Point-To-Point Packet Protocol

The LoRa RFM95 chips support half-duplex communication. Therefore, the communication “bus” over RF can be thought of as being a single wire. As a result, there is the need for a master device which controls all slave devices. Any communication is initiated by the master. Slaves can only respond to a poll request from the master device. Currently this protocol only supports a single master and a single slave.

The details of this protocol are defined below:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Packet start identifier | Data length | Data |
| No. bytes | 4 | 2 | - |
| Data type | Char | Uint16\_t | Uint8\_t |

|  |  |  |  |
| --- | --- | --- | --- |
| Packet Type | Identifier | Description | Payload fields |
| 1 | MREQ | Master packet to request a slave packet. This must be polled frequently so that slaves can talk. | Data length, data |
| 2 | SRSP | Slave response packet. Since RFM95 can only send 256-byte packets, some packets will span two transmissions. Master will need to wait until all data is received. | Data length, data |

**Send and receive sequence:**

Any transmission will be initiated by the master device. The master will poll the slave device at the poll frequency by sending packet type 1. The poll frequency must allow enough time for the slave device to respond.

Periodic polling is achieved by using a timer interrupt of medium priority (1). Incoming packets also trigger an interrupt of the highest priority (0). If a packet is received during the polling interrupt service routine, the process will switch to handle the packet.

If the slave device receives a packet type 1 but does not respond, it signifies that the slave device does not have data ready to send.

The maximum USB or UART packet size is 2\*max RF packet size. A slave or master device must read the data length field of an incoming packet and wait until all bytes are received. This may be over multiple incoming packets.