Microchip Engineers Built Amateur Satellite That Deployed From The International Space Station August 3rd

Satellite Design Team Launches Blog About Project; Deployment Broadcast Live on NASA TV and Online

Microchip announced that a volunteer team of Microchip engineers spent nearly four years working on nights and weekends to develop the ARISSat-1 amateur satellite. Their hard work came to fruition the morning of August 3rd at 11:43 a.m. (Pacific Time), when the crew of the International Space Station (ISS) deployed the satellite during a spacewalk.

The deployment was broadcast live on NASA TV and online. Additionally, ARISSat-1 design-team leader Steve Bible launched the limited-series Chips in Space Blog on EE Times’ Web site, to both educate and entertain readers by relating the story of how he and his colleagues came to build the satellite, and the challenges they ran into along the way. On a weekly basis, Bible continues to provide a detailed overview of ARISSat-1’s design, along with up-to-the-minute news and analysis of its performance.

ARISSat-1 is the prototype test flight for a proposed series of educational satellites being developed in a partnership with the Radio Amateur Satellite Corp. (AMSAT), the NASA Office of Education ISS National Lab Project, the Amateur Radio on ISS (ARISS) working group and RSC-Energia. Following the satellite’s successful launch it is performing the following primary functions:

- Two-way communication via UHF uplink and VHF downlink, for use by ham radio operators
- Visuals of space from four cameras
- Recharging of the satellite’s battery using solar panels, enabling operation for months
- Transmission of audio greetings in many languages, for reception via simple radios or scanners
- Telemetry transmissions with updates on the health of the satellite
- House an experiment from Russia’s Kursk State University measuring atmospheric pressure

Follow the Chips in Space Blog, to learn more about how the satellite was built and how well it performs in the vacuum of space:
http://www.eetimes.com/electronics-blogs/4218141/Chips-in-Space
Do You Need Industry-Leading Accuracy in a Six-Channel Analog Front End for Three-Phase Energy Metering Solutions?

The MCP3903 Device Includes Six 16-/24-bit ADCs, Integrated PGAs, Low-Drift Voltage Reference, Phase-Delay Compensation and Modulator Output Block

Microchip announced its first high-accuracy, stand-alone six-channel analog front end (AFE) for three-phase energy metering. The MCP3903 AFE includes six 16-/24-bit Delta-Sigma analog-to-digital converters (ADCs) and offers industry-leading accuracy, with a signal-to-noise and distortion (SINAD) of 89 dB (typical) and total harmonic distortion (THD) of -99 dB (typical). Additional integrated features include programmable gain amplifiers (PGAs), a low-drift voltage reference and phase-delay compensation, for a reduced external component count that increases design flexibility and lowers costs. The MCP3903 AFE is ideal for the utility and industrial markets, such as in utility meters, power-monitoring devices and instrumentation devices.

Government regulations and trends in smart metering, along with the Advanced Metering Infrastructure, have dramatically increased the need for products that offer precise measurements in multi-phase metering, while simplifying designs and reducing costs. The MCP3903 delivers this functionality by providing a highly accurate solution with integrated features that enable design flexibility. The MCP3903’s six 16-/24-bit Delta-Sigma ADCs enable the simultaneous sampling of six inputs, making it ideal for three-phase power monitoring and metering, while its industry-leading accuracy allows for higher-accuracy products.

The MCP3903 AFE provides engineers with a highly accurate solution for the growing smart-metering and power-monitoring market. This device’s integrated features enable more precise measurements than competitive solutions, with reduced design time and lower cost.

The MCP3903 is available in a 28-pin SSOP package. Samples are available today.

To learn more about the MCP3903, visit:
Microchip Makes Global Smart Meter Interoperability Easy With DLMS User Association Certified Stack for PIC® Microcontrollers

World’s First Semiconductor Company to Offer DLMS Stack Customized for MCUs, Enabling Interoperability for Broad Range of Energy Types and Communication Protocols

Microchip has partnered with Kalki Communication Technologies, Ltd. to provide a Device Language Message Specification (DLMS) protocol stack that is optimized for 16-bit PIC microcontrollers (MCUs). The DLMS protocol has become the worldwide standard of choice among smart meter designers for interoperability among metering systems, including most energy types (electricity, gas, heat and water), multiple applications (residential, transmission and distribution), and numerous communication media (RS232, RS485, PSTN, GSM, GPRS, IPv4, PPP and PLC); as well as secure data access, via AES 128 encryption.

This software stack has been tested and verified by the DLMS User Association, and is customized to operate on all of Microchip’s 16-bit PIC microcontrollers and dsPIC® Digital Signal Controllers (DSCs), making the DLMS certification process faster and easier. Additionally, the stack has been developed to ensure seamless integration with Microchip’s communication protocol stacks, including TCP/IP, ZigBee® and PLC, covering a broad spectrum of smart energy applications. Furthermore, this DLMS stack has been optimized to fit in a small memory footprint, enabling the use of the smallest, most cost-effective MCUs possible. For European applications, the stack provides support for the required IEC 62056-21 Mode E implementation.

The addition of this DLMS library to Microchip’s smart energy offerings reinforces a continued focus on providing cost-effective and comprehensive solutions to customers. Now, customers can leverage Microchip’s portfolio of communication protocol solutions, such as TCP/IP, ZigBee and PLC, to create a fully integrated smart energy system.

Customers can use the Explorer 16 Development Board to design their DLMS solutions, based on Microchip’s vast portfolio of industry-leading 16-bit MCUs and DSCs. The Explorer 16 is available today, in the following configurations:

- **100-pin Explorer 16 Development Board** (part # DM240001)
- **44-pin Explorer 16 Development Board** (part # DM240002)

This new DLMS stack is available today, in the following four flavors.

1. The **DLMS Evaluation Library for 16-bit MCUs** is a free evaluation version of the DLMS library.
2. The **DLMS-lite Stack for 16-bit MCUs** (part # SW500160).
3. The **DLMS Stack for 16-bit MCUs** (part # SW500162).
4. The **DLMS Explorer** (part # SW500164) is a Windows® based DLMS/COSEM client application.

To learn more about DLMS, visit:
http://www.microchip.com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=2926
Do You Need a Development Kit for High-Quality Digital Audio Applications?

32-bit Microcontroller-based Dev Kit Provides Complete Solution for the Development of 24-bit Audio and Speech Applications With Record, Playback and Mixing Capabilities

Microchip announced a 32-bit microcontroller (MCU)-based development kit for the creation of high-quality, 24-bit audio applications. The Audio Development Board for PIC32 MCUs features an 80 MIPS PIC32 MCU, a 24-bit Wolfson audio codec, a two-inch color LCD Display, a USB interface, and an onboard microphone. Supported by Microchip’s free software libraries, the kit provides a perfect solution for the development of speech and audio recording and playback products. Target applications include docks for portable audio players, home-entertainment systems and automotive sound systems.

The 80-MIPS PIC32MX795F512L MCU on the audio development board features 512 KB Flash and 128 KB RAM, providing plenty of processing power and memory to decode, analyze and play back audio and speech. Libraries are available for speech recording and playback, as well as MP3 music decoding applications. Additionally, an audio Sample Rate Conversion (SRC) library for 33 kHz, 44.1 kHz and 48 kHz is also supported, which enables developers to reduce component costs for playback solutions. There are also libraries available for managing the USB interface and driving the on-board color LCD display, which features 16-bit color images. For those developers who are enrolled in the Apple® Made For iPod (MFi) Licensing Program, the kit also interfaces to Microchip’s accessory development platform for iPod® and iPhone®.

The Audio Development Board for PIC32 MCUs offers a complete platform that doesn’t break the budget for high-quality audio development. The board also includes an interface for use with our accessory development platform for iPod and iPhone, enabling expansion to support these popular devices.

The Audio Development Board for PIC32 MCUs (part # DM320011) is available today. For MFi licensees, the Digital Audio Development Kit for PIC32 MCUs (part # DM320411) adds the accessory development platform for iPod and iPhone. This kit will be available by September to MFi licensees via Apple’s authorized distributor.
Does Your Project Call for GUI Development Without an External Graphics Controller?

Low-Cost, Controllerless Graphics Board Enables Developers to Directly Drive 65K (16-bit-per-pixel)-Color Graphical User Interfaces

Microchip announced the Low-Cost Controllerless (LCC) Graphics PICtail™ Plus Daughter Board (part # AC164144), which enables the development of graphics applications without an external graphics controller.

Many user interfaces are migrating toward intuitive, easy-to-use graphics-driven systems with touch-screen capability. However, the addition of an external graphics controller can be cost prohibitive for applications in highly-competitive markets, such as consumer appliances. The 32-bit PIC32 microcontroller (MCU)-powered LCC Graphics PICtail Plus Daughter Board enables developers to directly drive 256 (8-bit-per-pixel)-color graphical user interfaces utilizing the PIC32 MCU’s on-chip memory, Direct Memory Access controller, and Parallel Master Port. This eliminates the need for an external graphics controller and lowers the Bill of Materials cost.

Additionally, the board enables developers to “jumper” in the onboard 256 KB of SRAM to support 65K (16-bit-per-pixel)-color WQVGA interfaces.

With the LCC Graphics PICtail Plus Daughter Board, designers can leverage the power of PIC32 MCUs to do more with less, eliminating the added cost of an external graphics controller for lower-end applications.

This new daughter board can be used with an Explorer 16 Development Board or PIC32 Starter Kit, such as the PIC32 USB Starter Kit 2, and can be hooked up to any of the LCD panels available from Microchip, including the Truly 3.2” QVGA and Powertip 4.3” WQVGA display panels. It is supported by Microchip’s free Graphics Library and makes it easy to incorporate graphical user interfaces onto designs in the industrial (e.g. control panels), home appliance (e.g. coffee machines, washing machines and dryers), consumer (e.g. thermostats, security-alarm panels, educational toys) and automotive markets (e.g. driver information displays), among others.

The LCC Graphics PICtail Plus Daughter Board (part # AC164144) is available today.

Third-Party News

Microchip makes a lot of great development tools, but there are also plenty of unique and innovative tools created by Third-Party partners. Here is the latest news about Third-Party tools available on microchipDIRECT:

New Products

**Digilent Cerebot 32MX7 Development Board** is a powerful tool for embedded control and network communications projects. Based on the **PIC32MX795F512L**, the board includes built-in programming and debugging support under MPLAB IDE, and also provides numerous connections for peripheral devices. Ethernet, CAN, and USB 2.0 Device, Host, and OTG are supported. (TDGL004)

**Unagi CM1015 Electronic Compass Module** is an electronic compass module that outputs accurate directional data without the need for manual calibration or additional components. Utilizing a 3 axis magnetometer with a triaxial accelerometer, the CM1015 calculates its position relative to terrestrial magnetism, outputting its direction in degrees. Gyroscopic output data is available. (TUNAG001)

**Saleae Logic16 USB Logic Analyzer** is an enhanced version of the popular USB Logic analyzer. Like its predecessor, the Logic16 includes highly refined software that is fast and intuitive. Decodes many protocols including I2C, Async Serial, SPI, 1-Wire, CAN, I2S, PCM, UNI/O, Manchester and MP Mode. Stores up to 10 billion samples at rates up to 100 MHz. Up to 16 channels are supported. (TSAL0002)

**chipKIT Basic I/O Shield** adds a variety of useful I/O devices to the chipKIT Uno32 or the chipKIT Max32. It provides simple I/O such as buttons and LEDs, as well as more complex devices such as a 256kbit EEPROM, digital temperature sensor, 4 open drain transistor outputs, and a 128x32 OLED graphic display. (TDGL005)

**RS232 Gateway to Ethernet** provides an easy Ethernet connection using RS-232 communications. It allows the use of a TCP/IP stack, without licenses, supporting HTTP, TFTP, DHCP, socket-level UDP and TCP. It integrates with a host system through high level AT commands, and offers a web server with up to 29 variables. (TIPL402)

Special Discounts on MikroElektronika Development Systems

**Easy24-33 v6 Development System** is available now with 20% discount (expires 9/30/11)

The Easy24-33 v6 is a general purpose development system for low pin count **PIC24 MCUs** and **dsPIC DSCs**. It accepts DIP packages from 14 to 28 pins and comes with a **PIC24F16KA102** installed. Includes a boatload of on-board peripherals, integrated programmer/debugger and a large prototyping area. Demo versions of Mikro C, Basic, and Pascal compilers are included (6K program limit); the system is also compatible with MPLAB compilers and debuggers. This is the “Swiss army knife” of 16-bit development boards.

Use coupon code TPXM9L7

**LV-32MX v6 Development System** is available now with 20% discount (expires 9/30/11)

LV-32MX v6 is a full-featured development system for **PIC32 MCU** applications. With numerous built-in modules, such as TFT Color Display (320x240) with Touch Screen, Stereo Codec, CAN, Serial Flash, Serial EEPROM, MMC/SD card slot, and many others, the LV-32MX v6 development system offers many features for developing advanced graphic, audio, memory, and storage applications. Compatible with MPLAB compilers and debuggers. 64 and 100-pin **PIC32MX MCUs** are supported on removable MCU cards (**PIC32MX460F512L** included).

Use coupon code TPZM9K6

Software Update for Saleae Logic Analyzer

Software for the Saleae Logic USB Logic Analyzer (TSAL0001) has been completely re-written and is now available for Linux, Mac, and Windows. The new version is extremely fast and many operations (such as setting triggers) have been streamlined. Support for decoding CAN protocol has been added, along with slower sample rates (down to 25 KHz) and more flexible data export capabilities. The upgrade is free and is available online.

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Microchip receives 2011 Bronze Telly Award for Video Editing

Lights, camera, award! Microchip recently earned a 2011 Bronze Telly Award in the category of Online Video Editing for the Smart Energy Solutions video created by Mike Ballard and Stjepan Alaupovic. The Telly Awards honor the best local, regional, and cable television commercials and programs as well as the finest work created for the web. Winners represent the best work of the most respected advertising agencies, production companies, television stations, cable operators, and corporate video departments in the world.

“We were trying to establish Microchip as a credible solutions provider for the quickly emerging Smart Energy market,” said Ballard. “I wanted to create a short video that would bring credibility to Microchip by clearly communicating the challenges that the market will face through not only the script, but also through distinct visual messages. Stjepan and I were able to come up with a high-level end product that was exactly the result I hoped for. Not only were we able to establish our credibility, but it also gave viewers a vision into Microchip, our product solutions and our facilities.”

The award defines Microchip as industry leader in both online video production and marketing. You can check out the video by visiting the Smart Energy Design Center. The statuette award is also in display in the Microchip Multimedia Production studio in Chandler.

Be sure to visit to see the latest videos produced by Microchip:
http://www.microchip.com/videos
Microchip Welcomes Gordon Randall Perry Design as it’s Newest Industrial Design Partner

Gordon Randall Perry Design (GRPD) brings over 35 years of experience in the design and development of marketable products. Based in New York City, GRPD is an industrial design consultancy that designs products for domestic and international companies that produce consumer, medical, laboratory, commercial, office, lighting, industrial, contract and architectural products. The design solutions provided to our clients are sold worldwide and are widely published in magazines, newspapers and design books as well as shown in movie and TV productions. Salability, innovation and quality of design for manufacture are hallmarks of the work created.

"We are extremely pleased to welcome GRPD into Microchip’s world-class design partner network," says Cheri Keller, Sr. Manager of Microchip’s Design Partner Program. "Gordon’s industrial and mechanical design expertise align very well with Microchip’s existing design partners who focus on embedded electronics – thus, providing our customers a full-turn key solution and speedier time to market."

Since 1975, GRPD’s focus is the design, development and engineering of products for clients all ranging from individual entrepreneurs, mid-sized companies up to Fortune 500 corporations. Because a product’s design must fit into the entire marketing mix in order to perform in a competitive world, GRPD provides experienced leadership in branding. As an extension of these services GRPD’s capabilities include creating memorable graphics and packaging as well as research, human factors engineering, production-ready virtual solids, mechanism development and functional pre-production prototypes. GRPD can implement turnkey development programs or focused product consultation with rapid turn-around. For a fresh take on the marketplace GRPD also has experience in focused new product conception. In short GRPD helps clients innovate and get their products to market.

For more information about Gordon Randall Perry Design, please click here

Dental curing light

Personal RF monitor

Indirect fixtures
Join Microchip Technology at The East Coast's Leading Embedded Systems Event

ESC Boston brings together the entire embedded community from engineers, designers, system architects, vendors and suppliers, analysts and media for four days of hands-on training, educational sessions, an interactive Expo with hundreds of exhibitors featuring the most important emerging products and technologies the embedded community has to offer, networking opportunities, prizes and giveaways, and more.

Highlights include:

- Mr. Jonathan Dillon, Senior Applications Engineer and David Martin, Principal Field Applications Engineer will present the latest semiconductor solutions for "Digital Authentication for Medical Equipment"
- Mr. John Day, Field Applications Engineer will present a product teardown of the IWalk Powerfoot BIOMTM Bionic Lower Leg System
- 8-, 16-, 32-bit PIC® MCUs
- Metering solutions
- Lighting solutions
- Automotive applications
- Motor control solutions

Don’t miss this opportunity to learn more about Microchip’s embedded design technologies.

Register online, today at: http://esc.eetimes.com/boston/
In tough economic times, companies often look for ways to trim expenses as a means to cope with a downturn in sales. One of the areas often targeted for cutbacks is employee training. There is not only the direct cost of the training to contend with, but also travel expenses and time an employee spends away from the job. During this challenging business climate, however, competitive pressures and technology changes don’t stop and it is training that can help a company be better positioned to take advantage of the potential upswing.

Microchip, with its global network of Regional Training Centers (RTCs) and third-party training partners, is here to help companies stay competitive with cost-effective, local training. To help companies deal with issues of travel expense and time, classes are given not only in Microchip’s facilities, but are also taken on the road. Customized customer premise sessions can be scheduled offering the most convenience. Time away can be managed more efficiently with the flexibility of half or full day class sessions.

To be effective in teaching, instruction must take into account the needs and expertise level of the attendee. Microchip’s Regional Training Center classes are developed to provide a coordinated flow, enabling engineers to implement a solution to their product development needs. Instruction is developed and presented in product, technology and implementation classes that are grouped into application based curriculum.

Each curriculum flow enables the individual to engage with the training at a level that meets his or her current knowledge and needs. The intent is to provide training that is relevant to each attendee while eliminating the frustration often associated with attending classes that present too much known information or assume a level of knowledge beyond what the attendee currently possesses.

Product/tool classes provide knowledge on how Microchip’s products and development tools operate. This knowledge provides the foundation upon which all application instruction is based. Attendance at one of these classes can provide significant value through the reduction in time associated with instruction manuals and data sheet review or trial and error attempts to learn individually. Market forces constantly press companies to add functionality and features to their products often outside their areas of core competence. As a result, engineers must continually broaden their knowledge base. Microchip’s technology classes are intended to help engineers gain an understanding of a new field.

Implementation classes combine elements of product and technology instruction to teach engineers how to design a real world application. Classes at this level provide how-to instruction rather than what or why instruction.

Microchip is currently offering classes in the following curriculum: DSP, Ethernet, Human Interface, Motor Control, Power Management, Signal Chain, System Design and USB. Future curriculum is expected to include CAN/LIN, IrDA®, Lighting and RF.

With a worldwide network of Regional Training Centers and certified third-party trainers, Microchip makes it easy to enhance your technical skills, with locations in nearly every metropolitan area across the world!

For those organizations who desire to have a number of employees attend a course at the same time, Microchip can customize any curriculum to meet your specific needs. Our instructors arrive at your location with all presentation materials and equipment, making it easy for your whole team to benefit from a specific course topic in one setting. In addition to the instruction, most Regional Training Center classes offer the opportunity to purchase a set of the development tools used in the class at a discounted price.

For information on scheduling custom in-house training, contact your local RTC directly or visit the Microchip RTC web site: www.microchip.com/RTC

For a complete list of classes and locations, visit www.microchip.com/RTC
**What's New in Microchip Literature?**

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microchipDIRECT Now Makes It Easier To Find Third-Party and Academic-Friendly Development Tools!

Two new categories have been added to www.microchipDIRECT.com making it easier to find third-party development tools that compliment Microchip’s solutions and low-cost, academic-friendly tools for educators and students. How to access the new categories:

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