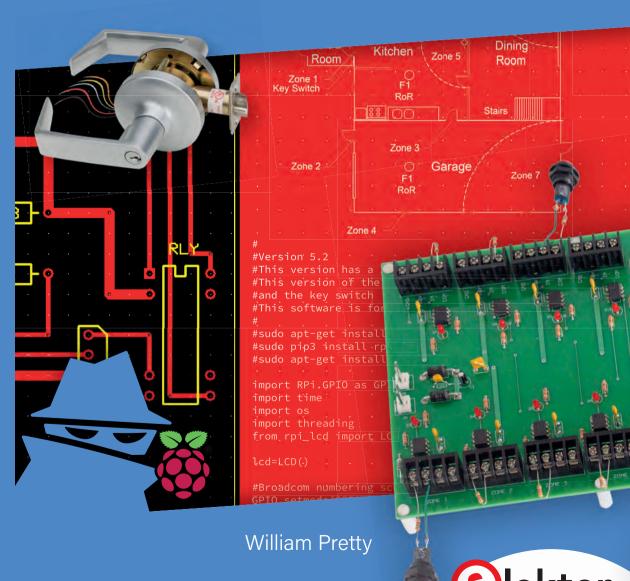


Building a High-Tech Alarm System with Raspberry Pi



Building a High-Tech Alarm System with Raspberry Pi

William Pretty



This is an Elektor Publication. Elektor is the media brand of Elektor International Media B.V.

PO Box 11, NL-6114-ZG Susteren, The Netherlands

Phone: +31 46 4389444

• All rights reserved. No part of this book may be reproduced in any material form, including photocopying, or storing in any medium by electronic means and whether or not transiently or incidentally to some other use of this publication, without the written permission of the copyright holder except in accordance with the provisions of the Copyright Designs and Patents Act 1988 or under the terms of a licence issued by the Copyright Licencing Agency Ltd., 90 Tottenham Court Road, London, England W1P 9HE. Applications for the copyright holder's permission to reproduce any part of the publication should be addressed to the publishers.

Declaration

The author, editor, and publisher have used their best efforts in ensuring the correctness of the information contained in this book. They do not assume, and hereby disclaim, any liability to any party for any loss or damage caused by errors or omissions in this book, whether such errors or omissions result from negligence, accident or any other cause. All the programs given in the book are Copyright of the Author and Elektor International Media. These programs may only be used for educational purposes. Written permission from the Author or Elektor must be obtained before any of these programs can be used for commercial purposes.

British Library Cataloguing in Publication Data
 A catalogue record for this book is available from the British Library

- ISBN 978-3-89576-551-3 Print
 ISBN 978-3-89576-552-0 eBook
- © Copyright 2023: Elektor International Media B.V.
 Prepress Production: D-Vision, Julian van den Berg

Elektor is the world's leading source of essential technical information and electronics products for pro engineers, electronics designers, and the companies seeking to engage them. Each day, our international team develops and delivers high-quality content - via a variety of media channels (including magazines, video, digital media, and social media) in several languages - relating to electronics design and DIY electronics. www.elektormagazine.com

Contents

| Cn | lapter 1 • Introduction to Alarm Systems |
|----------------------|--|
| | Alarm System Sensors - Door / Window Contact |
| | Motion Detectors |
| | Glass Break Sensor |
| | Fire Alarm Sensors - Heat Detectors |
| | Fire Alarm Sensors - Smoke Alarms |
| | Access Control |
| | Block diagram of the alarm system |
| | References |
| Ch | napter 2 ● Hardware |
| Ch | apter 3 ● Human Interface22 |
| | LCD Display |
| | Human Interface - Voice Output |
| | Human Interface - RFID Card Reader |
| Chapter 4 ● Software | |
| | Version 5.1 |
| | Version 5.2 |
| Ch | apter 5 ● Printed Circuit Board47 |
| | Assembly |
| | Printed Circuit Board |
| Ch | apter 6 ● Alarm System Wiring |
| | Zone Test Switches |
| | Constructing the Harnesses |
| | Testing the Harnesses |
| | Wiring the Sensors |
| Ch | apter 7 ● Planning your Alarm System |
| | Step 1 – The Walk-about |
| | Typical Four-Bedroom House |
| | Typical Pub or Restaurant |
| | Commercial Office Space |
| | |

| | Laboratory | |
|-----------------------------------|------------------------------------|--|
| Chapter 8 ● Future Enhancements83 | | |
| | Running Alarm Program from Boot | |
| | Running Raspberry Pi from 12 volts | |
| | Water / Moisture Detector | |
| | Adding a Door Solenoid | |
| | Links | |
| Appendix | | |
| | Bill of Materials | |
| | Software | |
| | Schematics | |