RobotDyn 4-digit display library for Arduino

1.0.0

Generated by Doxygen 1.8.11

Contents

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:

- 7SegementDisplayDemo

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);   // 1 1 : 5 9
```

Control time double dot

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

Display decimal value

```
{c++}
// Display decimal values
display.dec(-999);  // - 9 9 9
display.dec(-1);    // _ _ - 1
display.dec(0);     // _ _ _ 0
display.dec(1);     // _ _ _ 1
display.dec(123);   // _ 1 2 3
display.dec(9999);  // 9 9 9 9
display.dec(10000); // - - - -

// Display decimal values with padding
display.dec(1);     // _ _ _ 1  (Default no padding)
display.dec(1, 2);  // _ _ 0 1  (2 digits padding)
display.dec(1, 3);  // _ 0 0 1  (3 digits padding)
display.dec(1, 4);  // 0 0 0 1  (4 digits padding)

display.dec(34, 3); // _ 0 3 4  (2 digits padding)
```

Display hexadecimal value

```
{c++}
// Display hexadecimal values
display.dec(0x0000);    // 0 0 0 0
display.dec(0x1234);    // 1 2 3 4
display.dec(0xABCD);    // A B C D
display.dec(0xBEEF);    // B E E F

// Display hexadecimal values with padding
display.hex(0x0001);    // _ _ _ 1  (Default no padding)
display.hex(0x0001, 2); // _ _ 0 1  (2 digits padding)
display.hex(0x0001, 3); // _ 0 0 1  (3 digits padding)
display.hex(0x0001, 4); // 0 0 0 1  (4 digits padding)

display.hex(0x0034, 3); // _ 0 3 4  (2 digits padding)
```

Control individual digits

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

Special characters

```
{c++}
Control individual LED-segments (bit numbers):
    - 0 -
    |   |
    5   1
    |   |
    - 6 -
    |   |
    4   2
     |   |
     - 3 -  .7

// Display error: E r r _
display.rawDigit(0, 0b01111001);
display.rawDigit(1, 0b01010000);
display.rawDigit(2, 0b01010000);
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:

Chapter 3

Class Index

3.1 Class List

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

Chapter 4

File Index

4.1 File List

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

Chapter 5

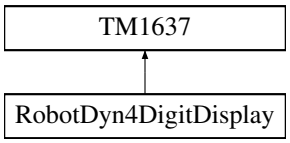
Class Documentation

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

clkPin	Clock pins.
dioPin	Bi-directional data pin.
displayOn	Optional: Turn display on. Default: true
brightness	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

value	0000..9999: Decimal value.
pad	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

digit	Digit number 0 (left digit) ... 3 (right digit)
value	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

on	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

value	0x0000..0xFFFF: Hexadecimal value
pad	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

digit	Digit number 0 (left digit) .. 3 (right digit)
value	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

hour	0..59: Hours
minute	0..59: Minutes
doubleDotsOn	true: Display double time dots. (Default) false: Turn double time dots off.
padHours	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.

Index