

Speak Easy

Mares Divemate computer tells all... almost

Delmar Mesa, In Depth's equipment editor, recently took the new Mares Divemate talking computer for a two-week, 24-dive, tropical test session. While he's never easy to please, this time he got seduced by a female voice. Here's his assessment.

All Hands and No Eyes

Have you ever found yourself descending with your camera under one arm, your strobe under the other, one hand on your LP inflator, the other pinching your nostrils on the way down, wondering helplessly just how deep you were or how fast you were dropping?

Have you ever postponed checking your dive computer on a dark night, not wanting to blind yourself by bouncing 50 watts of light off the display?

Has your dive buddy ever come over after 20 minutes on the bottom, frantically pointing at the blinking "up" arrow and the zero in the NO DEC TIME display?

If you plead guilty to any of these charges, maybe the Divemate is for you. The Divemate has a conventional LCD display, just as good as many other computers and better than some, but nobody's going to buy it for this. The Divemate's main selling point is the calm female voice of its speech synthesizer, reminiscent of high-tech telephone answering systems.

To Speak or Not to Speak, That Is the... (Tap!)

About the size of a computer mouse, the Divemate rides next to your ear in the audio mode, snapped into a sturdy clip threaded onto your mask strap. There's also

a safety leash, just in case, but this made it a hassle to free the Divemate from my mask strap underwater. Although the clip was easy to deal with, unthreading the leash by feel was difficult.

To test the clip, I threw the mask/clip/Divemate combination around on the boat quite a bit without the safety leash. Although the computer stayed put, I decided paranoid is best. The manual cautions

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that "Warranty coverage is not provided for loss of the computer."

The Divemate is easy to use. It switches on automatically when immersed. Pressing three metal contacts lets you select options such as audio mode, feet or meters of depth, temperatures in °F or °C, and so forth. With some other computers you need a cheat sheet to guide you through each long, drawn-out series of precisely timed taps, clicks, and curses. But not the Divemate; I had no problems at all.

Say What?

With the Divemate mounted on my mask, I could hear announcements clearly through a $\frac{1}{8}$ -inch neoprene skullcap. With the Divemate on my wrist, I could

hear sounds but not understand messages. (Coldwater divers or divers with significant hearing deficiencies should test the Divemate with normal thermal protection before buying one.)

So you won't miss an announcement, the Divemate beeps once before routine announcements, then gives you a couple of seconds to stabilize your breathing so you can hear. Warnings had more urgent, multiple beeps. The ascent rate audio (double beeps plus "Slow!") avoided false alarms. In my test dives, it sounded off during consistently fast ascents and remained silent for normal terrain following.

Depth was announced twice a minute, or whenever it changed by three feet, making no-hands or zero-visibility descents and ascents easy to monitor. Remaining no-stop times and depths were announced once a minute (Beep! "One hundred twenty feet, no-stop time nine!") until no-stop time dropped to four minutes. After that, no-stop times came twice a minute, and the beep became a three-note warble to get your attention. Elapsed time was announced every two minutes, and I was gently reminded to check my remaining air every four minutes.

One-Ninety-Nine Bottles of Beer on the Wall

I found the intervals between routine announcements about right, but several other testers preferred to turn off the audio when they got to depth. They turned it back on occasionally to check their times, then left it on for the ascent. One said that it was almost like having a buddy — a novel experience for him, since he's a hard-core photographer. Another said that it interfered with his enjoyment of "the (no longer) silent world." He particularly disliked the Divemate's regular shallow-

water announcements because he tired of hearing “one hundred ninety-nine” (the maximum time available) over and over.

Another tester, who felt that the computer announced depth changes too often, said that he would buy a Divemate if depths were announced at 10-foot intervals below fifty feet, where small changes are less important than in shallow water.

Yow! YOW! Oh, It's Only a SAFETY Stop...

The safety stop warning was one of the few genuinely poor features of the Divemate. Other warnings — fast ascents, running out of no-stop time — were for potentially hazardous situations. This one sounded when everything was okay. I heard beeps as soon as I hit 20 feet on my ascent from no-stop dives, and they continued for three minutes. Hearing a persistent alarm when I had done nothing wrong was a jarring experience. The visual display was confusing, too: its countdown of remaining time was in seconds, unlike all other timed readings.

The audible warning would be much better if it sounded only when you omitted a safety stop. I often turned off the audio function before I hit 20 feet. Furthermore, the safety stop warning had some strange operating parameters. It sounded only during ascents from dives deeper than 33 feet or longer than 20 minutes (numbers probably derived by rectal extraction). Once it was triggered, if I dropped back below 20 feet, it deactivated itself until the 33-foot/20-minute requirement was once again satisfied.

Stop Me If You've Heard This

If you're thinking of buying this computer mainly because of the audio feature, you'd better

not be a stop-required diver or you'll be disappointed. The Divemate does not announce stop depths or times. There was plenty of warning before no-stop time ran out, but once the Divemate said, “Dec dive,” only the screen had the necessary information: current ceiling, busted stops, and total ascent time, but not the required time at a ceiling.

These Guys Can Write

The Divemate's owner's manual (*User's Guide*) has one of the clearest set of instructions I've ever read for a dive computer. One pass through, and I could turn on and off virtually every option in the Divemate and interpret nearly every element of the visual display. The Divemate even comes with a little plastic quick-reference card tucked into its carrying case.

The manual does have a few inconsistencies. For instance,

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automatic compensation for high altitude diving is listed to a maximum of 11,480 feet on page 27, but 9,840 feet on page 40. That's too great a difference to be due to a typo.

The *User's Guide* also lacks technical information. While few divers are concerned with theoretical tissue models, the guide teases without providing the rest of the story. For example, before a dive you can select times based on either “normal” or “hard”

conditions, with the latter providing significantly less no-stop time (e.g., 18 vs. 12 minutes at 100 feet). No reference is provided to experimental data, empirical evidence, or the theoretical justification for any safety margin presumably gained by using the hard tables. How much safer is it? Should the hard-dive profile be used for all repetitive dives? Where did the 47° figure come from? There's probably some study, somewhere, that shows nitrogen release is slowed after “intense diving,” but inquiring minds want to know.

The manual also lacks information about decompression capabilities. How deep a stop can be shown, and for how long? If a diver exceeds a certain number of minutes of decompression, does the Divemate go out of range, issue a warning, or just pretend that it's okay and you're okay?

Dive Times

The Divemate's normal no-stop schedule at sea level is in the middle of the range of most computers. Compared to my multilevel dives using a Suunto Solution as a backup, the Divemate had similar no-stop available times below 50–60 feet.

Shallower than 60 feet, the Divemate was often more generous than the Suunto, sometimes by as much as 20 minutes. I was frequently surprised by the amount of time the Divemate allowed late in a dive. For example, during a brief break in ascent at the end of the third long, deep, multilevel dive in one day, the Divemate offered 10 more minutes of no-stop time at 50 feet than did the Solution.

I don't pretend to know whether or not any dive computer is conservative enough to keep *you* from getting bent. Profiles are

based for the most part on theoretical mathematical models, and there is no good database yet available linking likelihood of decompression sickness to any particular recreational dive schedule. All dive computers purport to be "safe," whatever that means to someone who ventures repeatedly and voluntarily into an environment that has no air. Clearly, the Divemate is more liberal than the Suunto; you'll have to pick your own spot on the risk-versus-bottom time spectrum.

Plenty of Juice

The Divemate uses a half-AA-sized, SAFT 3.6-V lithium LS3 or LS14250 battery. During surface intervals, the Divemate automatically switches into a power-saving, minimum-display mode. The battery's predicted life span is 150 hours of diving in the audio mode (more without audio).

Battery changes are very simple and require no tools. I read the instructions and did a swap in less than two minutes. The *User's Guide* also mentions a PC interface for downloading dive profiles.

Do Not Fly While Diving

The visual display could be improved. Next-to-worthless red LEDs flank the screen, hidden under the edge of the case. They flash when you're ascending too fast, but they're difficult to see except on a night dive. They were also easy to miss when they flash upon entering decompression. A warning light on the face would be more helpful. The LEDs are also supposed to illuminate the display when you hit the tap switch, but it was nearly impossible to read in the dark. Keep your flashlight handy.

And why isn't a busted stop more prominently flagged than with a single small triangle

pointing downward? Why does an airplane clutter the screen ("Do not fly") when you're underwater?

I was also concerned about the apparent lack of any error warning when the Divemate's limits have been seriously violated. The *User's Guide* states, "The maximum depth of the Divemate is 216 feet. If the computer is taken deeper than this, the LCD will continue to show 216 feet and all calculations will assume a depth of 216 feet." 'Scuse me, but

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that's terminally stupid. Show ERR or some other malfunction warning. Even a total shutoff is better than calculating any dive at less than its actual depth.

Thoughtful Touches

Mares has made a serious effort to produce a user-friendly computer. The Divemate comes with a nice, small carrying case; a cheat sheet showing how to select options, change batteries, and use most functions; and clear adhesive covers to protect the display.

The built-in dive planner is easy to use and will be helpful to a new owner learning to read the display. Unlike the gnarly simulators built into most other dive computers, the Divemate's planner can be cranked up between repetitive dives to check out simulated no-stop and stop-required profiles on subsequent dives.

The Bottom Line

Despite its inability to talk me through stop-required dives, I loved the Divemate on no-stop dives and found the visual display adequate for brief stop-required dives. (I might have been willing to use the Divemate on longer stop-required dives if I'd known how big the deco envelope was or what might be tucked inside it.) The voice was clear and easy to understand. The Divemate worked perfectly and did everything its manual said it would do.

The Divemate is most appropriate for underwater photographers, night divers, research divers, and others who sometimes ignore their depth gauges or dive computers for a little too long. It may also be a good choice for surface-supplied divers who don't need to monitor their air supply but plan to stay within no-stop limits.

The Divemate really shines on descents and ascents, freeing up that hand that usually grips the gauges. Handicapped divers who can't easily reach a standard console and manipulate their buoyancy at the same time will particularly appreciate the audio.

I was tempted to give this novel dive computer one thumb up, rather than two, just to encourage the designers to extend its audio capabilities to stop-required dives. Cave divers and other hard-cores who don't always have free use of their hands would probably love it then. Despite a few important features on my wish list, the Divemate is an exceptionally useful computer for no-stop dives — which is all that most recreational divers do these days. I'm going to give it two thumbs up.

The Divemate retails for \$559. Street price should be about 10 to 15 percent less.

Delmar Mesa