

M12 Gps Receiver User S Guide

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This proceedings contains a selection of peer-reviewed papers presented at the IAG Scientific Assembly, Postdam, Germany, 1-6 September, 2013. The scientific sessions were focussed on the definition, implementation and scientific applications of reference frames; gravity field determination and applications; the observation and assessment of earth hazards. It presents a collection of the contributions on the applications of earth rotations dynamics, on observation systems and services as well as on imaging and positioning techniques and its applications.

Congratulations on purchasing the ODROID-XU4! It is one of the most powerful low-cost Single Board computers available, as well as being an extremely versatile device. Featuring an octa-core Exynos 5422 big.LITTLE processor, advanced Mali GPU, and Gigabit ethernet, it can function as a home theater set-top box, a general purpose computer for web browsing, gaming and socializing, a compact tool for college or office work, a prototyping device for hardware tinkering, a controller for home automation, a workstation for software development, and much more. Some of the modern operating systems that run on the ODROID-XU4 are Ubuntu, Android, Fedora, ARCHLinux, Debian, and OpenELEC, with thousands of free open-source software packages available. The ODROID-XU4 is an ARM device, which is the most widely used architecture for

mobile devices and embedded 32-bit computing. This volume offers coverage of the 1999 international conference on information visualization. Topics include augmented and virtual reality, visualization in construction, computer-aided geometric design, design visualization, digital art, graphical modelling and applied visualization."

Fundamentals of Structural Geology provides a new framework for the investigation of geological structures by integrating field mapping and mechanical analysis. Assuming a basic knowledge of physical geology, introductory calculus and physics, it emphasizes the observational data, modern mapping technology, principles of continuum mechanics, and the mathematical and computational skills, necessary to quantitatively map, describe, model, and explain deformation in Earth's lithosphere. By starting from the fundamental conservation laws of mass and momentum, the constitutive laws of material behavior, and the kinematic relationships for strain and rate of deformation, the authors demonstrate the relevance of solid and fluid mechanics to structural geology. This book offers a modern quantitative approach to structural geology for advanced students and researchers in structural geology and tectonics. It is supported by a website hosting images from the book, additional colour images, student exercises and MATLAB scripts. Solutions to the exercises are available to instructors.

At the XXIV General Assembly of the International Union of Geodesy and Geophysics (IUGG), held July 2-13, 2007 in Perugia, Italy, the International Association of Geodesy (IAG) also had its quadrennial General Assembly. The IAG - organized and contributed to several Union Symposia, as well as to Joint Symposia with other Associations. It also organized ve Symposia of its own, one dedicated to

each of its four Commissions and a dedicated to the Global Geodetic Observing System (GGOS). This volume contains the proceedings of these five Symposia, which are listed below: Symposium GS001: Reference Frames Convener: H. Drewes Co-convener: A. Dermanis Symposium GS002: Gravity Field Convener: C. Jekeli Co-convener: U. Marti, S. Okubo, N. Sneeuw, I. Tziavos, G. Vergos, M. Vermeer, P. Visser Symposium GS003: Earth Rotation and Geodynamics Convener: V. Dehant Co-convener: Chengli Huang Symposium GS004: Positioning and Applications Convener: C. Rizos Co-convener: S. Verhagen Symposium GS005: The Global Geodetic Observing System (GGOS) Convener: M. Rothacher Co-convener: R. Neilan, H.-P. Plag The Symposia were organized based on the structure of the IAG (i. e., one per Commission) and covered the three pillars of geodesy, namely geometry, Earth rotation, and gravity field, plus their applications. The inclusion of the Symposium on GGOS - which is no longer a project but a major component of the IAG - integrated all geodetic areas and highlighted the importance of multidisciplinary in, and for, geodetic research. Earth observation technology, in conjunction with in situ data collection, can be used to observe, monitor, measure, and model many of the components that comprise urban ecosystems cycles. Over the past decade, urban remote sensing has rapidly emerged as a new frontier in the Earth observation technology by focusing primarily on understanding the biophysical properties, patterns, and processes of urban landscapes, and mapping and monitoring of urban land cover and spatial extent. The second edition reflects new developments in satellite sensors, image processing methods and techniques, and the applications of urban remote sensing to meet societal and economic challenges at this time.

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All the expert guidance you need to understand, build, and operate GPS receivers. The Second Edition of this acclaimed publication enables readers to understand and apply the complex operation principles of global positioning system (GPS) receivers. Although GPS receivers are widely used in everyday life to aid in positioning and navigation, this is the only text that is devoted to complete coverage of their operation principles. The author, one of the foremost authorities in the GPS field, presents the material from a software receiver viewpoint, an approach that helps readers better understand operation and that reflects the forecasted integration of GPS receivers into such everyday devices as cellular telephones. Concentrating on civilian C/A code, the book provides the tools and information needed to understand and exploit all aspects of receiver technology as well as relevant navigation schemes: Overview of GPS basics and the constellation of satellites that comprise the GPS system Detailed examination of GPS signal structure, acquisition, and tracking Step-by-step presentation of the mathematical formulas for calculating a user's position Demonstration of the use of computer programs to run key equations Instructions for developing hardware to collect digitized data for a software GPS receiver Complete chapter demonstrating a GPS receiver following a signal flow to determine a user's position

The Second Edition of this highly acclaimed text has been greatly expanded, including three new chapters: Acquisition of weak signals Tracking of weak signals GPS receiver related subjects Following the author's expert guidance and easy-to-follow style, engineers and scientists learn all that is needed to understand, build, and operate GPS receivers. The book's logical flow from basic concepts to applications makes it an excellent textbook for upper-level undergraduate and graduate students in electrical engineering, wireless communications, and

computer science.

Robotic sailing offers the potential of wind propelled vehicles which are sufficiently autonomous to remain at sea for months at a time. These could replace or augment existing oceanographic sampling systems, be used in border surveillance and security or offer a means of carbon neutral transportation. To achieve this represents a complex, multi-disciplinary challenge to boat designers and naval architects, systems/electrical engineers and computer scientists. Since 2004 a series of competitions in the form of the Sailbot, World Robotic Sailing Championship and Microtransat competitions have sparked an explosion in the number of groups working on autonomous sailing robots. Despite this interest the longest distance sailed autonomously remains only a few hundred miles. Many of the challenges in building truly autonomous sailing robots still remain unsolved. These proceedings present the cutting edge of work in a variety of fields related to robotic sailing. They will be presented during the 5th International Robtoic Sailing Conference, which is taking place as part of the 2012 World Robotic Sailing Championships.

This book introduces the technological innovations of robotic vehicles. It presents the concepts required for self-driving cars on the road. Besides, readers can gain invaluable knowledge in the construction, programming, and control of the six-legged robot.

The book also presents the controllers and aerodynamics of several different types of rotorcrafts. It includes the simulation and flight of the various kinds of rotor-propelled air vehicles under each of their different aerodynamics environment. The book is suitable for academia, educators, students, and researchers who are interested in autonomous vehicles, robotics, and rotor-propelled vehicles.

Rapid growth of geodetic information provided by the Global Positioning System (GPS) and stringent requirements for a precise geoid in ocean areas for ocean circulation models have spurred interest in geoid studies. As a result, the International Geoid Commission was formed to provide a focus for this important geoid research. Determination of the Geoid: Present and Future is the result of the first meeting of the Commission, held at the Instituto di Topografia, Fotogrammetria e Geofisica at the Politecnico di Milano, June 1990. Six major topics are presented: Global Geopotential Models: Present and Future; Role of Topography in Geoid Computations; the Geoid and the Global Positioning System; the State of Computation of National or Regional Geoids; Software and Data Improvements for Geoid Computations; and Recent Developments in the GEOMED (Determination of the Geoid in the Mediterranean) Project.

This volume is based on an international symposium

held in Rio de Janeiro. It gives a progress report on geodetic positioning with GPS. The maintenance and the densification of reference frames are treated for the purpose of establishing global and regional GPS networks. The scientific achievements of the South American Geocentric Reference System project (SIRGAS) are described. Several contributions review the state of the art of GPS analysis techniques, ambiguity resolution methods, as well as GPS antenna and site problems. Novel applications of kinematic GPS positioning and quality control issues of real-time GPS positioning are discussed.

NCG KNAW publications

The WAAS uses geo-stationary satellites to receive data measured from many ground stations and transmits information to GPS users for position correction. Since the WAAS satellites are geo-stationary, the Doppler frequency caused by their motion is very small, typically, in the order of a few tens of Hz. Thus, the signal transmitted by the WAAS can be used to calibrate the sampling frequency in a GPS receiver. The WAAS signal frequency is at 1575.42 MHz. The sampling frequency of a C/A code GPS receiver is in the neighborhood of 5 MHz. The ratio of these two frequencies is about 300, thus, 10 Hz inaccuracy in the WAAS frequency will be translated to about 0.03 Hz ($10/300$). The accuracy of the sampling

frequency measured through this approach should be less than 1 Hz. The clock in a low cost Motorola GPS receiver (Model M12 Oncore) is used in this study. The WAAS signal can be rather weak for users in certain areas. Two seconds of data collected by a software receiver using the Motorola front end are used in this study. The result using this approach has been compared with an high accurate RF (Radio Frequency) frequency counter (1 Hz accuracy). There is no difference in result. The detail of the algorithms and the clock calibration is reported.

It is hardly a profound observation to note that we remain in the midst of a wireless revolution. In 1998 alone, over 150 million cell phones were sold worldwide, representing an astonishing 50% increase over the previous year. Maintaining such a remarkable growth rate requires constant innovation to decrease cost while increasing performance and functionality. Traditionally, wireless products have depended on a mixture of semicond- tor technologies, spanning GaAs, bipolar and BiCMOS, just to name a few. A question that has been hotly debated is whether CMOS could ever be suitable for RF applications. However, given the acknowledged inferiority of CMOS transistors relative to those in other candidate technologies, it has been argued by many that "CMOS RF" is an oxymoron, an endeavor best left cloistered in the ivory towers of academia.

In rebuttal, there are several compelling reasons to consider CMOS for wi- less applications. Aside from the exponential device and density improvements delivered regularly by Moore's law, only CMOS offers a technology path for integrating RF and digital elements, potentially leading to exceptionally compact and low-cost devices. To enable this achievement, several thorny issues need to be resolved. Among these are the problem of poor passive components, broadband noise in MOSFETs, and phase noise in oscillators made with CMOS. Beyond the component level, there is also the important question of whether there are different architectural choices that one would make if CMOS were used, given the different constraints.

This text is designed to give students a strong grounding in the mathematical basis of photogrammetry while introducing them to related fields, such as remote sensing and digital image processing. Suitable for undergraduate photogrammetry courses typically aimed at junior and senior students, and for graduate-level courses at the Master's level. Excellent reference for those working in related fields.

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