# Erriez Serial Terminal library for Arduino

1.1.2

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# Contents

# Chapter 1

# Serial Terminal library for Arduino

This is a universal Serial Terminal library for Arduino to parse ASCII commands and arguments.

### Hardware

Any Arduino hardware with a serial port.

### Examples

Arduino IDE | Examples | Erriez Serial Terminal |

- `ErriezSerialTerminal`

### Documentation

- `Online HTML`
- `Download PDF`

### Usage

#### Initialization

Create a Serial Terminal object. This can be initialized with optional newline and delimiter characters.

Default newline character: `'\n'` Default delimiter character: `Space`

```
{c++}
#include <ErriezSerialTerminal.h>

// Newline character '\r' or '\n'
char newlineChar = '\n';
// Separator character between commands and arguments
char delimiterChar = ' ';

// Create serial terminal object
SerialTerminal term(newlineChar, delimiterChar);


void setup()
{
    // Initialize serial port
    Serial.begin(115200);

    // Initialize the built-in LED
    pinMode(LED_BUILTIN, OUTPUT);
    digitalWrite(LED_BUILTIN, LOW);
}
```

### Register new commands

Commands must be registered at startup with a corresponding `callback handler`. This registers the command only, excluding arguments.

The callback handler will be called when the command has been received including the newline character.

An example of registering multiple commands:

```
{c++}
void setup()
{
    ...

    // Add command callback handlers
    term.addCommand("?", cmdHelp);
    term.addCommand("help", cmdHelp);
    term.addCommand("on", cmdLedOn);
    term.addCommand("off", cmdLedOff);
}

void cmdHelp()
{
    // Print usage
    Serial.println(F("Serial terminal usage:"));
    Serial.println(F("  help or ?          Print this usage"));
    Serial.println(F("  on                 Turn LED on"));
    Serial.println(F("  off                Turn LED off"));
}

void cmdLedOn()
{
    // Turn LED on
    Serial.println(F("LED on"));
    digitalWrite(LED_BUILTIN, HIGH);
}

void cmdLedOff()
{
    // Turn LED off
    Serial.println(F("LED off"));
    digitalWrite(LED_BUILTIN, LOW);
}
```

### Set default handler

Optional: The default handler will be called when the command is not recognized.

```
{c++}
void setup()
{
    ...

    // Set default handler for unknown commands
```

```
    term.setDefaultHandler(unknownCommand);
}

void unknownCommand(const char *command)
{
    // Print unknown command
    Serial.print(F("Unknown command: "));
    Serial.println(command);
}
```

### Read from serial port

Read from the serial port in the main loop:

```
{c++}
void loop()
{
    // Read from serial port and handle command callbacks
    term.readSerial();
}
```

### Get next argument

Get pointer to next argument in serial receive buffer:

```
{c++}
char *arg;

// Get next argument
arg = term.getNext();
if (arg != NULL) {
    Serial.print(F("Argument: "));
    Serial.println(arg);
} else {
    Serial.println(F("No argument"));
}
```

### Get remaining characters

Get pointer to remaining characters in serial receive buffer:

```
{c++}
char *arg;

// Get remaining characters
arg = term.getRemaining();
if (arg != NULL) {
    Serial.print(F("Remaining: "));
    Serial.println(arg);
}
```

### Clear buffer

Optional: The serial receive buffer can be cleared with the following call:

```
{c++}
term.clearBuffer();
```

## Library configuration

`SerialTerminal.h` contains the following configuration macro's:

- `ST_RX_BUFFER_SIZE` : The default serial receive buffer size is 32 Bytes. This includes the command and arguments, excluding the `'\0'` character.
- `ST_NUM_COMMAND_CHARS`: The default number of command characters is 8 Bytes, excluding the `'\0'` character.

### Library dependencies

- None.

### Library installation

Please refer to the Wiki page.

### Other Arduino Libraries and Sketches from Erriez

- Erriez Libraries and Sketches

# Chapter 2

# Class Index

## 2.1 Class List

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

# Chapter 3

# File Index

## 3.1 File List

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

# Chapter 4

# Class Documentation

## 4.1 SerialTerminal Class Reference

SerialTerminal class.

`#include <ErriezSerialTerminal.h>`

### Public Member Functions

- SerialTerminal (char newlineChar='\n', char delimiterChar=' ')
  *SerialTerminal constructor.*
- void addCommand (const char *command, void(*function)())
  *Add command with callback handler.*
- void setDefaultHandler (void(*function)(const char *))
  *Set default callback handler for unknown commands.*
- void readSerial ()
  *Read from serial port.*
- void clearBuffer ()
  *Clear serial receive buffer.*
- char * getNext ()
  *Get next argument.*
- char * getRemaining ()
  *Get all remaining characters from serial buffer.*

### 4.1.1 Detailed Description

SerialTerminal class.

Definition at line 52 of file ErriezSerialTerminal.h.

### 4.1.2 Constructor & Destructor Documentation

#### 4.1.2.1 SerialTerminal()

```
SerialTerminal::SerialTerminal (
            char newlineChar = '\n',
            char delimiterChar = ' ' )  [explicit]
```

SerialTerminal constructor.

**Parameters**

| | |
|---|---|
| *newlineChar* | Newline character '\r' or '\n'.<br>Default: '\n'. |
| *delimiterChar* | Delimiter separator character between commands and arguments.<br>Default: space. |

Definition at line 44 of file ErriezSerialTerminal.cpp.

### 4.1.3 Member Function Documentation

#### 4.1.3.1 addCommand()

```
void SerialTerminal::addCommand (
            const char * command,
            void(*)() function )
```

Add command with callback handler.

**Parameters**

| | |
|---|---|
| *command* | Register a null-terminated ASCII command. |
| *function* | The function to be called when receiving the command. |

Definition at line 66 of file ErriezSerialTerminal.cpp.

#### 4.1.3.2 getNext()

```
char * SerialTerminal::getNext ( )
```

Get next argument.

**Returns**

Address: Pointer to next argument
NULL: No argument available

Definition at line 154 of file ErriezSerialTerminal.cpp.

#### 4.1.3.3 getRemaining()

```
char * SerialTerminal::getRemaining ( )
```

Get all remaining characters from serial buffer.

**Returns**

Address: Pointer to remaining characters in serial receive buffer.
NULL: No remaining data available.

Definition at line 165 of file ErriezSerialTerminal.cpp.

#### 4.1.3.4 readSerial()

```
void SerialTerminal::readSerial ( )
```

Read from serial port.

Process command when newline character has been received.

Definition at line 98 of file ErriezSerialTerminal.cpp.

#### 4.1.3.5 setDefaultHandler()

```
void SerialTerminal::setDefaultHandler (
            void(*)(const char *) function )
```

Set default callback handler for unknown commands.

Store default callback handler which will be called when receiving an unknown command.

**Parameters**

| | |
|---|---|
| *function* | Address of the default handler. This function will be called when the command is not recognized. The parameter contains the first ASCII command. |

Definition at line 88 of file ErriezSerialTerminal.cpp.

The documentation for this class was generated from the following files:

- src/ErriezSerialTerminal.h
- src/ErriezSerialTerminal.cpp

# Chapter 5

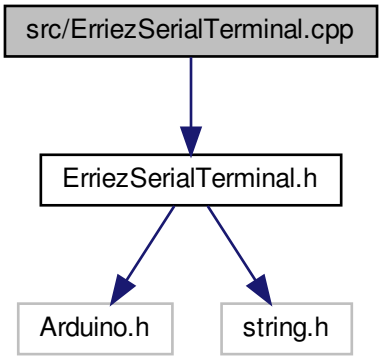
# File Documentation

## 5.1 src/ErriezSerialTerminal.cpp File Reference

Serial terminal library for Arduino.

```
#include "ErriezSerialTerminal.h"
```

Include dependency graph for ErriezSerialTerminal.cpp:




### 5.1.1 Detailed Description

Serial terminal library for Arduino.

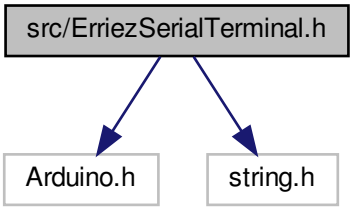
Source: https://github.com/Erriez/ErriezSerialTerminal Documentation: https://erriez.github.io/ErriezSerialTerminal

## 5.2 src/ErriezSerialTerminal.h File Reference

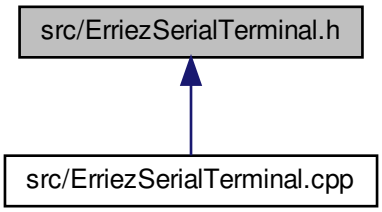
Serial terminal library for Arduino.

```
#include <Arduino.h>
#include <string.h>
```

Include dependency graph for ErriezSerialTerminal.h:




This graph shows which files directly or indirectly include this file:




### Classes

- class SerialTerminal

  *SerialTerminal class.*

### Macros

- #define ST_RX_BUFFER_SIZE 32

  *Size of the serial receive buffer in bytes (Maximum length of one command plus arguments)*
- #define ST_NUM_COMMAND_CHARS 8

  *Number of command characters.*

### 5.2.1 Detailed Description

Serial terminal library for Arduino.

Source: https://github.com/Erriez/ErriezSerialTerminal Documentation: https://erriez.github.io/ErriezSerialTerminal

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