

RobotDyn 4-digit display library for Arduino  
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## Chapter 1

# RobotDyn 4-digit LED display with TM1637 library for Arduino.

This is a RobotDyn 4-digit 7-segment LED display library for Arduino. The PCB contains a two wire **TM1637 LED / button** controller.

**Note:** This library uses the double-dot to display a time. The LED dots per segment are not wired and cannot be controlled.

### Library features

- Set brightness (0..7)
- Set digit (0..3)
- Control all individual segments per digit
- Control double dots (on/off)
- Display time (hours:minutes)
- Display decimal value (-999..9999) with optional padding
- Display hexadecimal value (0...0xFFFF) with optional padding

### Hardware

#### Connection display with Arduino

Display	Arduino UNO / Nano / Pro Mini / Leonardo / Mega2560 / ESP8266 / Lolin32
GND	GND
VCC	5V (or 3.3V)
CLK	Any DIGITAL pin
DIO	Any DIGITAL pin

Other MCU's may work, but are not tested.

## Examples

Arduino IDE | Examples | Erriez RobotDyn 4-digit display:

- [7SegmentDisplayDemo](#)

## Documentation

- [Online HTML](#)
- [Download PDF](#)

## Usage

### Initialization

```
1 {c++}
2 #include <RobotDyn4DigitDisplay.h>
3
4 // Connect display pins to the Arduino DIGITAL pins
5 #if defined(ARDUINO_ARCH_AVR)
6 #define TM1637_CLK_PIN      2
7 #define TM1637_DIO_PIN      3
8 #elif defined(ARDUINO_ESP8266_WEMOS_D1MINI) || defined(ESP8266_WEMOS_D1MINI) ||
   defined(ARDUINO_ESP8266_NODEMCU)
9 #define TM1637_CLK_PIN      D2
10 #define TM1637_DIO_PIN      D3
11 #elif defined(ARDUINO_LOLIN32)
12 #define TM1637_CLK_PIN      0
13 #define TM1637_DIO_PIN      4
14 #else
15 #error "May work, but not tested on this target"
16 #endif
17
18 // Create display object
19 RobotDyn4DigitDisplay display(TM1637_CLK_PIN, TM1637_DIO_PIN);
20
21 void setup()
22 {
23     // Initialize TM1637
24     display.begin();
25 }
```

### Clear display

```
1 {c++}
2 // Clear display
3 display.clear();    // _ _ _ _
```

### Set brightness

```
1 {c++}
2 // Set brightness
3 display.setBrightness(0); // Minimum
4 display.setBrightness(7); // Maximum
```

### Display time

```
1 {c++}
2 // Display time
3 display.time(11, 59);    // 11 : 59
```

## Control time double dot

```
1 {c++}
2 display.doubleDots(true);    // Turn double dot on
3 display.doubleDots(false);   // Turn double dot off
```

## Display decimal value

```
1 {c++}
2 // Display decimal values
3 display.dec(-999);    // - 9 9 9
4 display.dec(-1);     // _ _ - 1
5 display.dec(0);      // _ _ _ 0
6 display.dec(1);      // _ _ _ 1
7 display.dec(123);    // _ 1 2 3
8 display.dec(9999);   // 9 9 9 9
9 display.dec(10000);  // - - - -
10
11 // Display decimal values with padding
12 display.dec(1);      // _ _ _ 1 (Default no padding)
13 display.dec(1, 2);   // _ _ 0 1 (2 digits padding)
14 display.dec(1, 3);   // _ 0 0 1 (3 digits padding)
15 display.dec(1, 4);   // 0 0 0 1 (4 digits padding)
16
17 display.dec(34, 3);  // _ 0 3 4 (2 digits padding)
```

## Display hexadecimal value

```
1 {c++}
2 // Display hexadecimal values
3 display.dec(0x0000);    // 0 0 0 0
4 display.dec(0x1234);    // 1 2 3 4
5 display.dec(0xABCD);    // A B C D
6 display.dec(0xBEEF);    // B E E F
7
8 // Display hexadecimal values with padding
9 display.hex(0x0001);    // _ _ _ 1 (Default no padding)
10 display.hex(0x0001, 2); // _ _ 0 1 (2 digits padding)
11 display.hex(0x0001, 3); // _ 0 0 1 (3 digits padding)
12 display.hex(0x0001, 4); // 0 0 0 1 (4 digits padding)
13
14 display.hex(0x0034, 3); // _ 0 3 4 (2 digits padding)
```

## Control individual digits

```
1 {c++}
2 // Display individual digits: 1 2 3 4
3 display.digit(0, 1);
4 display.digit(1, 2);
5 display.digit(2, 3);
6 display.digit(3, 4);
```

## Special characters

```
1 {c++}
2 Control individual LED-segments (bit numbers):
3   - 0 -
4   |   |
5   5   1
6   |   |
7   - 6 -
8   |   |
9   4   2
10  |   |
11  - 3 - .7
12
13 // Display error: E r _
14 display.rawDigit(0, 0b01111001);
15 display.rawDigit(1, 0b01010000);
16 display.rawDigit(2, 0b01010000);
17 display.rawDigit(3, 0b00000000);
```

```
18
19 // Display H character: _ _ _ H
20 display.rawDigit(3, 0b01110110);
21
22 // Display negative temperature: - 1 ` C
23 display.rawDigit(0, SEGMENTS_MINUS);
24 display.digit(1, 1);
25 display.rawDigit(2, SEGMENTS_DEGREE);
26 display.rawDigit(3, SEGMENTS_CELSIUS);
27
28 // Display rect
29 display.rawDigit(0, 0b00111001);
30 display.rawDigit(1, 0b00001001);
31 display.rawDigit(2, 0b00001001);
32 display.rawDigit(3, 0b00001111);
```

## Library dependencies

- [Erriez TM1637](#) library

## Library installation

Please refer to the [Wiki](#) page.

## Other Arduino Libraries and Sketches from Erriez

- [Erriez Libraries and Sketches](#)



## Chapter 2

# Hierarchical Index

### 2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

TM1637	
RobotDyn4DigitDisplay . . . . .	<a href="#">11</a>



## Chapter 3

# Class Index

### 3.1 Class List

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

<a href="#">RobotDyn4DigitDisplay</a>	
<a href="#">RobotDyn4DigitDisplay</a> class . . . . .	11



## Chapter 4

# File Index

### 4.1 File List

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

<a href="#">RobotDyn4DigitDisplay.cpp</a>	
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## Chapter 5

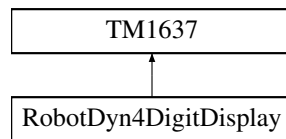
# Class Documentation

### 5.1 RobotDyn4DigitDisplay Class Reference

[RobotDyn4DigitDisplay](#) class.

```
#include <RobotDyn4DigitDisplay.h>
```

Inheritance diagram for RobotDyn4DigitDisplay:



#### Public Member Functions

- [RobotDyn4DigitDisplay](#) (uint8\_t clkPin, uint8\_t dioPin, bool displayOn=true, uint8\_t brightness=5)  
*Constructor RobotDyn 4-digit LED display.*
- void [rawDigit](#) (uint8\_t [digit](#), uint8\_t value)  
*Display raw digit.*
- void [digit](#) (uint8\_t digit, uint8\_t value)  
*Display a single digit.*
- void [doubleDots](#) (bool on)  
*Display double time dots.*
- void [time](#) (uint8\_t hour, uint8\_t minute, bool doubleDotsOn=true, bool padHours=true)  
*Display time.*
- void [dec](#) (int value, uint8\_t pad=1)  
*Display decimal value.*
- void [hex](#) (unsigned int value, uint8\_t pad=4)  
*Display hexadecimal value with optional padding.*
- void [overflow](#) ()  
*Display overflow with four minus digits.*

### 5.1.1 Detailed Description

[RobotDyn4DigitDisplay](#) class.

This class

Definition at line 52 of file RobotDyn4DigitDisplay.h.

### 5.1.2 Constructor & Destructor Documentation

#### 5.1.2.1 RobotDyn4DigitDisplay::RobotDyn4DigitDisplay ( uint8\_t *clkPin*, uint8\_t *dioPin*, bool *displayOn* = true, uint8\_t *brightness* = 5 )

Constructor RobotDyn 4-digit LED display.

Parameters

<i>clkPin</i>	Clock pins.
<i>dioPin</i>	Bi-directional data pin.
<i>displayOn</i>	Optional: Turn display on. Default: true
<i>brightness</i>	Optional: Set brightness 0..7 Default: 5.

Definition at line 84 of file RobotDyn4DigitDisplay.cpp.

### 5.1.3 Member Function Documentation

#### 5.1.3.1 void RobotDyn4DigitDisplay::dec ( int *value*, uint8\_t *pad* = 1 )

Display decimal value.

Parameters

<i>value</i>	0000..9999: Decimal value.
<i>pad</i>	0..4: Optional: Number of digits to pad with a zero. Default: 1.

Definition at line 170 of file RobotDyn4DigitDisplay.cpp.

#### 5.1.3.2 void RobotDyn4DigitDisplay::digit ( uint8\_t *digit*, uint8\_t *value* )

Display a single digit.

Parameters

<i>digit</i>	Digit number 0 (left digit) ... 3 (right digit)
<i>value</i>	Digit value 0..9 or 0x00..0x0F.



Definition at line 113 of file RobotDyn4DigitDisplay.cpp.

#### 5.1.3.3 void RobotDyn4DigitDisplay::doubleDots ( bool *on* )

Display double time dots.

##### Parameters

<i>on</i>	true: Turn double time dots on. false: Turn double time dots off.
-----------	--

Definition at line 126 of file RobotDyn4DigitDisplay.cpp.

#### 5.1.3.4 void RobotDyn4DigitDisplay::hex ( unsigned int *value*, uint8\_t *pad* = 4 )

Display hexadecimal value with optional padding.

##### Parameters

<i>value</i>	0x0000..0xFFFF: Hexadecimal value
<i>pad</i>	0..4: Optional: Number of digits to pad with a zero. Default: 4.

Definition at line 224 of file RobotDyn4DigitDisplay.cpp.

#### 5.1.3.5 void RobotDyn4DigitDisplay::rawDigit ( uint8\_t *digit*, uint8\_t *value* )

Display raw digit.

##### Parameters

<i>digit</i>	Digit number 0 (left digit) .. 3 (right digit)
<i>value</i>	LED segments

Definition at line 98 of file RobotDyn4DigitDisplay.cpp.

#### 5.1.3.6 void RobotDyn4DigitDisplay::time ( uint8\_t *hour*, uint8\_t *minute*, bool *doubleDotsOn* = true, bool *padHours* = true )

Display time.

##### Parameters

<i>hour</i>	0..59: Hours
<i>minute</i>	0..59: Minutes
<i>doubleDotsOn</i>	true: Display double time dots. (Default) false: Turn double time dots off.
<i>padHours</i>	true: Display first digit as 0 when hours < 10. false: Turn first digit off when hours < 10.

Definition at line 149 of file RobotDyn4DigitDisplay.cpp.

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

- [RobotDyn4DigitDisplay.h](#)
- [RobotDyn4DigitDisplay.cpp](#)

## Chapter 6

# File Documentation

### 6.1 RobotDyn4DigitDisplay.cpp File Reference

[RobotDyn4DigitDisplay](#) library for Arduino.

```
#include <pgmspace.h>
#include "RobotDyn4DigitDisplay.h"
```

#### 6.1.1 Detailed Description

[RobotDyn4DigitDisplay](#) library for Arduino.

Source: <https://github.com/Erriez/ErriezRobotDyn4DigitDisplay> Documentation↔  
: <https://erriez.github.io/ErriezRobotDyn4DigitDisplay>

### 6.2 RobotDyn4DigitDisplay.h File Reference

[RobotDyn4DigitDisplay](#) library for Arduino.

```
#include <Arduino.h>
#include <TM1637.h>
```

#### Classes

- class [RobotDyn4DigitDisplay](#)  
*[RobotDyn4DigitDisplay](#) class.*

## Macros

- `#define ROBOT_DYN_4DIGIT_DISPLAY_NUM_DIGITS 4`  
*Number of display digits.*
- `#define SEGMENTS_MINUS 0b01000000`  
*Special characters.*
- `#define SEGMENTS_DEGREE 0b01100011`  
*Degree symbol.*
- `#define SEGMENTS_CELSIUS 0b00111001`  
*Celsius symbol.*

### 6.2.1 Detailed Description

[RobotDyn4DigitDisplay](#) library for Arduino.

Source: <https://github.com/Erriez/ErriezRobotDyn4DigitDisplay> Documentation↔  
: <https://erriez.github.io/ErriezRobotDyn4DigitDisplay>

### 6.2.2 Macro Definition Documentation

#### 6.2.2.1 `#define SEGMENTS_MINUS 0b01000000`

Special characters.

Minus sign

Definition at line 43 of file RobotDyn4DigitDisplay.h.

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