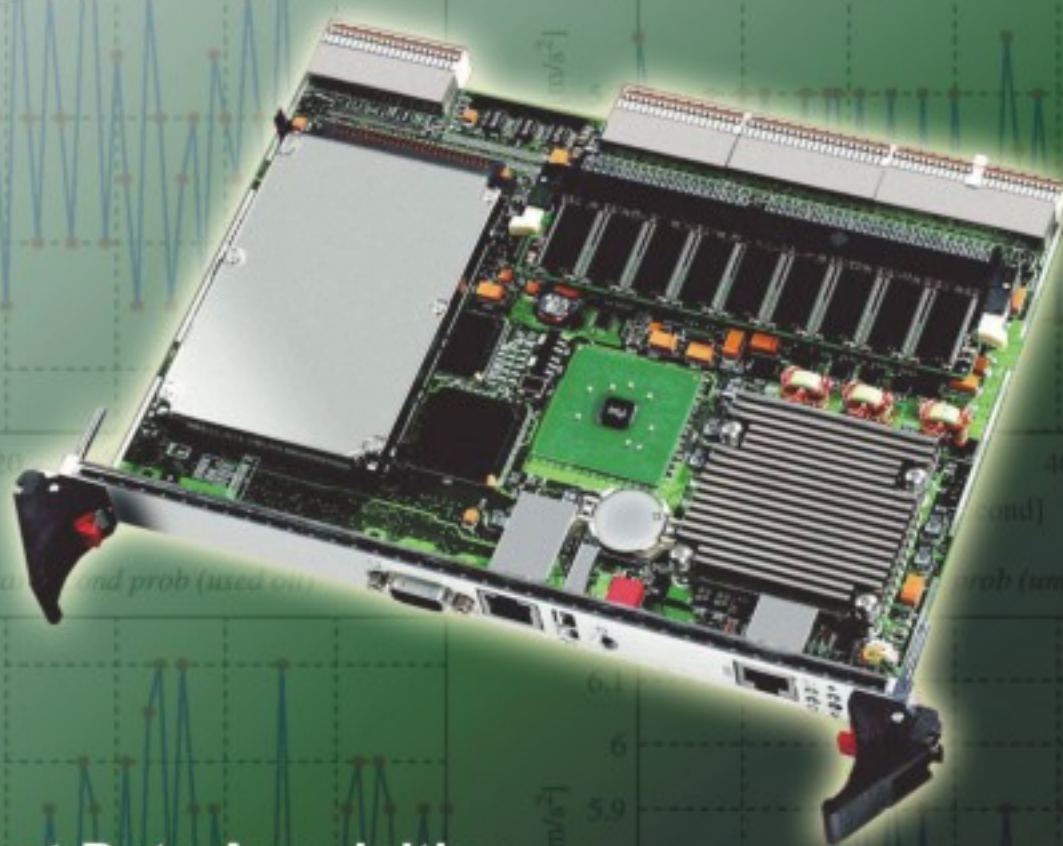


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**Intelligent Data Acquisition
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Digital Sensors and Sensor Systems: Practical Design

Sergey Y. Yurish



Formats: printable pdf (Acrobat) and print (hardcover), 419 pages

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The goal of this book is to help the practitioners achieve the best metrological and technical performances of digital sensors and sensor systems at low cost, and significantly to reduce time-to-market. It should be also useful for students, lectures and professors to provide a solid background of the novel concepts and design approach.

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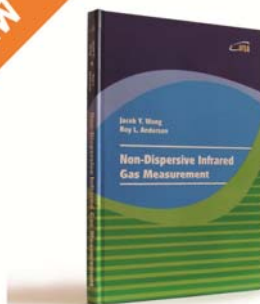
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A High Precision Multi-Function Electronic Scale Based on PSoC3

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Abstract: PSoC3 is adopted as the controller core of the design, and resistance strain type pressure sensor is the weighing transducer. Use by the built-in analog and digital resources and a small external function module of PSoC3, designed a new type of electronic scale with touch induction buttons and slider as the main operation interface. After the whole debugging and actual testing, realized the calibration, speech broadcast, zeros, peeling, PC processing, currency conversion, calendar, temperature and humidity detection and other capabilities. With many characteristics, such as good stability, high accuracy, the function is all ready, show intuitional and simple operation, etc. Can be used for the occasion which needs some high precision weighing, such as civil and industrial. *Copyright © 2013 IFSA.*

Keywords: Electronic scale, PSoC3, High precision, Multi-functional, Touch induction.

1. Introduction

Along with the electronic technology and automation measurement technology of development, in China, the traditional weighing system in the aspects of accuracy ratio of function has been difficult to satisfy people's needs, especially in intelligent portable tiny the measurement of quality, etc; And the developed countries in the electronic weighing, no matter from the technical level variety and size and so on to a higher level, especially in accuracy long-term stability and reliability have great advantage in recent years, with the development of integrated circuit technology and new chip system appear, for

development of high quality weighing system provides favorable conditions, especially the programmable chip system PSoC3 the advent of [1-3].

Review at home and abroad, electronic said was in high precision multi-functional intelligent high stability and simple operation in the direction of the high speed development of the design according to the development of science and technology and the demand of the market, in recent years the development direction of the electronic scale as the goal, make full use of the PSoC3 chip analog to digital resources, USES the ratio type method of measurement section translation calibration/calculation weighing value method and the improved traditional weighing value

shows that processing method, design a kind of maximum range is 25 kg, minimum quantity of feeling for 1 g, precision for 1/25000 of the high precision multi-functional electronic says.

2. System Structure and Principle

Electronic scale is equipped with electronic weighing device of weighing apparatus, mainly by the weighing sensor bearing device (commonly known as scale frame) weighing instrument 3 parts [4], its

working principle is to function in the bearing device on the quality or force size, through the weighing sensor into the electrical signal proportional to, and to analog or digital quantity in the form of weighing instrument display.

The system is composed of power module resistance strain type pressure sensor Nokia5110 liquid crystal display module DHT11 temperature and humidity acquisition module WT588D voice module and PSoC3 control module system block diagram as shown in Fig. 1.

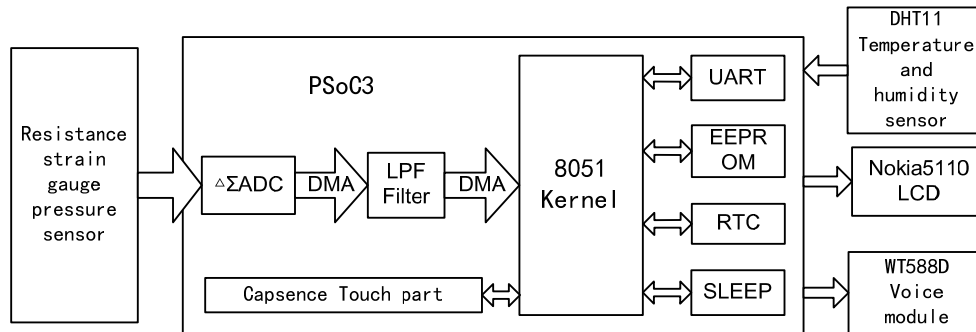


Fig. 1. System structure.

The working principle of the system are as follows: resistance strain type pressure sensor acquisition for pressure change and the resulting voltage signal, through the PSoC3 built-in A/D converter will analog signal is converted to A digital signal, the digital signal via DMA into low pass filter, processed digital signal then through DMA into kernel processing, the kernel do corresponding treatment, get the current the weight of the body data, and through the LCD display, in addition, PSoC3 kernel also is responsible for Capacitance UART RTC EEPROM SLEEP components such as [5-6] and DHT11 temperature and humidity sensor and WT588D voice module processing.

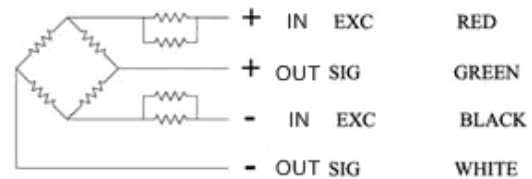


Fig. 2. Resistance strain gauge pressure sensor schematic.

3. The System Hardware Design

3.1. Resistance Strain Type Pressure Sensor

Resistance strain type pressure sensor is mainly composed of elastomer resistance strain gauge cables, etc, the internal circuit using huygens bridge, when elastic deformation under load, the resistance strain gauge is tensile or compressive strain slice deformation, its value will change (increase or decrease), so that the bridge is out of balance, produce the corresponding differential signal, for the next circuit measurement and processing of the system the resistance strain type pressure sensor principle diagram and connection diagram are shown in Fig. 2 and 3 respectively.

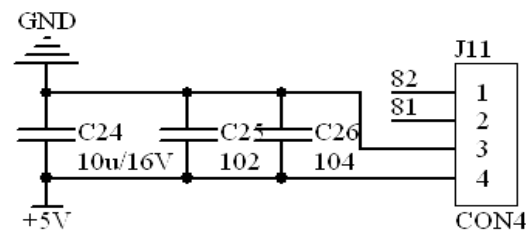


Fig. 3. Resistance strain gauge pressure sensor connection.

3.2. PSoC3 Internal Resource Allocation

The PSoC3 CY8C38 series chip has many device integration, such already to avoid the complex connection, and reduce the use of peripheral equipments and reduce the design cost, improve the reliability and accuracy [5] - [6]. This system PSoC3 specify the internal resources include a 18 of the Delta Sigma ADC two DMA a low pass filter, 10 touch induction key, 1 group touch induction slider a EEPROM component a real-time clock RTC

component one UART serial communication module 1 SLEEP component 1 Nokia5110 LCD liquid crystal display modules and several corresponding external module communication pin, and the specific configuration shown as shown in Fig. 4.

3.3. Touch the Keyboard and Strip Design

PSoC3 touch induction adopted a Delta - Sigma modulator (CSD) capacitive sensing method [7] PSoC3 use the touch of induction make a design personnel in a short span of a few minutes can achieve touch induction keys and strip function this design by 10 capacitance type touch key constitute a touch the keyboard and five capacitance type touch key constitute a touch induction slider, use 10 resolution 24 MHZ acquisition rate single channel high speed scan Capsense mode this design touch induction keyboard principle diagram as shown in Fig. 5.

4. System Optimization Design

4.1. System Measuring Method

In order to achieve the best performance, the design USES the ratio type measuring method (bridge DC excitation source and PSoC3 built-in ADC reference voltage source to use the same reference source) ratio type measuring method of the output voltage with both of the bridge excitation voltage proportional and ADC reference voltage source in proportion, so even if the actual bridge excitation voltage change also won't affect the measurement accuracy this ratio type measuring eliminates the excitation source of temperature drift and extremely low frequency noise on the influence of output accuracy for filtering ADC input from weighing sensor noise, this design in weighing sensor power supply end with a decoupling filtering capacity.

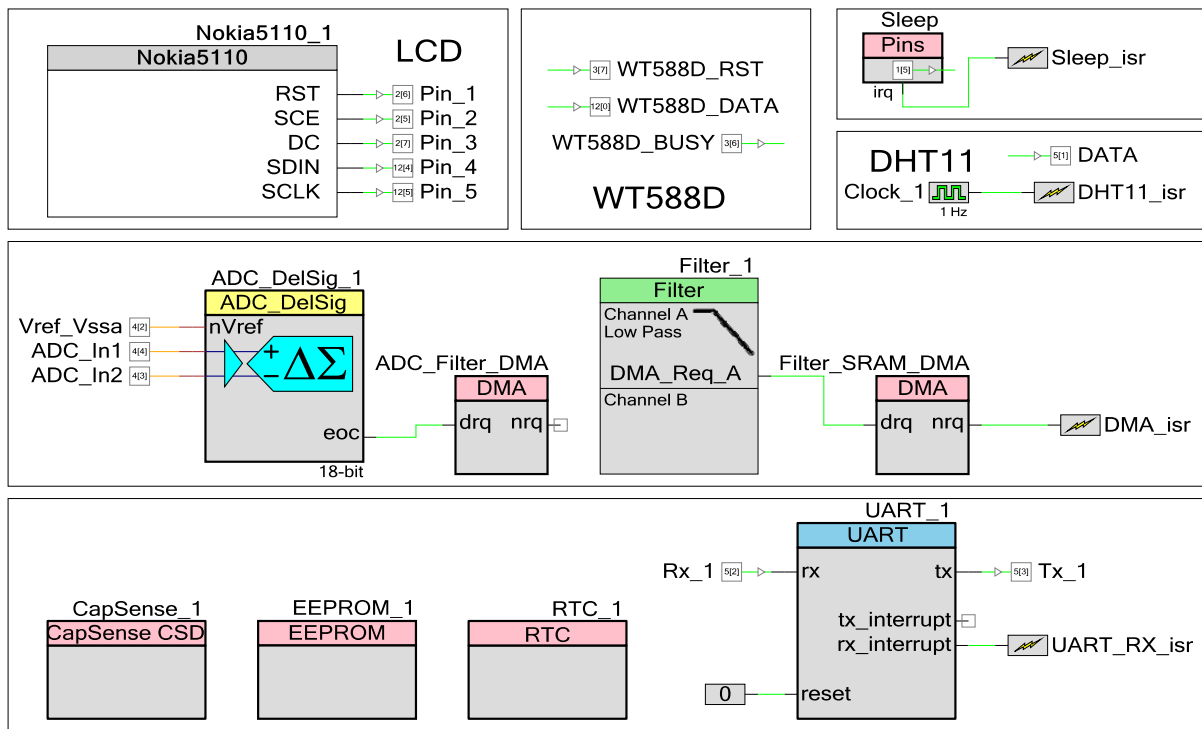


Fig. 4. PSoC3 internal resource allocation.

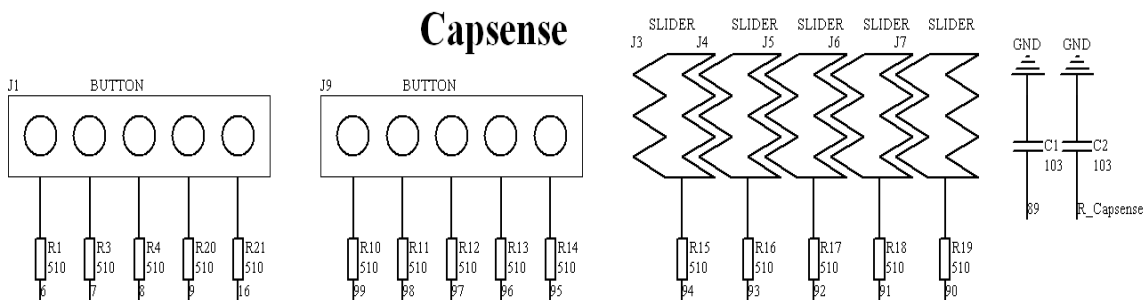


Fig. 5. Touch-sensitive keyboard schematic.

4.2. Nonlinear Compensation Method

Due to the impact of the factors such as temperature and the ADC linearity is not ideal, make weighing linearity change so this design using piecewise linear interpolation method, using piecewise calibration weighing value and piecewise calculation weighing value, its greatly reduced weighing value of relative error [2, 8].

In addition, the system also used two calibration methods: piecewise linear calibration and zero calibration piecewise linear calibration use calibration equipment such as weight on the corresponding calibration value of linear block calibration, draw calibration matrix, and finally figure out each linear segment of calibration slope, in order to calculating weighing value; Zero calibration is opposition zero drift, to correction system zero.

4.3. Weighing Value Display Method

Although the use PSoC3 built-in low pass filter has achieved the good filtering effect, but weighing value display or is not so stable, so this system combines the traditional electronic scale processing methods, the use of the measured value transformation weighing value, and then take a certain amount of data mean value, set a number of average, when the frequency arrived, for these mean to average, get a relatively stable weighing value if weighing value did not change, would say no change; If weighing value change but not exceed 1/2 a minimum amount of sense, still think weighing value did not change; If beyond, should carry out a series of comparison to determine whether or not a new weight to join [2, 8, 9] the actual test shows this method can effectively solve the weighing value shows that unstable problem says (see Fig. 6).

5. System Software Design

System programming design is in the cypress semiconductor company PSoC Creator integrated development environment of PSoC Creator integrated development environment for each module the application to provide a lot of API and interrupt service routine ISR, when writing application just call the function, can realize the function of the module.

5.1. The Main Menu Programming

This system work is divided into initial interface mode measurement model calibration mode setting mode and other mode, according to different key value into different patterns, the realization of different function this system main program flow chart shown as shown in Fig. 7.

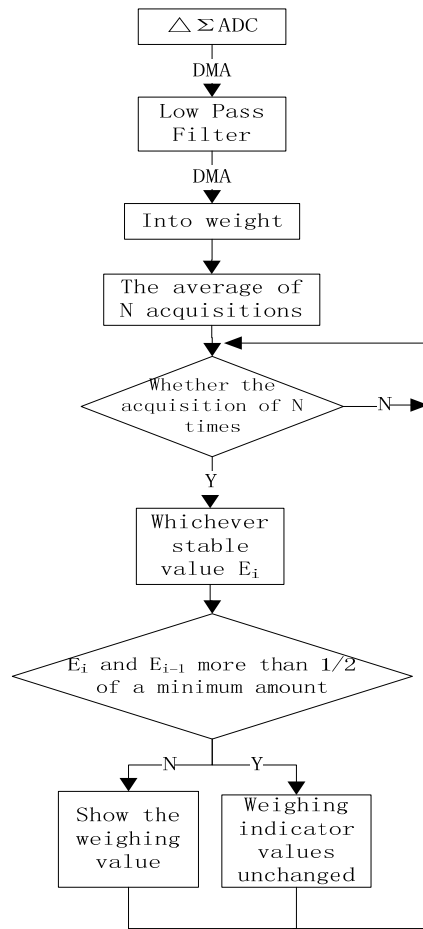


Fig. 6. Weighing value of show flow chart.

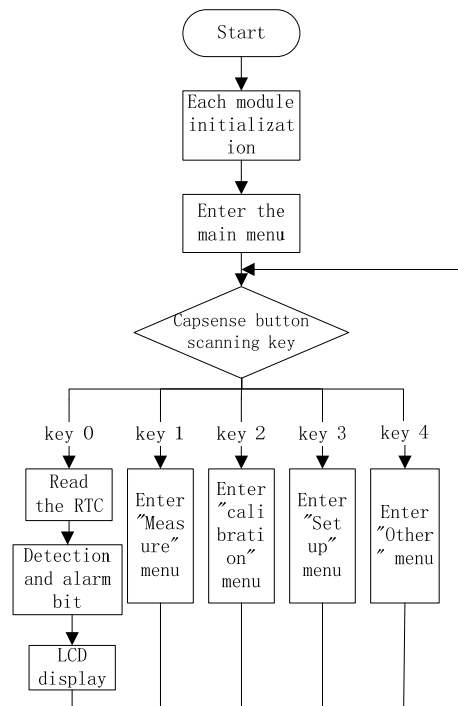


Fig. 7. Main program flow chart.

5.2. Weighing Measuring Program Design

Weighing measuring menu is mainly complete weighing measuring and display voice broadcast unit price change and set value, and other functions, and the main menu programming ideas similar, its flow chart shown as shown in Fig. 8.

5.3. PC Program Design

Epistatic machine programming by VC write complete, the use of parameters for the baud rate for 9600 black and white even parity bit 8 bits of data a one stop bits serial interface for communication, is based on the dialog MFC AppWizard applications,

realize the PC and PSoC3 weighing measuring communication between [10] epistatic machine interface as shown in Fig. 9.

6. System Test and Analysis

This system USES a set of standard weight (type: 1 g 2 g 2 g 5 g 10 g 10 g 20 g 50 g 100 g 100 g 200 g 500 g) after calibration and test, test results as is shown in Table 1.

Through the above, it is known that this system test results are reasonable, error basic for 1 g, this system accuracy is higher, comply with the design requirements.

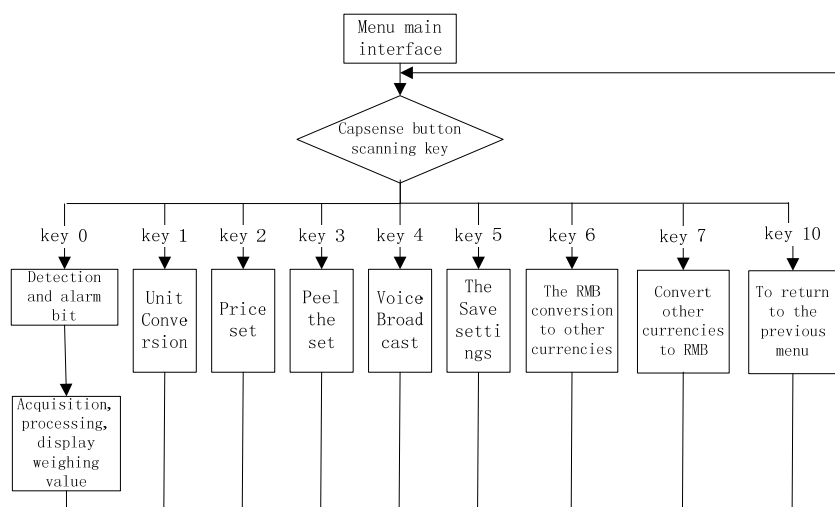


Fig. 8. Weighing the program flow chart.

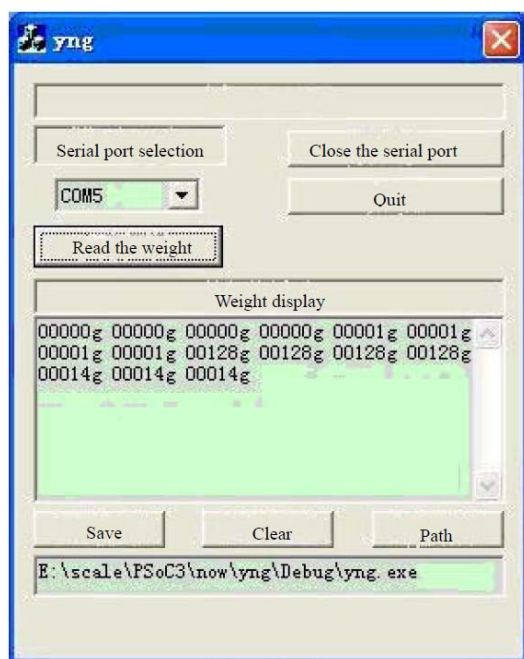


Fig. 9. Electronic PC interface.

Table 1. Test results.

Test weight/g	Test 1	Test 2	Test 3
1	1	1	1
2	2	2	2
5	5	5	5
10	10	10	10
20	20	19	20
50	50	49	50
100	100	99	99
200	199	199	200
500	499	499	499
1000	999	999	1000

7. Conclusions

This paper introduces PSoC3 based on the high precision multi-functional electronic says design, make full use of the internal resources PSoC3 adoption of good system optimization design method and use efficient program design, realized the high

precision measurement of electronic balance functions through the physical test, the design has reached the expected related technical indicator; Compared with the traditional electronic says system, this design further highlights the peripheral hardware circuit simple high accuracy complete function convenient operation short development cycle and stable performance, etc, and have higher practical value and broad application prospect in the market.


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References

- [1]. Li Kang, Zuo Jinping, Jin Sanmei, Design of High-precision Electronic Balance Based on AVR MCU, *J. Electronic Technology*, 25, 7, 2011, p. 29.
- [2]. WANG De Qing, HU Xiao Yi, JIA Hong, et al, The design and realization of high precision electronic scale based on SPCE061A, *J Application of Electronic Technique*, 31, 5, 2008, pp. 83-86.
- [3]. Wang Xian An, Wang Xian Yu, A pocket scale design, *J. Light Industry Machinery*, 25, 2, 2007, pp. 110-113.
- [4]. ZHAO Guangping, SUN Wenping, SUN Jianjun, Present Condition and Development of Electronics Weighs Technique, *J Instrument Technology and Sensor*, 21, 7, 2007, pp. 76-77.
- [5]. Cypress, PSoC®5:CY8C55 Family Datasheet [EB/OL], (2011-4-10), <http://www.cypress.com/?rID=37581>.
- [6]. Cypress, PSoC®Creator™ Component Data Sheet [EB/OL, 2011(2011-4-15), <http://www.cypress.com/?app=search&searchType=keyword&keyword=PSoC5+Component>.
- [7]. PENG Jiansheng, LI Xing, QIN Zhiqiang, Design of Portable Multi-channel γ Spectrometer Based on PSoC3, *J. Nuclear Electronics & Detection Technology*, 7, 2012, pp. 829-833.
- [8]. Wang Wei Qiang, Pan Gang, Signal processing and self-adaptive compensation design of dynamic weighing system, *J. Transducer and Microsystem Technology*, 7, 2010, pp. 69-71.
- [9]. CHEN Liang-Zhu, TENG Zhao-Sheng, YANG Min, Design of weighing unit of electronic balance based on DSP, *J Sensor and Micro Systems*, 2, 2011, pp. 68-70.
- [10]. Gong Jian Wei, Xiong Guang Ming, VisualC++ / TurboC serial communication programming practice (second edition), *Publishing House of Electronics Industry*, Beijing, 2009.

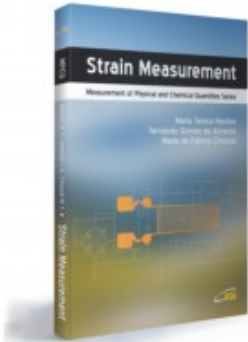
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Maria Teresa Restivo, Fernando Gomes de Almeida, Maria de Fátima Chouzal

Strain Measurement

Measurement of Physical and Chemical Quantities Series



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"Strain Measurement" deals with measurement of stresses and strains in mechanical and structural components. This topic is related to such diverse disciplines as physical and mechanical sciences, engineering (mechanical, aeronautical, civil, automotive, nuclear, etc.), materials, electronics, medicine and biology, and uses experimental methodologies to test and evaluate the behaviour and performance of all kinds of materials, structures and mechanical systems.

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- Uncertainty estimation on the measurement of mechanical stress;
- Supplemented multimedia components such as animations, simulations and video clips.

The different subjects exposed in this book are presented in a very simple and easy sequence, which makes it most adequate for engineering students, technicians and professionals, as well as for other users interested in mechanical measurements and related instrumentation.

http://sensorsportal.com/HTML/BOOKSTORE/Strain_Measurement.htm

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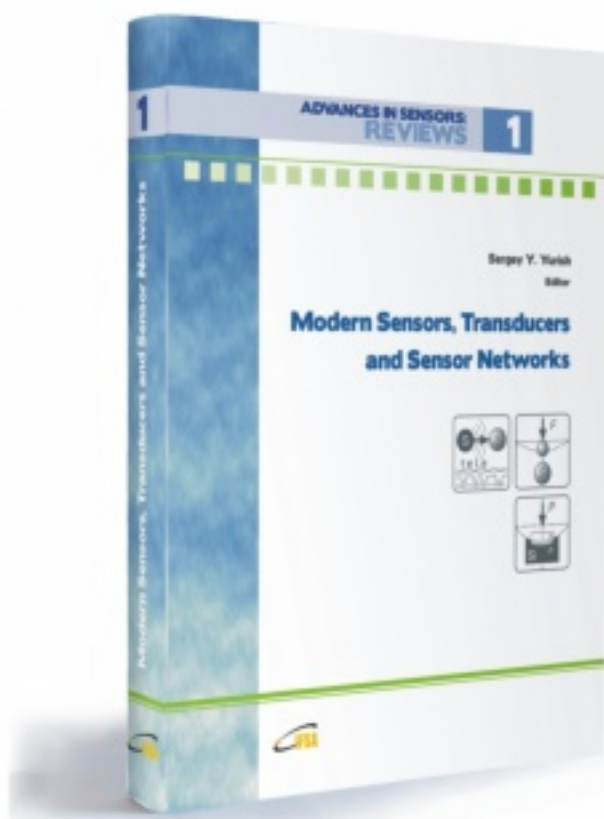
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