speedgoat
real-time simulation and testing

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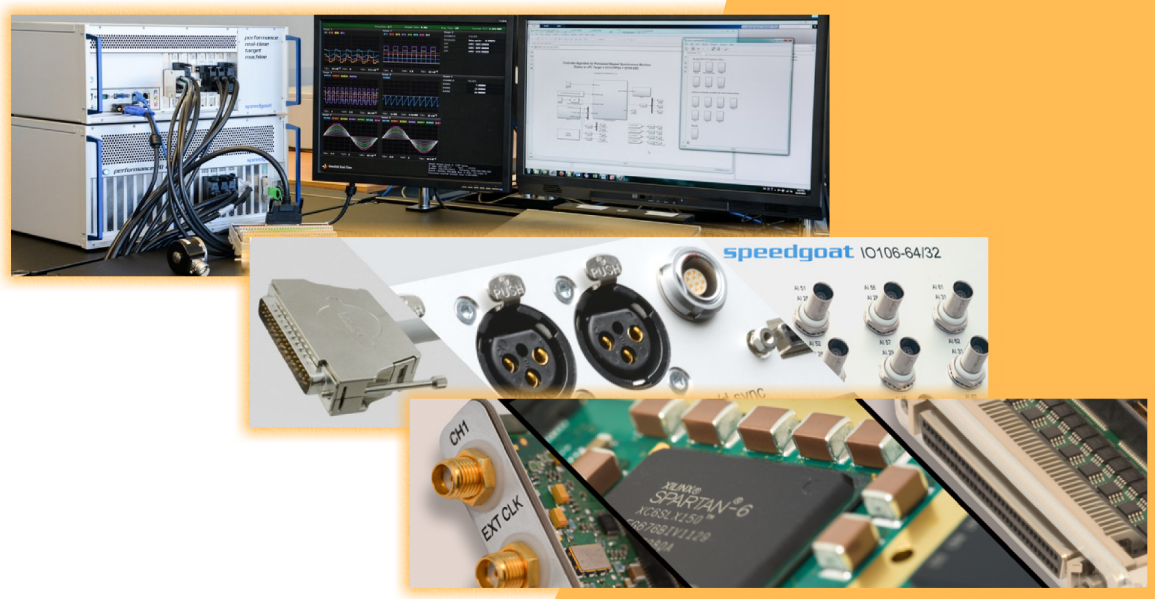


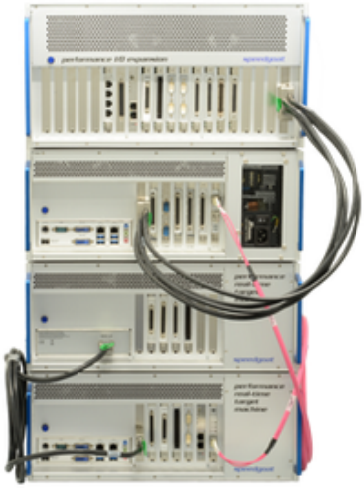
Real Time Target Machines Catalog 2014

Performance real-time target machine

The Performance real-time target machine is Speedgoat's mainstay target machine for office and lab use and can be placed on a desk or installed in a rack. This target machine is used in a broad range of application areas and industry sectors.

Capabilities

- State-of-the-art Intel CPU and optional Xilinx FPGA technology
- Concurrent multicore, multitarget and FPGA real-time application execution
- Flexible expansion concept: install 50+ I/O modules
- Expressly designed to work together with Simulink Real-Time™
- Over 150 different I/O Modules available
- Light-weight and space-effective aluminum housing with high-grade EMI sealing
- Ideal for desktop use and rack mounting
- 60GB SSD drive fitted as standard supporting transfer rates of up to 450MB/s (for logging large amounts of data options with up to 1TB are available)



The complete, fully assembled and tested Performance real-time target machine includes:

Housing	
Enclosure	4U 19"-compatible aluminium chassis / I/O front-accessible (standard) I/O front or rear accessible (deep option)
Color	Silver powder-coated, natural aluminium
External dimensions	Height: 177.8mm (4U) Width: 440mm, 480mm (including rack mounts) Depth (standard): 360mm (400mm including handles) Depth (deep option): 440mm (480mm including handles)
Weight	12kg (excluding I/O modules, cables, and terminal boards)
Power supply	400W, 100-240V, 50-60Hz, fan-less, zero-noise
Fans	Two at rear (outtake), high quality, low-noise Papst fans
Handles	2 for desktop use 2 for rack installation
Certification	CE and FCC certified

Mainboard & CPU	
Processor	Intel Core i3 3.3GHz (standard) Intel Core i7 3.4GHz (option) Intel Core i7 3.5GHz (option)
Form factor	ATX
Chipset	Intel C216
Bus	PCI, 32-bit/33MHz
Memory	2048MB DDR3 RAM 4096MB (option)
Graphics	Intel HD Graphics 400P onboard
USB	4 x USB 3.0 and 1 x USB 2.0 at front 6 x USB 2.0 internal
Ethernet	2 x Gigabit at front
Serial Ports (for baud rates up to 115kb/s only)	1 x RS232/422/485 at front 1 x RS232/422/485 and 4 x RS232 internal
Keyboard & mouse	1 x PS/2 at front
BIOS	American Megatrend Inc. (AMI)
Number of slots for I/O modules	3 PCI 4 x PCIe 1 x Mini PCIe

Drives	
Standard (for storing real-time application, Simulink Real-Time kernel, and logged data)	1 x 60GB SSD (read transfer rates up to 450MB/s, write transfer rates up to 450MB/s)
Options:	500GB or 1TB HDD 256GB SSD (read transfer rates up to 540MB/s, and write transfer rates of up to 520MB/s)

Power	
Power inlet	AC 100-240V, 50/60Hz, at rear
Power switch	at rear
Secondary power switch	at front
Reset button	none (secondary power switch)
Power LED	at front (combined with secondary power switch)

Environment	
Temperature	0° to +60°C (operating)
Humidity	10-90%, non-condensing

Software	
OS / RTOS	FreeDOS / Simulink Real-Time™ kernel, preinstalled on CompactFlash or Hard Disk for current release of MathWorks software
Development computer	Utilities for kernel transfer, I/O drivers and Simulink test models for your selected I/O modules

Mobile real-time target machine

Speedgoat's Mobile real-time target machine is the ideal choice if you need to rapid-prototype your model-based designs in a vehicle, a confined area, or a harsh environment. This is a target machine which likes being moved around, from site to site, from task to task.

Mobile and rugged doesn't mean slow. With CPU support up to Intel Core 2 Duo 2.16GHz this little machine doesn't have to hide behind our bigger real-time target machines.

Capabilities

- Small and rugged design
- Certified to withstand high levels of shock, vibration, and EMC
- Low power consumption
- Fanless, noiseless, no moving parts and no internal I/O cabling
- Ideal for continuous operation
- Fast boot-up and kernel load time
- Extended temperature support for -40 C° to +75C° (option)
- High CPU performance up to Intel Core 2 Duo 2.16GHz
- Various extensions and options available, including hard disk, RAM, and voltage range
- Wide range of peripheral interfaces
- Long component lifecycles for stability and consistent high quality
- Made and optimized for use with Simulink Real-Time

Chassis	
Enclosure	Rugged chromated aluminium chassis with EMI protection
Size	Height: 82mm, Width: 270mm, Depth: 162mm (custom sizes available on request)
Weight	1.8kg

Main Board	
Chipset	Intel 855GME and 6300ESB, 400MHz front side bus
Bus	PMC, 32-bit/33MHz PCI
Memory	512MB ECC DDR RAM, soldered (optional support for up to 3072MB of RAM)
Drive	1024MB flash module, on board
Graphics	Intel IGD graphics subsystem, DVI-I (DVI-I to VGA adapter included), on board
USB	2 x USB 2.0
Parallel Ports	SPP, EPP, ECP (IEEE1284)
Serial Ports	4 x RS232, up to 115 kb/s
IEEE-1394b	3 x IEEE-1394b ports, up to 800Mbit/
Keyboard & mouse	2 x PS/2
Ethernet (LAN)	Intel 82541ER 10/100/1000Gb/s, on board
BIOS	QuickBoot General Software
No. of PMC slots	3

Processor	
Standard CPU	Intel Pentium M 1.4GHz, 2MB level 2 cache
CPU options	Intel Pentium M 1.8GHz, 2MB level 2 cache Intel Core 2 Duo 1.5GHz, 4MB level 2 cache Intel Core 2 Duo 2.16GHz, 4 MB level 2 cache

Drives	
Main drive	1GB SATA FLASH module (on board)
Options	4GB SATA FLASH module (on board) or industrial 100GB hard disk (recommended for data logging)

Accessible components	
No. of PMC slots	3
Power inlet	8-28V DC, external AC 110/24V 50/60Hz power adapter included. Optional power input ranges are 18-48V and 9-36V.
Main power switch	none
Reset button	on top
Power LED	on top
HD activity LED	on top
VGA video connector	at rear
USB	2 x USB 2.0, at rear, intended use: Simulink Real-Time™ kernel and file transfer between host and target
3 ½" 1.44 floppy drive	USB, external, intended use: classic method for Simulink Real-Time™ kernel and general file transfer
Ethernet	10/100/1000 GB/s controller, at front (for primary host-target communication)
RS232	4 x RS232 on top (for RS/232 I/O and back-up host-target communication)
Keyboard & mouse	2, at rear

Environment	
Temperature	0° to +60°C (standard) -40 to +75C° (option)
Humidity	10-90%, non-condensing
Shock / vibration	EN60068-2-6 and EN60068-2-27
EMI	CE, (EMI) EN50081-2, EN 50082-2, EN 60959

Software	
OS / RTOS	FreeDOS / Simulink Real-Time™ kernel, preinstalled on FLASH or optional hard disk device
Development PC	Utilities for kernel transfer, I/O drivers and Simulink test models for your selected I/O modules

Openframe real-time target machine

Speedgoat's Openframe real-time target machine is the ideal choice for applications where the target machine doesn't need to have its own enclosure (second enclosure) and where you provide your own enclosure/chassis/frame and cooling concept for mobile or confined-space setups. From a mechanical, performance, and I/O connectivity perspective it is a technically more flexible and advanced solution than other open-frame target computers based on PC/104, EBX, EPIC, or similar form factors. With CPU support up to Intel Core 2 Duo 2.26GHz this little machine doesn't have to hide behind our bigger real-time target machines.

Capabilities

- Small, ruggedized, no moving parts, low power design
- Room for up to 6 state-of-the-art PMC I/O modules
- High structural (mechanical) integrity
- Flexible mounting options
- Certified to withstand shock/vibration (EN60068-2-6, EN60068-2-27)
- EMC certified (EN50081-2, EN 50082-2, EN 60959)
- High performance: Up to Intel Core 2 Duo 2.26GHz
- Support for extended temperature ranges
- Optimized for round-the-clock operation
- Made and optimized for use with Simulink Real-Time™

Chassis	
Size	Height: 82mm, Width: 270mm, Depth: 162mm (custom sizes available on request)
Weight	1.8kg

Main Board	
Chipset	Intel 855GME and 6300ESB, 400MHz front side bus
Bus	PMC, 32-bit/33MHz PCI
Memory	512MB ECC DDR RAM, soldered (optional support for up to 3072MB of RAM)
Drive	1024MB flash module, on board
Graphics	Intel IGD graphics subsystem, DVI-I (DVI-I to VGA adapter included), on board
USB	2 x USB 2.0
Parallel Ports	SPP, EPP, ECP (IEEE1284)
Serial Ports	4 x RS232, up to 115 kb/s
IEEE-1394b	3 x IEEE-1394b ports, up to 800Mbit/
Keyboard & mouse	2 x PS/2
Ethernet (LAN)	Intel 82541ER 10/100/1000Gb/s, on board
BIOS	QuickBoot General Software
No. of PMC slots	3, 6 with two PMC baseboards

Processor	
Default CPU	Intel Pentium M 1.4GHz, 2MB level 2 cache
CPU options	Intel Pentium M 1.8GHz, 2MB level 2 cache Intel Core 2 Duo 1.5GHz, 4MB level 2 cache Intel Core 2 Duo 2.16GHz, 4 MB level 2 cache

Drives	
Main drive	1GB SATA FLASH module (on board)
Main drive options	4GB SATA FLASH module (on board) or industrial 100GB 7X24 hard disk (recommended for data logging)

Accessible components	
No. of PMC slots	3 + 3 (I/O expansion) available for PMC I/O modules
Power inlet	8-28V DC, external AC 110/24V 50/60Hz power adapter included. Optional power input ranges are 18-48V and 9-36V.
Main power switch	none
Reset button	on top
Power LED	on top
HD activity LED	on top
VGA video connector	at rear
USB	2 x USB 2.0, at rear (for transfer of Simulink Real-Time™ kernel and files between development computer and target machine)
3 ½" 1.44 floppy drive	USB, external (for classic method of transferring Simulink Real-Time™ kernel and files between development computer and target machine)
Ethernet	10/100/1000 GB/s controller, at front (for primary communications between development computer and target machine)
RS232	4 x RS232 on top (for RS232 I/O and back-up communications between development computer and target machine)
Keyboard & mouse	2 x, at rear

Environment	
Temperature	0° to +60°C, extended temperature support available: -40 to +75C°
Humidity	10-90%, non-condensing
Shock / vibration	EN60068-2-6 and EN60068-2-27
EMI	CE, (EMI) EN50081-2, EN 50082-2, EN 60959

Software	
OS / RTOS	FreeDOS / Simulink Real-Time™ kernel, preinstalled on FLASH or optional hard disk device
Development PC	Utilities for kernel transfer, I/O drivers and Simulink test models for your selected I/O modules

Education real-time target machine

Study and teach basic and advanced mechatronic and custom FPGA design concepts

Together with Simulink Real-Time™ from MathWorks the Education real-time target machine forms a complete real-time simulation and testing solution to study and teach mechatronic concepts with components currently used in industry.

To make this product a truly industrial-grade solution, available at the best price, Speedgoat has teamed up with industry leading providers including Acromag, B&R Industrial Automation, and MathWorks. The result is a system providing the best balance between feature richness, quality, and a price an academic institution can afford.

Capabilities

- Ideal for motion control, power electronics, or signal processing applications
- Industrial-grade design
- Rugged mechanical and electrical design
- Low-latency analog and digital I/O connectivity included
- Pulse generation (PWM), pulse capture (CAP), quadrature decoding (QAD), and generic digital I/O channel support (option)
- Develop and integrate custom FPGA I/O functionality with a step-by-step guide (option)
- Includes all required cables, terminal boards, and adapters
- Best balance between feature richness, industrial-grade quality, and price

Chassis	
Enclosure	Zinc coated sheet chassis with EMI protection
Size	Height: 270mm, Depth: 241.1mm, Width: 111.9mm
Weight	4.5 kg

Processor	
CPU	Intel Core i3 2.4 GHz dual-core CPU

Main Board	
Bus	PCI, 32bit/33MHz
Memory	2GB RAM (DDR3)
Graphics	Intel Extreme Graphics 2, DVI / SDL, on board

Drives	
Main drive	4GB CFast CompactFlash device

Accessible components	
PCI slots for I/O modules	2 (one required for the included I/O subsystem)
Power inlet	24VDC (+/- 25%), external AC 110/240V 50/60Hz power adapter included
Main power switch	none
Reset button	at front
Power LED	at front
HD (FlashDisc) activity LED	at front
Link 1 / Link 2 LED	at front
DVI video connector	on top
USB	2x USB 2.0, on top, (for transferring Simulink Real-Time kernel and files between development computer and target machine)
RS232	1 x RS232 on top (for back-up communications between development computer and target machine)
Ethernet (LAN)	2 x Gigabit Ethernet (1 for communications between development computer and target machine)
Audio	MIC, line IN, line OUT

Environment	
Power consumption	~ 35W
Temperature	0° to +55°C
Humidity	10-90%, non-condensing
Shock / vibration	15g, 11ms / 2 - 9 Hz: 3,5 mm amplitude / 9 - 200 Hz: 1 g

Software	
OS / RTOS	FreeDOS / Simulink Real-Time kernel, preinstalled on CompactFash Drive
Development computer	Utilities for kernel transfer, I/O drivers and Simulink test models

Audio real-time target machine

Applications in the area of audio communication (e.g. for the development of hearing aids) typically require:

- highest computational performance to mimize calculation time for the complex algorithmic models
- high performance analog input and output I/O connectivity
- Interface patch panels e.g. with balanced XLR and LEMO connectors
- Special cabinets or racks combining the components to a complete package
- Low noise operation
- Possibility to interact with other real-time systems (e.g. to simulate both, the left ear and the right ear hearing aid)

Audio real-time target machines typically include:

- One or two Performance real-time target machines with highest CPU clock rate (Intel Core i7 3.5GHz four core CPU)
- Audio/Speech I/O connectivity and XLR panels
- Optional very fast target to target connection using shared memory technology
- 7U to 20U 19" chassis

Use case
Summary of a typical hearing aids case study here.

To discuss your application please contact Speedgoat.