

# Turnkey target machines for Simulink®-based real-time testing

Optimised for xPC Target™



Because your projects are complex enough.

# Building your own real-time target system is a real challenge

Evaluating and assembling the right components to form a powerful real-time target system for the use with xPC Target is not an easy task. There are many facets which, if not properly taken into consideration, can put the usability of the final real-time system at high risk. It can also be a very time consuming process preventing you from concentrating on your actual work, the design of the next generation high-tech product. Typical challenges and pitfalls include:

## **State-of-the-art Components**

How to know which components like CPU and chipset form a state-of-the-art and integrated x86 compatible real-time target system, which is 100% compatible with xPC Target?

## **Performance**

How to make sure that the evaluated components and the system as a whole shows best real-time performance under xPC Target? Which CPUs, chipsets, devices, bus types, and software aspects such as BIOS settings guarantee reaching highest performance levels?

## **I/O Connectivity**

How can you be sure that your I/O modules have the right characteristics for your application? All required I/O types have to be covered by the

smallest amount of I/O modules to save costs and I/O expansion space. Which I/O modules lead to the smallest possible latency times, usually the major bottleneck in a real-time system? Which I/O modules come with the right transceivers for signal connection? And can you make sure that the xPC Target drivers access the I/O modules in its most efficient and flexible way?

## **Usability**

Which form factors of hardware components exist to build a system which meets your space and environmental requirements? How can power consumption be minimized? Is it functional in a harsh environment?

## **Availability**

How to make sure that the selected components will be available if the

same systems are needed over a longer period of time? What about life cycle, long-term supply and quality requirements for mission critical applications?

## **Support and Repair Services**

How to find a professional partner to discuss your requirements? What about warranty and repair services, and technical support for your system including I/O modules in conjunction with Simulink and xPC Target?

## **Product Maintenance**

How can you make sure that the I/O modules drivers and tools are continuously maintained and available for the latest release of xPC Target and other MathWorks products?

**Speedgoat** supports you in reaching your ultimate goal: The design of a prototype or HIL testing system for your next high-tech product

# Getting it from Speedgoat makes it real easy

**Real-time target systems from Speedgoat are state-of-the-art solutions which work out-of-the-box, have highest computational performance, broad I/O connectivity, and are accompanied by quality services. Most importantly: The systems are built to your exact needs.**

Speedgoat's focus is to provide state-of-the-art turn-key real-time solutions for Simulink and xPC Target which are completely based on your requirements. The team at Speedgoat combines years of experience in doing just this, so you always deal with the most knowledgeable and experienced team in that domain.

Speedgoat understands that there won't be a single product covering all the different projects out there. Therefore we have developed a broad range of standard real-time system platforms, for office, lab, production, to field use to cover most use cases. And if you need something special we are keen to build a solution just for you.

Speedgoat knows that the most critical component of a real-time environment is the I/O subsystem. High computational performance is one thing, seamless I/O-access to your system under test another. That is the reason why we at Speedgoat

are I/O specialists. Our I/O modules offer high functionality, high I/O-density, low latency, and come with drivers which have been especially designed for xPC Target. We continuously work on supporting new I/O types, so the use of next generation I/O technologies is guaranteed.

Speedgoat is here to work with you to find the best overall system for your application. We take the time to thoroughly discuss your requirements and find the most complete, future-oriented, and expandable system with highest quality in mind. We're only happy if we can deliver to you the right thing. We speak your language because we are at home in many application areas and industries, from automotive, aerospace, defense, automation, motion control, medical, energy systems, to audio/speech.

Speedgoat makes sure that you won't be left alone after the purchase. Providing timely technical

support is standard and this independently if it's a simple driver use question or on how to upgrade your current system for your next high-tech project. Everything, even the best engineered product can break. Not a problem: With our repair services we make sure that your system will be up and running again in the shortest possible amount of time. And even outside of warranty, we take the same complete care of repairing defective systems as we take in delivering new ones.

Speedgoat believes in the success of partnerships with you as the customer and companies around the world as our suppliers. Together we work on products which will make a difference in the future.

Speedgoat also partners with the planet: Our Greengoat program gives you a discount, our donation, on a purchase if your project plays a role in reverting man-made global warming.

Speedgoat is official partner and Systems Integrator of The MathWorks



## Customer Quote

**"With the Real-time target machine from Speedgoat we achieved a quick and easy startup of our HIL concept. The troublefree and most flexible interaction with xPC Target from The MathWorks and the excellent support service convinced us completely."**

**Suzlon Energy GmbH, Germany (developers of wind turbine generators)**

# Speedgoat Product Overview



Each real-time target system consists of a Real-time target machine, I/O modules, and complementing drivers and test models for Simulink and xPC Target.

## Real-time target machines

Speedgoat offers a set of six standard Real-time target machines and additional custom built solutions. For all machines various options are available such as different processor types and speed, temperature ranges, enclosures, RAM size, FLASH or hard disk size, and power supply choices.



**Performance real-time target machine**

- ✓ For indoor use, highest performance, includes industrial-strength features



**Mobile real-time target machine**

- ✓ Small, ruggedized, fan-less, for the use in confined areas and/or harsh environments



**Modular real-time target machine**

- ✓ Powerful, expandable, ruggedized, room for up to 13 I/O modules



**Application optimized solutions**

- ✓ Special applications call for special solutions. So if you need something special, we are keen to build a solution just for you. Some examples are shown above.



**Education real-time target machine**

- ✓ Study and teach state-of-the-art mechatronic and FPGA design concepts at a price an academic institution can afford

## I/O connectivity

Speedgoat offers numerous I/O modules covering an ever growing range of I/O connectivity:

- Analog I/O (high-resolution, high-speed, simultaneous sampling, audio)
- Digital I/O (TTL, 12V, 24V, high-drive, opto-coupled)
- Serial (RS232, RS422, RS485, SDLC, HDLC, ...)
- Protocols (SSI, CAN, Raw Ethernet, UDP, J1939, ARINC429, MIL-STD-1553, ...)
- Shared Memory (Reflective Memory for MP-systems)
- Audio/Speech, LVDT/RVDT, Synchro/Resolver, ...
- Configurable FPGA-based I/O connectivity and algorithmic functionality:
  - Pulse train generation and capture (PWM, Capture, Quadrature Decoding, Hall, ..).
  - Inter-system, -sensor/actuator, -chip protocols (SPI, I2C, SSI, ...)
  - Highest cycle-rate system design algorithm HDL implementations



I/O-modules installed in the target machines are eventually making it possible to connect to and communicate with the outside world.

Therefore, the selection of the proper I/O-modules is of utmost importance. It is one of Speedgoat's key competences to help you select the best set of I/O modules for your specific requirements.

All I/O modules from Speedgoat are in the PMC form factor and can be used in all our systems with the exception of the Classic real-time target machine. Being able to use and reuse the same I/O-modules for various application areas and projects increases your return of investment. All I/O modules come with an extensive set of drivers and test models for Simulink and xPC Target.

Generally, Speedgoat customers conduct the selection process of the I/O-modules and the Real-time target machine for a given application in close collaboration with Speedgoat. In addition to this evaluation support, Speedgoat offers extended engineering services, e.g. for project or industry specific I/O adaptations or for the development of software components and add-on tools.

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