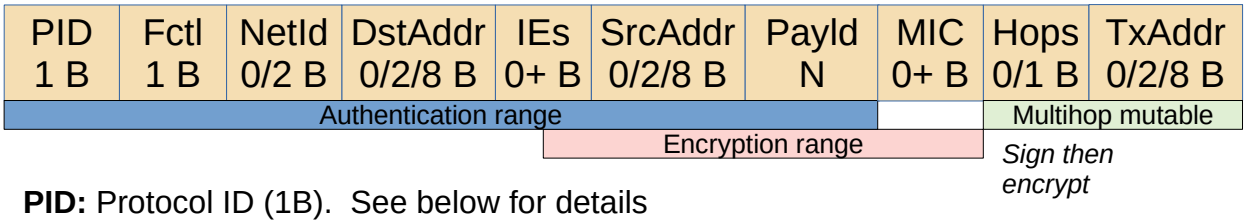
# Heymac link layer frame format

draft 4.1 2021/05/08

Heymac Frame




**PID:** Protocol ID (1B). See below for details
**Fctl**: Frame Control. See below for details.
**NetId: Net**work **Id**entifier. Exists if Fctl's N bit is set.
**DstAddr**: **Des**tination **Addr**ess. 0, 2 or 8B address. Exists of Fctl's D bit is set.
**IE**s: Header and Body Information Elements. Exists if Fctl's I bit is set.
**SrcAddr**: **S**ou**rc**e **Addr**ess. 0, 2 or 8B address. Exists of Fctl's S bit is set.
**Payld**: Payload (0 .. 253 octets; entire frame must not exceed 255 octets).
**MIC**: Message Integrity Code (size depends on algorithm which is specified in IE).
**Hops**: wireless subnet hops remaining (0 or 1B). Exists if Fctl's M bit is set.
**TxAddr**: Re-transmitter's address. Exists if Fctl's M bit is set.

PID field:

PID: Protocol ID: an 8-bit pattern to identify the frame's protocol.
HeyMac claims the range 8b111XXXXX to distinguish from LoRaWAN and 802.15.4-2015 MAC header (MHR).

| **Bit pattern** | **Protocol** |
|---|---|
| 1110 00vv | HeyMac TDMA, major (vv)ersion |
| 1110 01vv | HeyMac CSMA, major (vv)ersion |
| 1110 1xxx | HeyMac (RFU) |

Fctl field:

| X | L | N | D | I | S | M | P |
|---|---|---|---|---|---|---|---|
| 1 b | 1 b | 1 b | 1 b | 1 b | 1 b | 1 b | 1 b |

X: Extended:
- 0: Fctl bits and HeyMac fields as described here.
- 1: Remaining Fctl bits are Extended Frame ID (rest of frame is unique).

L: Long Addressing: all present address fields are:
- 0: 2 octets (16b).
- 1: 8 octets (64b).

N: Net ID present
D: Dst Addr present
I: IE(s) present
S: Src Addr present
M: Multihop: Hops and TxAddr fields are present.
P: Pending frame: 1: another frame immediately follows this one.

Command:

| Prefix 2b10 | Command ID 6 b | Command Data N |
|---|---|---|

Heymac commands are sent in the Payld field. The first byte contains the two-bit prefix and the six-bit command ID. The command determines if there are any bytes that follow. Data may be fixed or variable length.