SDcard files

There are three file types expected on the SDcard, configuration files, read once when the L0cost controller boots, html files and script files, read either when the controller boots, in the case of the startup script, immediately when the controller initialisation is complete, in the case of the main script, or when requested in a command input.

The configuration files are config.txt (the name is fixed), the wifi configuration file, which is listed in the config file and the PS3 configuration file, also listed in the config file. Because the L0cost controller can only run either Bluetooth or wifi separately and not concurrently, only one for these two file can be in the config file.

Configuration file.

The config file has a fixed format and the lines must be in the order listed, though lines at the end will use default values if not included.

|  |  |  |
| --- | --- | --- |
| Line | Parameter | Explanation |
| 1 | Mode | Sets the mode of operation. This value is interpreted and sets the execution flags in the controller to cause the controller to behave in the desired manner. |
| 2 | Hostname | This is the name the robot will be known by when requested, typically in response to a command or for wireless network identification. It should be a valid network name of not more than 20 characters or it will be truncated. |
|  |  | Wifi config and PS3 configs are mutually exclusive |
| 3 | Wifi config | This is the name of the file on the SDcard containing the wifi configuration information.  Example: wifi.txt would expect the wifi configuration details to be contained in the file called wifi.txt on the SDcard. This name is actually the default. |
| PS3 config | This is the name of the file on the SDcard containing the PS3 configuration information.  Example: PS3.txt would expect the PS3 configuration details to be contained in the file called PS3.txt on the SDcard. This name is actually the default. |
| 4 | Startup script | This is the name of the file containing the startup script. This script will accept changes to the controller configuration to customise the usage, such as setup camera framesize or servo defaults. This entry must be here, even if pointing to an empty file, if a main script is required. |
| 5 | Main script | This is the name of the file containing the Main script which will be executed as soon as the setup for the controller is complete. |

Table of Modes of Operation

|  |  |
| --- | --- |
| Config Mode Entry |  |
|  | In all BASIC modes, pins 12 and 13 are used to provide drive signals to transistors switching current to motors. Remote commands are passed to the serial port without handshaking |
| BASICSTA | Runs as a wifi client with a web page and negative drive pin control |
| BASICAP | Runs as a wifi access point with a web page and negative drive pin control |
| BASICPS3 | Runs with PS3 controller input and negative drive pin control |
| BASICSTA+ | Runs as a wifi client with a web page and positive drive pin control |
| BASICAP+ | Runs as a wifi access point with a web page and positive drive pin control |
| BASICPS3+ | Runs with PS3 controller input and positive drive pin control |
|  | REMOTE modes use pins 12 and 13 for handshaking on the serial communications |
| REMOTESTA | Runs as wifi client with a web page |
| REMOTEAP | Runs as wifi access point with a web page |
| REMOTEPS3 | Runs with PS3 controller input |
|  | SERVO modes assign pins 12 and 13 to be used for controlling servos. Remote commands are passed to the serial port without handshaking |
| SERVOSTA | Runs as a wifi client with a webpage |
| SERVOAP | Runs as a wifi access point with a webpage |
| SERVOPS3 | Runs with PS3 controller input |
|  | SOKOBAN modes assign motor control to pins 3, 12 and 13 to drive logic gates and a motor controller to provide forward/reverse/turn control from 3 pins. Remote commands are passed to the serial port without handshaking, serial command input is disabled. |
| SOKOBANSTA | Run as a wifi client with a web page. |
| SOKOBANAP | Run as a wifi access point with a web page |
| SOKOBANPS3 | Run with PS3 controller input |
|  |  |

Wifi configuration

The wifi file has a fixed format and the lines must be in the order listed, though lines at the end will use default values if not included.

|  |  |  |
| --- | --- | --- |
| Line | Parameter | Explanation |
| 1 | SSID | This is the SSID that as a client the controller will attempt to connect to, or as an access point, will broadcast. |
| 2 | password | This is the password associated with the SSID |
| 3 | Html file | This is the name of the html file on the SDcard which will be used as the home web page for the controller. The default page serves the video stream from the camera. |
| 4 | Webserver port | This is the port on the controller webserver used to serve the default home web page. Defaults to 80 |
| 5 | Streaming port | This is the port on the controller webserver used to serve the video stream. Defaults to 81. |

PS3 Configuration

The PS3 file has a fixed format and the lines must be in the order listed, though lines at the end will use default values if not included. The purpose of the file is to firstly connect the PS3 controller over Bluetooth to the L0cost controller. The rest of the file maps the input from the PS3 controller to commands that can either be executed by the L0cost controller or routed to the remote controller. There are many entries and each can either be active or not. Entries not included at the end of the list are deemed to be not active, but all entries beforehand must be in the fixed sequence listed in the table below. On startup, this file is read and each entry loaded into a translation table, which when a PS3 control is activated, is converted into a command prefix followed by any values received from the controller. Lines beginning with a 0 are ignored and the maximum command prefix length is 19 characters

|  |  |  |
| --- | --- | --- |
| Line | Example Prefix | Explanation |
| 1 | A0:5A:5A:A0:09:84 | MAC address of the PS3 controller to be paired |
| 2 | LMTR | left and right joystick values are appended  Example: LMTR0000025500000255 |
| 3 | XMTR | left and right joystick values are appended  Example: XMTR0000025500000255 |
| 4 | XLJP | left joystick pressed, the command has no values |
| 5 | XLJR | left joystick released, the command has no values |
| 6 | XRJP | right joystick pressed, the command has no values |
| 7 | XRJR | right joystick released, the command has no values |
| 8 | XUPV | up button values, the button pressure value is appended  Example: XUPV0255 |
| 9 | XUBP | up button pressed, the command has no values |
| 10 | XUBR | up button released, the command has no values |
| 11 | XRBV | right button values, the button pressure value is appended  Example: XRBV0255 |
| 12 | XRBP | right button pressed, the command has no values |
| 13 | XRBR | right button released, the command has no values |
| 14 | XDBV | down button values, the button pressure value is appended  Example: XDBV0255 |
| 15 | XDBP | down button pressed, the command has no values |
| 16 | XDBR | down button released, the command has no values |
| 17 | XLBV | left button values, the button pressure value is appended  Example: XLBV0255 |
| 18 | XLBP | left button pressed, the command has no values |
| 19 | XLBR | left button released, the command has no values |
| 20 | XXBV | cross button values, the button pressure value is appended  Example: XXBV0255 |
| 21 | XXBP | cross button pressed, the command has no values |
| 22 | XXBR | cross button released, the command has no values |
| 23 | XSBV | square button values, the button pressure value is appended  Example: XSBV0255 |
| 24 | SBP | square button pressed, the command has no values |
| 25 | XSBR | square button released, the command has no values |
| 26 | XTBV | triangle button values, the button pressure value is appended  Example: XTBV0255 |
| 27 | XTBP | triangle button pressed, the command has no values |
| 28 | XTBR | triangle button released, the command has no values |
| 29 | XCBV | circle button values, the button pressure value is appended  Example: XCBV0255 |
| 30 | XCBP | circle button pressed, the command has no values |
| 31 | XCBR | circle button released, the command has no values |
| 32 | XLSV | left shoulder values, the button pressure value is appended  Example: XLSV0255 |
| 33 | XLSP | left shoulder pressed, the command has no values |
| 34 | XLSR | left shoulder released, the command has no values |
| 35 | XRSV | right shoulder values, the button pressure value is appended  Example: XRSV0255 |
| 36 | XRSP | right shoulder pressed, the command has no values |
| 37 | XRSR | right shoulder released, the command has no values |
| 38 | XLTV | left trigger values, the button pressure value is appended  Example: XLTV0255 |
| 39 | XLTP | left trigger pressed, the command has no values |
| 40 | XLTR | left trigger released, the command has no values |
| 41 | XRTV | right trigger values, the button pressure value is appended  Example: XRTV0255 |
| 42 | XRTP | right trigger pressed, the command has no values |
| 43 | XRTR | right trigger released, the command has no values |
| 44 | XSLP | select button pressed, the command has no values |
| 45 | XSLR | select button released, the command has no values |
| 46 | XSTP | start button pressed, the command has no values |
| 47 | XSTR | start button released, the command has no values |
| 48 | XPSP | PS3 button pressed, the command has no values |
| 49 | XPSR | PS3 button released, the command has no values |

HTML file

The wifi config may contain a web page file name to be used to load into the webserver as the default home page. If the load of this file fails then a default page is loaded which displays the video stream from the server. The webserver only serves this page and any other items that are required on the page must be obtained from another server.

The option to dynamically update this page may be added at a later date.

Startup script file

This file is read as part of the setup phase of the L0cost robot controller software and is intended to initialise various parameters for the camera or attached servos and motors. Remote commands encountered are executed but file commands are not. Local commands may not be executed.

Main script file

This file is read at the start of normal processing and may contain any valid script commands. This script may be the only thing the robot does, excluding all other command input.