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g.tec GUGER TECHNOLOGIES

g.MOBIlab MOBILE LABORATORY

SIMULINK highspeed ONLINE processing

USER MANUAL
V3.15.01

CONTENT:

TO THE READER

Welcome to the medical and electrical engineering world of g.tec!
Discover the only professional biomedical signal processing platform under MATLAB and Simulink. Your ingenuity finds the appropriate tools in the g.tec elements and systems. Choose and combine flexibly the elements for biosignal amplification, signal processing and stimulation to perform even real-time feedback.

Our team is prepared to find the better solution for your needs.

Take advantage of our experience!

Dr. Christoph Guger Dr. Guenter Edlinger

Researcher and Developer

Reduce development time for sophisticated real-time applications from month to hours.
Integrate g.tec's open platform seamlessly into your processing system.
g.tec's rapid prototyping environment encourages your creativity.

Scientist

Open new research fields with amazing feedback experiments.
Process your EEG/ECG/EMG/EOG data with g.tec's biosignal analyzing tools.
Concentrate on your core problems when relying on g.tec's new software features like ICA, AAR or online Hjorth's source derivation.

Study design and data analysis

You are planning an experimental study in the field of brain or life sciences? We can offer consultation in experimental planning, hardware and software selection and can even do the measurements for you. If you have already collected EEG/ECG/EMG/EOG, g.tec can analyze the data starting from artifact control, do feature extraction and prepare the results ready for publication.

Related Products

g.tec provides several biosignal analysis elements that are especially relevant to the kinds of tasks you perform with g.MOBIlab Highspeed On-line Processing.

For more detailed information on any of our elements, up-dates or new extensions please visit our homepage www.gtec.at or just send us an email to office@gtec.at

Conventions

Item	Format	Example
MATLAB code	`Courier`	to start Simulink, type `simulink`
String variables	*`Courier italics`*	`set(P_C,'`*`PropertyName`*`',...)`
Menu items	**Boldface**	Select **Save** from the **File** menu

Installation and Configuration

This chapter includes the following sections:

Hardware and Software Requirements

Hardware Requirements

g.tec Highspeed On-line Processing requires a PC compatible desktop, notebook or workstation running Microsoft Windows.

The table below lists optimal settings:

Hardware	**Properties**
CPU	Pentium working at 3000 MHz
Harddisk	100 gigabyte
RAM	8 gigabyte
USB	2-free connector for Hardlock and Bluetooth dongle

Software Requirements

g.tec Highspeed On-line Processing requires the installation of MATLAB and Simulink. Make sure that the MATLAB installation works correctly before installing the g.tec Highspeed software. Depending on your Windows operating system administrator rights might be necessary for the installation.

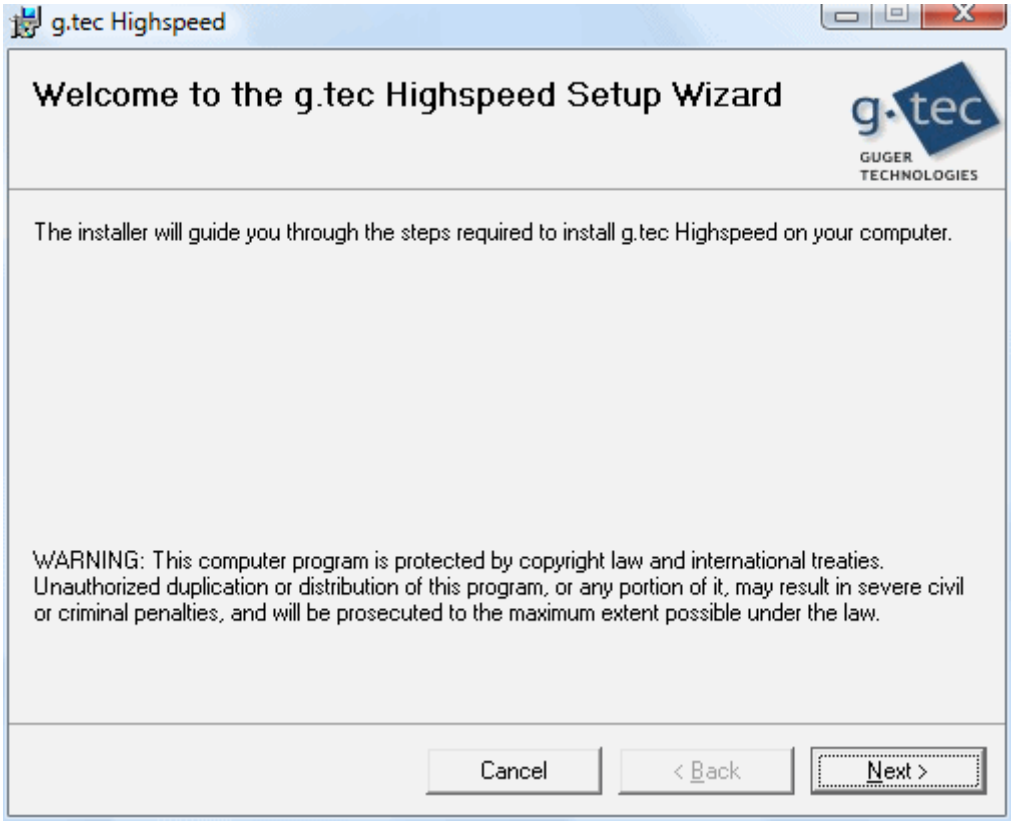
Software	**Version**
MATLAB	Release 2014a
Simulink	Release 2014a
Windows	Windows 7 Professional Service Pack 1 English Win64
Acrobat Reader	11.0.04
.net Common Language Runtime	4

Installation from a CD

The installation of g.tec Highspeed software consists of three steps

1. Installation of g.tec Highspeed

   Insert the g.tec product CD into the CD-drive and change to the `g.HIsys\g.HIsys Highspeed Online processing for SIMULINK` directory of your CD-drive and double-click on the `Setup.exe` file. The installation starts and displays the welcome message. Follow the instructions on the screen.



   Please read the License Agreement for g.tec Highspeed and if you agree with the terms, click **I Agree** and **Next**. Then just follow the steps on the screen.

2. Installation of the Hardlock

   The driver software for the Hardlock is installed automatically via Windows update, when the computer is connected to the internet. For manual installation click the `HASPUserSetup.exe` in the `Prerequisites/HaspHL` folder on your g.tec CD.

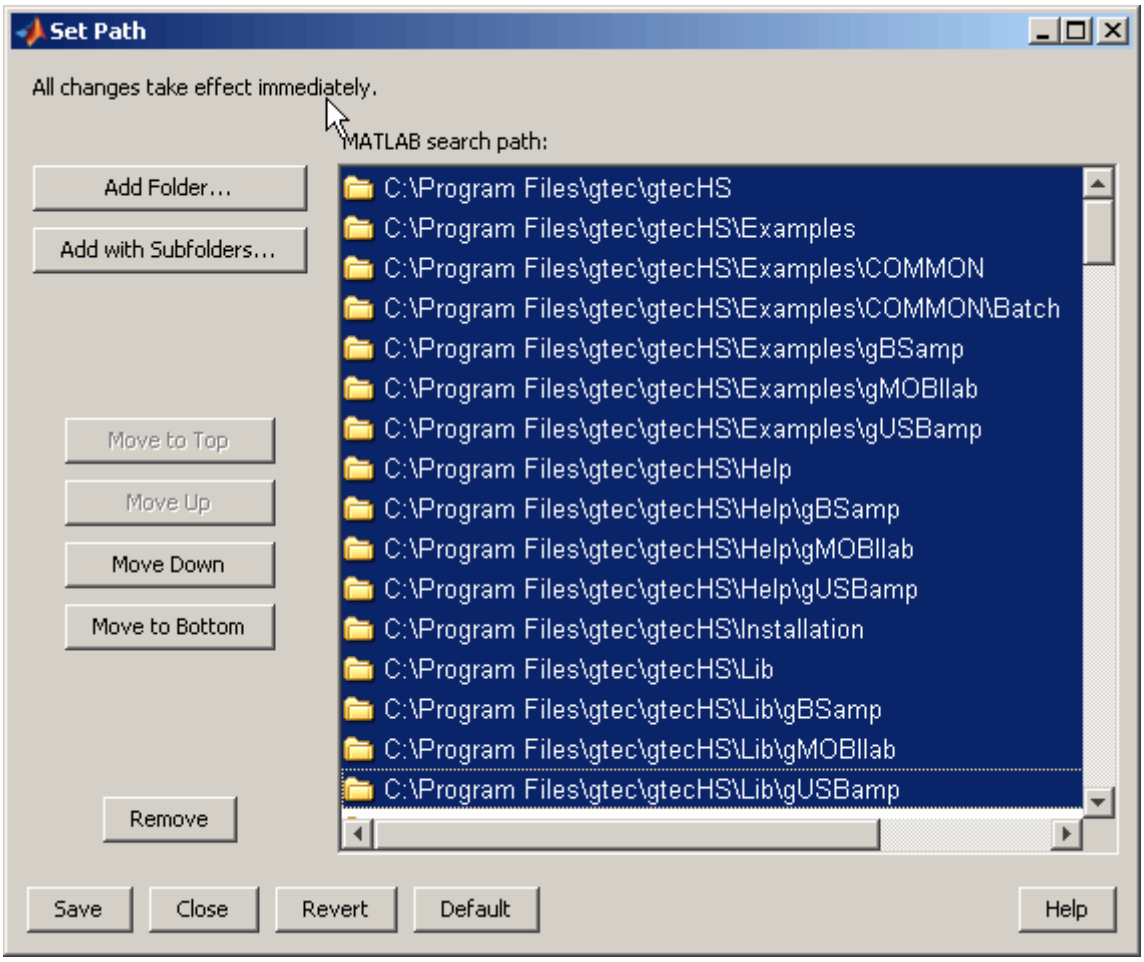
   Note that you have to uninstall the Hardlock driver separately if you uninstall the g.MOBIlab Highspeed On-line Processing software.

3. Set MATLAB path

   To make the path settings start MATLAB and open the **Set Path** window in the **File** menu. Then click on the **Add with Subfolders** button and select

   ```
   C:\Program Files\gtec\gtecHS
   ```

   to add all subdirectories:



Click **Save** and **Close** to finish the installation.

Insert the Hardlock into a free USB slot of your PC or notebook. The light must be on if the installation was successful.

Files on your Computer

g.MOBIlab+ files - are stored by default under (it is assumed that the default path setting is used)

```
C:\Program Files\gtec\gtecHS\Lib\gMOBIlab
```

Example models - are stored in the subdirectory

```
C:\Program Files\gtec\gtecHS\Examples\gMOBIlab
```

Help files - are stored under

```
C:\Program Files\gtec\gtecHS\Help\gMOBIlab
```

Introduction to g.MOBIlab+

g®.MOBIlab+ - g.tec's portable biosignal acquisition and analysis system - is the perfect tool for recording multimodal biosignal data on a standard Pocket PC, PC or notebook. This allows investigating brain-, heart-, muscle-activity, eye movement, respiration, galvanic skin response and other body signals.
g.MOBIlab+ multi-purpose version comes with 4 EEG/EOG, 2 ECG/EMG channels and 2 analog inputs which can be utilized for other sensors. A switch can be connected for external triggering of the data.
g.MOBIlab+ EEG-version comes with 8 EEG type channels. A switch can be connected for external triggering of the data.

g.MOBIlab+ system example: g.MOBIlab+ is connected to a Pocket PC running the g.MOBIlab recording software. g.MOBIlab+ is here connected to an ECG patient cable, an EEG/EOG electrode box and a switch box. The g.tec electrode cap with 64 electrode positions according to the international 10/20 electrode system and screw-able EEG electrodes can be used to measure EEG.

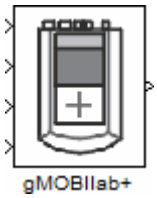
Highlights

- acquire EEG, ECG, EOG, EMG simultaneously on a standard PC
- on-line visualization and storage of up to 8 analog channels and 8 digital channels
- Bluetooth connection to standard PC
- Data Acquisition to built-in SD card
- on-line signal analysis under Simulink
- can be combined with g.BSanalyze for off-line biosignal analysis under MATLAB

Technical details and specifications					
g.MOBIlab+ (multi purpose)	***EEG/EOG***	Channels: 2 Filters: 0.5 - 100 Hz Sensitivity: 500 µV (bipolar)	Channels: 2 Filters: 0.01 - 100 Hz Sensitivity: 2 mV (bipolar)	***ECG/EMG***	Channels: 2 Filters: 0.5 - 100 Hz Sensitivity: 5 mV (bipolar)
	Analog inputs	Channels: 2, Filters: DC - 100 Hz, Sensitivity: 5 V (bipolar)			
g.MOBIlab+ (EEG - Version)	***EEG/EOG***	Channels: 8 Filters: 0.5 - 100 Hz Sensitivity: 500 µV (monopolar)			
Additional Inputs/Outputs		7 digital TTL inputs, 1 external switch, 4 digital TTL outputs			
Power supply		4 standard AA batteries or accumulators			
Data acquisition		ADC with 16 bit and 256 Hz, bluetooth and serial (RS232) interface, SDcard slot for SD cards up to 2 GB			
Standard		meets IEC 60601-1, for research application, no medical use			
Connectors		10 pin connector for EEG/EOG 8 pin connector for ECG/EMG 10 pin connector for analog in and digital I/O		4 pin connector for switch 7 pin connector for RS232 to PC or PPC	

For a more detailed description please refer to the "`Instructions for use`" manual for g.MOBIlab+.

g.MOBIlab+ Highspeed Block



The g.MOBIlab+ Highspeed block provides a graphical interface to the g.MOBIlab+ hardware which can be used under Simulink to perform online biosignal processing, data logging and signal visualisation.

Description

The g.MOBIlab+ block has four inputs and 1 output. The inputs are used to control the four digital output of g.MOBIlab+. A falling edge from 1 to 0 at the g.MOBIlab+ block inputs sets the digital output to LOW and a rising edge from 0 to 1 sets the output to HIGH.

The g.MOBIlab+ block output signal provides the biosignal data. The data format is double and it is scaled in Microvolts. If all analog input channels (8) and all digital lines (8) are acquired the line width is 16. Use a **Demux** block to de-multiplex the channels.

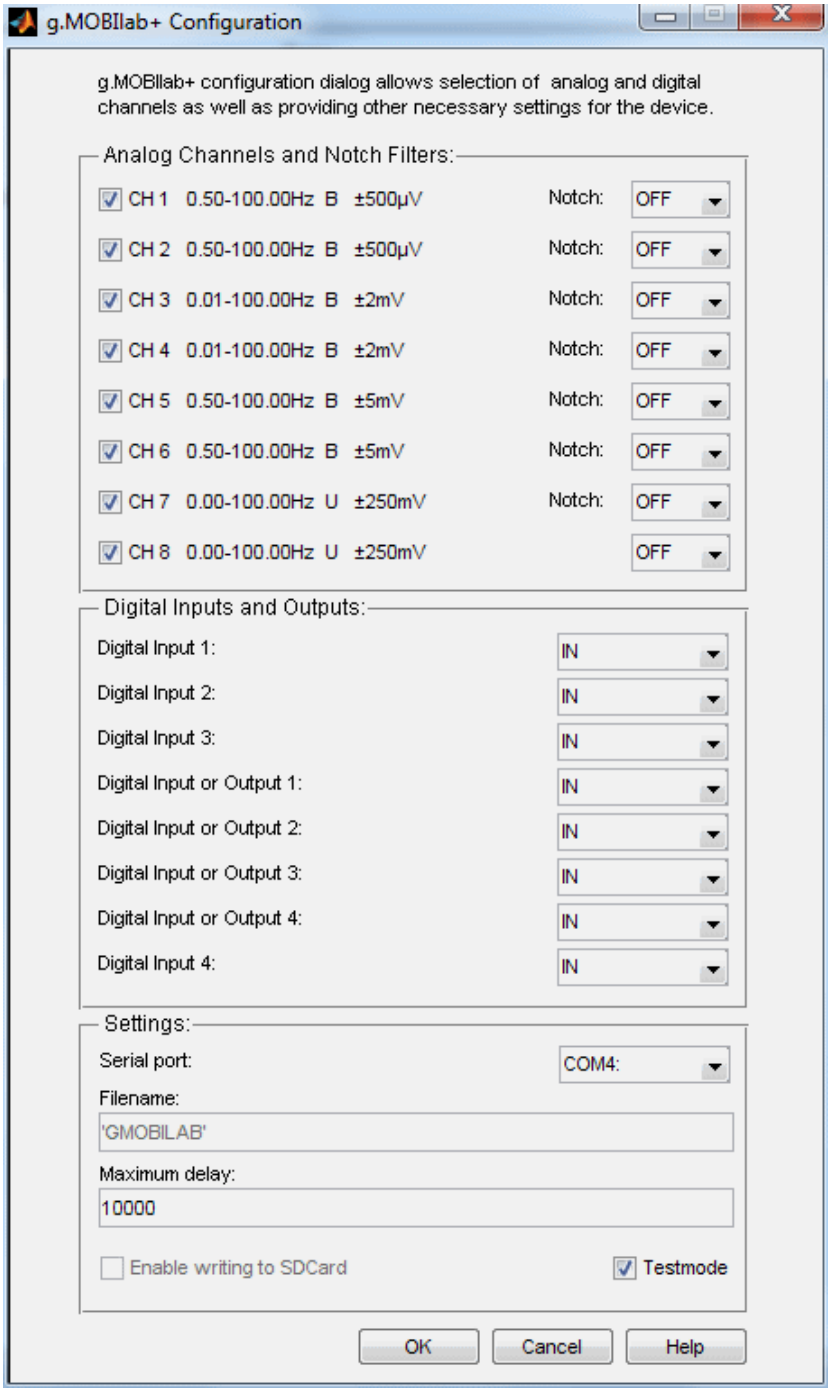
g.MOBIlab+ multi-purpose version has the following analog input channels:

Channel	Signal	Sensitivity	Low pass [Hz]	High pass [Hz]
1	EEG/EOG	± 500 µV	100	0.5
2	EEG/EOG	± 500 µV	100	0.5
3	EEG/EOG	± 2 mV	100	0.01
4	EEG/EOG	± 2 mV	100	0.01
5	ECG/EMG	± 5 mV	100	0.5
6	ECG/EMG	± 5 mV	100	0.5
7	Sensor	± 5 V	100	DC
8	Sensor	± 5 V	100	DC

g.MOBIlab+ EEG version has the following analog input channels:

Channel	Signal	Sensitivity	Low pass [Hz]	High pass [Hz]
1	EEG/EOG	± 500 µV	100	0.5
2	EEG/EOG	± 500 µV	100	0.5
3	EEG/EOG	± 500 µV	100	0.5
4	EEG/EOG	± 500 µV	100	0.5
5	EEG/EOG	± 500 µV	100	0.5
6	EEG/EOG	± 500 µV	100	0.5
7	EEG/EOG	± 500 µV	100	0.5
8	EEG/EOG	± 500 µV	100	0.5

Dialog Box



Analog Channel 1 – 8: Use the check boxes to define the analog inputs that should be acquired.

Notch: For each analog channel, a notch filter can be used, depending on the local power line frequency either **50** or **60 Hz**, select **OFF** to disable notch filtering.

Digital Input 1, 2, 8: Can be chosen as input (**IN**) or switched off (**OFF**).

Digital Input 3: If chosen as input (**IN**) in the edit box, this channel can be used to read in a button press from the external trigger button. If the button is not pressed the output signal is 5. If the button is

pressed the output signal is 0. The channel can be switched off (**OFF**).

Note: The amplitude of the digital I/Os of the g.MOBIlab+ block is 0 (LOW) or 5 (HIGH).

Digital Input or Output 4 – 7: Define the digital I/O as input (**IN**), output (**OUT**) or disable it (**OFF**).

Max. delay (ms): define a hardware buffer for storing the acquired data during the acquisition. If the Simulink model can not process the data fast enough the data is stored in this buffer. If the Simulink model is fast enough this buffer will be empty. If the computation demand of the Simulink model is too high a buffer overflow will be indicated by a warning message.

Serial Port: select the serial port where g.MOBIlab+ is connected. Only ports available on the system are displayed

Enable writing to SD card: Use check box to enable the g.MOBIlab+ to write data to a miniSD card. Streaming to SD card can only be enabled, when a miniSD card is inserted into the SD card slot. The space remaining on the card is displayed in this line.

Filename: If streaming to SD card is enabled, provide a filename for the data written to the SD card, consisting of 8 characters (numbers or uppercase letters). The default filename is GMOBILAB.

Testmode: Check this box to use the implemented test mode. The test mode sends for every channel ramp signals at different frequencies. Hence, the proper connection and function of the setup can be easily checked.

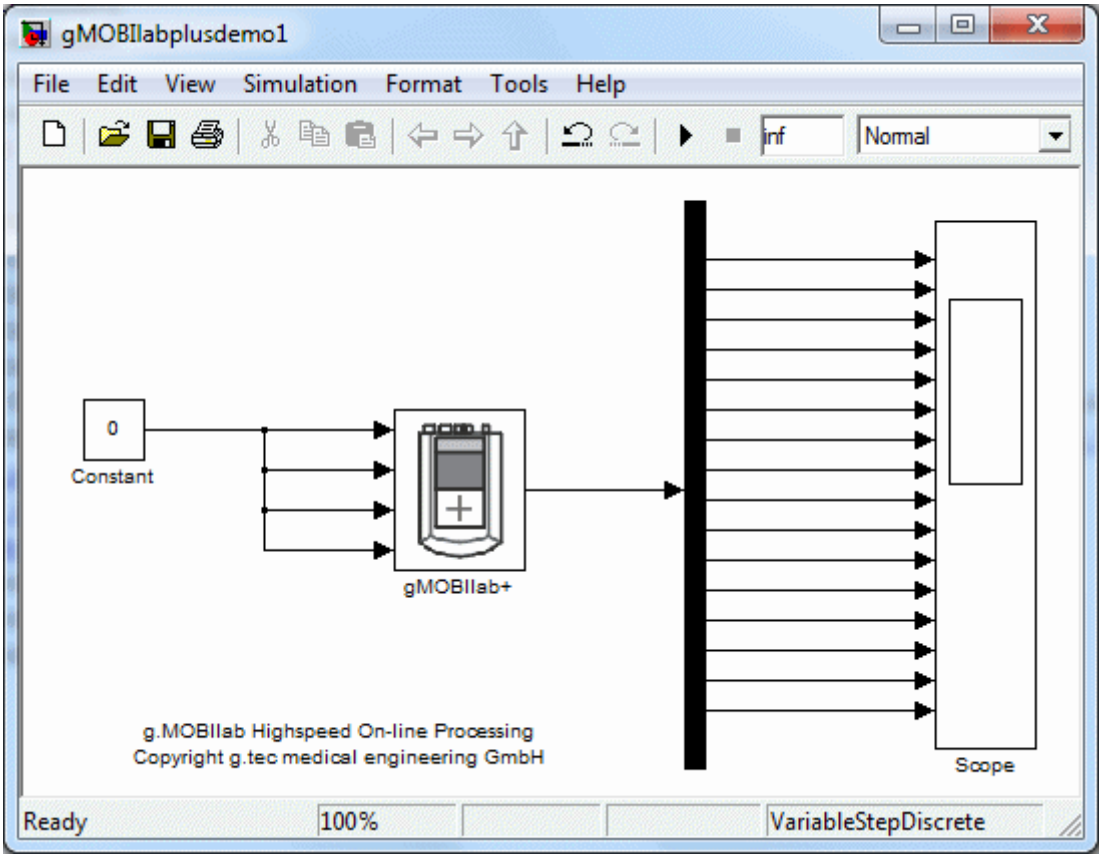
Characteristics of the block	Direct Feedthrough	No
	Sample Time [s]	1/256
	Number of Inputs	4
	Number of Outputs	1

Connect to g.MOBIlab+

The connection to g.MOBIlab+ can be tested by performing the following steps:

1. Start the MATLAB command window. See your MATLAB documentation if you are not sure how to do this.

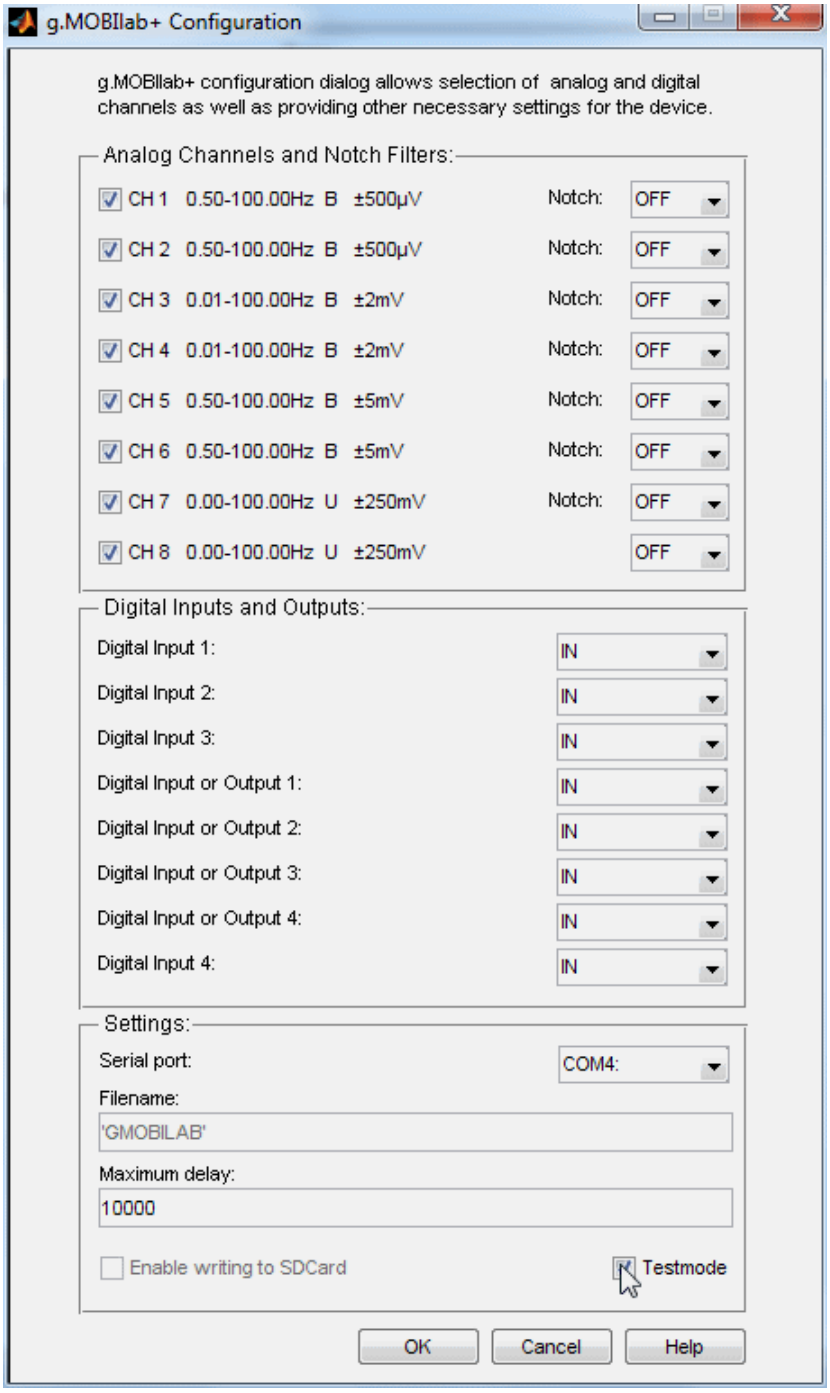
2. Open the Simulink model by typing `gMOBIlabplusdemo1` into the MATLAB command window. This command starts up Simulink and creates the following window:



   The Simulink model contains a **gMOBIlab+** block which reads in the data from the amplifier over Bluetooth or serial interface.

3. Enable the Bluetooth connection and switch on g.MOBIlab+. See "`Instructions for use`" for g.MOBIlab+ for installing the Bluetooth dongle and proper connection. When g.MOBIlab+ is switched on, the power LED on g.MOBIlab+ is blinking green. Do not connect any cables to g.MOBIlab+.

   Double click the **gMOBIlab+** block to open the following dialog box:

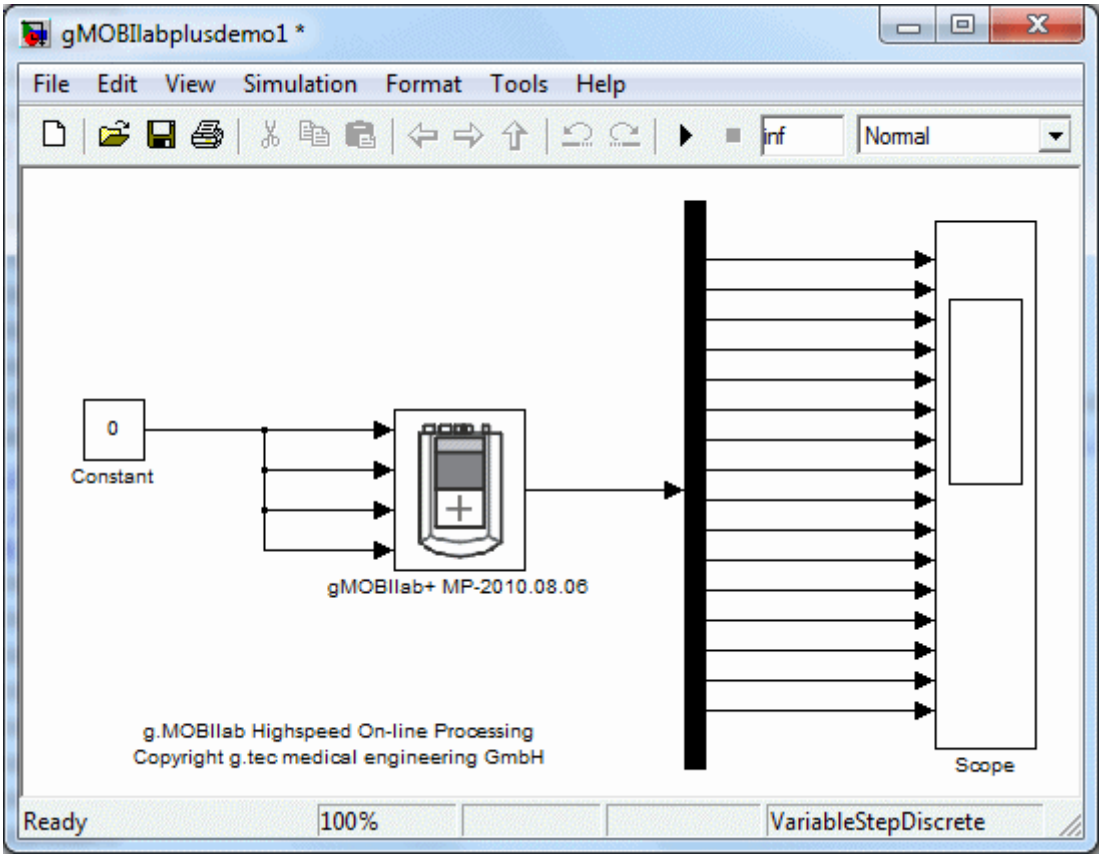


4. Make sure that all Analog Channels (**CH 1** – **CH 8**) are selected and the Digital Lines 1 – 8 are set to IN.

5. Check the **Testmode** checkbox at the bottom of the dialog box.

6. Select the **Serial port** where g.MOBIlab+ is connected to and press the **OK** button. The correct serial port can be found by checking the serial port connections in the device manager at Ports (COM & LPT).

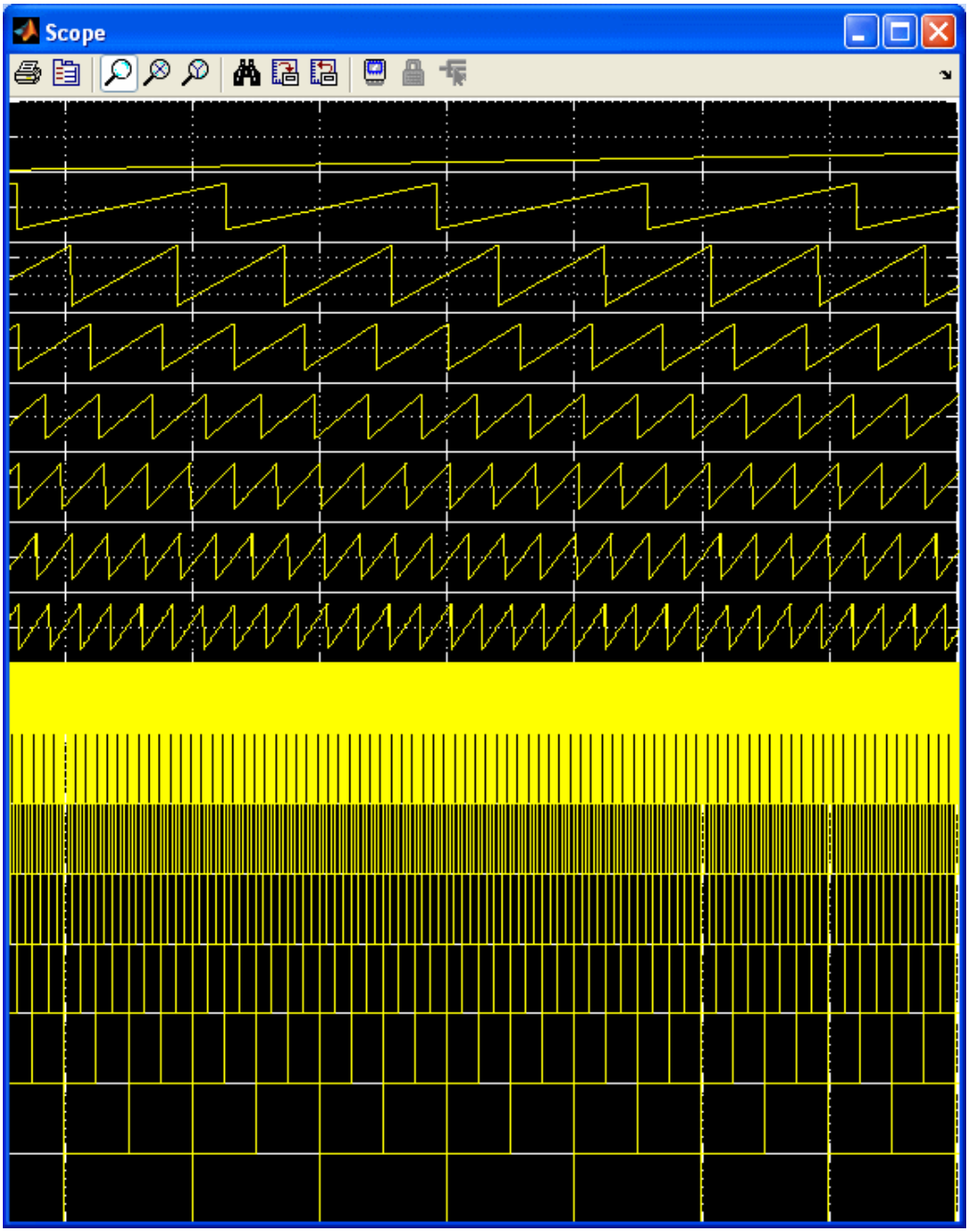
7. The model should now look like this



The serial number of your g.MOBIlab + is transmitted from the device and displayed below the block in the model. In this case the serial number is: `MP-2010.08.06`.

8. Start the model by pressing the start button in the Simulink model.

9. To view the signals double click on the **Scope** block.



Channels 1 – 8 show ramps repeating with different slopes. Channels 9 – 16 show digital signals toggling between HIGH and LOW.

10. Stop the model with the **Stop** button in the Simulink model.

Note that the data read into Simulink in testmode have no unit and are not scaled.

11. If the model can not be properly started, then please check the error messages indicating the possible problems. See section **Error Messages** for the description of all error messages.

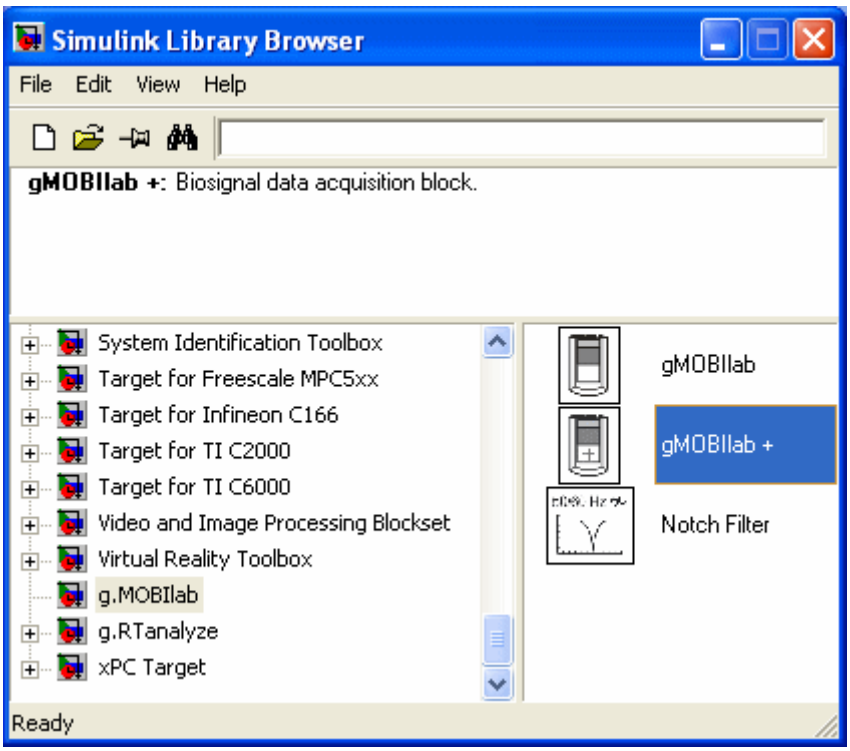
Running g.MOBIlab Highspeed

To test the g.MOBIlab Highspeed configuration on your system please perform the following example:

1. To create a new Simulink model click on the **Simulink** icon in the MATLAB window

or enter Simulink into the MATLAB command window. As alternative just type `gMOBIlabplusdemo2` into the MATLAB command window and follow the steps beginning from 8.

The **Simulink Library Browser** opens:

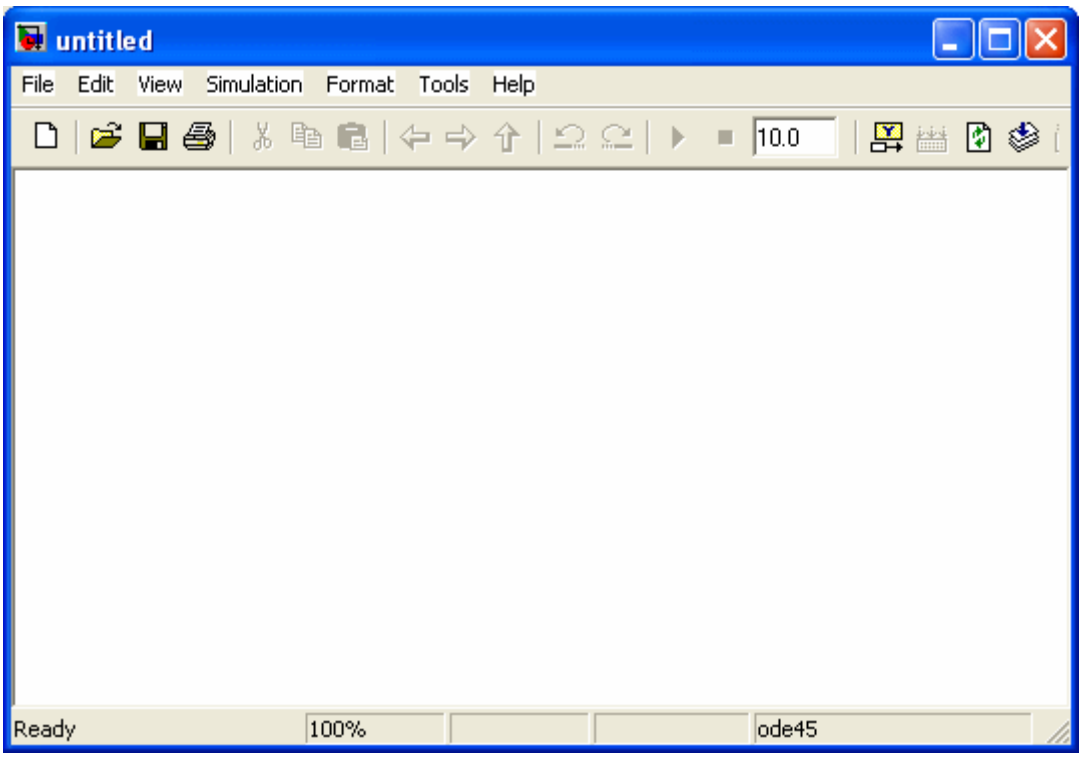


The **Simulink Library Browser** gives access to all Simulink based blocksets.

2. Scroll down to **g.MOBIlab** to show the biosignal data acquisition block.

3. Press the **Create a new model** icon in the **Simulink Library Browser**

to open an empty Simulink model:



4. Click on the **gMOBIlab+** block in the **Simulink Library Browser** and drag it into the new Simulink model.

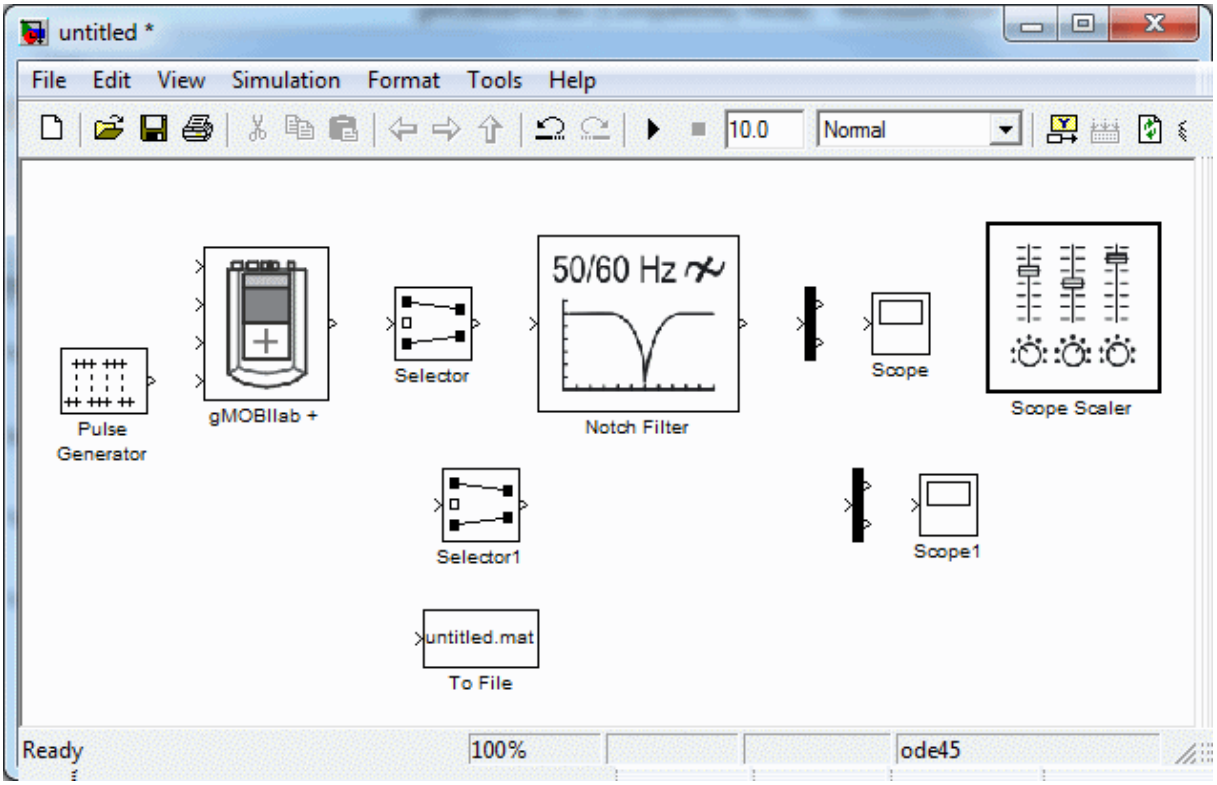
5. Click on the **Notch Filter** block in the **Simulink Library Browser** and drag it into the Simulink model. Do the same for the **Scope Scaler** block.

6. Open the **Sources** path under **Simulink** in the **Simulink Library Browser** and copy the **Pulse Generator** and the **Constant** block into the new model.

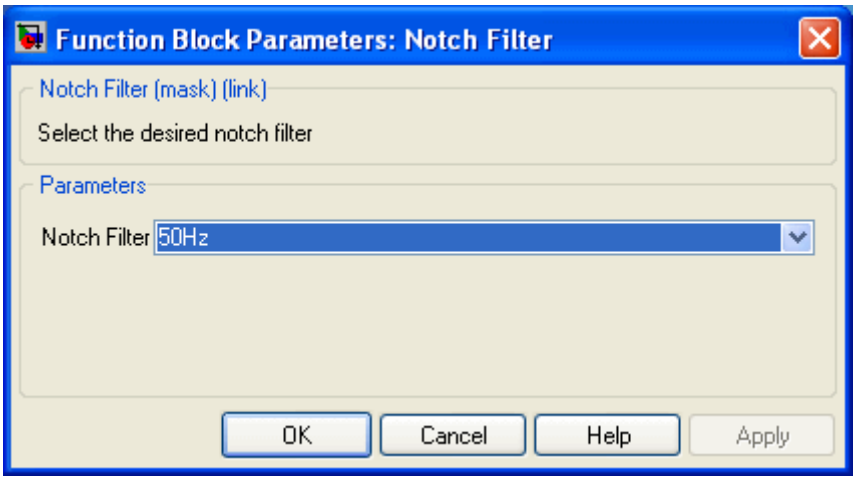
7. From the **Sinks** directory under **Simulink** copy the **Scope** block.

8. From **Signal Routing** under **Simulink** copy the **Demux** block.

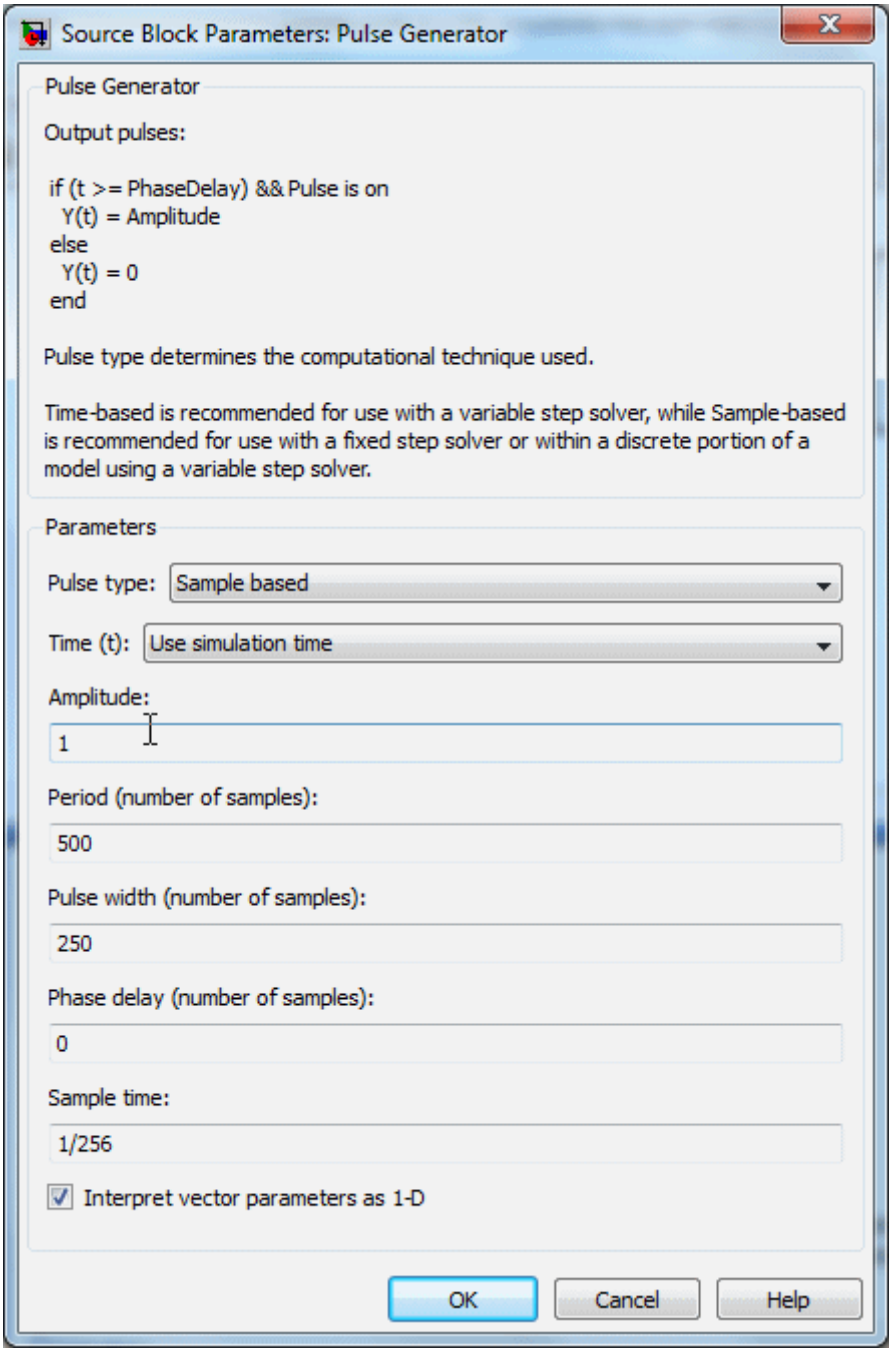
Now your model should look like this:



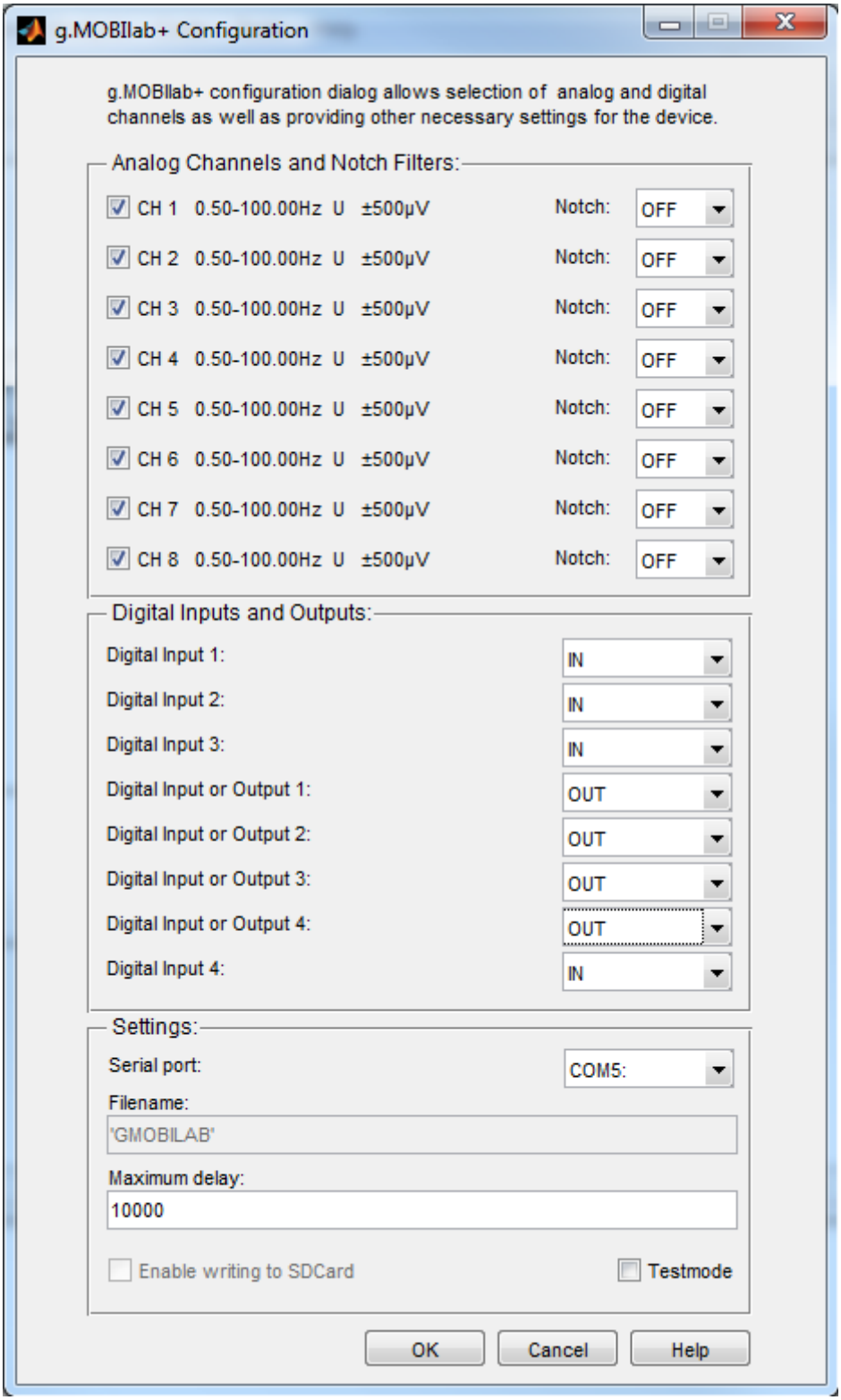
9. Double click the Notch Filter block to set the Frequency for the notch filter. A filter with **50** or **60** Hz can be chosen or select **none** to apply no filtering.



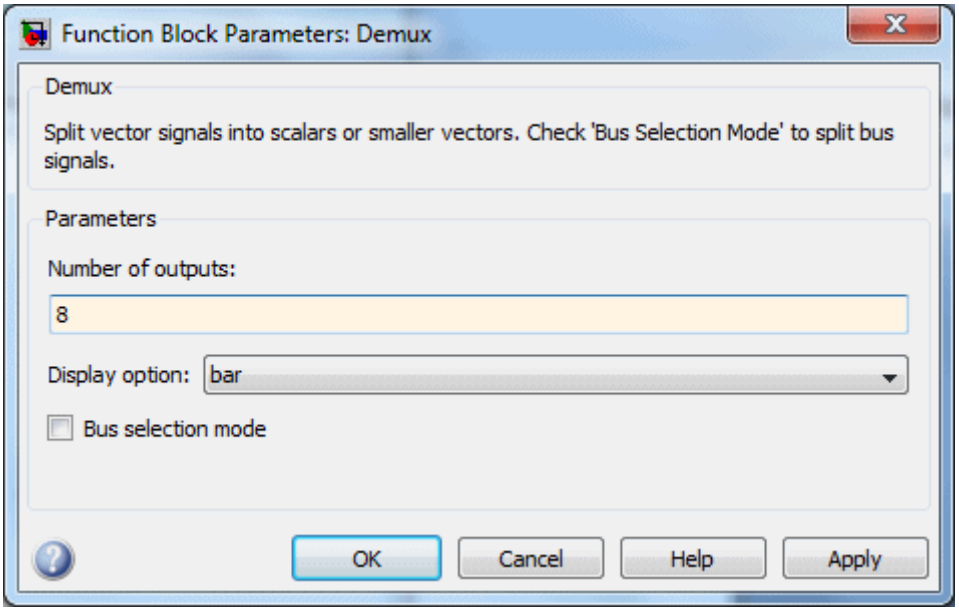
10. Double click on the **Pulse Generator** block and perform the settings according to the following window. The block is configured to output a rectangular signal with an amplitude of 1 and a frequency of 0.5 Hz. The duty cycle is 50 %. The block frequency is set to 256 Hz.



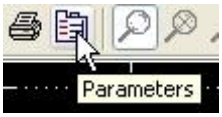
11. Double click on the **gMOBIlab+** block. The settings for the analog channels are displayed in the dialog box and the serial number of your device is displayed in the header. Select all analog channels (**CH 1** to **CH 8**) to read in all 8 analog input channels. Enable the Digital Inputs 1 to 3 and 4 by setting them to **IN**. Define the Digital I/Os 4 to 7 as outputs (**OUT**). Define the **Max. delay [ms]** as `10000`. This buffers 10 seconds of incoming data and avoids to loose data if the Simulink model is interrupted. Select the correct **Serial Port** for your device.



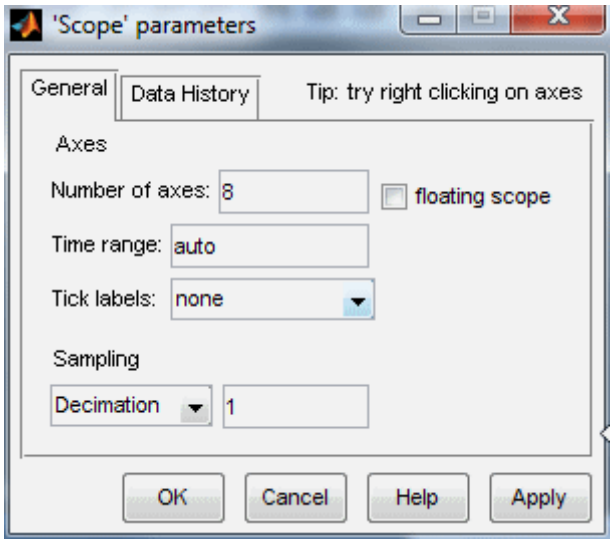
12. Double click both **Demux** blocks and set the **Number of outputs** to `8` for each.



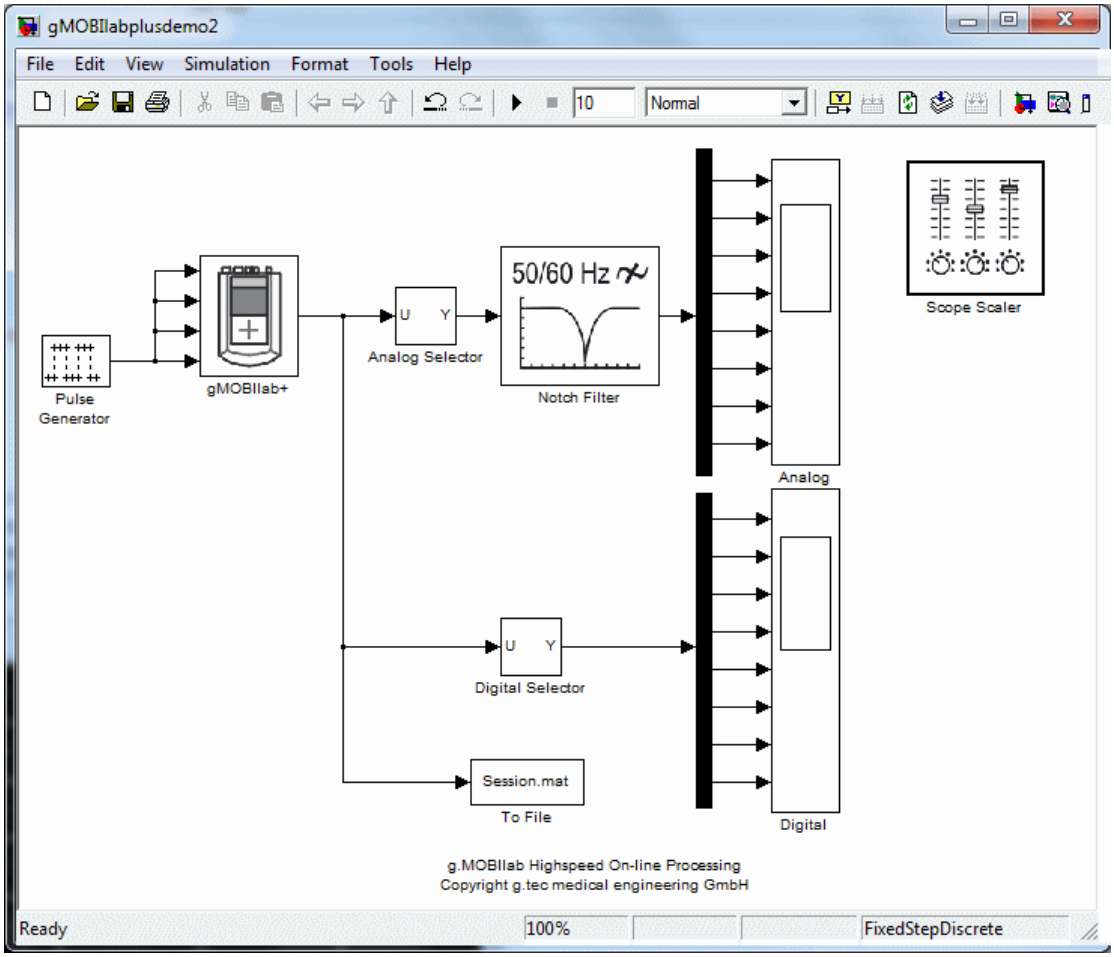
13. Double click both **Scope** blocks and select the **Parameters** icon:



14. Set the **Number of axes** to `8` to visualize 8 analog input channels and 8 digital inputs/outputs for each scope. Set the **Time range** to `auto` or best to `10` seconds and the **Tick labels** to none. The **Sampling Decimation** should be `1`.



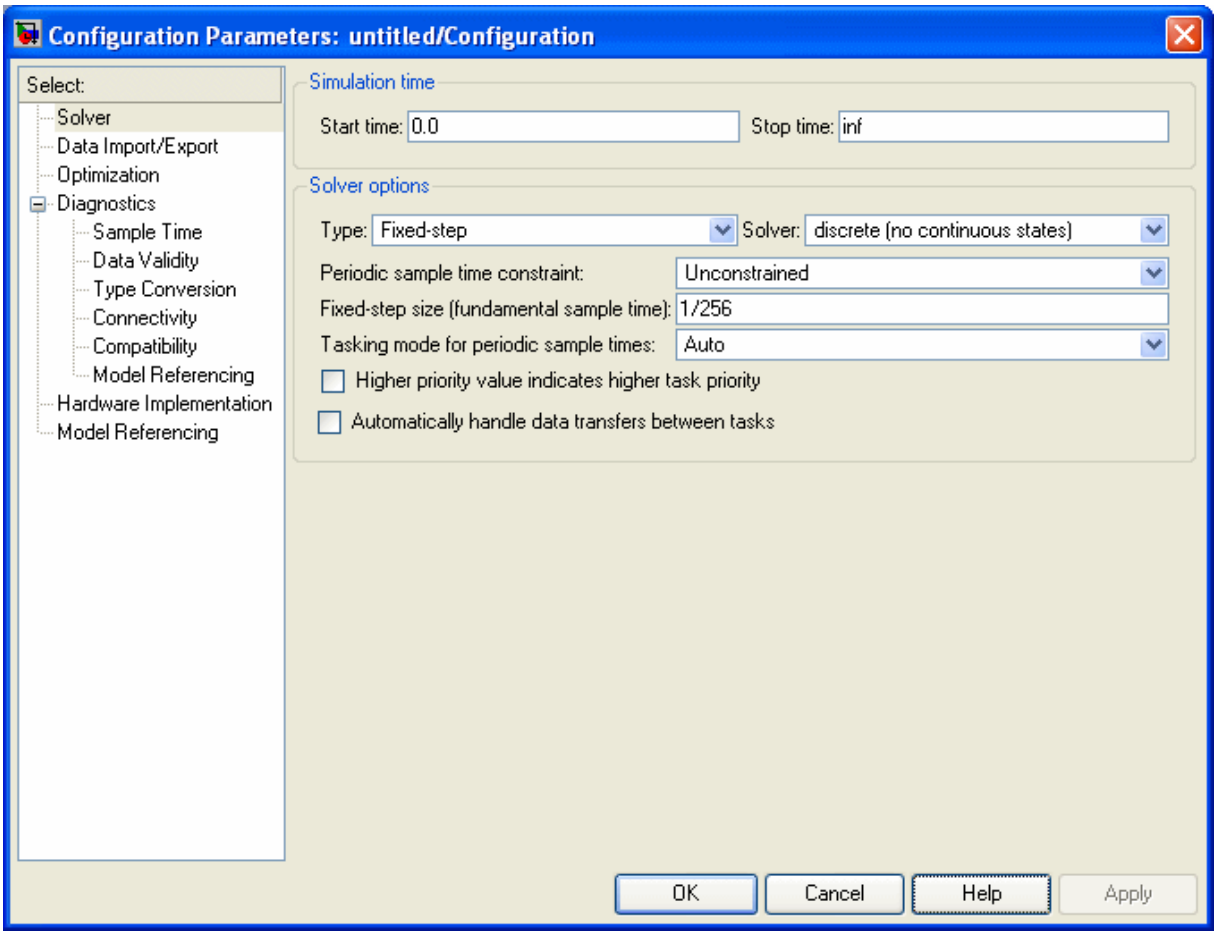
15. After configuring each block perform the connections as shown below:



Note that below the **gMOBIlab+** block the name of the block and the serial number of the g.MOBIlab+ device are displayed.

16. Click on the **Simulation** menu and select **Configuration Parameters**.

17. Set the **Stop time** to inf and the **Type** under **Solver options** to Fixed-step. The **Fixed-step size** must be set to 1/256 because g.MOBIlab+ samples signals at 256 Hz.



18. Confirm the settings and close the window with **OK**

19. Start the model

Note that if you move the model window during data acqusition with digital outputs data might be lost and the channel might not be displayed correctly.

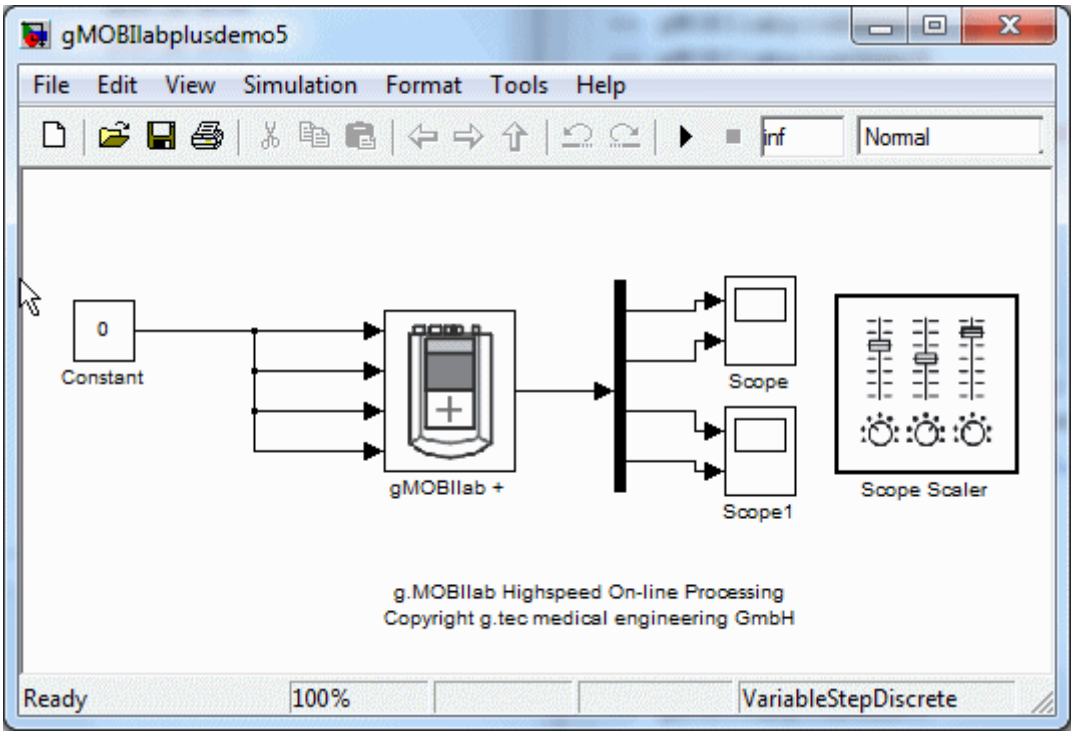
20. Stop the model by clicking the **Stop** button in the Simulink model.

Using the Scope Scaler

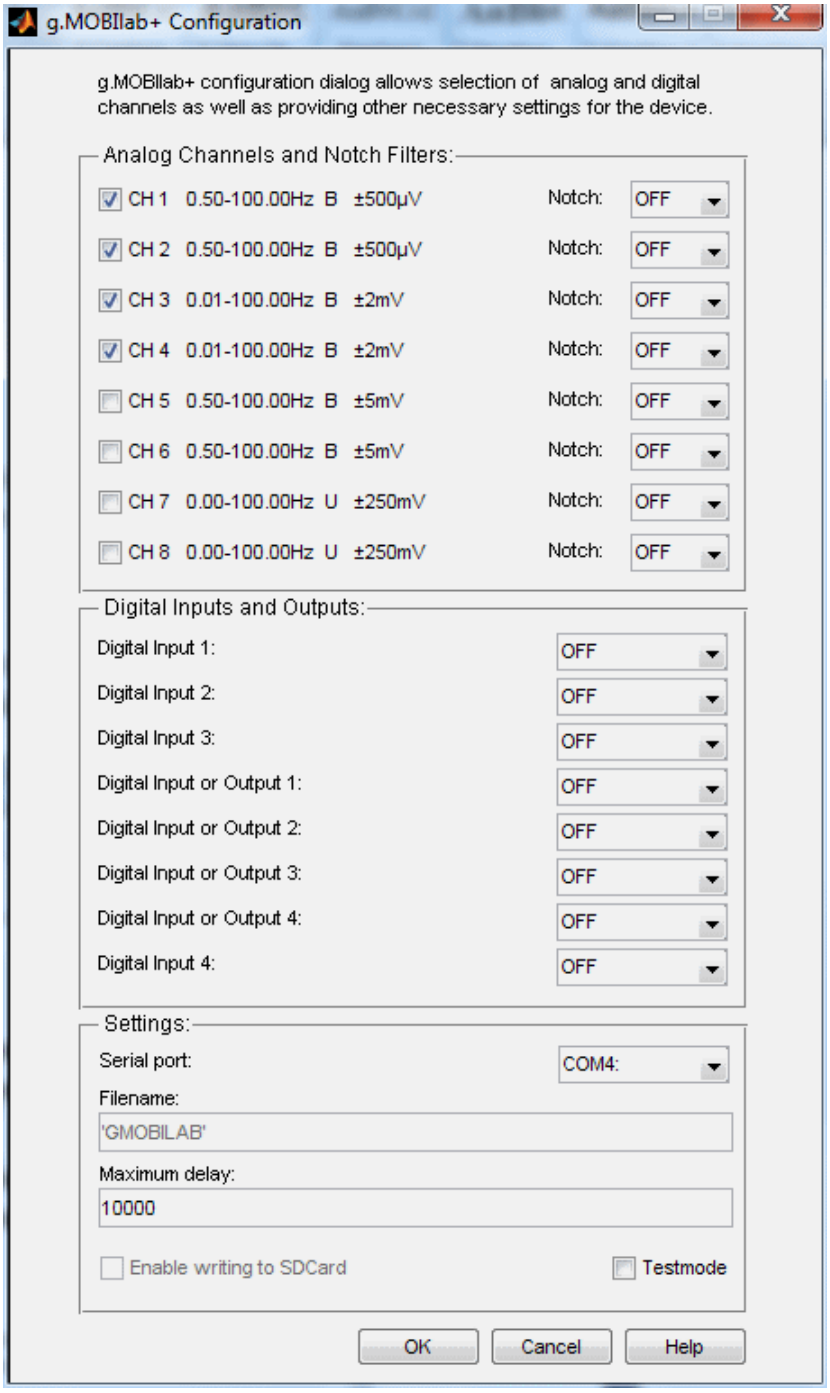
This section explains the function of the block Scope Scaler which can be copied from the example below or found in the `gMOBIlab.mdl` in the folder

`C:\Program Files\gtec\gtecHS\Lib\gMOBIlab`

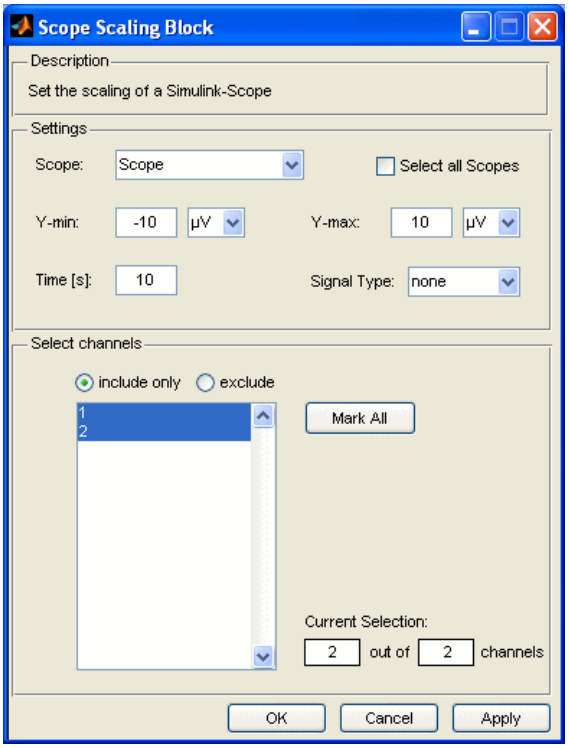
1. To run the example presented in this section type `gMOBIlabplusdemo5` into the MATLAB command window. This opens the Simulink model shown below.



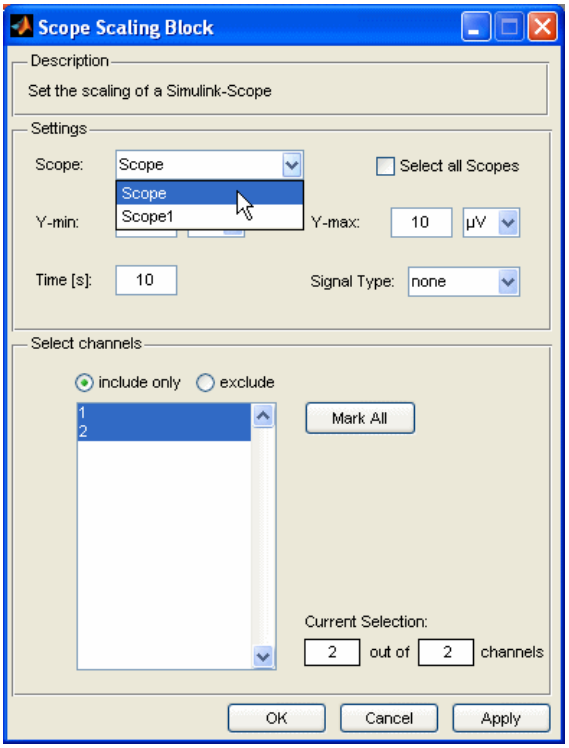
2. Double-click the **g.MOBIlab+** block to review the g.MOBIlab+ configuration.



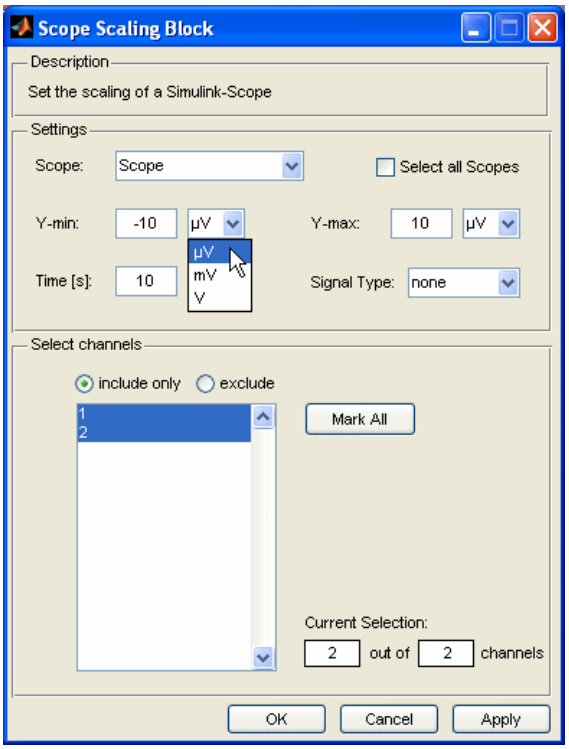
3. Double-click the **Scope Scaler** block to open the dialog below.



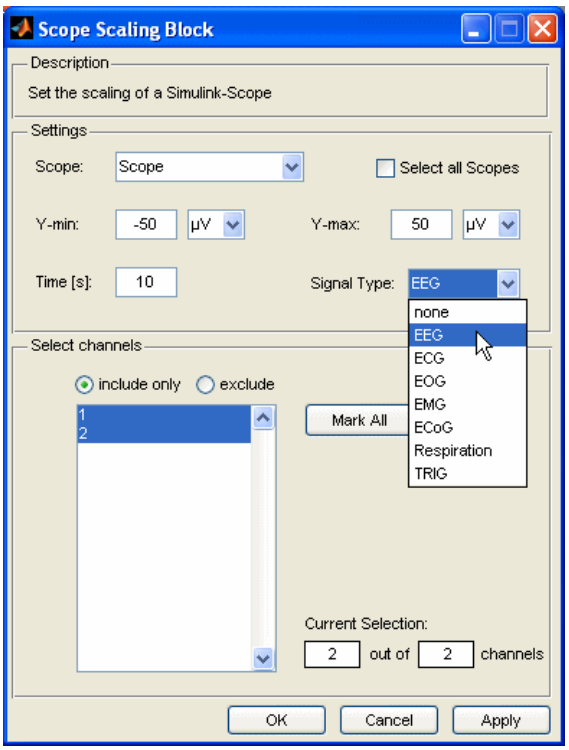
4. In the model there are 2 scope blocks, **Scope** and **Scope1**. In the **Scope** section you can either choose **Scope** or **Scope1**. With the **Select all Scopes** checkbox the settings can be applied to all scopes in the current model.



5. In the **Y-min** and **Y-max** editor boxes the maximum settings for the Y-axis can be set. With the listbox beside you can set the scale to either **µV**, **mV** or **V**.



6. In the **Time** editor box the displayed time range in seconds (the X-axis range) can be selected. With the **Signal Type** list box select a type of signal you are recording (e.g. EEG, ECG, etc.) The values for Y-min and Y-max change with the selected signal type.



7. In the **Select Channels** section the channels in the scope to be changed can be set. With the radio buttons **include only** and **exclude**, the selected channels are either included to be changed or excluded from being changed. The **Current Selection** is displayed at the bottom of this section. With the **Mark All** button you can select all available channels in the selected scope.

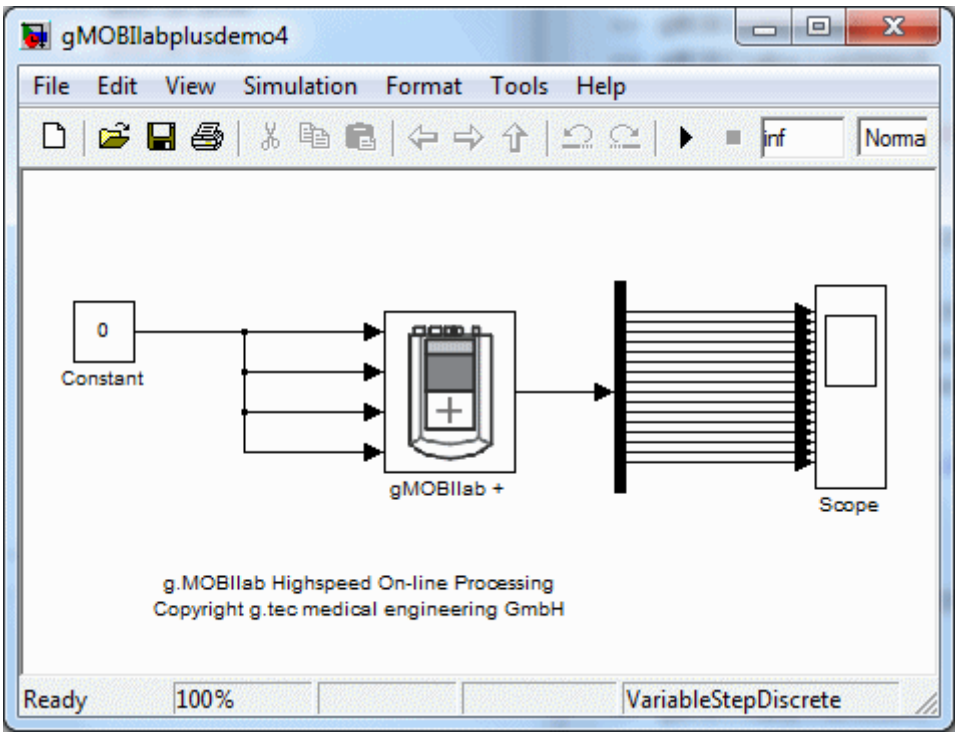
8. With the Apply button the changes are applied to the selected scope(s). Click OK to close the dialog.

Disconnect from and Reconnect to g.MOBIlab+

This section shows the use of the SD card for g.MOBIlab+ and how to disconnect g.MOBIlab+ from SD card streaming and how to reconnect to the device again.

1. Start the MATLAB command window.

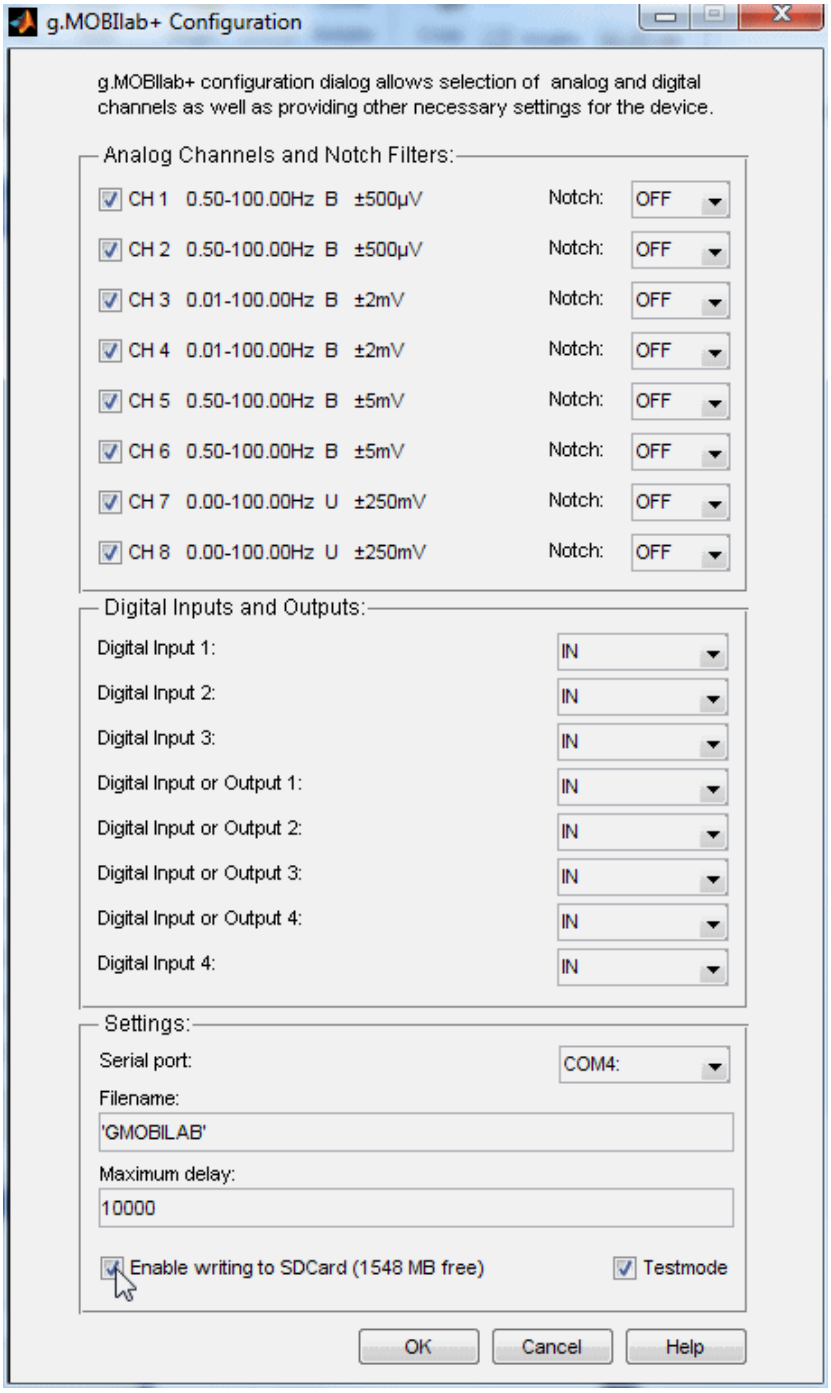
2. Open the Simulink model by typing `gMOBIlabplusdemo4` into the MATLAB command window. This command starts up Simulink and creates the following window:



3. Insert the provided SD card into the card slot in the battery case. **Always do this before switching on g.MOBIlab+!**

4. Plug in the Bluetooth dongle and switch on the g.MOBIlab+ device.

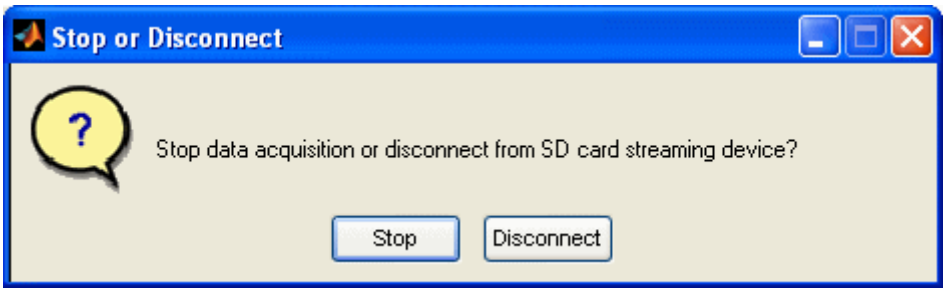
5. Double click the g.MOBIlab+ block in the model to open the following dialog box:



In this dialog select the checkboxes **Enable writing to SD card** and **Testmode**. In the line with the **Enable writing to SD card** checkbox the space left on the inserted card is displayed. In this case a total of `1548` MB is available for data streaming.
Choose a filename or accept the default filename "`GMOBILAB`". If the filename has less than 8 characters the difference to 8 will be completed by underscores. To all filenames a 4-digit number is appended automatically. This number represents the already done number of recordings on the g.MOBIlab+ device. Click **OK** to close the dialog.

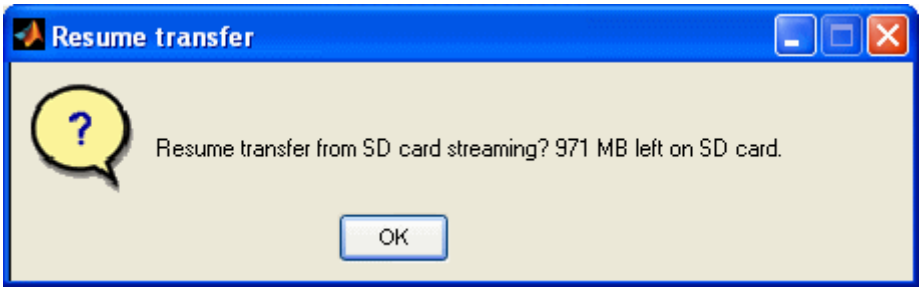
6. Start the model. When the model is started the green blinking LED is switched to glow permanently until data acquisition either to PC or SD card is stopped. Then the LED will blink again.

7. By pressing the **Stop** button on the Simulink model, if a SD card is inserted into g.MOBIlab+ and **Enable Writing to SD card** is enabled, the following dialog will open:



Click **Disconnect** to disable the data transmission from g.MOBIlab+ to the PC. g.MOBIlab+ will continue to record data to the SD card. The LED on the device will continue glowing green. By clicking **Stop** or the close button in the top right hand corner the data acquisition is stopped and the LED blinks green.

8. When g.MOBIlab+ was disconnected from the PC all programs can be closed. g.MOBIlab+ will continue to record data.
9. To reconnect press the **Start** button in the Simulink model as shown in step 6. The following dialog will open:



By clicking **OK** data transfer from g.MOBIlab+ to the PC will be resumed. If **Cancel** or the close button in the top right hand corner is clicked g.MOBIlab+ will continue to stream data to SD card. The space left on the SD card is displayed in the dialog box (in the example above a total of `971` MB are left on the card). If there is no more space available on the SD card before you stop the model, g.MOBIlab+ will automatically stop acquiring data. If the acquisition was stopped, the LED is blinking green. If the battery capacity is low the color of the LED will turn to orange and after 5 minutes the data acquisition is stopped. After the acquisition was stopped the LED is red blinking indicating that the batteries must be exchanged.

10. Stop the model by clicking the stop button in the model and then the **Stop** button in dialog in step 7.

11. To read in the recorded data from the binary data file on the SD card use the example function `importgMOBIlabplus.m` or see Addendum "`gMOBIlabplus data format.pdf`" in the Help folder for detailed information about the data format of the binary data file.

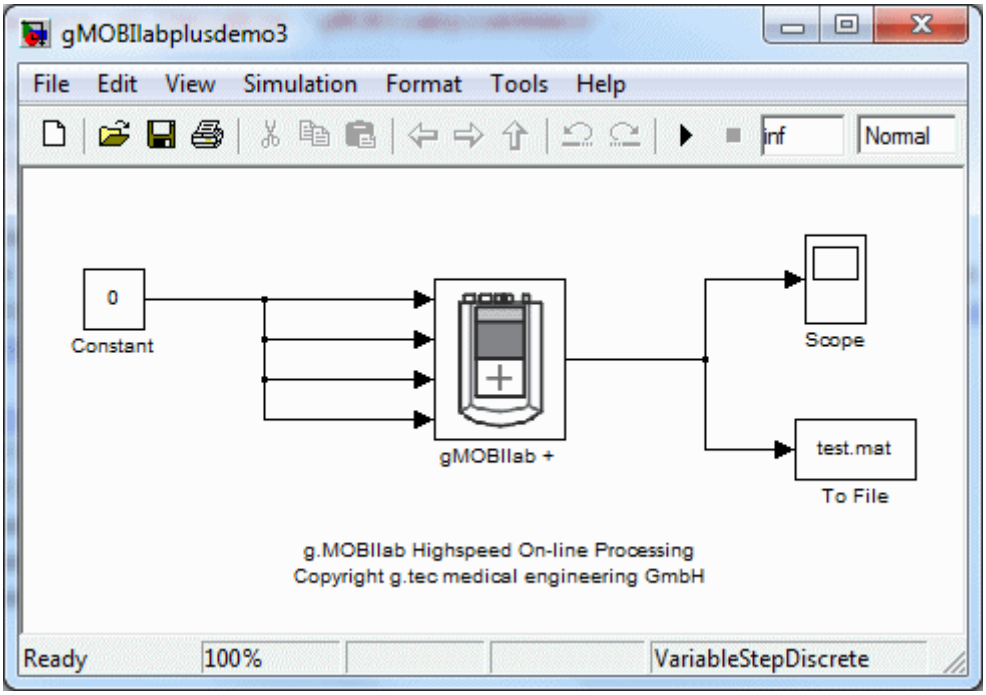
    If g.MOBIlab+ can not stream to SD card format the SD card with the FAT file system.

Biosignal Acquisition and Visualization

This section shows the configuration of g.MOBIlab Highspeed On-line Processing for the acquisition of a single ECG channel.

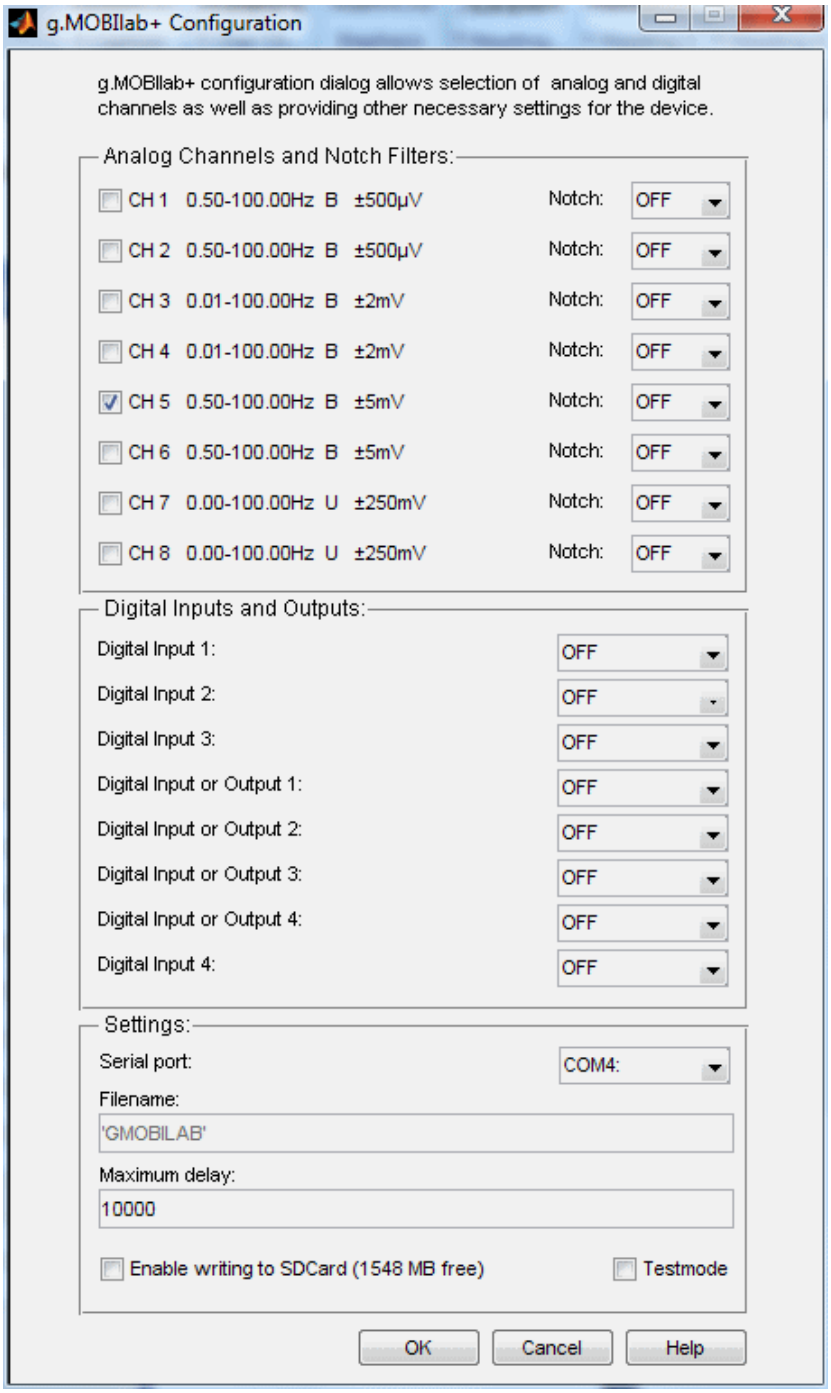
1. Start the MATLAB command window.

2. Open the Simulink model below by typing `gMOBIlabplusdemo3` into the MATLAB command window. This command starts up Simulink and creates the following window:

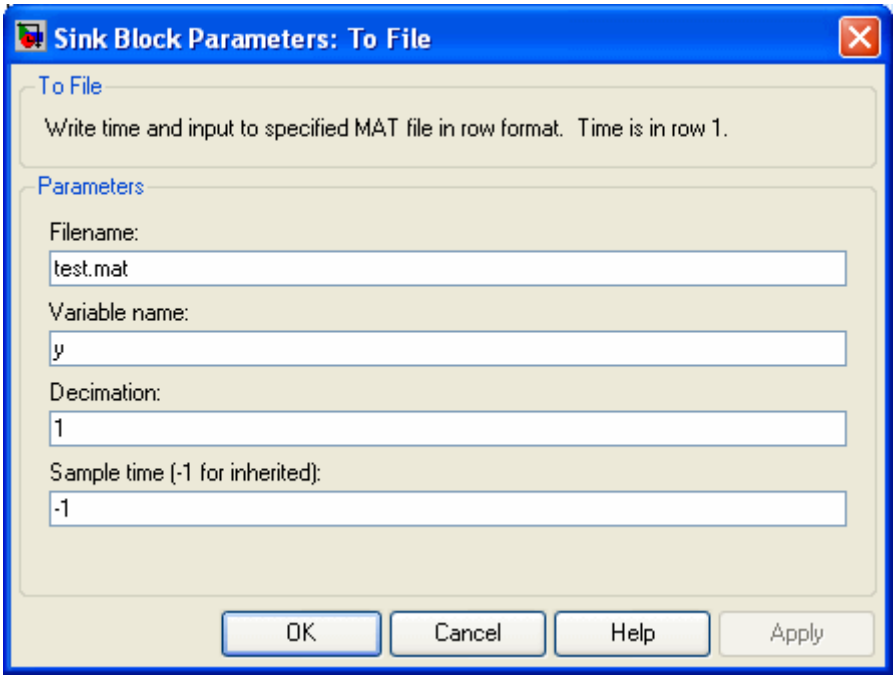


3. Plug in the Bluetooth dongle and switch on the g.MOBIlab+ device.

4. Double click on the **gMOBIlab+** block and select Analog Channel 5 **(CH 5)** to read in the ECG channel. Switch all digital channels to **OFF**.



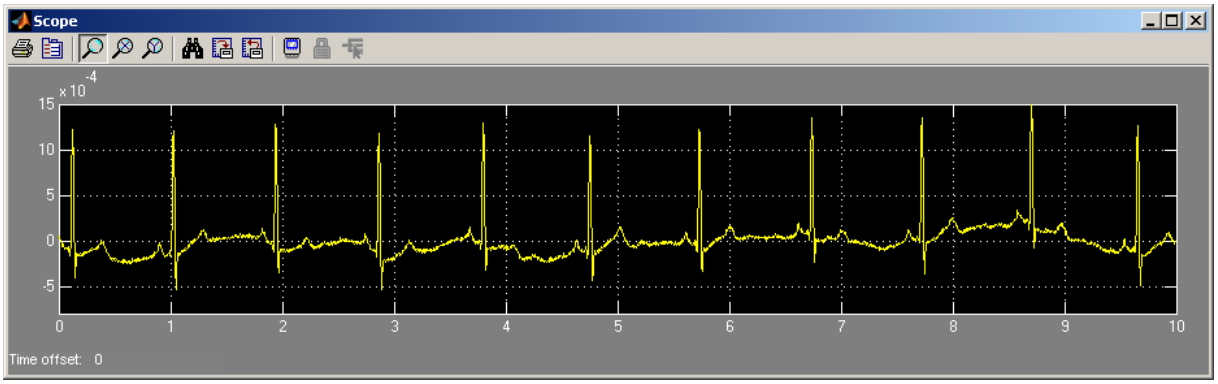
5. Double click on the **To File** bock and enter **Filename** `test.mat`. The data are stored into the variable y.



6. Plug in the **ECG/EMG electrode box** and connect your ECG electrodes to channel 5

7. Press the **Start** icon

8. Double click on the Scope block to view the biosignal data

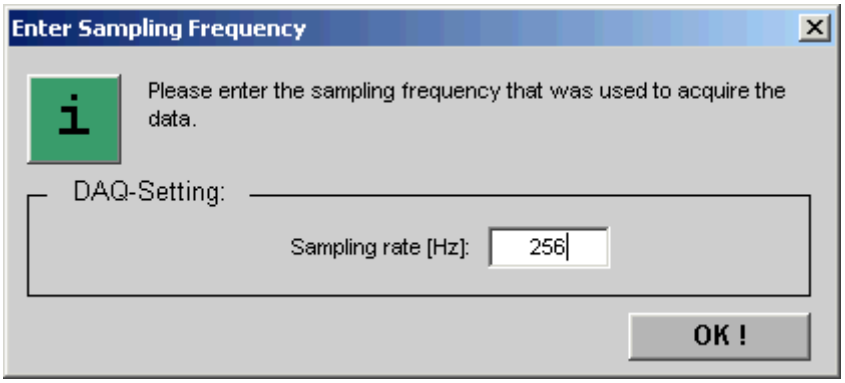


g.MOBIlab Highspeed reads in the data in Microvolts. The ECG signal above has therefore an amplitude of approximately 1 mV.

Viewing Data with g.BSanalyze

1. Start the biosignal processing toolbox g.BSanalyze and load the biosignal data file test.mat into the Data Editor with the **Load data** function from the **File** menu

2. Enter the sampling frequency `256` Hz



3. The data loaded consists of two channels, one with the sample time and the ECG channel. The Data Editor below shows the ECG channel after cutting out the sample time channel. Use the sliders to scroll through the data-set.

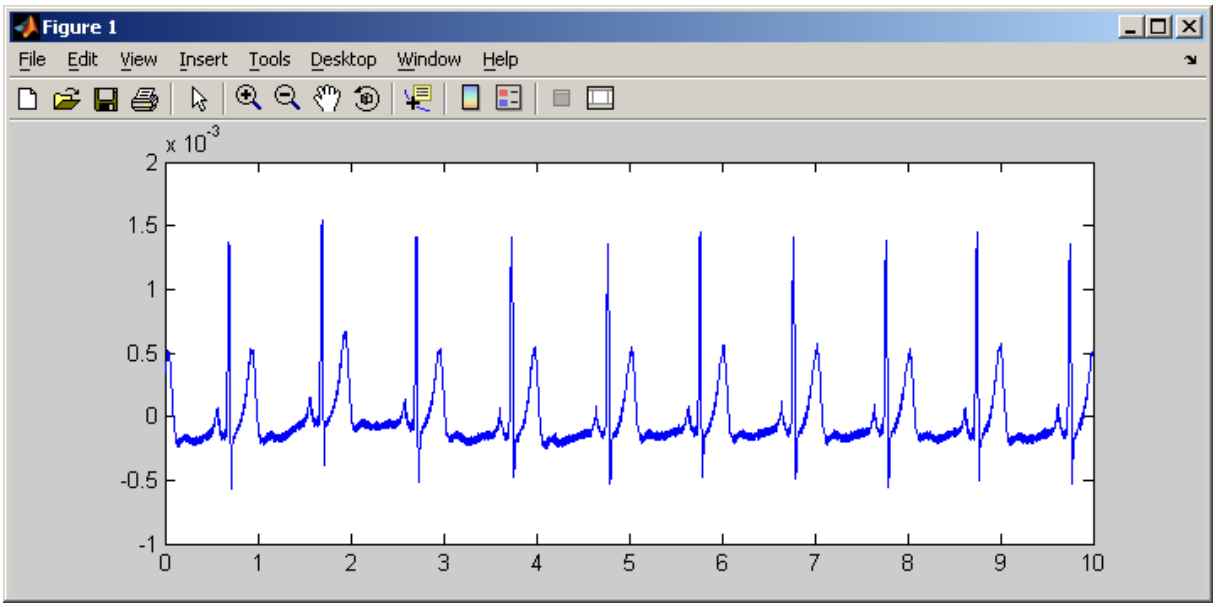
MATLAB Plot Function

You can use the MATLAB plotting functions for the visualization of acquired data. After running gMOBIlabplusdemo3.mdl and logging data to the harddisk perform the following steps:

1. Change to the directory where test.mat is stored and enter load test.mat in your MATLAB command line

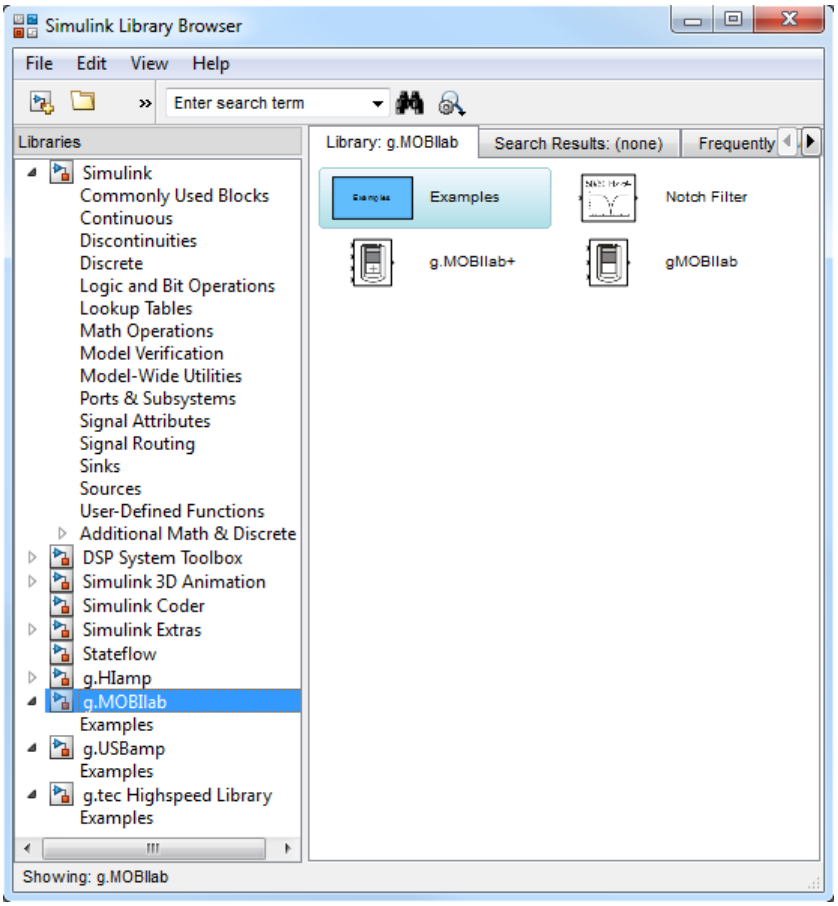
2. Type whos to investigate the variable `y`. The first row is a time vector and the second raw the acquired ECG data.

3. Enter `plot(y(1,:),y(2:end,:))` to create the following window:



Other Examples

g.MOBIlab Highspeed provides the **g.MOBIlab** library and three other useful examples. Open the **Simulink Library Browser** and either select **g.MOBIlab** or double click the **Examples** entry to see the examples:



gMOBIlab starts a Simulink library with the driver blocks for g.MOBIlab and g.MOBIlab+

Examples contains the following models:

gMOBIlab Online ECG, Respiration starts a Simulink model which calculates the heart-rate, heart-rate variability and respiration rate

gMOBIlab Brain Computer Interface starts a Simulink model which performs brain computer interface experiments

gMOBIlab P300 Spelling Device starts a Simulink model which allows to spell with the single character flash speller

See the PDF documentation under

`C:\Program Files\gtec\gtecHS\Help\gMOBIlab`

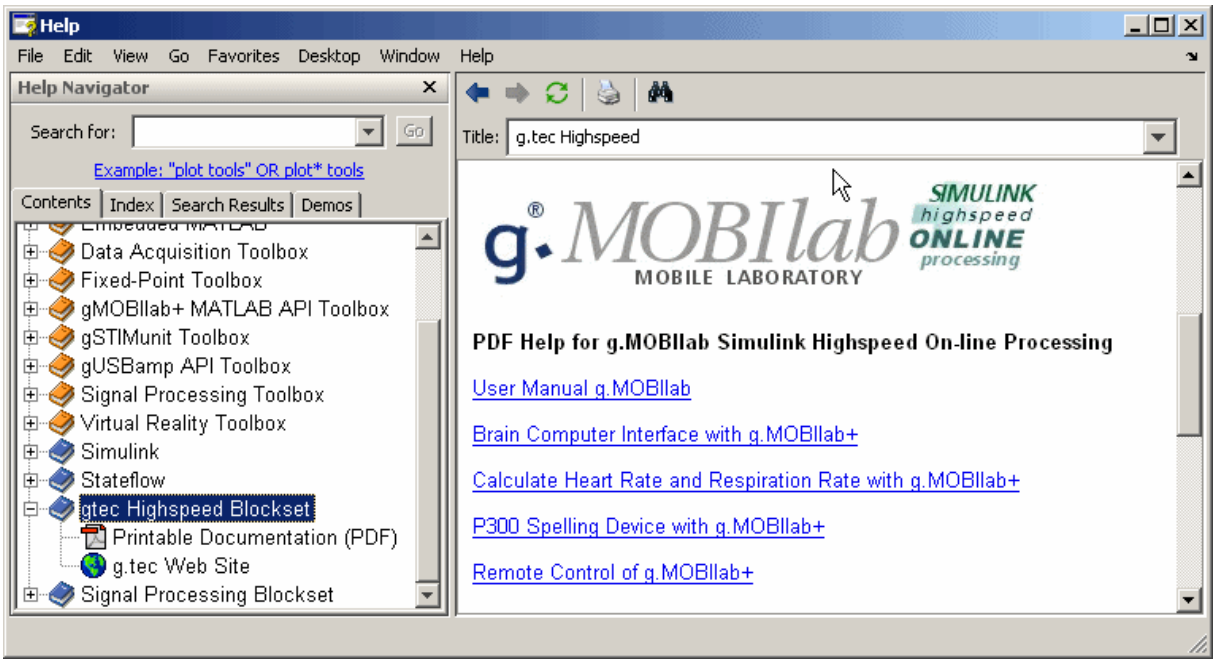
for a detailed description.

Help

g.tec Highspeed provides a printable documentation.

To access the help click on **MATLAB Help** in the **Help** menu of MATLAB. To access the help from command line type:

doc



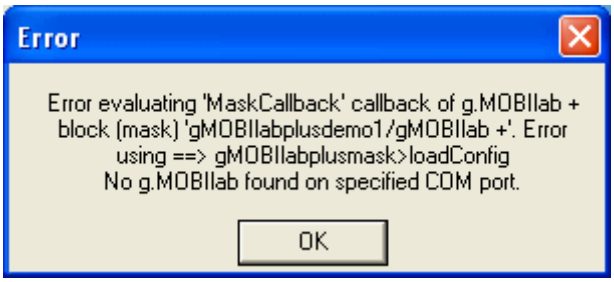
The printable documentation is stored under

`C:\Program Files\gtec\gtecHS\Help\gMOBIlab`

as `gMOBIlabHS.pdf`. Use Acrobat Reader to view the documentation.

Error Messages

Error messages are displayed via the error message pop up window. The error message describes the function call within the error occurred.



The last line of the error message yields a more detailed information. In the case above, the wrong COM port was selected for communication or g.MOBIlab+ was not switched on.

Error messages:		
	No g.MOBIlab found on specific COM port	the wrong COM port was selected for connections or g.MOBIlab+ is not switched on
	No g.MOBIlab connected. Setting port to COM1	automatic COM port detection is selected, but either g.MOBIlab+ is not connected or switched off
	Could not open specified COM port	a COM port that does not exist is selected
	g.MOBIlab is paused	the g.MOBIlab+ to be connected to is recording data to the SD card. See section “Disconnect From and Reconnect To g.MOBIlab+”.
	Could not read configuration	reading configuration from g.MOBIlab+ failed
	Insert Dongle	the hardlock dongle is not inserted. Make sure that the dongle is plugged in correctly
	Dongle not valid	the hardlock inserted to the USB slot is not valid with this software

Product Page

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