



**PARAGON
INNOVATIONS**

News in Brief...

Paragon Ranks 26th in FastTech 50

Paragon Innovations is on the fast track and the FastTech. In May, the Dallas Business Journal, Dallas' premier weekly newspaper, announced that Paragon had ranked #26 in its annual FastTech 50 list, which recognizes the 50 fastest-growing high-tech companies in Dallas and Fort Worth. Paragon experienced more than 100 percent growth between 1999 and 2000, adding customers such as 3M, CC Tech and Motorola Computer Group. Mike Wilkinson, founder and chief executive officer, says the company's growth is attributable largely to "to our team of employees, partners and customers. We achieve great results because of the great people working for us and with us."

Customers Tell All About Paragon

Paragon completed its comprehensive client-satisfaction survey in June. Many thanks to everyone who participated in the survey, and to Leighton-Bradley & Associates, which administered the project. Your feedback is extremely valuable as we continue our efforts to better serve you and retain our commitment to customer value, innovation and quality. Thank you!

**Revised Newsletter Coming Soon:
Sign Up Now, Win a FREE Handspring**

Next quarter, Paragon is considering a revamped and revised newsletter — potentially via e-mail. Sign up to receive the newsletter and enter a drawing for a chance to win a top-of-the-line Handspring Visor of your choice. Choose from the Handspring Deluxe, Platinum, Prism or Edge. Sign up now at www.paragoninnovations.com. Winners will be announced by Sept. 28.

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TECHNOLOGY Report

Vol. 2, Issue 2

"Hard is Part of the Job"

Wilkinson leads panelists to address outsourcing benefits and challenges during AeA CEO roundtable discussion

On May 8, in a cozy, crowded Dallas hotel-turned-conference-room, Paragon Innovations founder and Chief Executive Officer Mike Wilkinson, along with other high-ranking panelists, conducted a lively question-and-answer session with Dallas-area business leaders about outsourcing, its benefits, challenges and the decision-making criteria needed for outsourcing projects. The event was part of the AeA Texas Council CEO Roundtable series. The AeA is the nation's largest high-tech trade association.

Why Outsource?

According to Wilkinson, companies should keep core competencies in-house and outsource complex projects that require a large outlay of labor, money and resources.

"For Paragon, 'hard' is part of the job," said Wilkinson. "Outsourcing is about hiring experts to do what can't be done in house because of its complexity or limited resources, be it a law firm, software development or our world - designing embedded systems."

When to Outsource?

When to outsource? When the challenge is beyond the scope of your organization, agreed Wilkinson and the other panelists. "It's best to select an outsourcing provider when a project or system is too difficult or expensive," said Wilkinson. "Outsourcing is ideal when a function is outside a company's core competency. Do what you do best and hire others to do what they can do best."

... For the complete article, visit www.paragoninnovations.com/ceoroundtable.htm.

Wall Power

Paragon and 3M Introduce One-Stop-Shop Presentation System

It's new, practical, bleeding edge and just plain cool. Paragon joined 3M in June to introduce the 3M™ Wall Display, the world's first flat-screen, all-in-one presentation system that mixes both audio and visual technologies, including full-motion video, animation and graphics, plus connectivity to virtually any multimedia device. "Our team was intrigued by the 3M Wall Display's concept, which demanded complex, pioneering technology," said Guenter Lehmann, Paragon's senior project navigator. "It is the most sophisticated technology display device on the market today. From the classroom to the boardroom - the Wall Display is perfect for presentation users." The unit was introduced at the International Communications Industries Association Inc.'s @ Infocomm International 2001 trade show, June 13-15, in Las Vegas. Check out www.paragoninnovations.com/releases_3m.htm to learn more and see the display.

Shortages

Good news! Lead Times Decrease

Below is a list of some of the lead times, as stated by a number of Paragon Innovations' vendors.

FAI:

- Linear products: 4-6 weeks
- Linear Power Management (temp sensors, RS-232): 8-10 weeks, many distributors have available stock
- Standard logic products: 3-6 weeks
- Memory (in general): much easier to come by than in the last year
- Micro controllers: same as memory

Impact:

- Agere Systems FPGAs: 8-12 weeks
- Agere Systems Netcom: 6-12 weeks
- Agere Systems NetProcs: 14-20 weeks
- Agere Systems Opto: stock-20 weeks
- hi/fn: stock-8 weeks
- Netlogic: stock-8 weeks
- Tyco: 12-14 weeks
- Triquint: 8-10 weeks
- Power Integrations: 2-3 weeks
- Semtech: 6-8 weeks
- SST Flash: stock-3 weeks
- Microchip Microcontrollers: stock-4 weeks
- GSI SRAM: stock-4 weeks
- C&D DC/DC: stock-6 weeks
- Quicklogic ESPs and FPGAs: stock-3 weeks

Be sure to visit Paragon Innovations at these upcoming trade shows

Aug 14-16, 2001 - Attending the Embedded Internet Conference in Santa Clara, Calif.

Aug 28 - Attending the Real Time Embedded Computing Show in Plano, Texas

Sept 4-7 - Exhibiting at the Embedded Systems Conference (East) with NetSilicon in Boston, Mass.

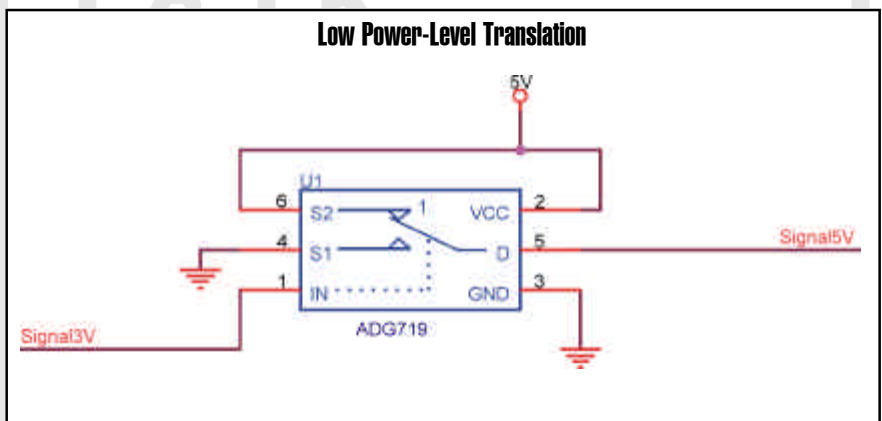
Design Ideas! Low Power-Level Translation

5V - 3V-level translations tend to not be a big deal. Throw in a 3V buffer with 5V tolerant inputs and you're done. In most cases, 5V parts understand 3V logic so nothing is needed there. Easy ... Next problem?

Now let's complicate things. The 5V part is CMOS, so $V_{IHmin} = 0.7 * V_{CC} = 3.5V$ (Hard to do with 3V logic). Still easy, throw in another buffer for the signals in question. Pick a buffer that doesn't have a problem with the low-input voltage and has a V_{OHmin} of at least 3.5V. Or if logic inversion isn't a problem, use a FET or BJT to do the level translation.

Now let's complicate it even further (some people just can't leave things alone). Power consumption is everything. We need this device to run for years on AA batteries. Are there alternatives to the approaches mentioned above that will increase power efficiency?

One of the things to consider is quiescent current. For instance, the 74AHCT16244 has a maximum quiescent current of 40 uA (not too bad). It does buffer 16 lines, so this equates to 2.5 uA/Signal. An alternative approach would be to use a digital switch to perform the level translation, such as the ADG719. This device has a maximum quiescent current of 1 uA (typical is 0.001 uA). The tradeoff is that it only translates a single signal (more board space). Still, there is a 60-percent saving in current when using the digital switch.



For the 5V to the 3V translation, this part might not be the right answer. For instance, the 75LVCC2244A has a maximum quiescent current of 10 uA. It buffers 8 lines, so this equates to 1.25 uA/Signal. With 3V VCC, this equates to a max. of 3.75 uVA per signal line, while the AGD719 will still have 5uVA per signal line.



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<http://www.paragoninnovations.com>

Paragon Innovations, Inc.
2100 10th Street, Suite 100
Plano, TX 75074-8016
(972) 265-6000