

## ADsim – even Simulink® models run on ADwin

With **ADsim**, you easily run Simulink® models on **ADwin** hardware. With a few clicks only you insert inputs and outputs for the **ADwin** system as blocks into the model and start C code generation. After compilation, the model runs on the **ADwin** system in real-time with absolute timing precision and predictability.

The analog and digital inputs and outputs and other interfaces of the **ADwin** hardware like RS232, SSI decoder, CAN bus, Profibus or FlexRay connect the **ADwin** system to your test environment. The communication to the PC is carried out over the Ethernet interface.

For development and debugging, the model signals and parameters can be displayed or modified by the graphical user interface **ADsimDesk**. The running model can be controlled and tested from **ADsimDesk** or by use of the free-of-charge **ADtools**. Via the standard **ADwin** driver you can build your own user interface for the compiled model in any common programming language.

### Creating a Model

**ADsim** contains blocks to access the **ADwin** hardware:

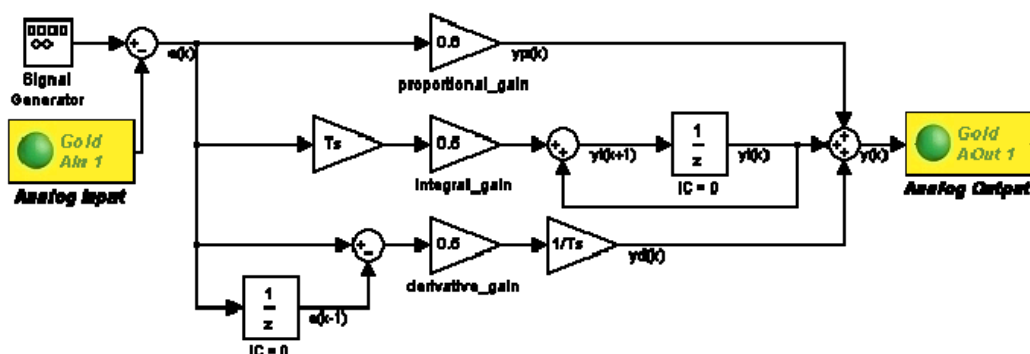
- analog and digital inputs and outputs
- Multi functional counter, PWM outputs
- CAN bus interface
- global variables and arrays
- global variables and arrays of the **TiCo** processor

You insert **ADwin** blocks into the Simulink® model and join inputs and outputs as usual in the block diagram.

### Generating and Running Code

The Simulink Coder® generates C code from your Simulink® model. Based on the model code in combination with the required **ADwin** code, the VisualDSP environment generates the program, ready to go. After compilation the program is automatically transferred to the **ADwin** hardware and started.

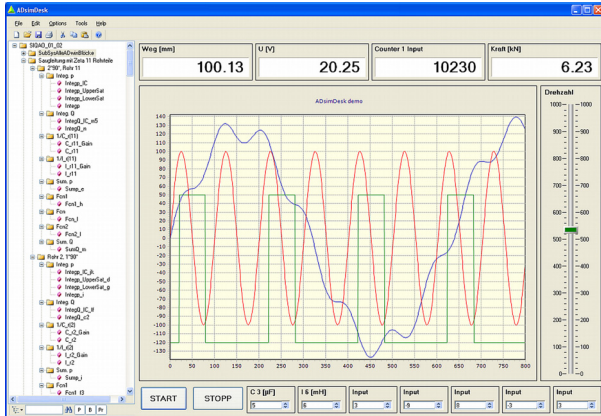
The compiled model runs cyclically with up to 100 kHz on the **ADwin** hardware—precise and with exact timing in steps of 5 µs.



Simulink® model: PID controller with analog input and output of **ADwin** system

## Testing the Compiled Model Online

**ADsim** contains the graphical user interface **ADsimDesk**, where you can display signals of the compiled Simulink® model and modify the parameters—all online.



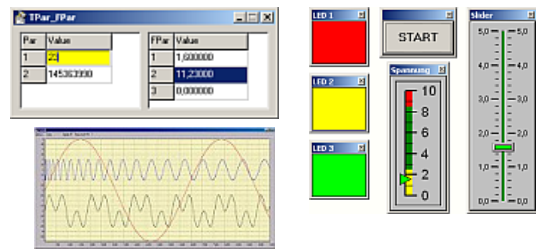
The model layout is shown in a tree structure., from where the parameters can be easily assigned to display instruments via drag-and-drop. Numeric displays and input fields complement the graphic display of user-selected signals.

The intuitive user interface **ADsimDesk** simplifies debugging. You can test your models quickly and obtain short development cycles.

## Even more Features

The data of global **ADwin** variables and arrays in the compiled Simulink® model can also be read and modified by other applications—in parallel to **ADsimDesk**:

- **ADtools** are standard tools to display or modify values of global variables.



- All common programming languages (e. g. Matlab, VB, C/C++, Delphi) can access the global variables via a standard **ADwin** interface. This way you can create individual user interfaces, operate compiled models, evaluate data from test stands or production plants and process further.

On **ADwin** systems with **TiCo** processor you can establish self-defined functions like fast data pre-processing or signal generation—in addition and independent from the **ADwin** CPU and naturally including data exchange with the compiled model.

Since **ADsim** uses standard **ADwin** hardware, you can—depending on the application—also run the usual **ADbasic** real-time processes instead of the Simulink® model.

## Requirements for ADsim

- Matlab® since version 7.1
- Simulink® since version 6.3
- Simulink Coder® / Real-Time Workshop®  
Embedded Coder® / Real-Time Workshop Embedded Coder®
- Analog Devices VisualDSP++ Environment 5.0  
for TigerSHARC
- **ADwin-Gold II** or **ADwin-Pro II**