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Soar Waypoint Changing Specifications

* Ground station (GS) generates a list of waypoints
* GS sends a request to send waypoints to the autopilot (XXXRTS)
* AP sends an acknowledgement of the waypoint request
* GS Sends the Waypoint Packet with the following format
  + XXX
  + Bottom of list or top of list identifier
  + One byte for number of waypoints (U8)
  + Waypoints
    - WPT
    - Latitude (4 bytes)
    - Longitude (4 bytes)
    - Altitude (2 bytes)
  + CHK
  + 4 bytes for the checksum calculated for all packet data starting with the XXX
* AP sends an acknowledgment that the checksum is corr**e**ct or a resend request
* AP sets current waypoint based on waypoint packet specs.
* If the AP is at the last waypoint it will request more from the GS
* GS will do will one of two things
  + Request identifier then send a waypoint list
  + Send a no more waypoint message
* If there are no more waypoints, the AP will enter the landing sequence

Messages

* Ground station
  + All messages prefixed with “XXX” to specify a waypoint message
  + Request to append to bottom of list “END”
  + Request to add to top of list “TOP”
  + No more waypoints “OUT”
  + Request to send “RTS”
  + Waypoint “WPT”
  + Checksum “CHK”
* Autopilot
  + All messages prefixed with “XXX” to specify a waypoint message
  + Acknowledgment “ACK”
  + Bad Checksum Resend waypoints “BCR”
  + End of List, More waypoints? “MOR”

Checksum

* Adler-32 Checksum algorithm

**Autopilot Revised EEPROM**

* + Waypoint packets will be kept in memory until checksum is corect
  + The new waypoints will then b written to the current secondary list in the EEPROM
  + The list flag will be changed to either a 1 to swap lists after last waypoint is reached or a 2 to immediately swap lists
  + Another variable will hold the current list identifier

|  |  |
| --- | --- |
| 0x00 🡪 0x0B | Configuration Bytes (Don’t Touch) |
| 0x0C🡪0x17 | Home Waypoint |
| 0x18🡪0x44 | Reserved for landing (45 Bytes) |
| 0x45 | List Change Flag (0, 1, or 2) |
| 0x46 | Current Waypoint in List |
| 0x47 | Current List |
| 0x48 | # of Waypoints in List 1 |
| 0x49 | # of waypoints in List 2 |
| 0x4A🡪0x20B | Waypoint List 1 (45 Waypoints) |
| 0x20C🡪0x3CD | Waypoint List 2 (45 Waypoints) |
| 0x3CE🡪0x3E7 | Trims and other (Don’t Touch) |