

# Serial Terminal library for Arduino

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# 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

- Examples | Erriez Serial Terminal | [GettingStarted](#)

### 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`

```
1 {c++}
2 #include <SerialTerminal.h>
3
4 // Newline character '\r' or '\n'
5 char newlineChar = '\n';
6 // Separator character between commands and arguments
7 char delimiterChar = ' ';
8
9 // Create serial terminal object
10 SerialTerminal term(newlineChar, delimiterChar);
11
12
13 void setup()
14 {
15     // Initialize serial port
16     Serial.begin(115200);
17
18     // Initialize the built-in LED
19     pinMode(LED_BUILTIN, OUTPUT);
20     digitalWrite(LED_BUILTIN, LOW);
21 }
```

## 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:

```
1 {c++}
2 void setup()
3 {
4     ...
5
6     // Add command callback handlers
7     term.addCommand("?", cmdHelp);
8     term.addCommand("help", cmdHelp);
9     term.addCommand("on", cmdLedOn);
10    term.addCommand("off", cmdLedOff);
11 }
12
13 void cmdHelp()
14 {
15     // Print usage
16     Serial.println(F("Serial terminal usage:"));
17     Serial.println(F("  help or ?      Print this usage"));
18     Serial.println(F("  on           Turn LED on"));
19     Serial.println(F("  off          Turn LED off"));
20 }
21
22 void cmdLedOn()
23 {
24     // Turn LED on
25     Serial.println(F("LED on"));
26     digitalWrite(LED_BUILTIN, HIGH);
27 }
28
29 void cmdLedOff()
30 {
31     // Turn LED off
32     Serial.println(F("LED off"));
33     digitalWrite(LED_BUILTIN, LOW);
34 }
```

## Set default handler

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

```
1 {c++}
2 void setup()
3 {
4     ...
5
6     // Set default handler for unknown commands
7     term.setDefaultHandler(unknownCommand);
8 }
9
10 void unknownCommand(const char *command)
11 {
12     // Print unknown command
13     Serial.print(F("Unknown command: "));
14     Serial.println(command);
15 }
```

## Read from serial port

Read from the serial port in the main loop:

```
1 {c++}
2 void loop()
3 {
4     // Read from serial port and handle command callbacks
5     term.readSerial();
6 }
```

## Get next argument

Get pointer to next argument in serial receive buffer:

```
1 {c++}
2 char *arg;
3
4 // Get next argument
5 arg = term.getNext();
6 if (arg != NULL) {
7     Serial.print(F("Argument: "));
8     Serial.println(arg);
9 } else {
10     Serial.println(F("No argument"));
11 }
```

## Get remaining characters

Get pointer to remaining characters in serial receive buffer:

```
1 {c++}
2 char *arg;
3
4 // Get remaining characters
5 arg = term.getRemaining();
6 if (arg != NULL) {
7     Serial.print(F("Remaining: "));
8     Serial.println(arg);
9 }
```

## Clear buffer

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

```
1 {c++}
2 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:

<a href="#">SerialTerminal</a>	
<a href="#">SerialTerminal</a> class	9



## Chapter 3

# File Index

### 3.1 File List

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

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<a href="#">SerialTerminal.h</a>	
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## Chapter 4

# Class Documentation

### 4.1 SerialTerminal Class Reference

[SerialTerminal](#) class.

```
#include <SerialTerminal.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 SerialTerminal.h.

#### 4.1.2 Constructor & Destructor Documentation

4.1.2.1 [SerialTerminal::SerialTerminal](#) ( char *newlineChar* = '\n', char *delimiterChar* = ' ' ) [explicit]

[SerialTerminal](#) constructor.

**Parameters**

<i>newlineChar</i>	Newline character ' <code>\r</code> ' or ' <code>\n</code> '. Default: ' <code>\n</code> '.
<i>delimiterChar</i>	Delimiter separator character between commands and arguments. Default: space.

Definition at line 44 of file SerialTerminal.cpp.

### 4.1.3 Member Function Documentation

#### 4.1.3.1 void SerialTerminal::addCommand ( const char \* *command*, void(\*)() *function* )

Add command with callback handler.

**Parameters**

<i>command</i>	Register a null-terminated ASCII command.
<i>function</i>	The function to be called when receiving the <i>command</i> .

Definition at line 66 of file SerialTerminal.cpp.

#### 4.1.3.2 char \* SerialTerminal::getNext ( )

Get next argument.

**Returns**

Address: Pointer to next argument  
NULL: No argument available

Definition at line 154 of file SerialTerminal.cpp.

#### 4.1.3.3 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 SerialTerminal.cpp.

#### 4.1.3.4 void SerialTerminal::readSerial ( )

Read from serial port.

Process command when newline character has been received.

Definition at line 98 of file SerialTerminal.cpp.

#### 4.1.3.5 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

<i>function</i>	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 SerialTerminal.cpp.

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

- [SerialTerminal.h](#)
- [SerialTerminal.cpp](#)





## Chapter 5

# File Documentation

### 5.1 SerialTerminal.cpp File Reference

Serial terminal library for Arduino.

```
#include "SerialTerminal.h"
```

#### 5.1.1 Detailed Description

Serial terminal library for Arduino.

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

### 5.2 SerialTerminal.h File Reference

Serial terminal library for Arduino.

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

#### 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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