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Turbo Charged

Tested: Cobra power inverters, Code-Alarm security system

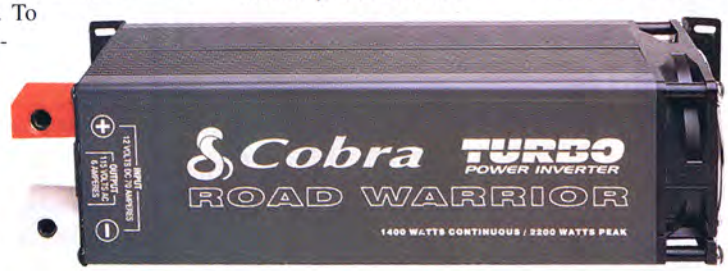
BY MICHAEL MICHNAY & MICAH SHEVELOFF

Cobra
Turbo Series Power Inverters

EMAIL IS A WONDERFUL THING. I RECENTLY RECEIVED AN electronic inquiry from an avid reader wanting to know how he could modify a home-audio signal processor to work in his car-stereo system. Problem is, an electrical device built for the home doesn't use the same type of electrical current used in the car. Normal house current is between 110-120 volts alternating current. Alternating current (AC) is an electrical current that systematically reverses its direction 60 times per second. In the automotive environment, 12-volt direct current is the norm. Direct current (DC) maintains a single direction. Therefore, products designed for the home won't readily work in the car, and vice versa. Nevertheless, there *is* a simple device that can convert DC to AC, and it's called an AC power inverter.

Generally speaking, an AC power inverter is a type of adaptor device that plugs directly into your car's cigarette lighter or attaches to wires connected to the vehicle's battery. All you have to do is plug the power cord of any AC device into the power inverter's AC outlet, and the device is up and running. But, as most car-stereo buffs know, nothing is simple in the 12-volt environment. To make any sensitive home-audio product work properly in the automotive milieu, a power inverter must produce the same high-quality alternating current that's delivered from a wall socket in your home. Electric motors, lights, and heat guns aren't electrically fussy and will operate with "dirty" or erratic current. But sensitive electronic devices such as TVs, VCRs, personal computers, and audio processors need "clean," stable current to operate free of noise. And, as we all know, noise is *not* a desirable characteristic in an audio system.

My past experiences with power inverters have been, let's say, not positive. I've found that the devices are bulky and can't handle the hefty start-up surges required by many high-tech electronic devices. They also tend to run very hot—electricity does produce heat, after all. While I was pondering this reader's dilemma, I came across Cobra's Turbo line of AC power inverters. The hefty power-output capability of these very compact units is what initially caught my eye. The Turbo line offers inverters with output ratings from 80 watts to a massive 1,400 watts continuous output at 115 volts AC.



Current affairs: Cobra's powerful Turbo Executive (above) and Turbo Road Warrior power inverters

The first device in the Turbo line is the Executive (Model P-2, $80). It's rated to deliver 80 watts continuous (200 watts peak) at 115 volts AC. As its name implies, the Executive is designed to power the standard mobile office (laptop computer, cellphone, etc.). The tiny 1.5 x 4.125 x 1.5-inch (h/w/d) device easily fits into a laptop computer case along with a modem and any accessories. I inserted the Executive's power cord into my rolling laboratory's (i.e., my buddy's 1997 GMC Yukon's) cigarette lighter and plugged in a Compaq 233-MHz Pentium laptop computer to the inverter's AC receptacle. After booting up the laptop, I fired up an audio CD in the computer's built-in CD-ROM drive and started to experiment with different software applications. After about 50 minutes, the Executive hadn't missed a beat (or bit) and only got moderately warm to the touch. While putting the laptop away, I noticed that the PC's rated AC power draw is 130 watts continuous—that's 50 watts more than the Executive's continuous rated output capability.

Next, I grabbed the Traveler (Model P-4, $90), a 1.5 x 5.125 x 2.5-inch (h/w/d) device that's rated to deliver 140 watts continuous (400 watts peak) at 115 volts AC. The Traveler, which also plugs into a vehicle's cigarette lighter, is designed to power an average 13-inch color TV plus a VCR or videogame player. After my experience with the Executive, I had no doubt that the Traveler was powerful. However, I wanted to see if it would produce clean, "noise-free" current; if not, the TV would produce a distorted picture.

The only accessible TV set was the 27-inch Proton that sits in my office. Though Cobra doesn't recommended using the Traveler to power a TV set of this size, I figured that if it could power such an excessive load without distorting the TV's picture quality, then it could certainly run a smaller TV set. To make the Traveler's task even more difficult, a bum knee prevented me from carrying the hefty 27-incher downstairs to my workshop, so I had to run a 50-foot AC extension cord from the Traveler up to the set. I powered up the TV expecting some-

thing to give, but the picture was perfect.

The other 2 power inverters in the Turbo line are designed to be permanently installed in your vehicle. The sleek 3.125 x 12 x 3.125-inch (h/w/d) Tradesman (Model P-6, $340) is rated to deliver 700 watts continuous (1,200 watts peak), and is built for those who need to operate power tools or small appliances from remote locations. The Road Warrior (Model P-8, $560) is simply the mother of all power inverters. It's the same size as the Tradesman, but's rated to deliver a whopping 1,400 watts continuous (2,299 watts peak). Both devices must be wired within 10 feet of the battery using 2-gauge power cable and feature a built-in cooling fan and low-battery alarm.

Since these 2 units aren't meant to be used for everyday mobile-electronics applications, I decided to just test the bad-boy Road Warrior. After connecting the Road Warrior to the Yukon's main battery, I tested the unit's low-battery alarm by powering up my espresso machine and made a cup of cappuccino. With the Yukon's engine turned off, the espresso machine's 800-watt draw was able to drain the battery down to 10.3 volts within 12 minutes. Within seconds of hitting 10.3 volts, the Road Warrior's audible low-battery signal sounded. When battery voltage reached 10.0 volts, the Road Warrior promptly terminated its 115-volt AC output. When the Yukon's engine was started and battery voltage climbed back to 13.0 volts, the Road Warrior automatically switched AC output back on. Very impressive indeed. The Road Warrior is also designed to automatically shut down in a thermal or extended overload condition. However, I was unable to achieve either, no matter what I did.

Next, I experimented with a couple of power tools. I cut a hole in a 1-inch-thick piece of MDF with a 0.5-inch drill with a hole-saw bit and heated up some vinyl with a 1,200-watt heat gun. The Road Warrior handled both jobs with ease. Feeling a little frisky, I decided to power up my baby mig welder. Though the device couldn't handle the welder's highest setting, it let me weld for 5 minutes on the lowest setting without any hiccups. Unbelievably, the unit barely got warm in the process.

In each test case, the Turbo power inverters outperformed my wildest expectations; these devices deliver the electric goods without reproach. How do you modify a home-audio component to work in your car-stereo system? Try one of Cobra's Turbo AC power inverters. They've set the new standard by which all others must be compared.

—Michael Michnay

Cobra, Dept. CSR, 6500 W. Cortland St., Chicago, IL 60707; 773-889-8870. Web site: www.cobraelec.com. ***Circle 150 on reader-service card***

Elite model: The impact sensor on Code-Alarm's Elite Series 4800 security system makes for a special breed indeed

Code-Alarm
Elite Series 4800 Security System

THE CODE-ALARM ELITE Series 4800 is what I'd call a good "bread-and-butter" automotive security system. It won't notify the head of the FBI when someone's trying to steal your car. It's unable to activate a coffeemaker in your home via satellite communication so that a cup of freshly brewed decaf is waiting for you back at the homestead. And it can't make your bed or sing you a lullaby at night. But what it can provide is an excellent array of basic security features (such as starter disable) and a nearly foolproof impact sensor. Throw in several nifty convenience features such as remote door lock/unlock capability and a courtesy-dome-light feature that illuminates the car's interior once the system is disarmed, and the Elite Series 4800 ($349, uninstalled) looks like a nice little security system—on paper, that is. Let's see how it looks in the real world.

The Elite 4800 supplies two 4-button remote controls, a 2-tone siren, a red LED, a wire harness, and a control unit (i.e., a "brain"). Comprehensive installation and owner's manuals are also part of the package. The 4800's shock sensor, appropriately named the IR-s impact detector, uses infrared (IR) technology to safeguard your vehicle against unwanted intruders. Inside the IR-s's compact plastic housing, a constant infrared beam is directed at an infrared receiver. Any serious contact with the vehicle will momentarily interrupt that connection and set off the alarm.

Installer James Samudosky and I installed the 4800 in a '93 Honda Civic 4-door sedan. Unfortunately, the Civic was outfitted with a poorly installed aftermarket alarm system that was constantly registering false alarms and had caused an electrical failure in the vehicle's power door lock/unlock system. Sometimes the locks would function, sometimes they wouldn't. Our first chore, therefore, was to remove this mess and repair the damaged electrical wiring. After restoring the Honda to good health, we began the security-system installation.

The 4800's main control unit is very compact. Thus, it was easy to conceal it where it wouldn't readily be found. Code-Alarm managed to house 6, count 'em, 6 relays inside the brain. These relays control lock/unlock functions, parking-light flash, starter disable, dome-light-on disarm, and electric trunk unlatch. Having all of the relays in the brain serves to simplify the installation and makes the 4800 almost universally compatible with almost any automobile. Many security systems require additional relays in order to function correctly in some vehicles. Adding external relays isn't rocket science, but it adds bulk to the wiring harness and slows down the installation dramatically.

Next, we assembled the 4800's wire harness by running all of the necessary wires from the brain to their correct termination points throughout the vehicle. During this process, we noticed that some of the wires barely reached their destinations. It would be useful in some instances if the harnesses were at least 2

feet longer. However, the quality of the wiring and the plugs at the main control unit were excellent, making up for the initial shortsightedness. We wrapped the 4800's wire harness in 3M 33+ vinyl tape so that it would look like the stock wiring from Honda. The IR-s sensor was mounted securely to the steering column so that the sensitivity-adjustment knob could be accessed after the install was complete, and the LED was installed in an unused blank switch panel in the dash.

The 4800 comes equipped with a handy onboard starter-disable system. However, James and I felt that the Civic needed more protection than a starter disable can provide by itself. Luckily, Code-Alarm makes an optional dual-kill immobilizer (the DDI-1, $60) for higher-risk installs. The immobilizer is a separate standalone unit that links to the 4800's brain via a trigger wire so that it can be activated and deactivated using the alarm system's remote control.

The installation manual says that the 4800's main 12-volt power source can come directly from the vehicle's battery or from the ignition-switch harness. I'm usually more confident with a direct-to-battery power connection, but James and I wired the 4800 to the ignition harness to see if we could experience any current-flow instability. When making our power termination, the 4800's 4 in-line fuse holders were very difficult to conceal because they were large and all grouped together as part of the alarm's main wire harness. It took some time to arrange them so that they'd fit next to the control unit.

With the brain mounted and wired, James ran the long remote-range antenna up the driver's-side A-pillar and along the headliner. The instruction manual indicates that this is the best way to achieve excellent range with the remote controls. Lastly, the siren was mounted under the hood. The siren included with the 4800 is a bit larger than the norm, so it was a little more difficult to conceal. Once it was in place, the Elite 4800 was ready to meet the real world.

The Elite 4800 passed my barrage of tests with flying colors. Absolutely everything worked as it was supposed to. My initial apprehension about using the ignition harness as a source of power for the security system was proven groundless, at least for the short time that I had the vehicle. It's best, though, to provide every alarm with as stable a 12-volt source as possible, especially in colder climates where car batteries live a tough life. The IR-s impact sensor worked like a charm; it gave a warning on light impacts and the full alarm cycle for any real blows. I found the consistency of this sensor to be the 4800's standout feature. It sensed impact evenly around the car, and I can't say that about very many of today's high-tech sensors. The long-range antenna also worked flawlessly. The remote controls activated and deactivated the alarm from all over the parking lot at a range of over 100 feet. The panic feature, which is activated by pressing any 2 buttons simultaneously, also worked from far away.

Not everything was perfect, however. The emergency-disarm procedure, although a clever idea, is awkward to execute. (Sources at Code-Alarm have, however, indicated that a new secured disarm procedure may be on the horizon.) I was also a little disappointed with the remote cases, which snap together instead of using small screws. I have a difficult time imagining these cases surviving many battery changes.

Although many auto alarm systems are great examples of the latest and greatest technology, many car owners find their security needs to be practical and are primarily concerned with value and reliability. When all is said and done, the Code-Alarm Elite Series 4800 is a very solid security package. The impact sensor is nothing short of outstanding, and the optional immobilizer ensures that the car can't be hot-wired. When combined with a careful installation, the 4800 is as smooth as butter, and likely to cause car thieves to howl in frustration as they angrily backpedal in search of a more vulnerable target.

—Micah Sheveloff

Code-Alarm, Dept. CSR, 950 E. Whitcomb, Madison Heights, MI 48071; 248-583-9620. Web site: www.codl.com. ***Circle 151 on reader-service card*** ■

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