CUSTOM PC

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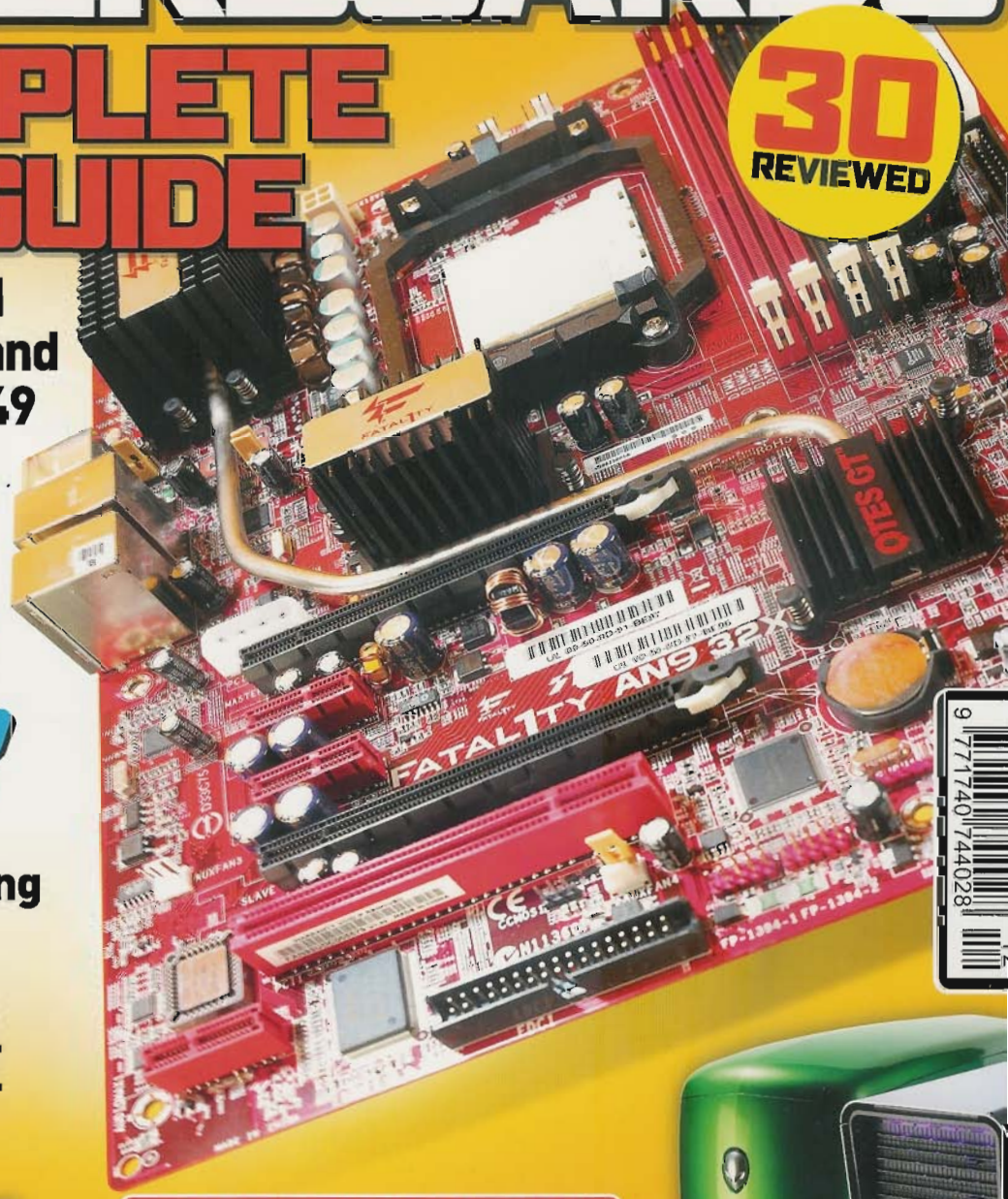
BUMPER 24 PAGE TEST!

MOTHERBOARDS

THE COMPLETE BUYING GUIDE

30 REVIEWED

The latest Core 2 Duo and Athlon 64 boards tested and overclocked, from only £49



SPEED SPECIAL!

4.8GHz CORE 2

How to break world speed records using extreme cooling

7950 GX2 QUAD SLI vs X1950XTX CROSSFIRE

Which is the ultimate hardware for high resolution gaming?

BATTLE OF THE BRANDS!

MASSIVELY POPULAR

Why multiplayer online games are taking the world by storm

ALIENWARE vs DELL XPS

The two hottest big-name games PCs reviewed, head to head

PLUS HOW TO USE YOUR RADEON GRAPHICS CARD TO HELP CURE CANCER

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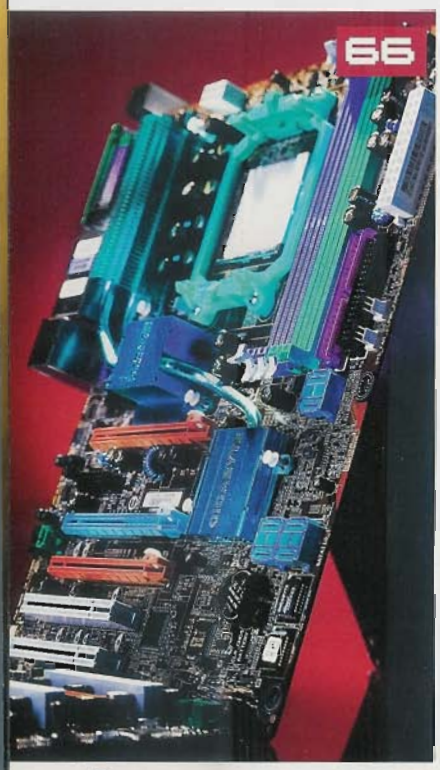

LABS TESTS

COVER STORY

66 MOTHERBOARDS
With Core 2 Duo and Socket AM2 Athlon 64 CPUs now on the market, many people will be preparing to upgrade to a new motherboard. That's why we've tested and overclocked 30 Socket AM2 and Core 2-compatible boards this issue, from as little as £49, to provide you with the best buying guide available.

FEATURES

COVER STORY

106 VIRTUAL WORLDS
Massively Multiplayer Online Games, or MMOGs, have taken the world by storm, with 13 million players currently logged on, and an estimated 20 million expected by the end of the decade. Stuart Andrews finds out why MMOGs are so popular, and what it takes to build a compelling virtual world.

COVER STORY

112 EXTREME WIDESCREEN GAMING
The latest dual-graphics setups from ATi and Nvidia allow for extreme high-definition gaming (XHD). We find out whether Radeon X1950XTX CrossFire or GeForce 7950 GX2 SLI is top dog when it comes to XHD gaming, by testing both setups using a massive 2,560 x 1,600 30in Dell TFT monitor.

COVER STORY

118 THE POWER OF COOL
Building cascade cooling systems and overclocking a 2.93GHz Core 2 Extreme X6800 CPU to a ridiculous 4.8GHz, generating the world's fastest PCMark05 score in the process, is all in a day's work for extreme overclocker Shannon Thomas. James Morris finds out how it was done.

DOWNLOAD

COVER STORY

10 In this month's Download, we test ATi CrossFire on an Asus P965 motherboard, and try the new Folding@home client for Radeon graphics cards. Plus, there's the latest tech news and gossip from around the globe.

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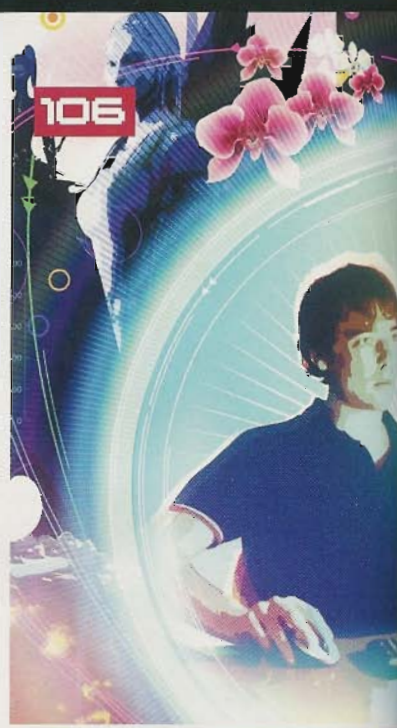
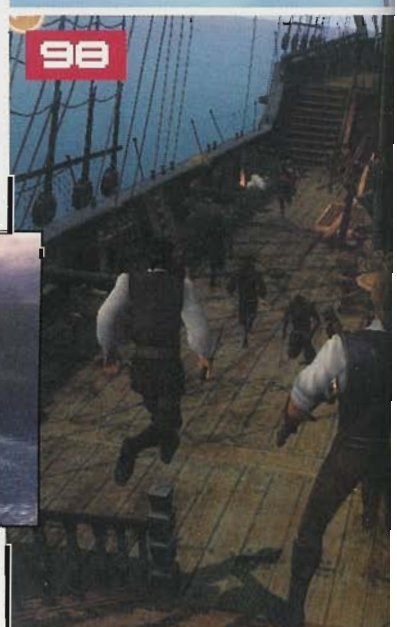




RED MI

MATTHEW JUFFS CONVERTS AN OLD, CLAPPED-OUT ENERMAX TWILIGHT CHASSIS INTO A THOROUGHBRED RACING DEMON WITH A FERRARI THEME

The World's Most Awarded Memory
Winner of the Prestigious HEXUS X List Award
2005 HEXUS THE X LIST
XPERT 3200XL
2005 HEXUS THE X LIST
XMS2 5400UL

CORSAIR
THE WORLD'S MOST AWARDED MEMORY

WIN!

eteen

I've been an observer of the modding scene for a good few years now, although my first 'custom' PC was built in a pre-modded case, to which I barely did any extra modding. It wasn't until last summer, when I painted my partner's small form factor PC pink, that I was well and truly bitten by the 'modding bug', and decided to build a new modded gaming PC, codenamed 'Red Nineteen'.

Red Nineteen was originally going to be blue and gold but, after spotting Acer's F-19 Ferrari-endorsed TFT monitor on special offer, I decided to purchase one and alter my planned colour scheme to match.

I'd initially intended to purchase a new Lian Li or SilverStone case to use for this project, but I later decided to completely modify an Enermax Twilight midi-tower case that had been languishing in the loft.

The first step was to sort out the paint, and a quick trip to Halfords netted me a few cans of black gloss paint and a can of Nissan Red for the internals (unfortunately, Halfords doesn't stock Ferrari paint!). With the colours sorted, I then searched eBay for some Ferrari vinyl stickers and a Scuderia badge to add to the mix. The Scuderia badge is identical to the badge on the Acer F-19 TFT, and I planned to attach it to the PC's fascia to help link the two items together.

The PC components were carefully chosen over a period of two months, as I wanted to wait until AMD had released its new Socket AM2 chips, and Intel had announced its Core 2 offerings. I eventually got an OEM Socket AM2 Athlon 64 X2 4000+ CPU, which runs at 2GHz but should overclock nicely. The motherboard is Foxconn's C51XEM2AA-8EKRS2H, and I added 2GB of Corsair TWIN2X2048-6400C4 DDR2 memory to this. I then bought a Leadtek GeForce 7800 GT card from a friend and fitted it with an Arctic Cooling Accelero X1 HSF to tame the noise. I also bought an Arctic Cooling Freezer 64 Pro HSF for the CPU, as I'd read good things about it in **CPC**. I decided I only needed one hard disk drive, though, so I bought a 250GB Samsung SpinPoint P120S S-ATA II model.

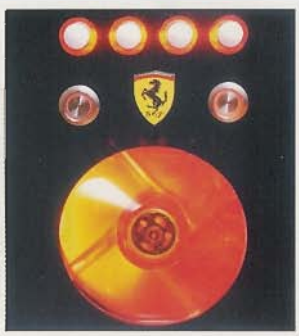
With the hardware sorted, the next job was to modify the chassis. Firstly, I replaced the flower-shaped side-panel window with a more traditional square window. I then removed the rear fan grilles and cut a new figure-of-eight-shaped fan grille in their place, using a Dremel-style rotary tool. The material for the new rear grille is from a disposable barbeque, which I purchased for the paltry sum of £1.

As I had opted for a single hard disk drive, the chassis' six 3.5in drive bays were a waste of space, so I promptly removed them and relocated the Samsung disk to a custom-made acrylic shelf just above the DVD writer.

The Enermax chassis comes with a blowhole in the roof as standard but, as this would disrupt my plans for airflow through the case, I used body filler to fill it in. Once the filler had dried, it then required a further six hours of wet and dry sanding to make it smooth!

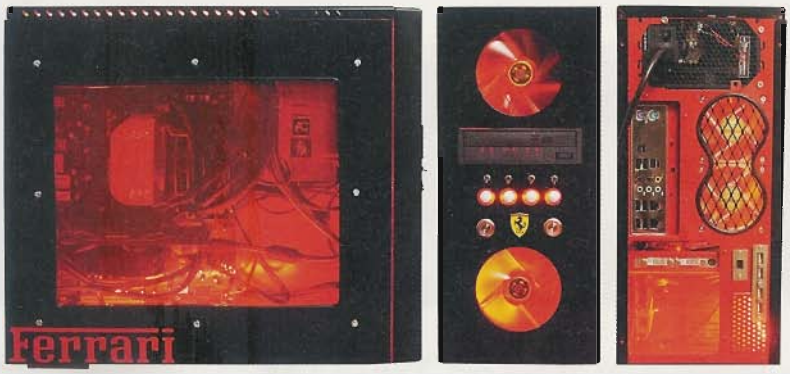
The front of the chassis took around a week to complete, as it comprises elements of the original fascia, along with a sheet of acrylic and plenty of car body filler. The acrylic was cut to shape using a combination of a jigsaw, holesaw and cutting discs, and was then bonded to the original plastic surround using epoxy. I used body filler, and more wet and dry paper to smooth the surface.

The fascia incorporates a Nexus fan controller, to which I added toggle



BE A WINNER!

To enter, you need to be resident in the UK and have a fully working machine. Simply log on to the Custom PC website at www.custompc.co.uk, and click on the Readers' Drives section, where you'll find a form and instructions. The best entrant each month will be featured here and we'll even send our roving photographer round to get you and your PC professionally photographed. But fame isn't the only prize – we've also teamed up with a selection of leading manufacturers to give you a fabulous showcase of prizes each month – check out the selection on p126.



switches to turn the fans on or off. The fan controller was originally equipped with blue lights, but I swapped these for red LEDs to maintain the Ferrari feel. I wired up the fan attached to the Freezer 64 Pro HSF, the two rear 80mm fans and the two front 120mm fans to the fan controller, which allows me to make adjustments to the airflow as required. It also allows me to adjust the noise level, and the PC is extremely quiet while still providing excellent cooling.

For the power and reset buttons, I used two vandal-proof switches that incorporate LED lights. The LED in the power switch is connected to the power LED header on the motherboard, while the LED in the reset switch is connected to the hard disk drive activity header on the motherboard. For extra lighting, I added five red LEDs to the front of the case and installed two red cold cathode tubes. I modified the inverter for the cathodes so that it fitted into a small aluminium case, which I then attached to the underside of the drive cage. This also contains a toggle switch that allows the lights to be turned on and off.

The inside of the case was covered with several coats of red paint, and I applied around six coats of gloss black paint to the exterior. I then lacquered the entire case to give it a shine to rival that of any real Ferrari.

I use Red Nineteen mainly for gaming, and it runs every game I throw at it at the highest detail settings, although it will no doubt require an upgrade in the near future.

I'm very happy with the outcome of the project, and I surprised myself with what I'd achieved. There's nothing that I'd like to change, which is probably because I spent so many hours planning the project before starting it. I also feel that Red Nineteen has some synergy with Ferrari automobiles, in that it will never be the fastest computer in the world, but it does everything in consummate style.

I still have the modding bug, so I'm already planning my next project, which will be a water-cooled PC themed around Renault's Formula One livery. I've even purchased a new Dremel to aid me in my quest! CPC

SYSTEM SPECS

CPU	Socket AM2 Athlon 64 X2 4000+
CPU cooling	Arctic Cooling Freezer 64 Pro
Motherboard	Foxconn C51XEM2AA-8EKRS2H
Memory	2GB Corsair TWIN2X2048-6400C4
Graphics	Leadtek Winfast PX7800 GT TDH
Hard disk	250GB Samsung SpinPoint P120S
CD/DVD	NEC DVD-RW ND4570A
Audio	On-board HD audio
Speakers	Creative 4.1
Case	Modified Enermax Twilight
Input	Microsoft Laser Mouse 6000
Extras	Acer F-19 TFT, Tagan 530W PSU, 1.44TB NAS

MEET THY MAKER

Name: Matthew Juffs
Age: 22
Occupation: IT Technician/tutor
Location: Lincoln
Main uses for PC: Gaming
Likes: Anything to do with computers; cheese
Dislikes: Two-day weekends

WIN ALL THESE PRIZES!

We've teamed up with some of the world's leading PC component manufacturers to offer this great range of prizes to each lucky Readers' Drives winner. The winner will walk away with all four prizes listed below, so get your entries in!

Enermax prize bundle: CA3030 Pandora ATX case, Liberty 620W PSU (ELT620AWT)

Total value £186 inc VAT
Manufacturer Enermax, www.enermax.co.uk

This great prize bundle from Enermax includes the CA3030 Pandora ATX case, which has plenty of expansion potential, with four 5.25in drive bays and five 3.5in drive bays. It also has a tool-free design and a dust filter to ensure that the insides are kept clean. Also included in the prize is the 620W Liberty ELT620AWT PSU, with full ATX12V version 2.2 support, dual 22A 12V rails and dual PCI-E power plugs to support SLI graphics setups.

XFX GeForce 7600 GS

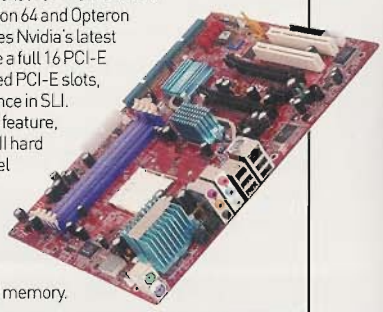
Value £70 inc VAT
Manufacturer XFX, www.xfxforce.com

World champion gamer, Jonathan 'Fatal1ty' Wendel, has chosen XFX to provide the graphics cards for his gaming PCs, because professional gamers understand that outstanding quality, performance and endurance are essential for success. However, it isn't only pro-gamers that can benefit from the 'XFX advantage', because XFX graphics cards are competitively priced, so you too could own an XFX card. Every Readers' Drives winner will receive one of our latest products, the XFX GeForce 7600 GS, which boasts a silent cooling system. Isn't life a mega-treat?

Abit AN8 32X

Value £126 inc VAT
Manufacturer Abit, www.abit.com.tw

The Abit AN8 32X is a high-end Socket 939 motherboard designed for AMD's powerful Athlon 64 and Opteron single- and dual-core CPUs. It uses Nvidia's latest nForce4 SLI X16 chipset to provide a full 16 PCI-E lanes to each of the two high-speed PCI-E slots, which delivers the best performance in SLI. In addition to this state-of-the-art feature, the AN8 32X also supports S-ATA II hard disk drives, gigabit LAN, 8-channel surround sound audio and up to 8GB of DDR memory. The board also supports Abit's excellent µGuru overclocking software to allow you to get the best performance out of your CPU and memory.



Corsair TWINX1024-3200C2PT

Value £135 inc VAT
Manufacturer Corsair, www.corsairmemory.com

The Corsair TWINX1024-3200C2PT is a 1GB matched pair of high-speed DDR memory designed to provide the ultimate performance and stability in dual-channel motherboards. They've been tested at 200MHz (400MHz effective) at extremely low latencies of 2-3-3-6 with a 1T command rate. As part of Corsair's XMS series, each module includes a high-efficiency, Platinum-coloured, aluminium XMS heatspreader.