# - RS232 Communication Protocol -

## *Linux to Robot protocol*

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| --- | --- | --- |
| Function | Command | Parameter(s) |
| Home camera | <A> | None |
| Manual control of DC motors | <B p1 p2 p3 p4> | **P1** - Sets speed 0-255mm/s of motor A (left) *Format*: 3 ASCII characters: xyz  *Example*:  100 = 100mm/s  070 = 70mm/s  *Special Cases:*  if P1 > 255 then P1 = 255  if P1 < 000 then P1 = 000  **P2** - Sets direction of motor A (left) *Format*: 1 ASCII characters: x *Values*:  0 - Stop motor 1 - Run forward  2 - Run reverse *Special Cases:*  If P2 < 0 or P2 > 2 then P2 = 0  **P1** - Sets speed 0-255mm/s of motor B (right) *Format*: 3 ASCII characters: xyz  *Example*:  100 = 100mm/s  070 = 70mm/s  *Special Cases:*  if P1 > 255 then P1 = 255  if P1 < 000 then P1 = 000  **P4** - Sets direction of motor B (right) *Format*: 1 ASCII characters: x *Values*:  0 - Stop motor 1 - Run forward  2 - Run reverse *Special Cases:*  If P4 < 0 or P4 > 2 then P4 = 0 |
| Pan camera to position | <C p1> | **P1** - Sets camera position 0-180 degrees on X axis *Format*: 3 ASCII characters: xyz  *Example*:  180 - Right limit 090 - Center  000 - Left limit *Special Cases:*  if P1 > 180 then P1 = 180  if P1 < 000 then P1 = 000 |
| Tilt camera to position | <D p1> | **P1** - Sets camera position 0-180 degrees on Y axis *Format*: 3 ASCII characters: xyz  *Example*:  180 - Upper limit 090 - Center  000 - Lower limit *Special Cases:*  if P1 > 180 then P1 = 180  if P1 < 000 then P1 = 000 |
| Heartbeat at 1 Hz to robot from server | <H> | None |
| Set DC motor target speeds | <S p1> | **P1** – Target speed for both DC motors in mm/s  *Format*: 3 ASCII character: xyz  *Example*:  100 = 100mm/s  070 = 70mm/s  *Special Cases*:  if P1 > 255 then P1 = 255  if P1 < 000 then P1 = 000 |
| Move robot | <R p1> | **P1** – Driving action.  *Format*: 1 ASCII character: x  *Values*:  0 – Stop driving  1 – Drive forward  2 – Drive backward  3 – Turn left  4 – Turn right |
| Move Webcam | <W p1> | **P1** – Driving action.  *Format*: 1 ASCII character: x  *Values*:  0 – Stop camera movement  1 – Tilt camera up  2 – Tilt camera down  3 – Pan camera left  4 – Pan camera right |

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## *Robot to Linux protocol*

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| --- | --- | --- |
| Function | Command | Parameter(s) |
| Heartbeat at 1 Hz to server from robot | H | None |
| Acknowledge server about invalid command | Ip1   *Example*: IX | **P1** - first ASCII character of a received command  *Format*: 1 ASCII character: x  *Example*:  X - unknown command |
| Acknowledge server about successful command | Sp1    *Example*: SB | **P1** - first ASCII character of a received command  *Format*: 1 ASCII character: x  *Example*:  B - motor A direction command received |