

# CP316

## Liquid Crystal Displays (LCDs)

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# HD44780 Display Controller

# HD44780 Display Controller

used in many different displays

# HD44780 Display Controller

used in many different displays  
pins and instructions

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→ Section 7.7

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→ page 178 - 2 line x 8 character display

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→ page 178 - 2 line x 8 character display

internal memory

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internal memory

→ Sections 7.7.1 to 7.7.3



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→ page 178 - 2 line x 8 character display

internal memory

→ Sections 7.7.1 to 7.7.3

internal registers

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used in many different displays

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→ Section 7.7

→ page 178 - 2 line x 8 character display

internal memory

→ Sections 7.7.1 to 7.7.3

internal registers

→ Section 7.7.4

# HD44780 Display Controller (continued)

# HD44780 Display Controller (continued)

4 bit and 8 bit modes

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4 bit and 8 bit modes  
(including instruction timing)

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4 bit and 8 bit modes  
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→ Section 7.7.6

# HD44780 Display Controller (continued)

- 4 bit and 8 bit modes  
(including instruction timing)
- Section 7.7.6
- [page 200 - 4 bit interface](#)

# HD44780 Display Controller (continued)

- 4 bit and 8 bit modes  
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- Section 7.7.6
- [page 200 - 4 bit interface](#)
- QwikFlash connections



# HD44780 Display Controller (continued)

4 bit and 8 bit modes  
(including instruction timing)

→ Section 7.7.6

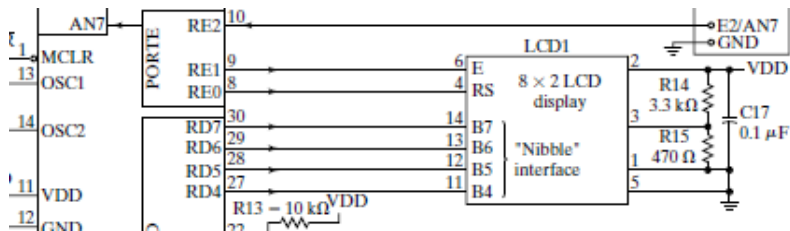
→ [page 200 - 4 bit interface](#)

QwikFlash connections

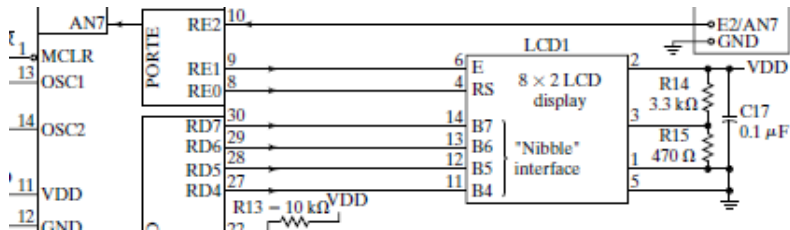
ramifications???

# Qwikflash LCD connections

## Qwikflash LCD connections

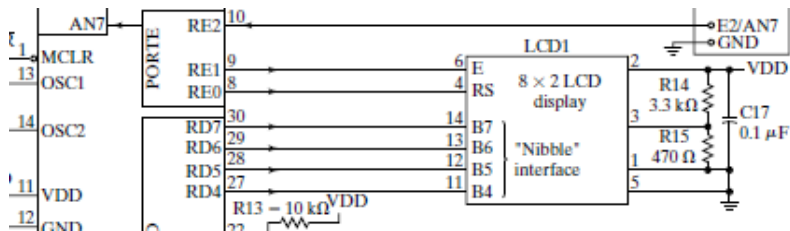


## Qwikflash LCD connections



What are pins 1, 2, 3, and 5?

## Qwikflash LCD connections



What are pins 1, 2, 3, and 5? (See page 7)

# Initialization

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Two methods of resetting device:

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- 1 internal reset (on power-up)



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→ [page 190](#) - see note

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→ [page 190 - see note](#)
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Two methods of resetting device:

- 1 internal reset (on power-up)  
→ [page 190 - see note](#)
- 2 by instruction (NOT in textbook)  
→ [page 213 - 4 bit mode reset](#)

# Initialization

Two methods of resetting device:

- 1 internal reset (on power-up)  
→ [page 190 - see note](#)
- 2 by instruction (NOT in textbook)  
→ [page 213 - 4 bit mode reset](#)

Example 7.6 problems

# Code

# Code

## PORT configuration

# Code

PORT configuration  
→ macro or subroutine?

# Code

PORT configuration

→ macro or subroutine?

Initiallization



# Code

PORT configuration

→ macro or subroutine?

Initiallization

→ macro or subroutine?

# Code

PORT configuration

→ macro or subroutine?

Initiallization

→ macro or subroutine?

Write character

# Code

PORT configuration

→ macro or subroutine?

Initiallization

→ macro or subroutine?

Write character

→ macro or subroutine?

# Code

PORT configuration

→ macro or subroutine?

Initiallization

→ macro or subroutine?

Write character

→ macro or subroutine?

Write ???

# Code

PORT configuration

→ macro or subroutine?

Initiallization

→ macro or subroutine?

Write character

→ macro or subroutine?

Write ???

→ macro or subroutine?

# Code

PORT configuration

→ macro or subroutine?

Initiallization

→ macro or subroutine?

Write character

→ macro or subroutine?

Write ???

→ macro or subroutine?

*How to create delays??*