes
                ▼
      ┌──────────────────┐
      │    Send:         │
      │ Disable X10 RF   │
      │ Or Enable other  │
      │ RF modes commands│
      └──────────────────┘
```

* The mode command and corresponding ACK depends on the configuration. The 1st is with and the 2nd is without an RFXCOM receiver connected by the handshake cable.

** The RF modes are saved in non-volatile memory in the transmitter. Setting is therefore needed only once.

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4. Revision history.

Version 1.0 – October 30, 2007
    First document.

Version 2.0 – October 31, 2007
    Retry added in the send data process of the transmitter flows.

Version 2.1 – November 23, 2008
    Copyright message extended.