

The Embedded Newsletter

Winter 2001

Communications Special

This is a special edition to celebrate our web site's new communication diagnostics pages. Producing microprocessor applications is about more than just writing programs; increasingly the micro uses sophisticated communications protocols. Products that help analyse those messages are a vital part of the developer's toolkit.

CAN Support

CAN is being used more and more for short-medium length communications links between multiple distributed intelligent instruments and we are pleased to have been appointed UK distributors for the 'Peak System Technik GmbH' range of controllers modules and supporting software.

CAN Controllers

A wide range of controllers that can be used as the PC end of a distributed system or to debug its activity. PCs can either be interfaced using ISA or PC/104 format cards or using a simple "dongle" running via the PC's parallel port (ideal for use with portables as a diagnostic tool).

<< NEWS FLASH >>



Windows software is available to report on the message traffic or to analyse CAN system throughput and performance. Library files allow C++, Pascal, Visual Basic or Delphi applications to be created.

CAN Modules

A range of low cost modules that can be put onto a CAN system to provide digital, A/D, D/A, PWM, temperature, magnetic field and stepper motor interfaces. These can either provide information at regular intervals or on demand.

TCP/IP Stack Enhancements

The TCP/IP protocols are used more and more both for micro to base station and micro to micro communications and MicroNet, its 8/16 bit micro implementation, is becoming increasingly powerful. Some recent enhancements to the MicroNet package available are:

- **SMTP** protocol allowing the micro to send emails
- **PAP** enhanced security feature within PPP
- **DHCP+BOOT+TFTP** allows a device to join the network without having a predefined IP address and if necessary to have a bootstrap application file sent to it across the network.

RS232 - Still the most Common

And still a ***** to get going and to debug. Now that most RS232 links are high speed ones between CPUs with complex message protocols rather than low speed to I/O devices it is even more important to use powerful tools to help debug your application.

A stunningly powerful package is Stream Team from a laptop it immediately provides the ability to capture and display all the RS232 information that is available both data and control. Data can be logged to disk and then searched for character strings.

PTO for Flash Programmers & RTOS News

Computer Solutions Ltd

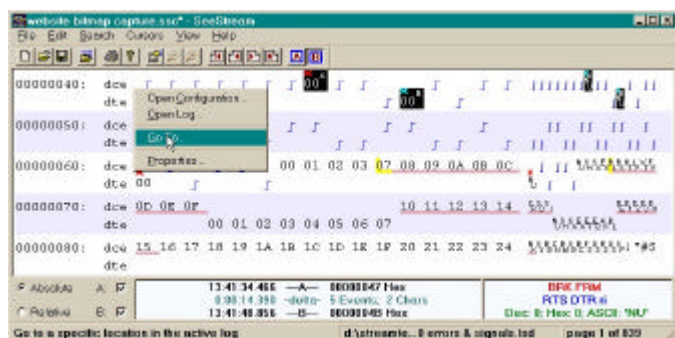
1a New Haw Road
Addlestone. Surrev. KT15 2BZ

www.computer-solutions.co.uk

Tel: 01932 829460 Fax: 01932 840603
Email: sales@computer-solutions.co.uk

If you have lots of data then you can turn logging on for selected message filtering a few hours traffic into a single screen.

You can display the traffic in real time as well as logging it to disk.



Up to 4 lines can be individually logged at speeds from 2 baud to 115,200 and log files can be up to 2 Gbytes long.

Try it and you will never want to start a RS232 project without it in your toolkit.

Single Chip RTOS

With the increasing number of CPU designs that have on chip flash significant amounts of code can be used in single chip applications but even then code and RAM space is scarce. However development time is an even more scarce resource and using an RTOS can radically simplify a design.

In most applications there are multiple independent time lines for example a front panel keyboard and display need not know anything about a remote RS232 link protocol and neither is concerned about a time delay associated with a valve closing or a stepper motor. By separating these items into tasks their individual logic becomes simpler and indeed they can even be programmed (simultaneously) by different members of the team. "But I don't have space for an RTOS" YES YOU DO.

CMX-Tiny+ is between 600 and 2200 bytes depending on which facilities you use and which CPU. Interrupt latency and response time are kept to a minimum. Its optimised to use as little RAM as possible as RAM tends to be the limiting factor 13 bytes per task is typical. It is available for any of these CPUs:

PIC18	AVR	166	
HC08	78K0	ST7	H8/300H
V850	MSP430	H8S	

Flash Programming

When creating new designs the most popular way to store programs now is in flash. This none the less comes with a few problems as well as advantages uniquely its own.

Of course the software department like them as new releases can be downloaded to a unit in the field to upgrade it (remove version 1's bugs and replace with version 2's bugs?).

Many single chip microprocessors come in a range of memory sizes so running out of space is not the disaster it use to be – and the cost of flash is much lower than most ROM systems even into quite high volumes.

But we still need to get that initial load of code into the chip whether that is done using a programmer before assembly or on the target using capabilities of the micro such as BDM or a hardware monitor. COMSOL has a solution to suit every need.

GANG Programmers

Low cost GANG-08 programmer that can program a wide variety of different memories (8 * 4 Mbit flash in 1 min). For those with higher throughput requirements the PRO208 has a more restricted range of chips but it can program 8 * 16 Mbit devices in 16 seconds.

68HC908 and Cyclone

P&E's latest offering can either be used as a debugger working as it does through the chip's MON-08 interface or as a completely stand alone flash programmer loading the flash on a 68HC908 at >3 Kbytes per second and doing a checksum at 12 Kbytes per second.

P&E's Low Cost BDM Cable

With the cable and software only costing £220 this parallel port interface device has got to be the cheapest way of loading flash programs. At 10 Kbytes/sec download + flash time it is no slouch either and we can supply version for the 68HC12, 68HC16, 68332 variants, ColdFire, MCore, PowerPC 5xx & 8xx.

BDM/JTAG Flash Programming @ 170 Kbytes/sec

The Abatron BDI2000 with its ethernet interface, 68360 processor and 1.5Mbytes of on board memory is capable of programming both on-chips and external flash at up to 170 Kbytes/sec (CPU & flash dependant). It can run BDM or JTAG interfaces for 68HC12, 68HC16, 68332 variants, ColdFire, ARM, MCore, TriCore and most PowerPC variants 4xx, 5xx, 6xx, 7xx, 74xx, 8xx and 82xx.