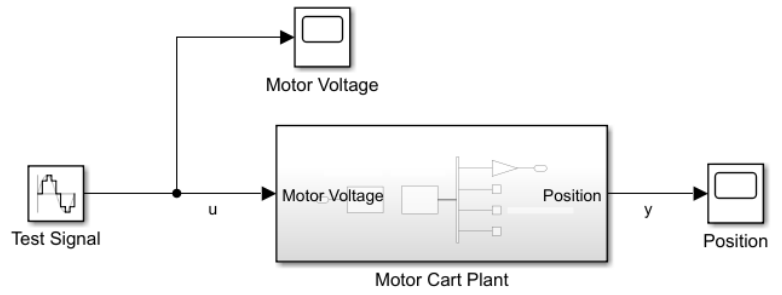
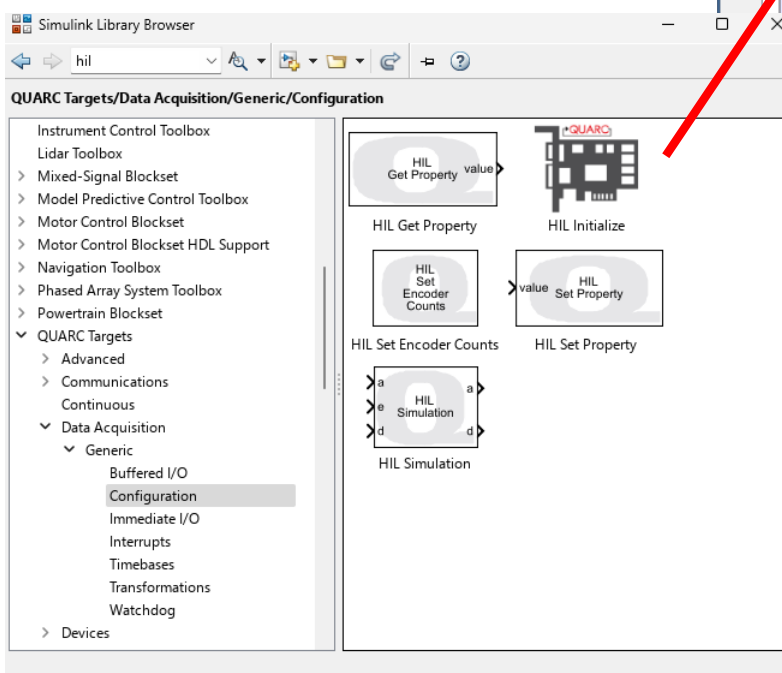
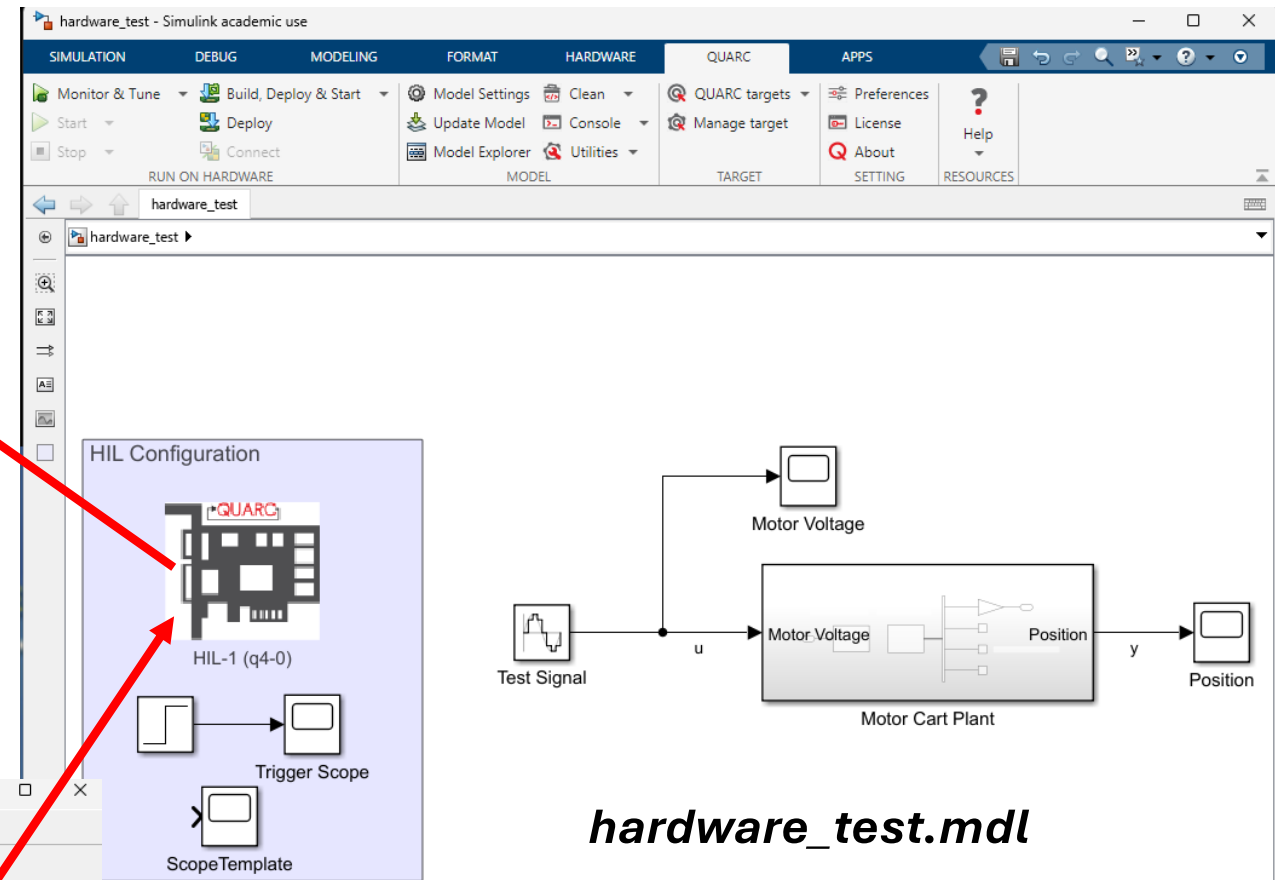
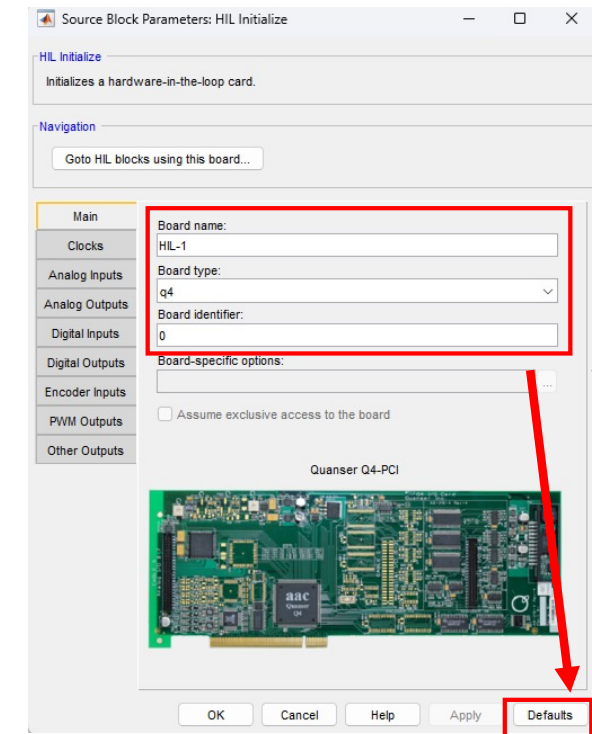


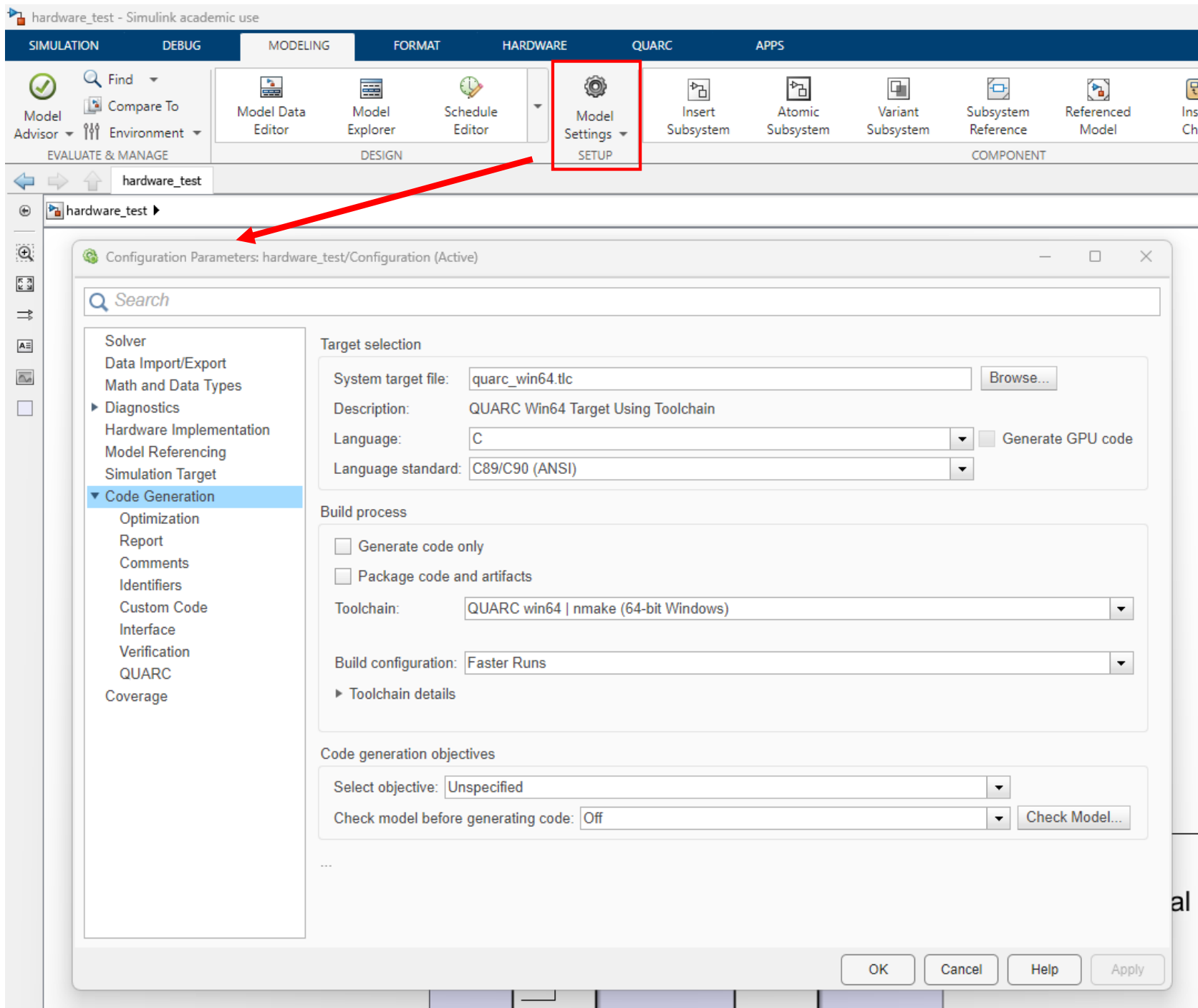
# Configuring the model to work with DAQ

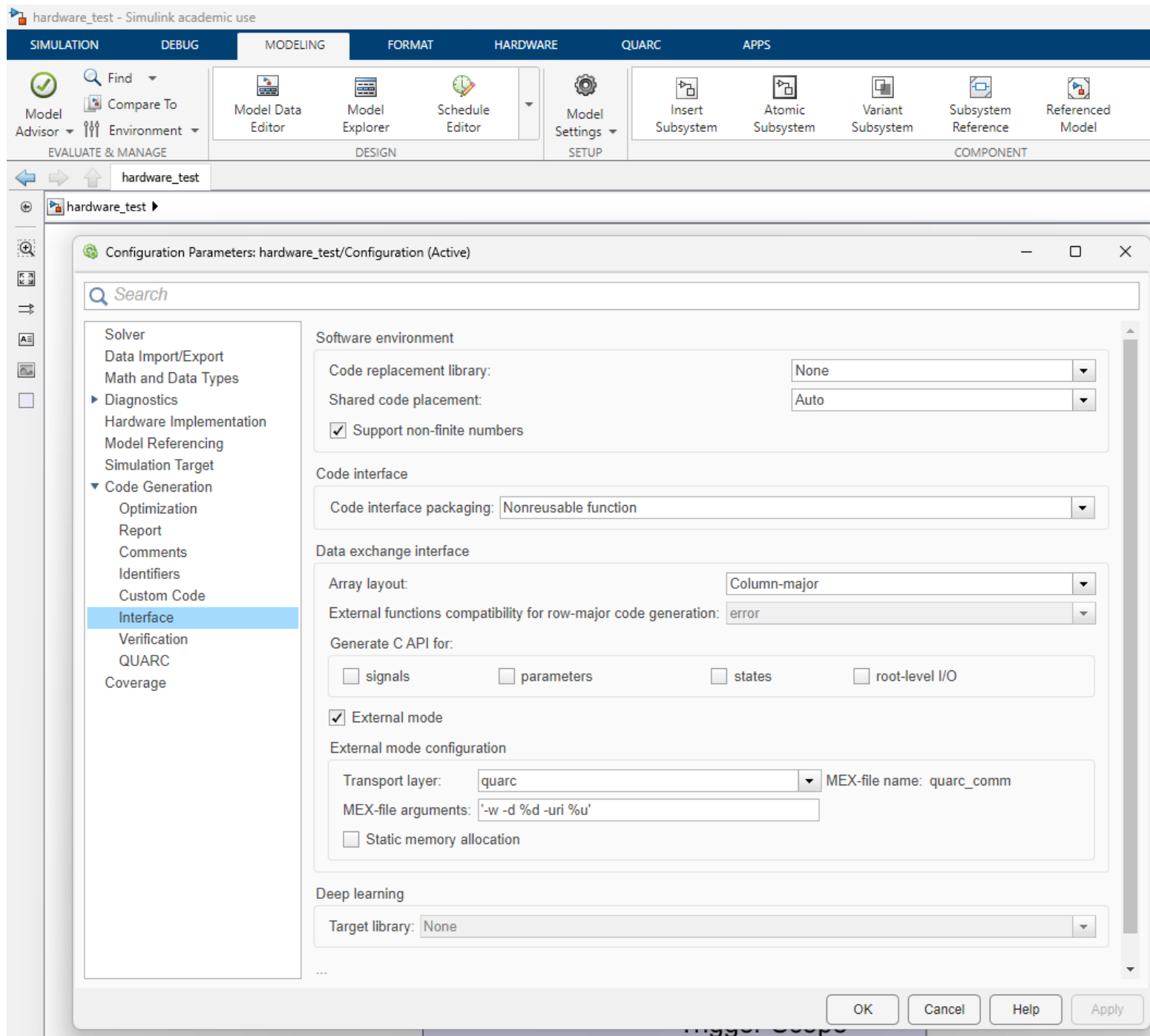


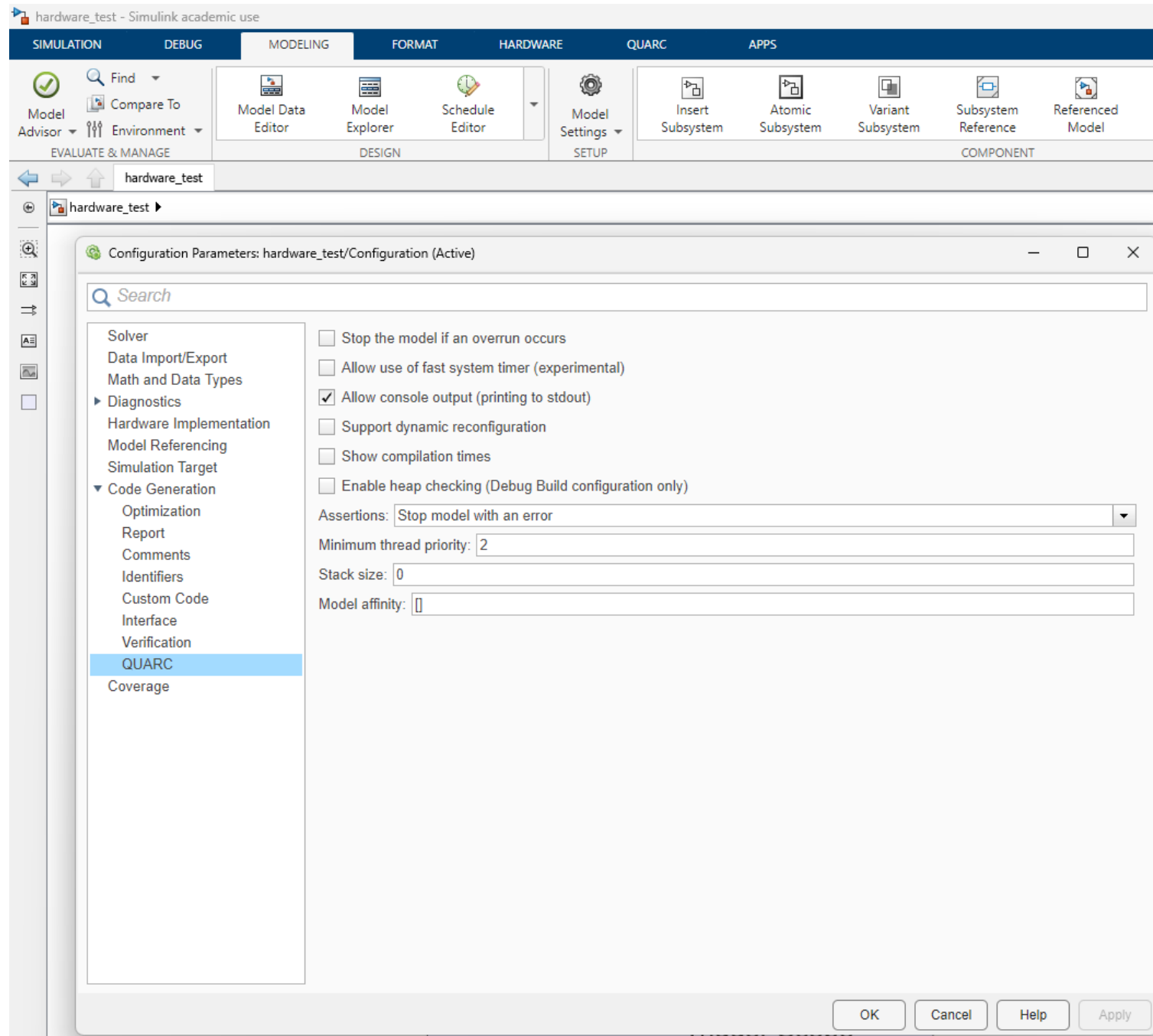
**hardware\_test.mdl**

Set the HIL Initialize block to have board name HIL-1 and Board type q4. Click defaults to set up

# Configuring model parameters for HIL & Quarc







Configuration Parameters: hardware\_test/Configuration (Active)

Search

**Solver**

- Data Import/Export
- Math and Data Types
- ▶ Diagnostics
- Hardware Implementation
- Model Referencing
- Simulation Target
- ▼ Code Generation
  - Optimization
  - Report
  - Comments
  - Identifiers
  - Custom Code
  - Interface
  - Verification
  - QUARC
  - Coverage

Simulation time

Start time: 0.0 Stop time: 10

**Solver selection**

Type: Fixed-step Solver: discrete (no continuous states)

▼ Solver details

Fixed-step size (fundamental sample time): 0.001

Tasking and sample time options

Periodic sample time constraint: Unconstrained

- ☒ Treat each discrete rate as a separate task
- ☐ Allow tasks to execute concurrently on target
- ☐ Automatically handle rate transition for data transfer
- ☐ Allow multiple tasks to access inputs and outputs
- ☒ Higher priority value indicates higher task priority

Important to have these set correctly  
 $T_s = 0.001$ , if you change it here change it everywhere...

OK Cancel Help Apply

Configuration Parameters: hardware\_test/Configuration (Active)

Search

- Solver
- Data Import/Export
- Math and Data Types
- ▶ Diagnostics
- Hardware Implementation
- Model Referencing
- Simulation Target
- ▼ Code Generation
  - Optimization
  - Report
  - Comments
  - Identifiers
  - Custom Code
  - Interface
  - Verification
  - QUARC
  - Coverage

Hardware board: Determine by Code Generation system target file

Code Generation system target file: [quarc\\_win64.tlc](#)

Device vendor: Intel Device type: x86-64 (Windows64)

▼ Device details

Number of bits

char:	8	short:	16	int:	32
long:	32	long long:	64	float:	32
double:	64	native:	64	pointer:	64
size_t:	64	ptrdiff_t:	64		

Largest atomic size

integer:	Char
floating-point:	Float

Byte ordering: Little Endian Signed integer division rounds to: Zero

☒ Shift right on a signed integer as arithmetic shift

☐ Support long long

OK Cancel Help Apply

## Configuring scopes for data logging:

The screenshot shows the HIL Configuration window with a block diagram. A block labeled 'ScopeTemplate' is highlighted with a blue border. A red arrow points from this block to the 'View' menu of the ScopeTemplate window. Another red arrow points from the 'View' menu to the 'Configuration Properties ...' option. A third red arrow points from the 'Configuration Properties: ScopeTemplate' dialog to the text below.

ScopeTemplate

Configuration Properties: ScopeTemplate

Main Time Display Logging

☐ Limit data points to last: 5000

☒ Decimation: 1

☒ Log data to workspace

Variable name: ScopeTemplate

Save format: Array

OK Cancel Apply

ScopeTemplate(:,1) = `time`  
ScopeTemplate(:,2) = `data`

Saved as an array in the workspace

`Variable name` is what will appear in the workspace after the run is complete

## Configuring triggering and model data logging:

The screenshot shows the Simulink hardware configuration interface. The 'HARDWARE' tab is selected in the top menu. The 'Control Panel' icon is highlighted with a red box. A red arrow points from this icon to the 'hardware\_test: External Mode Control Panel' dialog. Another red arrow points from the 'Signal & Triggering ...' button in the 'Configuration' section of the 'External Mode Control Panel' to the 'hardware\_test: External Signal & Triggering' dialog.

**hardware\_test: External Mode Control Panel**

Connection and triggering  
Connect Start Real-Time Code Arm Trigger

Floating scope  
☒ Enable data uploading  
Duration: auto

Parameter tuning  
☐ Batch download  
Download

Configuration  
**Signal & Triggering ...** Data Archiving ...

OK Help

**hardware\_test: External Signal & Triggering**

Signal selection

Trigger	Selected	Block	Path
	X	Motor Voltage	hardware_test/Motor Voltage
	X	Position	hardware_test/Position
T	X	Trigger Scope	hardware_test/Trigger Scope

☒ Select all  
Clear all  
☒ on  
☐ off  
Trigger Signal  
Go To Block

Trigger options  
Source: signal Mode: normal Duration: 1e+06 Delay: 0  
☒ Arm when connecting to target

Trigger signal  
Path: hardware\_test/Trigger Scope Port: 1 Element: any  
Direction: rising Level: 0.5 Hold-off: 0

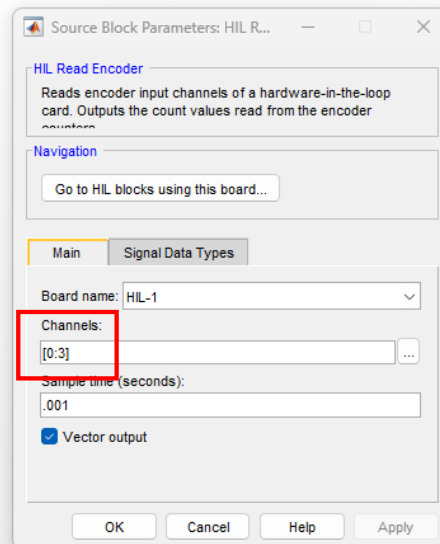
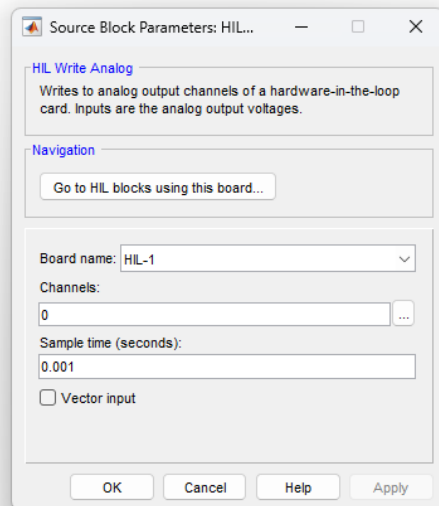
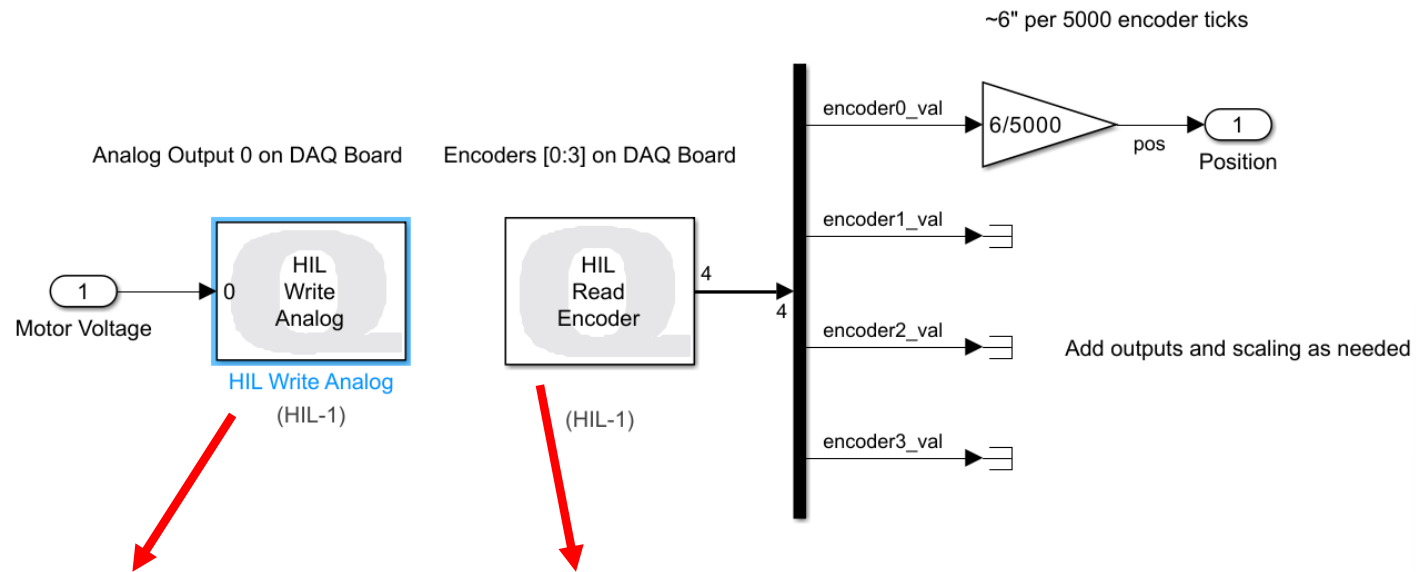
OK Cancel Help Apply

X under Selected means the signal will be logged

T under trigger means that will be used as trigger signal (don't change)

Duration is maximum # of samples logged,  $Duration = t_{Stop}/T_s$





Demo model is reading all 4 encoders as vector and demuxxing (shown above)

Can set to just read a single encode



# Monitor & Tune builds & runs the code. Expected outputs shown

