Simulink Excel Blocks

Simulink Excel Blocks is a custom Simulink library which will be useful to the refer the Excel files within Simulink model.

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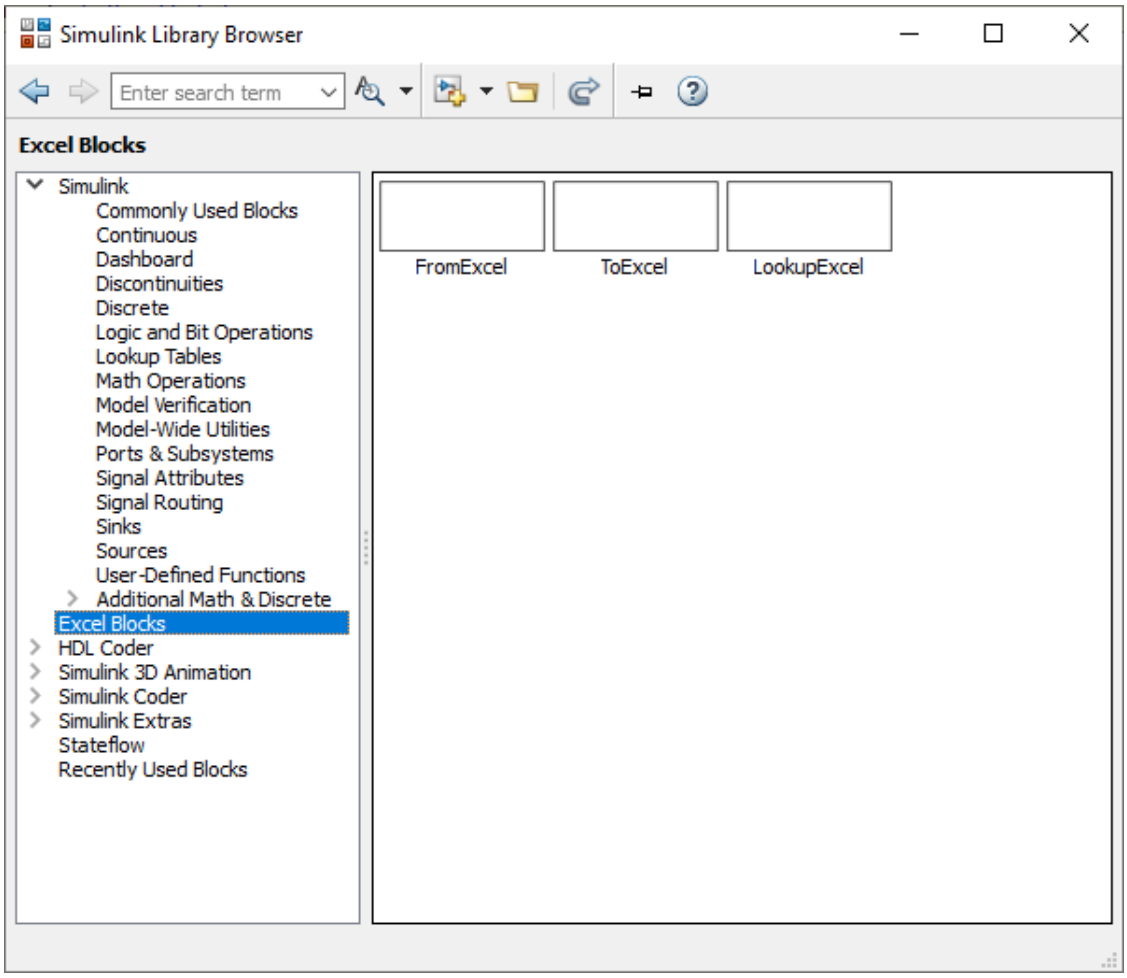
Version: 1.0 - Initial Version.

Detailed Information

Excel Blocks Library

- If this SimExcelBlocks folder is in MATLAB path, then this library will be available to use from Simulink Library Browser.



If this library is not visible in Simulink Library Browser, then close the Simulink and type following command in MATLAB command window. >> sl_refresh_customizations Now, it will become available within the Simulink Library Browser.

- There are three blocks available in this library.

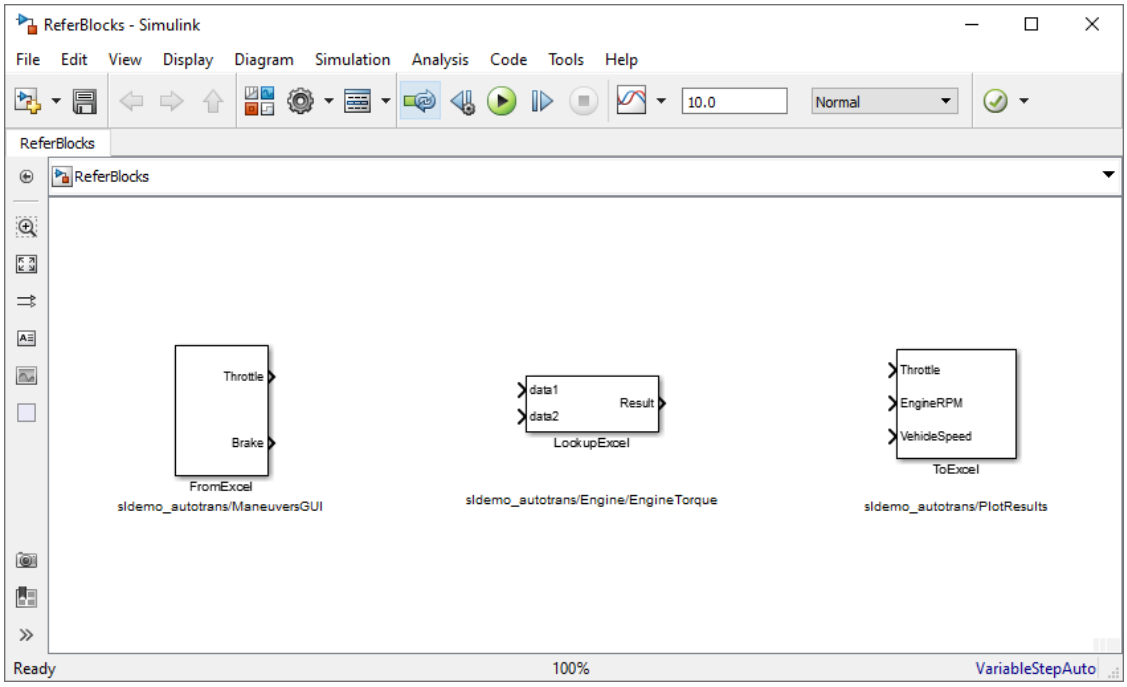
1. FromExcel Block - Helps to read the data from the Excel file and use it as a source block data for Simulink

2. ToExcel Block - Helps to write the Simulink simulation results to the Excel file. It can be used as a Sink block in the Simulink model.

3. LookupExcel Block - Helps to create a lookup table which can use the data from an Excel file.

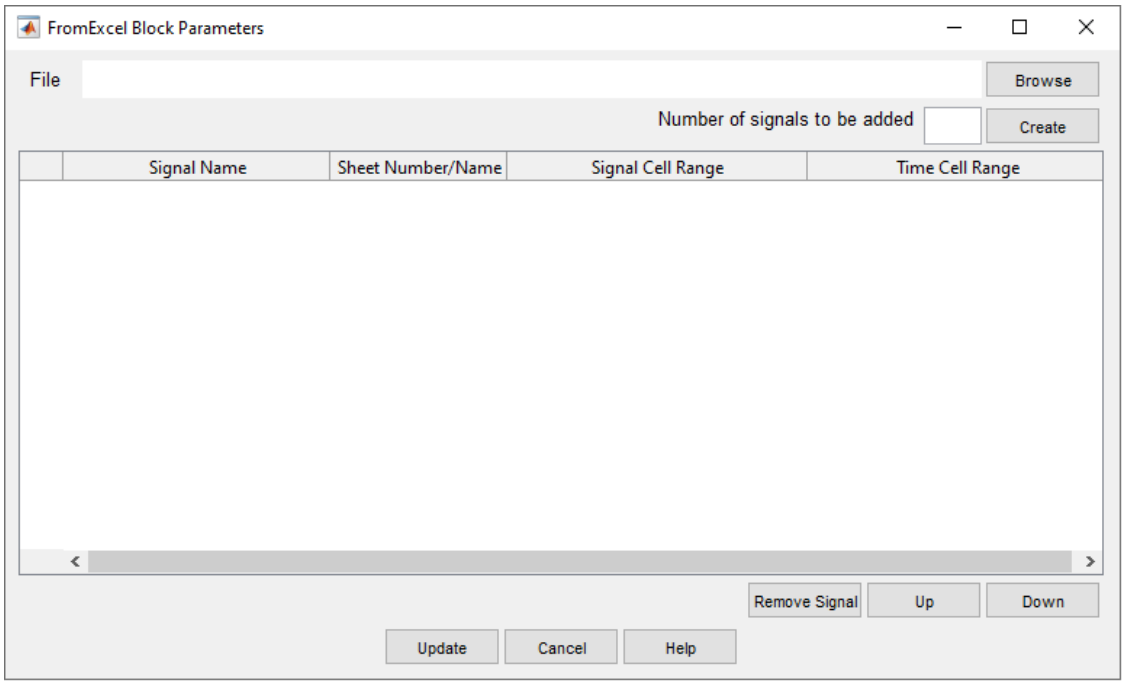
Demo

All these blocks are explained in the below sections using "sldemo_autotrans" demo model available in Simulink toolbox. The sample blocks and the corresponding Excel data files to use it in sldemo_autotrans are available in the testdata folder.



FromExcel Block

This block has following dialog settings.

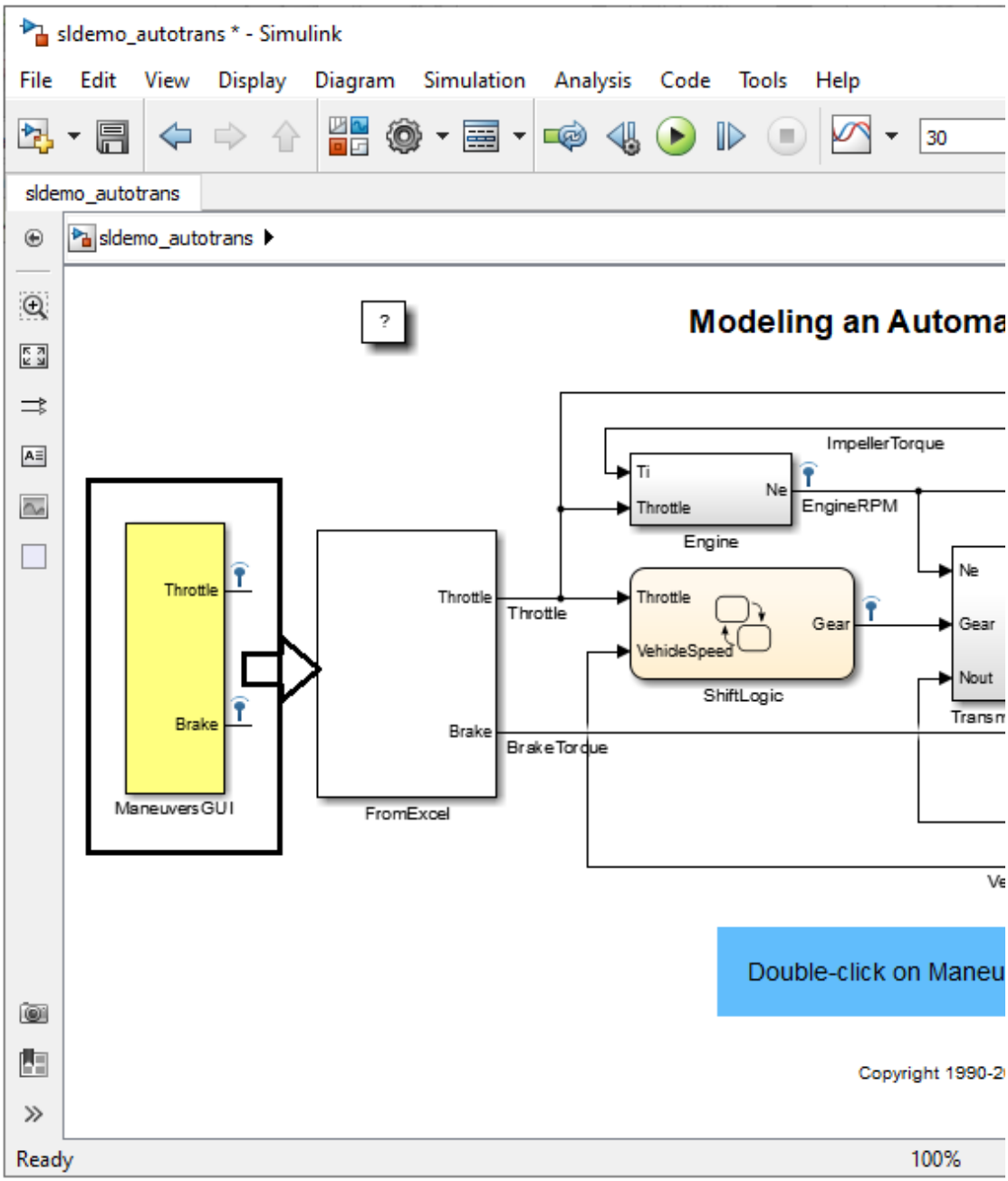


1. File - Browse the Excel file from where the data has be referred.

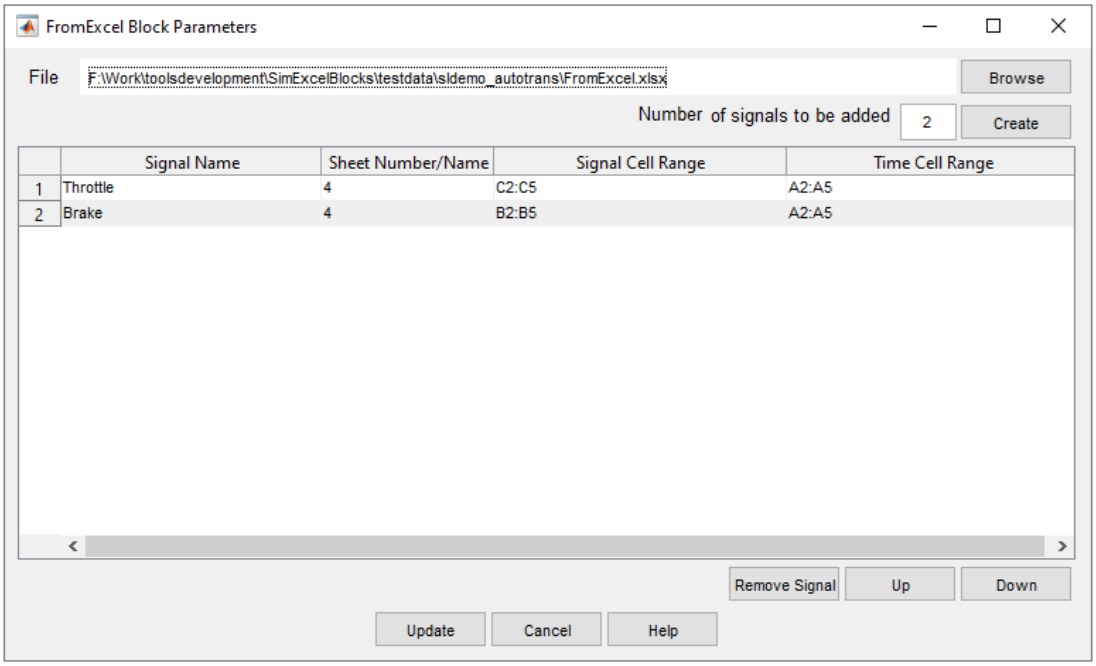
2. Number of Signals - Number of signals that has to be referred from the Excel file.

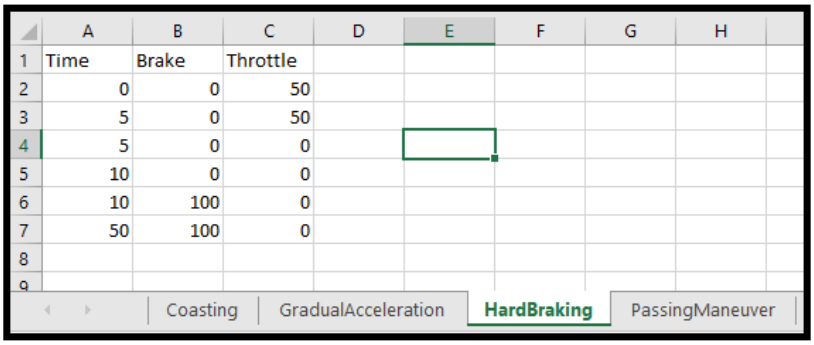
3. Table Information - Table should be populated with unique name for every signal and also information related to sheet name/number and cell ranges.

- Refer the below image. Instead of using the ManeuversGUI block as a source block in the sldemo_autotrans model, the user can use the FromExcel block by referring the data from Excel file.



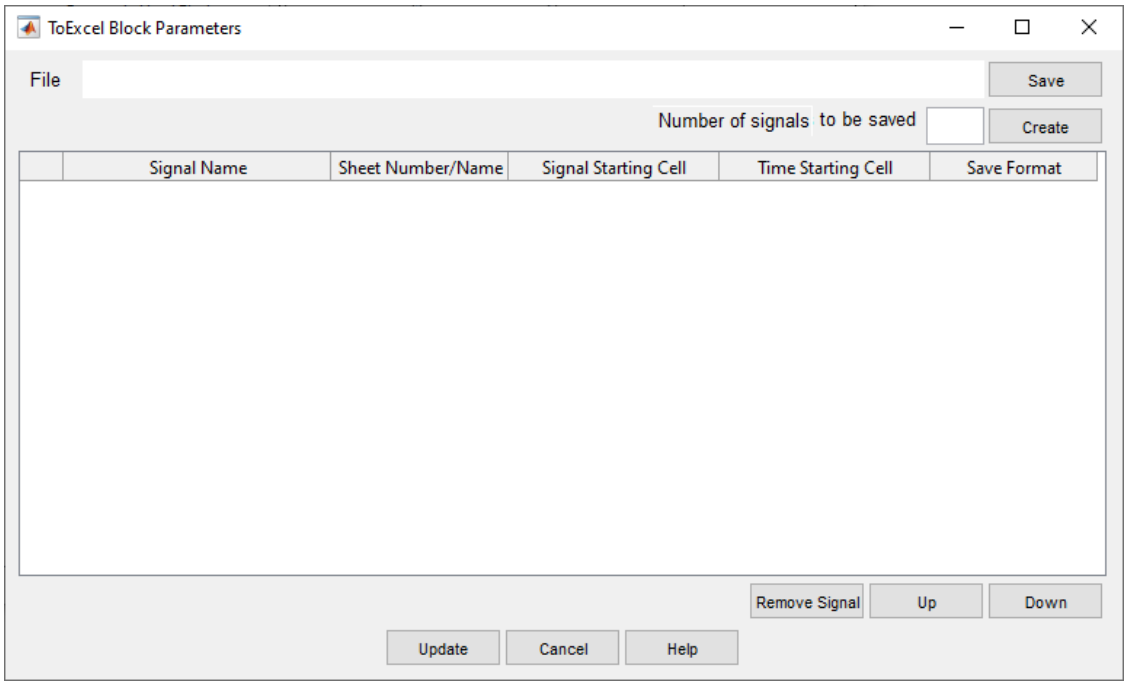
- The dialog settings for the FromExcel block and the respective Excel file can be as shown below.





ToExcel Block

This block has following dialog settings.

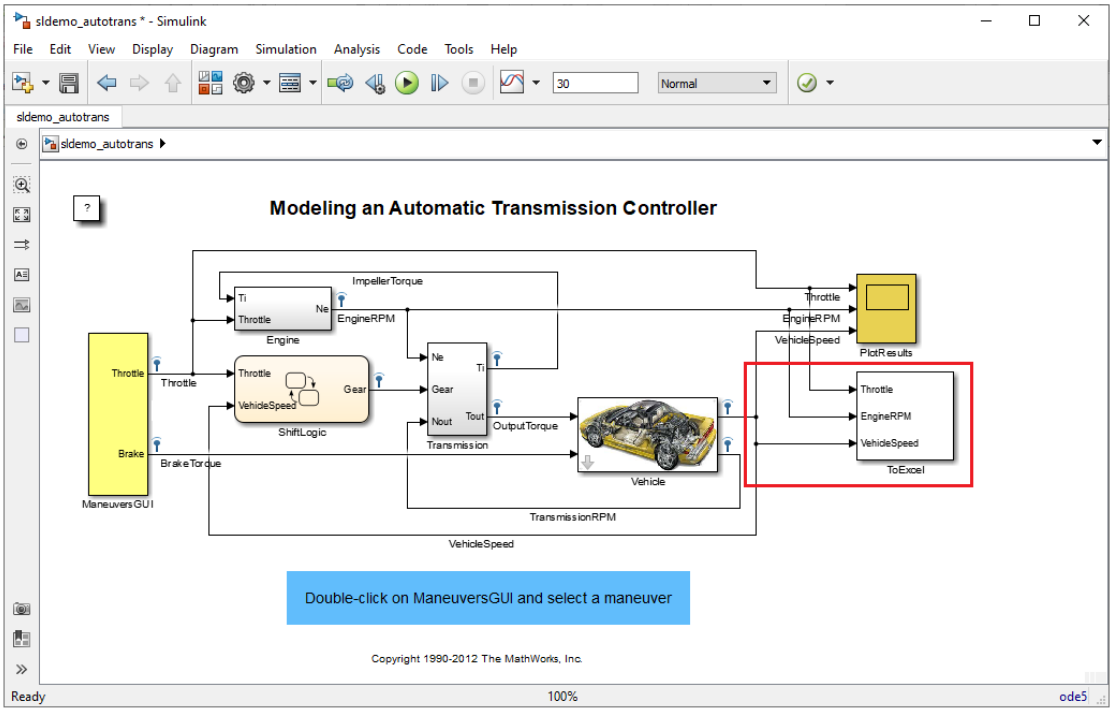


1. File - Path of the Excel file to write the Simulation results.

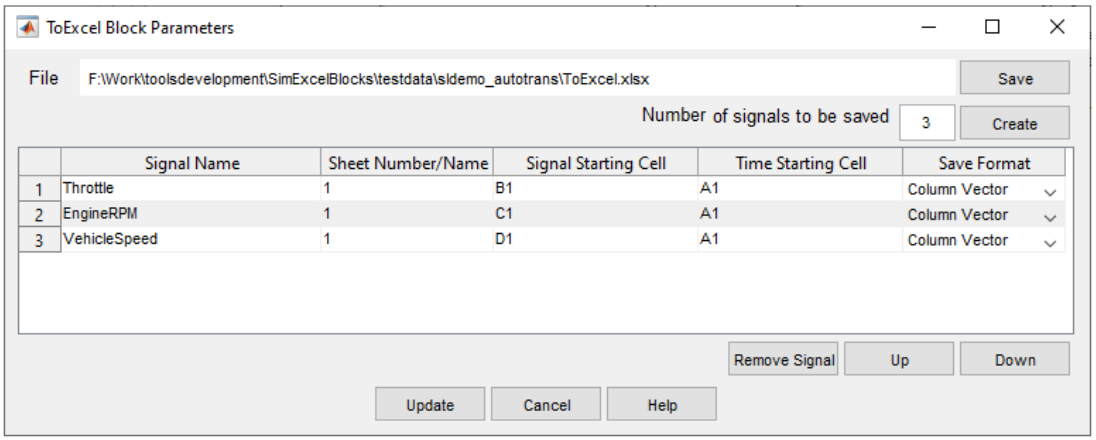
2. Number of Signals - Number of signals that has to be written to the Excel file.

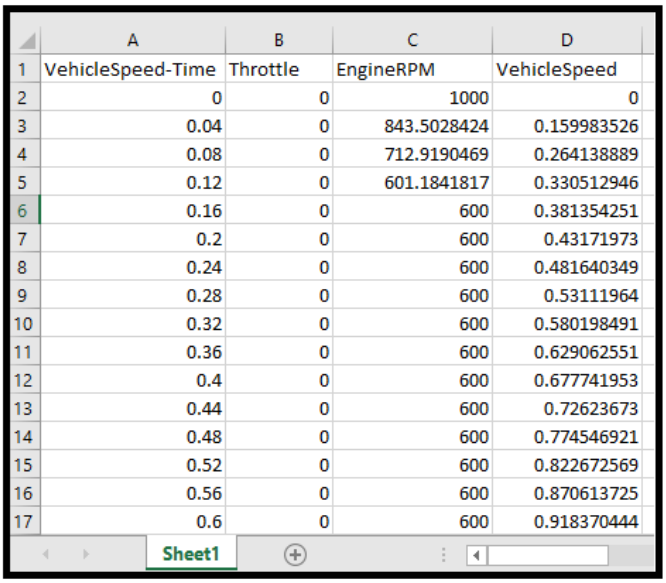
3. Table Information - Table should be populated with unique name for every signal and also information related to sheet name/number and the starting cell to write the data. The data can be written as a column vector or as a row vector.

- Refer the below image. All the signals connected to the Scope block(Plot Results) are connected to the ToExcel block in the sldemo_autotrans model.



- The dialog settings for the ToExcel block and the corresponding ToExcel file generated are shown below.



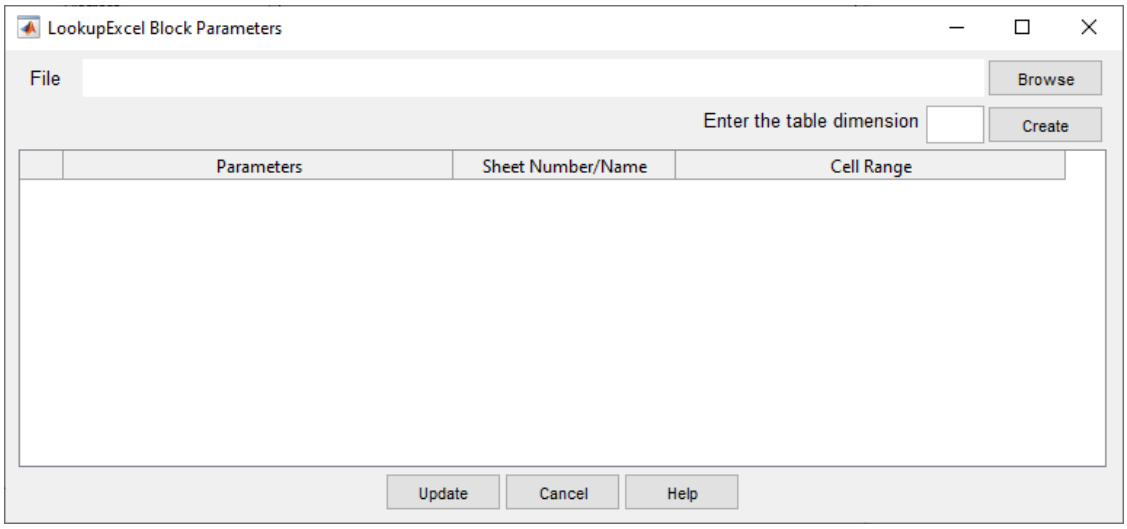


	A	B	C	D
1	VehicleSpeed-Time	Throttle	EngineRPM	VehicleSpeed
2	0	0	1000	0
3	0.04	0	843.5028424	0.159983526
4	0.08	0	712.9190469	0.264138889
5	0.12	0	601.1841817	0.330512946
6	0.16	0	600	0.381354251
7	0.2	0	600	0.43171973
8	0.24	0	600	0.481640349
9	0.28	0	600	0.53111964
10	0.32	0	600	0.580198491
11	0.36	0	600	0.629062551
12	0.4	0	600	0.677741953
13	0.44	0	600	0.72623673
14	0.48	0	600	0.774546921
15	0.52	0	600	0.822672569
16	0.56	0	600	0.870613725
17	0.6	0	600	0.918370444

Sheet1

LookupExcel Block

This block has following dialog settings.

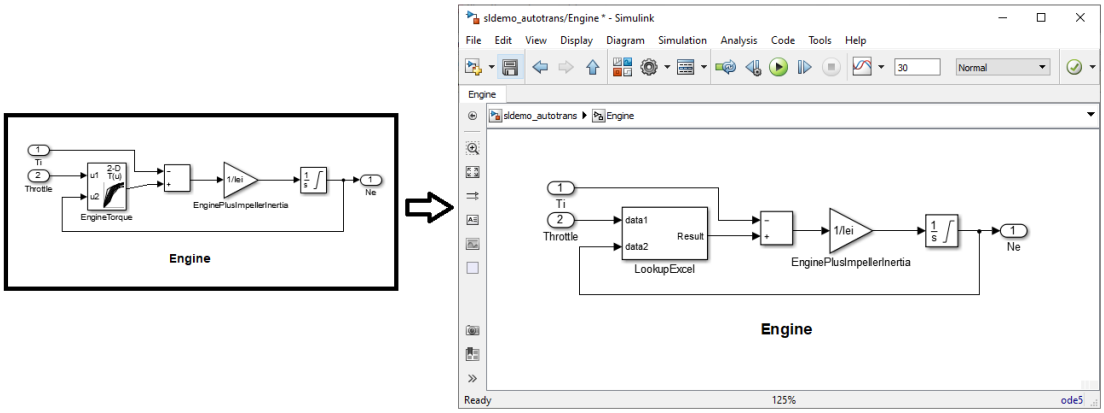


1. File - Issue the Excel file to read the lookup table data.

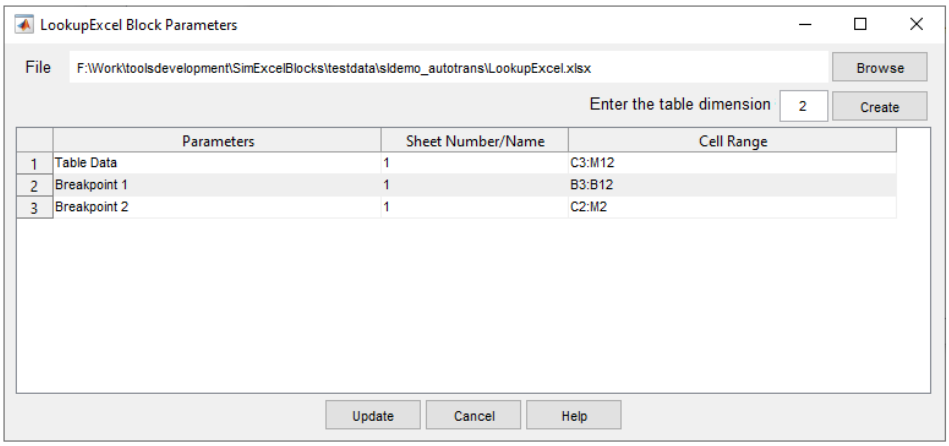
2. Lookup table dimension - As of now, this block supports only 1D 0r 2D lookup tables.

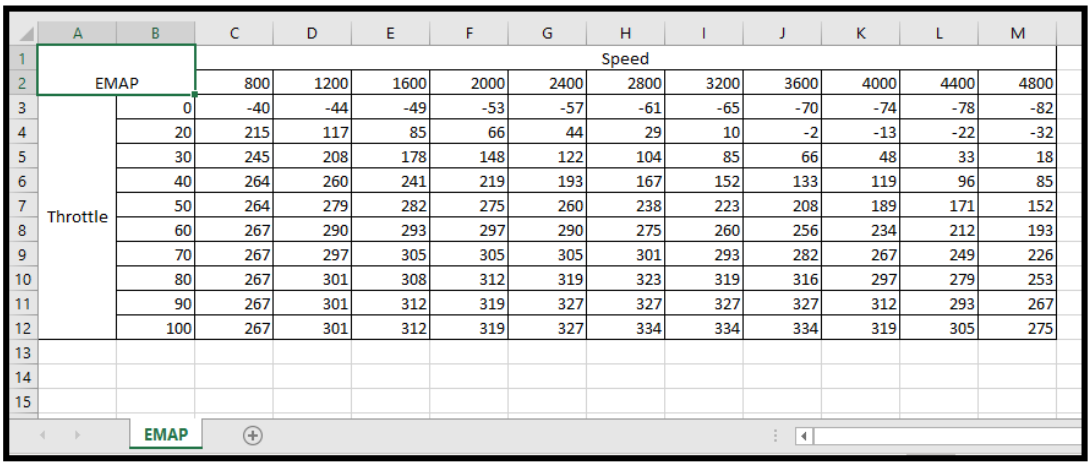
3. Table Information - Table should be populated with the information related to sheet name/number and cell ranges to refer.

- Refer the below image. The 2D lookup table in sldemo_autotrans/Engine/EngineTorque path can also be created with LookupExcel block by referring the data from Excel file.



- The dialog settings for the LookupExcel block and the corresponding Excel file data can be as shown below.





	A	B	C	D	E	F	G	H	I	J	K	L	M
1			Speed										
2	EMAP		800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
3	Throttle	0	-40	-44	-49	-53	-57	-61	-65	-70	-74	-78	-82
4		20	215	117	85	66	44	29	10	-2	-13	-22	-32
5		30	245	208	178	148	122	104	85	66	48	33	18
6		40	264	260	241	219	193	167	152	133	119	96	85
7		50	264	279	282	275	260	238	223	208	189	171	152
8		60	267	290	293	297	290	275	260	256	234	212	193
9		70	267	297	305	305	305	301	293	282	267	249	226
10		80	267	301	308	312	319	323	319	316	297	279	253
11		90	267	301	312	319	327	327	327	327	312	293	267
12		100	267	301	312	319	327	334	334	334	319	305	275
13													
14													
15													

EMAP

Note: Please share your comments and contact us if you are interested in updating the features further.

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