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Animatronics Controller

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Show File Format - XXX.ANI

Location	Description
0x0000 - 0xFFDF	Show Data
0xFFE0	Show Number (0xFF)
0xFFE1 - 0xFFE4	Show MS (0xFFFFFFFF)
0xFFE5 - 0xFFE7	*SPARE*
0xFFE8 - 0xFFEF	"©YYYY EC"
0xFFF0 - 0xFFFF	Show Name (15 Characters)

Config File Format - FIG.CFG

Location	Description
0x000 - 0x00F	Figure Name (16 Characters)
0x010 - 0x0F7	*SPARE*
0x0F8 - 0x0FF	"©YYYY EC"

Inputs 0x100 -> 0x1FF

Location	Description
0x1X0	Input Enabled (0xFF)
0x1X1	Input Pin (0xFF)
0x1X2 - 0x1X3	Input Min (0xFFFF)
0x1X4 - 0x1X5	Input Max (0xFFFF)
0x1X6 - 0x1X7	*SPARE*
0x1X8 - 0x1XF	Input Name (8 Characters)

Servos 0x200 -> 0x2FF

Location	Description
0x2X0	Servo Enabled (0xFF)
0x2X1	Servo Pin (0xFF)
0x2X2 - 0x2X3	Servo Min (0xFFFF)
0x2X4 - 0x2X5	Servo Max (0xFFFF)
0x2X6	Servo Input (0xFF)
0x2X7	Servo Invert (0xFF)
0x2X8 - 0x2XF	Servo Name (8 Characters)

Servo Filter Values 0x300 -> 0x30F

Location	Description
0x30X	Servo Filter Value (0xFF)

Class Index

Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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servo_t (Struct for Servo settings) 6

File Index

File List

Here is a list of all documented files with brief descriptions:

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Class Documentation

input_t Struct Reference

Struct for Input settings.

Public Attributes

- bool **enabled**
- uint8_t **pin**
- uint16_t **min**
- uint16_t **max**
- uint16_t **value**

The documentation for this struct was generated from the following file:

- servo.h

servo_t Struct Reference

Struct for Servo settings.

Public Attributes

- bool **enabled**
- uint8_t **pin**
- uint16_t **min**
- uint16_t **max**
- uint16_t **value**
- uint8_t **filter**
- input_t **input**
- bool **invert**

The documentation for this struct was generated from the following file:

- servo.h

File Documentation

Animatronics_Controller.ino File Reference

A custom Animatronics Controller with the ability to load and save configuration and show files from an SD card in sync with a 16-bit WAV file.

Macros

- #define **INTERFACE_PIN** 28
- #define **TEST_PIN** 29

Functions

- void setup ()
  Setup the Animatronics Controller.

- void loop ()
  Main program loop, load each show file and play it.

- void mainMenu ()
  Main menu.

- void loadedShowMenu ()
  Loaded show menu.

- void configMenu ()
  Config menu.

Variables

- char **versionNumber** [] = "2.2.2"

audio.h File Reference

Functions for playing audio with the PT8211.

Functions

- void setupAudio (void)
  Setup audio output (Note: This is required)

- uint32_t getAudioMS (void)
  Get the length of WAV file associated with the loaded show in milliseconds.

- void playAudio (void)
  Play WAV file associated with the loaded show.

- void stopAudio (void)
  Stop playing WAV file.

Function Documentation

uint32_t getAudioMS (void)

Returns

Returns the length of the loaded audio file in milliseconds, 0 ... 4294967295

config.h File Reference

Functions for loading, saving and modifying the config file.

Functions

- void loadConfig (void)
  Load the config file from SD card.

- void saveConfig (void)
  Save the config file to the SD card.

- char * getFigureName (void)
  Get the figure name from the config file.

- char * getInputName (uint8_t number)
  Get the input name for a given number from the config file.

- void setInputName (uint8_t number, char *name)
  Set the input name for a given number from the config file.

- char * getServoName (uint8_t number)
  Get the servo name for a given number from the config file.

- void setServoName (uint8_t number, char *name)
  Set the servo name for a given number from the config file.

- input_t getInputData (uint8_t number)
  Get the input data for a given input number.

- servo_t getServoData (uint8_t number)
  Get the servo data for a given servo number.

- uint16_t getServoCenter (uint8_t number)
  Get the center position for a given servo.

- uint16_t * minmaxInput (uint8_t input)
  Configure Input Min / Max.

- void configInput (uint8_t number)
  Configure a given input.

- void configServo (uint8_t number)
  Configure a given servo.

- void invertServo (uint8_t number)
  Invert a given servo.

- void filterServo (uint8_t number)

Change filter value for a given servo.

- void toggleServo (uint8_t number)
  Enable/Disable a given servo.

Function Documentation

void configInput (uint8_t *number*)

Parameters

number	Input number, 0 ... 15

void configServo (uint8_t *number*)

Parameters

number	Servo number, 0 ... 15

void filterServo (uint8_t *number*)

Parameters

number	Servo number, 0 ... 15

char* getFigureName (void)

Returns

Returns the figure name as a char[16]

input_t getInputData (uint8_t *number*)

Parameters

number	Input number, 0 ... 15

Returns

Returns a input_t struct

char* getInputName (uint8_t *number*)

Parameters

number	Input number, 0 ... 15

Returns

Returns the input name for a given number as a char[8]

uint16_t getServoCenter (uint8_t *number*)

Parameters

number	Servo number, 0 ... 15

Returns

Returns a uint16_t for the center position of a given servo

servo_t getServoData (uint8_t *number*)

Parameters

number	Servo number, 0 ... 15

Returns

Returns a servo_t struct

char* getServoName (uint8_t *number*)

Parameters

number	Servo number, 0 ... 15

Returns

Returns the servo name for a given number as a char[8]

void invertServo (uint8_t *number*)

Parameters

number	Servo number, 0 ... 15

uint16_t* minmaxInput (uint8_t *input*)

Parameters

input	Input pin to read, 0 ... 15

Returns

Returns the Input Min / Max as uint16_t array, 0 ... 1023

void setInputName (uint8_t *number*, char * *name*)

Parameters

number	Input number, 0 ... 15
name	Input name, char[8]

void setServoName (uint8_t *number*, char * *name*)

Parameters

number	Servo number, 0 ... 15
name	Servo name, char[8]

void toggleServo (uint8_t *number*)

Parameters

number	Servo number, 0 ... 15

interface.h File Reference

Functions for getting data from the serial buffer.

Functions

- char getChar (void)
  Get a char from the serial buffer.

- uint32_t getInt (void)
  Get a uint32_t from the serial buffer.

- char * getString (void)
  Get char[16] from the serial buffer.

Function Documentation

char getChar (void)

Returns

Returns a char from the serial buffer

uint32_t getInt (void)

Returns

Returns a uint32_t from the serial buffer

char* getString (void)

Returns

Returns a char[16] from the serial buffer

servo.h File Reference

Functions for working with the servos.

Classes

- struct input_t
  Struct for Input settings.
- struct servo_t
  Struct for Servo settings.

Functions

- void setupServos (void)
  Setup the servo output (Note: This is required)

- void processInputs (void)
  Load input data from the config file to an array.

- uint8_t getInputCount (void)
  Get the total number of inputs from the config file.

- void processServos (void)
  Load servo data from the config file to an array.

- uint8_t getServoCount (void)
  Get the total number of servos from the config file.

- void centerServos (void)
  Move all enabled servos to the center position.

- void updateServo (uint8_t number)
  Read a given servo input and update its position.

- uint16_t minmaxServo (uint8_t pin, uint8_t servo)
  Configure servo Min/Max.

- void recordServo (uint8_t number)
  Read a given servo input, save it to the show file and update its position.

- void playServo (uint8_t number)
  Read a given servo from the show file and update its position.

- float filter (float servoValue, float inputValue, int filter)
  Filter servo value for smoothing.

Function Documentation

float filter (float *servoValue*, float *inputValue*, int *filter*)

Parameters

servoValue	@Todo
inputValue	@Todo
filter	@Todo

Returns

Returns filtered servo value

uint8_t getInputCount (void)

Returns

Returns the total number of inputs, 0 ... 15

uint8_t getServoCount (void)

Returns

Returns the total number of servos, 0 ... 15

uint16_t minmaxServo (uint8_t *pin*, uint8_t *servo*)

Parameters

pin	Input pin to read, 0 ... 15
servo	Servo pin to write, 0 ... 15

Returns

Returns the servo position as uint16_t, 150 ... 600

void playServo (uint8_t *number*)

Parameters

number	Servo number to play, 0 ... 15

void recordServo (uint8_t *number*)

Parameters

number	Servo number to record, 0 ... 15

void updateServo (uint8_t *number*)

Parameters

number	Servo number to update, 0 ... 15

show.h File Reference

Functions for creating, loading, saving, recording and playing a show file.

Functions

- void newShow (void)
  Create a new show file, calls record after the file is created.

- bool loadShow (uint8_t number)
  Load a given show file from SD card.

- void saveShow (void)
  Save show file to SD card.

- void deleteShow (void)
  Delete show file from SD card.

- void playShow (void)
  Play the loaded show.

- void recordShow (void)
  Record show.

- void testShow (void)
  Test servo function.

- uint8_t getShowNumber (void)
  Get the loaded show number.

- void setShowNumber (uint8_t number)
  Set the show number.

- uint32_t getShowMS (void)
  Get the length of the show in milliseconds.

- void setShowMS (uint32_t ms)
  Set the length of the show in milliseconds.

- char * getShowName (void)
  Get the show name.

- void setShowName (char *name)
  Set the show name.

- void saveData (uint32_t address, uint8_t data)
  Brief description.

- uint8_t getData (uint32_t address)

Get data from show file.

- uint32_t getShowFrameCount (void)
  Get the current show frame.

- uint32_t getShowMaxFrameCount (void)
  Get the max show frame.

Function Documentation

uint8_t getData (uint32_t *address*)

Parameters

address	Address to read data from, 0x0000 ... 0xFFE0

Returns

Returns data from address, 0 ... 255

uint32_t getShowFrameCount (void)

Returns

Returns the current show frame count, 0x0000 ... 0xFFE0

uint32_t getShowMaxFrameCount (void)

Returns

Returns the max show frame, 0x0000 ... 0xFFE0

uint32_t getShowMS (void)

Returns

Returns the show length in milliseconds, 0 ... 4294967295

char* getShowName (void)

Returns

Returns the show name as a char[16]

uint8_t getShowNumber (void)

Returns

Returns the loaded show number, 0 ... 255

bool loadShow (uint8_t *number*)

Parameters

number	0 ... 255

Returns

`true` if show loaded and `false` if there was an error

void saveData (uint32_t *address*, uint8_t *data*)

Parameters

address	Address to write data to, 0x0000 ... 0xFFE0
data	Data to write, 0 ... 255

void setShowMS (uint32_t *ms*)

Parameters

ms	Show length in milliseconds, 0 ... 4294967295

void setShowName (char * *name*)

Parameters

name	Name of show to write to file

void setShowNumber (uint8_t *number*)

Parameters

number	Show number, 0 ... 255

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