reviews

CarCPU Elite System

Much more than just the ultimate car entertainment system

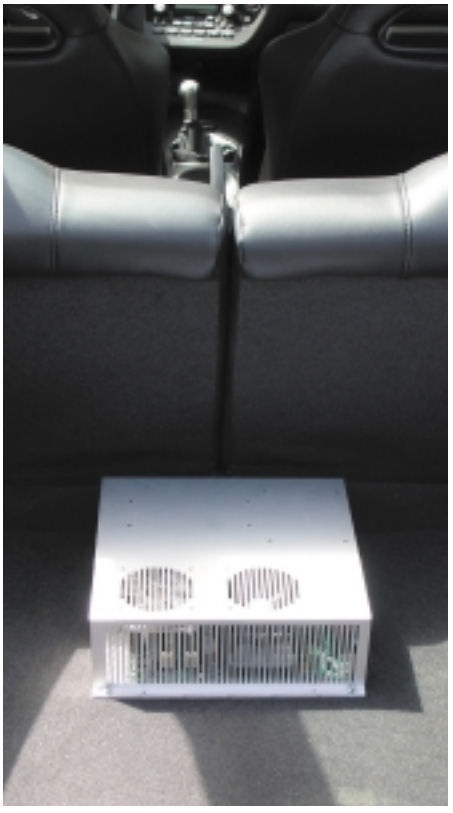
If you own a car, chances are you've at least once replaced a dinky factory stereo system with a better one from a mailorder place or electronics store. The third-party audio gear replacement market is worth billions and covers everything from modest tuners all the way to ultra-sophisticated multimedia systems with several video displays and enough volume to fill a baseball park. Interestingly, although everyone has a PC these days, almost none of those in-car systems include computing power. That's remarkable considering how PC-centric the home and mobile entertainment scene has become. And also because, unbeknownst to most, the average car has more CPUs and networks than most homes. However, as far as consumer-grade computing goes, cars are virgin territory.

That is about to change.

Enter CarCPU Systems, a Cleveland, Ohio, company that specializes in mobile electronics. Their view is that virtually all cool stuff these days is running on computers, managed by computers, or connected to computers. Think audio and visual entertainment, multimedia, email, web browsing, GPS, synchronizing with handhelds—it all requires a computer. Add to that the emerging fields of OBD-II (On Board Diagnostics) and ECU (Electronic Control Unit) tuning and you realize that there's a crying need for computing power in your car. And by that we (and CarCPU) don't mean just the laptop you lay on the backseat while driving home from work.

What CarCPU did was create a mobile computer system specifically designed for cars. That's not as easy as it sounds. For example, a real car computer must be wired into the vehicle's electric system. You don't just plug it into the cigarette lighter. That means a special power supply to accommodate the various voltage levels in the car's system. Next, you don't want to constantly turn a car computer on and off. It should do that automatically, which requires a certain kind of BIOS. And what if you do force a system to stay on while the motor is off and then forget about it? The car computer must shut off once the voltage drops. And what about drives and peripherals? Since space is at a premium in a car, you can't just have one big unit with everything built in. The CDRW/DVD drive, for example, is mounted in an external, convenient location and gets regulated power from the computer. Other external peripherals also get their power via special power harnesses supplied with the CarCPU.

As most road warriors know, mobile systems rarely offer the speed and power of a good desktop. That's because a mobile must be small and light and run off its internal battery. The CarCPU, on the other hand, uses the vehicle's electricity, so power consumption is less of an issue and there are no performance compromises. I shouldn't say none as the company had to decide just how small the system unit needed to be. They considered the Mini-iTX board with its 7 x 7 inch footprint but rejected it because current Mini-iTX boards just aren't very powerful, usually running processor speeds under 1GHz. Instead they decided to use a MicroATX board that can provide industrial-strength computing power with a footprint just a bit larger. As a result, the CarCPU comes with a blistering 2.6GHz Pentium 4. No compromises there.



The aluminum CarCPU system unit looks very high tech and we chose to show it off rather than hide it.

Choosing a case for the MicroATX board turned out to be a problem because most cases are built to accommodate all sorts of stuff you wouldn't have in a car, but lack the sturdy construction, shock-absorption, and special ventilation systems you need in a car. CarCPU ended up designing their own. It's made entirely of brushed aluminum and has a trendy industrial design look that you won't want to hide.

For peripherals USB is a natural in a car. Modern system boards can support a large number of USB ports, so the CarCPU has no less than eight of them, and all its peripherals are USB based. Wireless communication is also big because it cuts down on pesky cables. The CarCPU comes with a compact wireless keyboard and mouse, and an ergonomic remote control with a sleek little receiver.

Displays are always critical in a vehicle. They should be reasonably sized. Small enough to fit a standard Double-DIN bezel for those who want to mount it in the dash, but also large enough so you can actually see something on the display. And since your passengers will want to watch DVDs

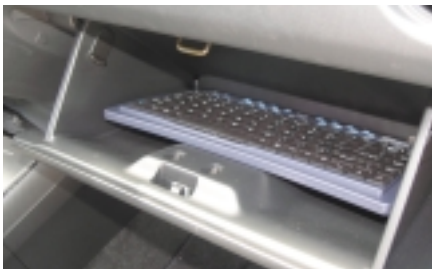
on it, it should use the fashionable 16:9 widescreen format. CarCPU found one, a 7-inch diagonal unit made by Xenarc. And since it's not always convenient to use a mouse, even if it is a wireless one, the Xenarc includes a touchscreen.

Now we get into what you actually want to use a car-based computer for. Me, I'd be happy to just get email and browse the web while parked within a WiFi HotSpot or in my driveway, synchronize my handheld, carry around all my important documents, and interface with my car's engine computer. Most people, however, will probably want to tie their car computer into the vehicle's audio system. This is where things can become pretty involved, though it's really no more difficult than installing an aftermarket multimedia system. One problem is that computers generally don't have their own amplifiers and you need to find a way to access the car's built-in or aftermarket sound system. The simplest way is to use a tape adapter or FM modulator. They are easy to use, but are rather low tech and they do not produce good sound. A better way is to tie directly into the on-board audio system via the head unit's AUX port if it has one, which few do. A more radical solution is to simply replace the factory head unit with the car computer and an aftermarket amplifier (we chickened out on that one). One potential problem here is that the built-in sound of a standard PC board may not be optimal for an elaborate six-speaker car sound system. That can be addressed with an external sound adapter.

So what exactly do you get when you order CarCPU's US$2,879 "Elite" system? First an elegant 11 x 11 x 4 inch system enclosure made entirely of sturdy anodized aluminum with a tech-looking brushed finish. It uses an Intel D865CLC motherboard with a 2.6GHz Intel Pentium 4 CPU,

Gyration's wireless optical mouse doesn't need a surface. You can use it in the air.

The handy wireless full-size keyboard fit nicely into the keyboard... er, glove compartment.



a shock-mounted 7200rpm 120MB Western Digital hard disk, and 256MB of DDR 400 RAM. Second, a number of specially selected and modified peripherals. There is an external DVD/CDRW drive wired directly into the CarCPU's special power connector so that you won't have to worry about finding regulated power for it. A Sound Blaster Audigy 2NX also has special power wiring. The wireless keyboard is small enough to fit into most glove compartments, yet has a full-size QWERTY layout and 17 extra function buttons. An ultra-cool Gyration wireless "air-mouse" comes with it. You can either use it as a standard optical mouse or simply hold it in your hand and move it. The Elite System also includes a DeLorme Earthmate GPS and Street Finder 2004 mapping and navigation software. The piece de resistance is the afore-mentioned Xenarc 700 TS touchscreen LCD that comes with a black stand and 360 degree adjustment.

So how do you go about actually installing a CarCPU? Basic installation is pretty much like that of an aftermarket sound system; it can be simple or quite complex depending on the car and your requirements. Also, while car stereos generally fit into the dash of the car (unless you're talking monster systems), the CarCPU system box needs to sit in an open-air area and you'll have to find the best spots for the various components. This can be a bit tricky. While the system box is certainly handsome enough to be placed in plain view in the trunk, that's pretty much where it *has* to be due to its ventilation requirements. The power installation has three wires. One is the ground, another the positive 12V that needs to go close to the battery, and a third one must be connected so that it is on when the ignition is on and off when the ignition is off. The display can either simply sit on top of the dash and be plugged into the cigarette lighter, or it can be fit into a Dual-DIN faceplate and wired into the electric system. Everything else is simple. The CarCPU comes with six extra USB extension cables to hook everything up even in a large vehicle. So after a bit of planning and some scraped knuckles from removing interior panels and pulling cables, you're ready to start your very own car computer.

The Xenarc display takes a bit of getting used to. First, you're in a car and that's not usually where you work with a computer. Second, while the screen is big for a car, it is very small to display Windows XP. Fonts are tiny. Also, you need to get used to the unusual 800 x 480 widescreen format. Theoretically, the display goes up to 1600 x 1200, but 800 x 480 is more like it. DVD playback is superb.

As far as software goes, CarCPU expects you to roll your own. That makes perfect sense. After all, everyone has different needs. My system will primarily be used for email and web browsing, and as an interface to various handhelds and my car's ECU via special engine management software. Others will want to create the perfect sound system. Or the ultimate GPS and mapping solution. The sky's the limit.

The beauty of the CarCPU solution is that it gives you all the computing power you could want without limiting you to some prefabricated software solutions. That's the way it's supposed to be. Those CarCPU guys are true pioneers and at the very forefront of an entirely new field of mobile entertainment and power. ◆

—Kirk Linsky

Mobile PC

CarCPU Elite System
www.carcpu.com
$2,879 (Lite system $1,565)

Windows XP Pro, 2.6GHz Pentium 4 processor, wireless LAN, 512MB RAM, 120GB hard disk, 7-inch touchscreen, 8 USB, video, CDRW/DVD, wireless keyboard, GPS

Pros
- Powerful system designed just for cars
- Excellent component integration
- Wireless mouse and keyboard
- Convertible functionality

Cons
- System unit rather large
- Integration can be fairly involved

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