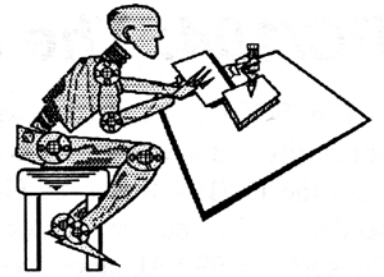


DPRG

DALLAS
PERSONAL
ROBOTICS
GROUP



July 1993

A Newsletter for Personal Robot Enthusiasts

Future-Bot Components

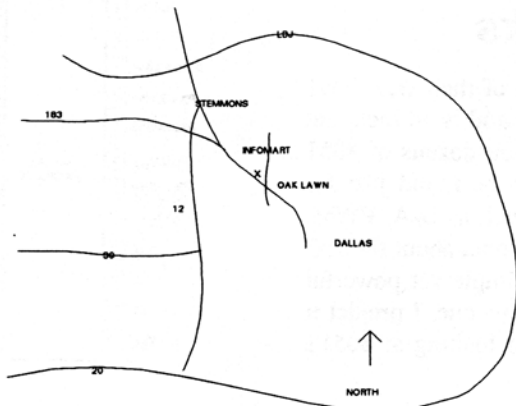
Recently I received a small catalog in the mail from Future-Bot Components out of Florida. As the name suggests, the products offered are targeted to homebrew robot builders. Items of interest include:

- 68705, HC11 Motorola microcontrollers
- 8032, 31, 35, etc. microcontrollers
- SPO256 Speech chip
- Various DSP chips
- Light sensing arrays
- DC gear motors
- Stepper motors
- MOSFETs

I'll contact them to see if they will supply the club with a box of their catalogs. If you can't wait, here's their address:

Future-Bot Components
106 Commerce Way A8
Jupiter, FL 33458

If you're coming through Dallas during vacation, we would like to see you. The following map should get you to the Infomart.



July Meeting Events

The July meeting will be on Saturday the 10th, 1:30pm at the Dallas INFOMART. The summer months tend to be slow with everyone going on vacation but we'll have fun anyway. Steve Rainwater plans to bring his RC-based robot with its newly built tether.

We'll also address the DPRG robot contest. With a little luck, we should be able to finalize the details in a document smaller than a postal regulation handbook. The contest has even generated some out-of-state interest. At least one builder is considering sending a robot to compete.

We'll also be distributing FREE 8051 data books, so don't miss the meeting!

President's Note

Hello fellow robot enthusiast. The summer months are typically slow for hobbyist with everyone going on vacation. This may, however, be the best time to work on your creation. Hardware and software prices are in their normal free-fall mode. Putting a 386 on a small robot was unthinkable last year. Now a 386sx motherboard costs only about \$100! Two years ago I put an 8088 motherboard on my robot at a cost of \$65. Power consumption is also plummeting. PC/104 products, mentioned on the next page, are also decreasing in costs making them a viable alternative for the homebrew robot builder. I invite you to join us at the next DPRG meeting to discuss these and other interesting topics.

Roger Arrick

PC/104: The Embedded-PC Standard

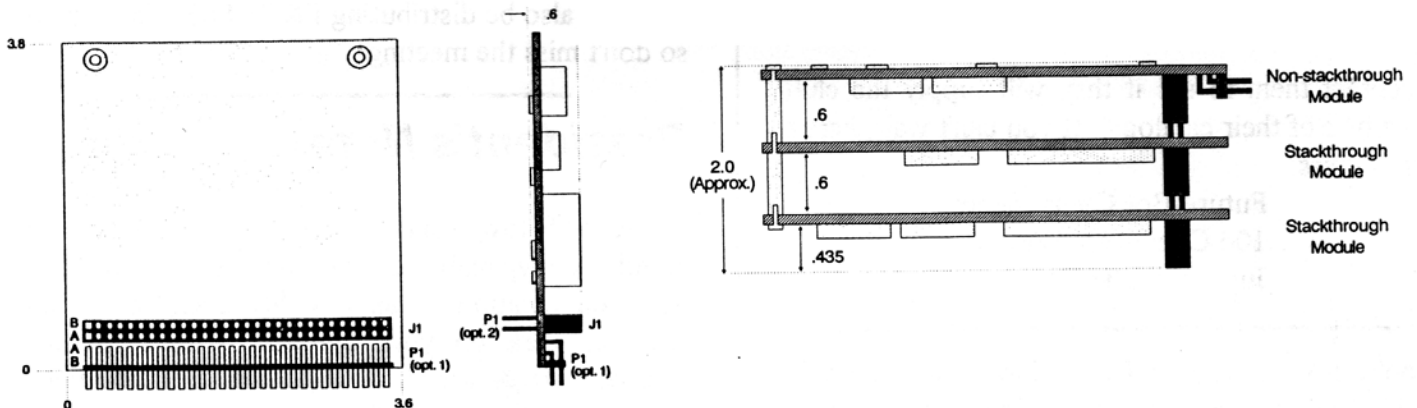
The PC/104 standard based on the architecture of the IBM personal computer is enjoying increased popularity. Because of its potential impact on the construction of personal robots, the following information from the PC/104 Resource Guide is being given here. The information has been edited to save space where needed. To receive detailed information on the PC/104 standard and consortium, contact the PC/104 Consortium, 990 Almanor Ave. Sunnyvale, CA 94086 (408) 720-1322.

The Need for an Embedded-PC Standard

Over the past decade, the PC architecture has become an accept platform for far more than desktop applications. Dedicated and embedded applications for PCs are beginning to be found everywhere! PCs are used as controllers within vending machines, laboratory instruments, and medical equipment, to name a few. By standardizing hardware and software around the broadly supported PC architecture, embedded system designers can substantially reduce development costs, risks and time. This means faster time-to-market and hitting critical market windows with timely product introductions. Another important advantage of using the PC architecture is that its widely available hardware and software are significantly more economical than traditional bus architectures such as STD, VME and Multibus. The only practical way to embed the PC architecture in space and power-sensitive applications has been to design a PC chip-by-chip directly into the product. But this runs counter to the growing trend away from "reinventing the wheel." A need therefore arose for a more compact implementation of the PC bus, satisfying the reduced space and power constraints of embedded control applications. Yet these goals had to be realized without sacrificing full hardware and software compatibility with the popular PC bus standard. This would allow the PC's hardware, software, development tools, and system design knowledge to be fully leveraged.

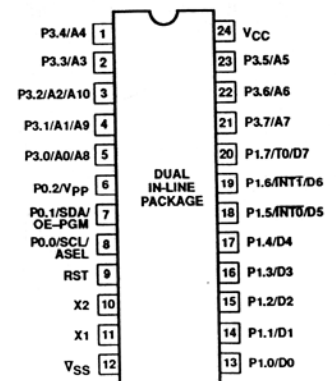
A Proposed Extension to the IEEE-P996 Standard

Although PC/104 modules have been manufactured since 1987, a formal specification was not published until 1992. Since then, interest in PC/104 has skyrocketed, with over a hundred different PC/104 modules introduced by more that three dozen manufacturers. In 1992, the IEEE began a project to standardize a reduced form-factor implementation of the IEEE P996 (draft) specification for the PC and PC/AT buses, for embedded applications. The PC/104 Specification has been adopted as the "base document" for this new IEEE draft standard called the *P996.1 Standard for Compact Embedded-PC Modules*. The key differences between PC/104 and the regular PC bus (IEEE P996) are: Compact form-factor of 3.6 by 3.8 inches, Unique self-stacking bus eliminates the cost of backplanes and card cages, Pin-and-socket connectors replacing edgcard connectors, and relaxed bus drive of 6ma to reduce power consumption. The basic mechanical dimensions follow:



Free 8051 Microcontroller Data Books

The Phillips Semiconductor office in Richardson sent us two boxes full of their new 8051 based 8-bit microcontroller data books. The book weighs in at over a pound and is an inch and a half thick! The contents are no less impressive. Detailed information on dozens of 8051 derivatives along with a complete assembly language reference guide can be found just for starters. These parts have an 8051 core and include a variety of add-ons such as D/A, PWM, watchdog timers and even the increasingly popular I2C bus. You may have read about the I2C bus in other magazines referred to as the ACCESS bus. I2C provides a simple yet powerful way for several devices to communicate with each other. Keep an eye on this one, I predict it will continue to increase in popularity as more chips implement it. If your looking at 8051's for your next project, come to the July DPRG meeting and get this book!

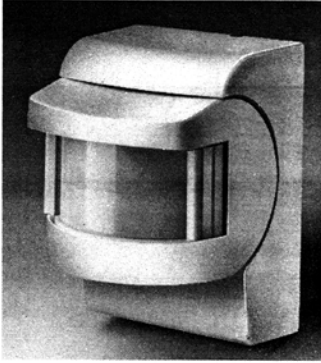


Interesting New Products

The following product advertisements were found in various industry publications such as Sensors and Industrial Equipment Magazine. Robot builders will probably find them interesting or possibly even useful. If you've seen an interesting new product, send it to the DPRG.

OCCUPANCY SENSOR

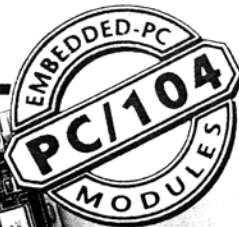
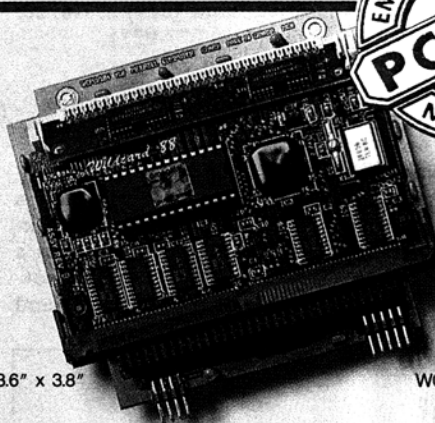
monitors large indoor areas



Passive infrared, wall-mounted Cat. No. 6777 has 2,200 sq ft field of view with 0-35 deg vertical and 90-180 deg horizontal adjustability. It reduces energy consumption in hallways, stairwells, and storage rooms. Adjustable delayed-off time setting ranges from 15 sec to 15 min.

Up to 5 sensors can be connected to single power supply box using low-voltage wiring. **Leviton Mfg Co**, Little Neck, NY (718) 229-4040

Embedded PC Module



\$99
Qty. 1

3.6" x 3.8"

WCPU/104

- PC/104 Compatible 80C88® 8Mhz CPU Module
- 256K Memory (up to 640K)
- 32K BIOS ROM
- Keyboard Port-Speaker Port

For more information please call:

Megatek Computer Corp.
125 Wendell Ave., Weston, Ont.
M9N 3K9 Fax: (416) 245-6505

(416) 245-3324

Megatek is a registered trademark of Megatek Computer Corp.
80C88 is a registered trademark of Intel Corp.

megatek®

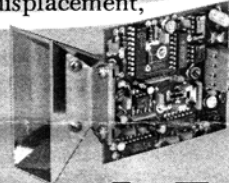
4 Common Sensing Problems

Solved by Microwave Sensors

Microwave sensors provide non-contact solutions...

- 1 in smokey, dusty, harsh surroundings
- 2 in hot, humid, noisy environments
- 3 over long distances (up to 150 feet)
- 4 through many non-metallic materials

AM Sensors, the Microwave Sensing Experts, has a complete range of versatile, low cost sensing solutions to help you detect displacement, proximity, and level.



Call for your
FREE
Selection Guide
1-800-289-2611

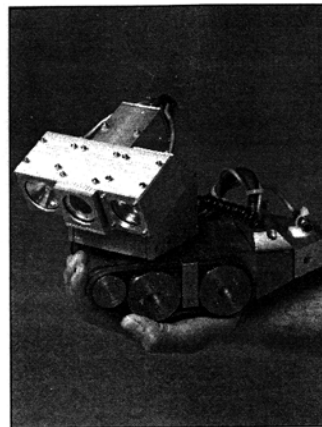
AM Sensors, Inc.

26 Keewaydin Drive Salem, NH 03079 Fax: 603-898-1638



INSPECTION ROBOT

for remote visual testing



Miniature, waterproof, pan-and-tilt S-VHS Rover is designed with remote control iris, two 35 W lamps, and on-board color CCD camera with over 375,000 pixels and S-VHS and composite video output. Imaging technology ensures good picture clarity in live and playback modes. Lazrlyne measurement capabilities allow for calculation

of distance, magnification defect size, and area with accuracy of $\pm 2\%$. **Visual Inspection Technologies**, Flanders, NJ (201) 927-0033

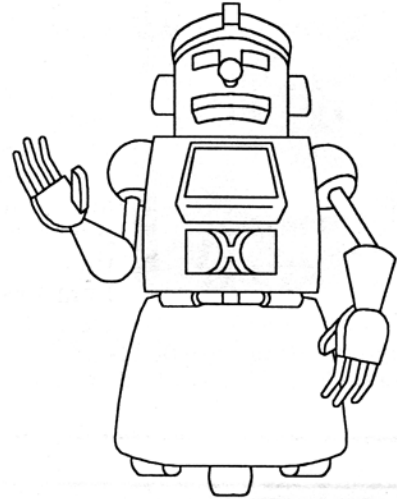


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NEWSLETTER

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- **July Meeting Information**
- **PC/104: Embedded PC Standard**
- **Interesting New Products**
- **Free 8051 Data Book**



Dallas Personal Robotics Group
C/O Roger Arrick
P.O. Box 1626
Hurst, TX 76053

