HaptiCenter Crane Controller

1. Crane Operation (Arduino Mega2560)  
   Command Table:

|  |  |  |  |
| --- | --- | --- | --- |
| Operation Category | Operation ID | Operation description | Value |
| 0 (Movement) | 0 | No operation | 0 |
|  | 1 -> u | Crane goes up | 0 |
|  | 2 -> d | Crane goes down | 0 |
|  | 3 S | Crane stops at top | 0 |
|  | 4 s | Crane stops at bottom | 0 |
|  | 5 | Electromagnet turns on | 0 |
|  | 6 | Electromagnet turns off | 0 |
|  | 7 | Crane "retrieves" device | 0 |
|  | 8 | Crane "allocates" device | 0 |
| 1 (Set) | 0 | No operation | 0 |
|  | 1 | Set crane status => isLoaded or not | 0 (unloaded) \ 1 (loaded) |
|  | 2 | Set the moving status of crane | -2 (bottom)  -1 (going down)  0 (initial)  1 (going up)  2 (top) |
|  | 3 | Set the operation status of crane | 0 (free status)  1 (retrieve)  2 (allocate) |
| 2 (Get) | 0 | No operation | 0 |
|  | 1 | Get crane status => isLoaded or not | 0 |
|  | 2 | Get the moving status of crane | 0 |
|  | 3 | Get the operation status of crane | 0 |

1. Communication
   1. Mega2560 and NodeMCU
      1. Server command packet contains 9 bytes  
         Command packet:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SOT | Op-category | OP\_ID | Value | OP\_ID | Value | OP\_ID | Value | OP\_ID | Value |
| “\n” |  | Station 0 |  | Station 1 |  | Station 2 |  | Station 3 |  |

* + 1. Serial port command contains 1+3x char

|  |  |  |  |
| --- | --- | --- | --- |
| Op-category | Station number | Op ID | value |

HaptiCenter Server

1. Communicate with crane controller
   1. Server send command format

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Length | cmdID | supervisor | Op-category | OP\_ID | Value | OP\_ID | Value | OP\_ID | Value | OP\_ID | Value |
| int | int | int | int | Station 0 |  | Station 1 |  | Station 2 |  | Station 3 |  |