

The MicroDAQ toolbox for Scilab is a free software for control and data acquisition application development. Software features automatic code generation from Xcos diagram and data acquisition capabilities. Toolbox lets you make a variety of measurements directly from Scilab without the need to convert the data or import from other software. Software includes functions for controlling analog inputs, analog outputs, digital I/O (quadrature encoders, PWM).

Automatic code generation can be used to create control application. Generated DSP application is loaded on MicroDAQ with Wi-Fi or Ethernet automatically. User can access live data from DSP application or save it with 'To workspace' or 'To File' blocks. Depending on model complexity and used blocks model code can be executed up to 200khz on MicroDAQ DSP core giving user possibility to create advanced digital signal processing, control and measurement application.

The 1.2v release introduces data acquisition functionality which enables Scilab users to create advanced data acquisition applications without a need to use with external tools or programs. The user can use analog inputs and outputs to acquire data or generate signals from Scilab. Digital IO (PWM, Encoder, DIO) also can be controlled with new software. We also improved DSP code generator by allowing finite state machine code generation and GUI prototyping with Evidence E4Coder tools. Improved Xcos block generator allows custom block C code compilation for DSP and Host which allows block verification before running on MicroDAQ DSP core. This release can be used with Scilab 5.5.2 and Scilab 6 on Windows, Linux, and MacOS.

How to install

Run following commands from Scilab console:

```
atomsInstall("microdaq");
```

Software requirements

MicroDAQ firmware 2.0.0 or higher

<https://github.com/microdaq/Firmware/releases>

Scilab 5.5.2, Scilab 6.0.0

<http://www.scilab.org/en/download/latest>

C6000 compiler ver. 7.4.21

<http://software-dl.ti.com/codegen/non-esd/downloads/download.htm#C6000>

SYS/BIOS ver. 6.50.01.12

http://software-dl.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/sysbios/

XDCTools ver. 3.50.00.10

http://software-dl.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/rtsc/

New features:

- **Data acquisition: AO/AI scan functions**
- **Custom blocks code is compiled also for host allowing simulation of block code without MicroDAQ**
- **ADC/DAC Multi-range selection support**
- **PARAM block introduced – DSP model live parameter change**

- Block ADC/DAC converter parameter auto-detection
- ADC block – averaging added
- ADC2/3/4/5 – 1V and 2V range added
- Encoder block: added ENC3, ENC4 – software implementation
- Multiple MicroDAQ devices can be controlled with toolbox
- Optimized To File block – now block can be used with models up to 50kHz
- Optimized DAC and ADC blocks
- Scilab 6.0.0 support (without DSP support)
- Windows/Linux/macOS support

MicroDAQ Firmware:

- New MLink library with TCP transport
- Changed WIFI mode to Access Point
- New web interface
- Improved firmware stability

Other:

- 32-bit Linux is no longer supported
- Toolbox uses latest TI compiler / SYSBIOS / XDCtools

- UART support from DSP
- Optimized DIO access
- Optimized toolbox loading

Improvements:

- **camelCase names for all user macros**
- No need to restart MicroDAQ when model loaded two times without starting
- Added missing help sections
- Added information when model is terminated
- Added more specific error messages
- Model duration in standalone mode is not ignored
- Added new category 'MicroDAQ sim' containing blocks for simulation mode
- Added RAND, TKSCALE blocks to 'Sources' category
- Added warning when starting model from superblock diagram
- Added mdaqLog() function
- Added mdaqBlockDelete() function
- mdaqClose() without argument closes all active connections
- Added analog output range selection option to mdaqAOWrite function
- Added binary file type support for mdaqFileData () function
- mdaqDSPStart () can load DSP model with custom sample rate
- Added TI DSPlib and MATH lib, available for custom code integration.

Bugfixes:

- Fixed for E1100 ADC02 configuration detection
- Fixed error with ADC, DAC block counter
- Fixed madqDIOWrite() description
- Fixed madqDIODir() description