

# Addressing Techniques of Liquid Crystal Displays (Wiley Series in Display Technology)

By Temkar N. Ruckmongathan



Addressing Techniques of Liquid Crystal Displays (Wiley Series in Display Technology) By Temkar N. Ruckmongathan

Unique reference source that can be used from the beginning to end of a design project to aid choosing an appropriate LCD addressing technique for a given application

This book will be aimed at design engineers who are likely to embed LCD drivers and controllers in many systems including systems on chip. Such designers face the challenge of making the right choice of an addressing technique that will serve them with best performance at minimal cost and complexity. Readers will be able to learn about various methods available for driving matrix LCDs and the comparisons at the end of each chapter will aid readers to make an informed design choice.

The book will address the various driving techniques related to LCDs. Due to the non-linear response of the liquid crystal to external voltages, different driving methods such as passive and active matrix driving can be utilized. The associated theoretical basis of these driving techniques is introduced, and this theoretical analysis is supplemented by information on the implementation of drivers and controllers to link the theory to practice.

- Written by an experienced research scientist with over 30 years in R&D in this field.
- Acts as an exhaustive review and comparison of techniques developed for passive-matrix addressing of twisted nematic and super-twisted nematic (STN) LCDs.
- Discusses the trend towards "High Definition" displays and that a hybrid approach to drive matrix LCDs (combination of active and passive matrix addressing) will be the future of LCD addressing.
- Contains the author's recent work on Bit-Slice Addressing that is useful for fast responding LCDs, as well as a chapter on driving ferroelectric LCDs
- Provides an objective comparison that will enable designers to make an informed choice of an addressing technique for a specific application.

- Includes examples of the practical applications of addressing techniques.
- Organised in a way that each chapter can be read independently; with the basic knowledge and historical background gained from the introductory chapters, adequate for understanding the techniques that are presented in the remaining chapters making it a self-contained reference.

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#### **Editorial Review**

From the Back Cover

An image is generated by the Simultaneous application of scanning and data waveforms to row and column electrodes in flat panel displays. This book is a comprehensive guide to addressing techniques that are based on the nonlinear response of pixels in LCDs. Addressing techniques are introduced with a strong theoretical basis and supported by detailed analysis and examples, as well as information given on drivers to enable the practical implementation of the techniques discussed in the book.

#### **Key Features:**

- Provides an introduction to liquid crystals and some electro-optic effects based on the properties of liquid crystals.
- Includes recent work on Bit Slice Addressing, Multibit Slice Addressing and Micro Pulse Width Modulation to drive displays with short response times.
- Compares the various addressing techniques on offer, enabling designers to make an informed choice of an addressing technique for a specific end use.
- Presents a range of addressing techniques that are based on line-by-line addressing, multiline addressing and methods to display greyscales.
- Features an in-depth analysis of hybrid addressing techniques and addressing techniques based on wavelets.
- Covers the latest research on backlight switching to reduce power consumption of an LCD without any
  compromise on image quality, as well as recent developments on the cross-pair method to display
  greyscales.

#### **Users Review**

#### From reader reviews:

#### Willene Choate:

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#### **Eric Bass:**

Addressing Techniques of Liquid Crystal Displays (Wiley Series in Display Technology) can be one of your

beginner books that are good idea. All of us recommend that straight away because this publication has good vocabulary that can increase your knowledge in words, easy to understand, bit entertaining however delivering the information. The article writer giving his/her effort to put every word into pleasure arrangement in writing Addressing Techniques of Liquid Crystal Displays (Wiley Series in Display Technology) nevertheless doesn't forget the main position, giving the reader the hottest in addition to based confirm resource info that maybe you can be among it. This great information can drawn you into new stage of crucial considering.

#### **Mamie Perkins:**

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#### **Mary Barrientes:**

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