

The Sage Advisor

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□ □ □ SCADA & Industrial Automation Specialists serving California & Nevada □ □ □

Communication is the Key

The key to successfully implementing wireless data systems is versatile equipment that can operate in a wide variety of system configurations. The Teledesign TS4000 radio modem is a high-speed (19,200 bps) radio modem that is specially designed to meet the needs of telemetry and SCADA users.

The TS4000 is certified to meet the new FCC re-farming rules and is available for the three main bands that are used for narrow-band data communication — VHF (132-174 MHz), UHF (380-512MHz), and 900MHz (928-960MHz). The TS4000 is configurable by the user for all

the currently licensable channel bandwidths (occupied bandwidth), including the narrow 6K0 (old 5K6) VHF channels.

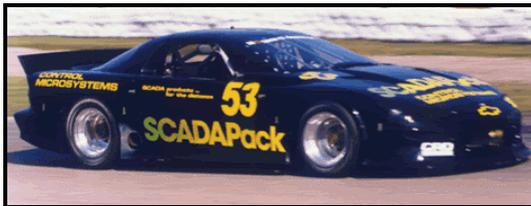
The TS4000 has a number of features that allow for optimal radio coverage under a variety of conditions and system topologies. The store and forward repeater function allows any or all nodes in a system to be setup as store-and-forward repeaters. This provides a simple and inexpensive way to extend radio coverage. The number of repeaters is only limited by the total throughput of the radio channel. Individual store-and-forward repeaters can be configured to repeat all packets or only packets to or from specific nodes in a system. In addition, the repeaters have a programmable attempt rate so that multiple repeaters can be configured to access the channel in a disciplined way in order to minimize collisions.

The TS4000 also has coding (FEC - Forward Error Correction) with interleaving which allows for improved radio coverage under difficult multi-path conditions. The Clear Channel Scan function allows the TS4000 to automatically select the best of several channels for communication. This function is very useful when using shared channels in order to minimize interference from other users and to other users.

These are only a few of the many features available in the TS4000. For specific system requirement, please contact us.

— Bruce Delevaux, Vice President, Teledesign Systems

SCADAPack Race Car



B.F. Goodrich Trans-AM Racing Series

James Holtom, President of Control Microsystems and long-time racing veteran, will be touring the United States with the newest Control Microsystems' product – the SCADAPack Corvette. Jim will be racing in the B.F. Goodrich Trans-AM Racing Series, with a full slate of races in the U.S. starting on June 17th in Detroit and ending on November 19 on the island of Aruba. Several parameters of the car are controlled by a SCADAPack PLC/RTU.

Control Microsystems and local representatives will be co-hosting hospitality events in conjunction with several of these races. If you are interested in attending, please let us know. A full listing of the racing schedule can be found by logging onto our web site and selecting the Control Microsystems' link on our Products page. A few of the races are:

June 17	The Tenneco Automotive Detroit Grand Prix
September 3	The Grand Prix of Texas, Fort Worth
October 15	Laguna Seca Raceway, Monterey, CA
October 29	Las Vegas Motor Speedway

Sage Designs still has a few of the popular Control Microsystems 2000 calendars which feature last year's SCADAPack Camero. Give us a call if you'd like one.

Free SCADA Seminars

May 16, 2000 — Redding, CA
May 17, 2000 — Stateline, NV
May 23, 2000 — Fresno, CA
May 24, 2000 — Sunnyvale, CA

Sage Designs is hosting four morning SCADA seminars next month. We will be discussing the features and benefits of open architecture SCADA systems. We will be demonstrating the integration of National Instruments' Lookout HMI software with Control Microsystems' SCADAPack SCADA-optimized PLCs over Teledesign Systems' UHF radios. The demonstration will include simple Ladders programming, downloaded through the radio system, and designing of simple HMI screens and supervisory control functions.

Guest speakers are Jim Quist, Regional Manager for Control Microsystems, Jim Shaw, Business Development Manager for National Instruments, and Bruce Delevaux, Vice President of Teledesign Systems.

There is no charge for these seminars, but you must register in advance.

New SCADAPack Training Course

Includes a SCADAPack PLC/RTU

June 13 - 15, Emeryville, CA

Control Microsystems and Sage Designs will be co-hosting a 3-day training course June 13-15 at the Holiday Inn/Bay Bridge Hotel. The course offers highly technical, in-depth training on TelePACE Ladder Logic Programming and how it applies to Control Microsystems products.

To meet the needs of new customers as well as existing users, two training packages offered: You may opt to pay \$800 for the 3-day course alone, or may pay \$1,200 and keep the SCADAPack Demo kit after the course. The SCADAPack Demo Kit consists of a Control Microsystems' SCADAPack SCADA-optimized PLC, TelePACE Ladders, SCADAPack I/O Simulator, SCADAPack Manual, Serial Cable, and a Lookout Demo Disk. The total value of the kit is \$3,278, making the course an excellent way to get started with a new SCADA system.

The course is taught by Dean Goldsmith, Technical Support Team Leader for Control Microsystems. Day One covers the SCADAPack Controller and introduction to TelePACE Ladder Logic Programming. Day Two continues with more advanced TelePACE programming techniques. Day Three concentrates on controller communications.

The class is limited to 20 students. A laptop computer and prior Ladder Logic programming experience are required. Please call Sage Designs to reserve a spot in this popular course.

path in order to get reliable communications. To compensate for these disadvantages, the manufacturers of these radios have developed very sophisticated products with store-and-forward, signal repeating and packetizing schemes with all kinds of collision detection, error correction and other helpful features.

On the other hand, the licensed radio crowd has been moving right along with spread spectrum bunch in incorporating sophisticated features into their products too. With the advantages of higher wattage and better signal propagation, all you need risk is about \$600 - \$700 in the services of an independent radio coordinator to investigate the availability of a license in your area. With the FCC re-farming the UHF and VHF frequencies, and many companies moving to cell phones for voice communications, there are licenses available in many previously locked-up areas.

— *Tony Sannella, Sage Designs, Inc*

New Technical Support Staff



Sage Designs would like to introduce you to Fred Harris, who joined our staff last October as an inside technical sales representative. Fred attended a technical college and brings to Sage Designs a strong background in electronics and computer networking. While at Sage Designs, he has been learning Ladder Logic Programming and Lookout HMI in order to provide customer assistance. He is also working to become our in-house expert on radio modem communications.

Annunciation At Its Best

The Betalarm 4, manufactured by Hathaway Process Instrumentation, can be the perfect annunciator for your project as it can be tailor-made to match your system requirements. You can have as few as 3 and as many as 256 alarm points using three different size modular display windows which can be mixed and matched in three sizes: 30 x 30mm, 30 x 60mm, or 60 x 60mm. The lower right cell is reserved for the push button and audible module, making the Betalarm 4 a completely self contained annunciator. In order to provide the utmost repeatability, high reliability, and to eliminate the need for a backup battery, all the parameters of the operating system are stored in EEPROM.

The Betalarm 4 is easily field serviceable, so at any time if you decide to change parameters, it can be easily done in the field with no special tools. The Betalarm 4 supports a wide variety of standard and custom alarm sequences. Multiple annunciators can be linked together by a ribbon cable to synchronize flash rate and share first-out and pushbutton information.

— *Fred Harris, Sage Designs*

New Lookout Demo Packages

The latest release of the Lookout Demo Disk allows the user to test not only the many objects in Lookout's extensive library, but also supports the latest networking features available in Lookout.

Just load the demo on two or more computers in your network, register them under Lookout's object explorer, and you will see the other computers in your network, the Lookout process files that they are running, and the complete list of objects and data members of each object. Then just drag and drop data from other Lookout applications into your local Lookout application, and you can begin to appreciate how powerful and easy networking can be. *Call today to get your free copy.*

Spread Spectrum vs. Licensed Radio

At Sage Designs we regularly encounter confusion among users, engineers and systems integrators about when and where to use licensed vs. spread spectrum radio solutions. Everyone and his uncle seems to be touting this new unlicensed technology (including yours truly), and many SCADA systems are being designed with these radios as the communications media. I often find that people don't understand how few advantages this technology offers, nor how many disadvantages it brings.

If you look at the plus side of Spread Spectrum technology, you immediately see the obvious — no FCC License. This means that if you need to put in a radio telemetry system in a densely populated region such as the Bay Area, you may find this to be an unbeatable advantage. Additionally, versions are available which support quite high data rates and can give you true Ethernet networking for your SCADA system, but this mainly offers relief from the problems of limited range and over-crowded frequencies.

If you look at the minus side of Spread Spectrum technology, you immediately see the obvious — no FCC License. This means that if there are too many people in your area with the same bright idea as you, your radios have to fight it out to get their signals through the noise. This is why these radios have such sophisticated modems and frequency management algorithms. The second most obvious disadvantage is their power limitation to one watt or less and 36dB system gain which is why they can have such a limited range. Also, because of the extremely high frequencies (mostly 900 MHz and 2.4 GHz), you must have a clear line-of-sight radio

Sage Sitings:

Control Microsystems' PLCs & RTUs Are Everywhere!

Since Sage Designs opened its doors in 1991, we have been working continuously at establishing a strong user base of SCADA customers. The map to the right shows all of our customers who are using Control Microsystems' TeleSAFE products, from the older TeleSAFE 6000 RTUs to the Micro16 to the newest SCADAPack SCADA-optimized PLCs. End users are shown as circles, while systems integrators are shown as stars.

If you'd like to learn more about these popular products, please give us a call. You might also consider attending one of our upcoming seminars. See the article on page one.

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Chester Public Utility District's New SCADA System

It was the goal of the Public Utilities District of Chester California to implement a responsive monitoring system to notify management of potential crisis situations at their water treatment facility. Chester PUD provided an opportunity for TAVA Technologies to design and implement a monitoring system to communicate specific alarm conditions.

The water treatment monitoring system consisted of four Control Microsystems' SCADAPack SCADA-optimized PLCs, one SCADA Master, 5 radios, Specter Instruments' WIN911/WIN411 Alarm Dialing & Paging Software, and National Instruments' Lookout HMI Software.

Real Enterprise Solutions (formerly TAVA Technologies & Vision Engineering) designed and implemented the RTU monitoring system through the customer interface (HMI). The HMI displays all relevant plant operational data such as: pump status, flow rates, water levels, chemical residual concentrations, motor/pump start conditions, on/off status of lead/lag pumps, and status of communication between the RTUs and the Main Site.

Real Enterprise Solutions is an experienced full service control system integration provider and has supported design & integration of factory process monitoring batch & continuous flow process control in many industries.

— Stacy Marie Olaskowitz, Systems Engineer, Real Enterprise Solutions, Rancho Cordova, CA

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Trademark Acknowledgments: Lookout is a trademark of National Instruments. TeleSAFE, Micro16, SCADAPack, and TelePACE are trademarks of Control Microsystems

