6DOF Can Bus Communication Protocol

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| **ID Assignments** | | |
| Example: 0x1A0 | | |
| 1 = Arm/Controller/Sensor 1 | A = Arm | 0 = Axis Position |
| 2 = Arm/Controller/Sensor 2 | C = Controller | 1 = Auto Movement |
| 3 = Arm/Controller/Sensor 3 | D = Sensor | 2 = Manual Movement |
| 4 = Arm/Controller/Sensor 4 |  | 3 = Control Function |
| 5 = Arm/Controller/Sensor 5 |  | 4 = Sensor |
| 6 = Arm/Controller/Sensor 6 |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Axis Position Message** | | | | | | | | |
| ID | D[0]-[1] | D[1]-[2] | D[2]-[3] | D[3]-[4] | D[4]-[5] | D[6]-[7] | D[6]-[7] | D[7] |
|  | 0-1 | 2-10 | 11-19 | 20-28 | 29-37 | 38-46 | 47-55 | 56-64 |
| 0x1A0 | Grip | Axis6 | Axis5 | Axis4 | Axis3 | Axis2 | Axis 1 | CRC |
| 0x2A0 |  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Auto Movement Message** | | | | | | | | |
| ID | D[0]-[1] | D[1]-[2] | D[2]-[3] | D[3]-[4] | D[4]-[5] | D[6]-[7] | D[6]-[7] | D[7] |
|  | 0-1 | 2-10 | 11-19 | 20-28 | 29-37 | 38-46 | 47-55 | 56-64 |
| 0x1A1 | Grip | Axis6 | Axis5 | Axis4 | Axis3 | Axis2 | Axis 1 | CRC |
| 0x2A1 |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Manual Movement Message** | | | | | | | | |
| ID | D[0] | D[1] | D[2] | D[3] | D[4] | D[5] | D[6] | D[7] |
|  | Axis1 | Axis2 | Axis3 | Axis4 | Axis5 | Axis6 | grip | CRC |
| 0x1A2 | 0x01 up | 0x01 up | 0x01 up | 0x01 up | 0x01 up | 0x01 up | 0x01 up |  |
| 0x2A2 | 0x11 down | 0x11 down | 0x11 down | 0x11 down | 0x11 down | 0x11 down | 0x11 down |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Control Message** | | | | | | | |
| D[0] | D[1] | D[2] | D[3] | D[4] | D[5] | D[6] | D[7] |
| COMMAND\_BYTE |  |  |  | SUB\_COMMAND\_BYTE |  |  | CRC\_BYTE |
|  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | **Byte location and Commands** | **Data[]** | **Value** | | **COMMAND\_BYTE** | 0x00 |  | | - SEND\_AXIS\_POSITIONS |  | 0x61 | | - RESET\_AXIS\_POSITION |  | 0x62 | | - HOME\_AXIS\_POSITION |  | 0x63 | | - SET\_WAIT\_TIMER |  | 0x6B | | - MOVE\_GRIP |  | 0x6A | | - EXECUTE\_PROGRAM |  | 0x1E | | - STOP\_PROGRAM |  | 0x0E | | **SUB\_COMMAND\_BYTE** | 0x04 |  | | - MOVE\_GRIP |  | 0x6A | | **CRC\_BYTE** | 0x07 |  | | - Generated CRC |  | CRC | | **MOVE\_GRIP\_BYTE** | 0x05 |  | | - HOLD\_GRIP |  | 0x00 | | - OPEN\_GRIP |  | 0x01 | | - SHUT\_GRIP |  | 0x11 | | **SET\_WAIT\_MIN\_BYTE** | 0x01 |  | | - Time in minutes |  | value | | **SET\_WAIT\_SEC\_BYTE** | 0x02 |  | | - Time in seconds |  | value | | **SET\_WAIT\_MS\_BYTE** | 0x03 |  | | - Time in Milliseconds |  | value | | **ACCELERATION\_BYTE** | 0x01 |  | | - Delay in milliseconds |  | value | | **SPEED\_BYTE** | 0x02 |  | | - Speed in milliseconds |  | value | | **LOOP\_BYTE** | 0x03 |  | | - Boolean |  | value | | **CONFIRMATION\_BYTE** | 0x01 |  | | - CONFIRMATION |  | 0x1C | | - NEG\_CONFIRMATION |  | 0x0C | | |  |  | | --- | --- | | **Arm 1 IDs** | | | CONTROL1\_RX | 0x1C3 | | ARM1\_POSITION | 0x1A0 | | ARM1\_PROGRAM | 0x1A1 | | ARM1\_MANUAL | 0x1A2 | | ARM1\_CONTROL | 0x1A3 |  |  |  | | --- | --- | | **Arm 2 IDs** | | | CONTROL2\_RX | 0x2C3 | | ARM2\_POSITION | 0x2A0 | | ARM2\_PROGRAM | 0x2A1 | | ARM2\_MANUAL | 0x2A2 | | ARM2\_CONTROL | 0x2A3 | |