



DraMS Diagram Simulator

DraMS Ops Training

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- **Mnemonics:** A named data channel or field
Example: A temperature sensor or a boolean state
- **Model:** A separate system with independent data
Example: Engineering model or flight model
- **Events:** A text label with for an instance in time.
Example: 01-17-2025 12:32:21 “Started the pump”
- **Diagrams:** A Diagram is an SVG image with an accompanying set of rules about how it should change in response to data. Those rules are divided into Switches and Indicators
- **Switches:** A Switch is an on/off logical value. These can be defined as Event Switches, which turn on or off by matching text in Events, Mnemonic Switches, which turn on when a mnemonic is within a specific range, or Logical Switches, which allow you to combine multiple other switches
- **Indicators:** An Indicator associates Switches with visual effects and particular elements in the Diagram image. Indicators can change colors, update text, or apply highlighting
- **Sequence Files:** Simple text (.txt) files containing simulated data streams, one step per line



The Diagram Simulator tool allows you to view responsive diagrams and dashboards with simulated data in the form of sequence files. For real data, use the Diagram Viewer.

Diagram loaded

Diagram ⓘ Minature Scroll Pump GSE Model ⓘ Scroll Pump Life Test

< State 105 / 123 Event: OUVERTURE CHEMIN CLM2 (Open path: Column 2) >

Sequence File

State #	Line #	Text
3	2	MNID 3058: 40
4	3	MNID 3062: 40
5	4	Event: OUVERTURE CHEMIN HIGH WAY V09-10 (Open Path: High Way V09-V10 (MN3))
6	5	Event: valve 9 open
7	6	Event: valve 10 open
8	7	Event: OUVERTURE CHEMIN HIGH WAY V19-20 (Open Path: High Way V19-V20 (MN4))
9	8	Event: valve 19 open
10	9	Event: valve 20 open
11	10	Event: OUVERTURE BOUCHON IF3 (Open manual valve on IF3) Confirm gas flow out of IF3
12	11	Event: TEST V20

DraMS Diagram Simulator Overview



Database

Definitions Diagram

Select Existing Diagram (Miniature Scroll Pump GSE)

Recent Search

Miniature Scroll Pump GSE 0.3.00.10

Select Existing Sequence File (MSP Test)

Recent Search

Any Contains Input search text here

+ Add Condition Save / Load History Search View

4 sequences found (1 - 4)

GC valve checkout sequence [2] 3.18.18

GC valve checkout sequence [2] with Simulate

GC valve checkout sequence [2] without Simulate

MSP Test 00.0

MSP Test 00.0

Save Changes

Insert New File

Diagram loaded

Diagram Miniature Scroll Pump GSE

State #2 Miniature Scroll Pump GSE

Sequence File

State #	Line #	Text
2	1	MN MSP
3	2	MN MSP
4	3	MN MSP
5	4	MN MSP/PS Current: 0.2
6	5	MN ST_MSP_Outlet_End_Plate: 21
7	6	MN MSP/PS Voltage: 15
8	7	MN MSP/PS Current: 0.18
9	8	MN Exhaust_Pressure: 1140

Switches

Status	Label	Type	Override
✓	Pump Running		
X	valve state	Mnemonic	MSP.Valve.Current: [0,1,-]

Indicators

Status	Label	Switches	Mnemonics
✓	Chamber Control Temperature	Always On	MSP.Chamber_Control_Temp
✓	Pump Running	Pump Running	MSP.Speed
✓	Pump Speed	Always On	MSP.Speed
✓	Pump Current	Always On	MSP.PS.Current
✓	Pump Temperature	Always On	ST_MSP_Outlet_End_Plate
✓	sample pressure	Always On	Sample_Pressure
✓	Flow Rate	Always On	Mass_Flow
✓	Rise indicator	Always On	Flow_Return

Diagram

MSP Power

15 V

0.18 A

Tenneco Chamber

Chamber 22

Running

Speed 3002 rpm

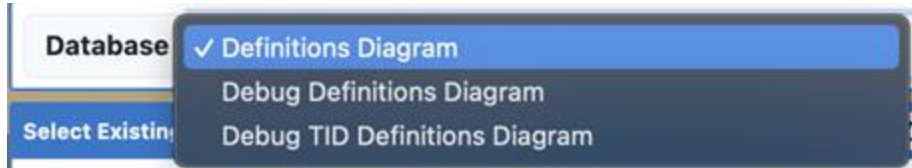
Current 0.18 amps

Exhaust Pressure 1140

GSE Vacuum Pump



Selecting a Diagram (Database Selection)



Database Selector: Select which database to view diagrams from here.



Selecting a Diagram (Diagram Listing/Selection)

Select Existing Diagram (Minature Scroll Pump GSE)

Record Search

Any Contains Input search text here CS

+ Add Condition Save / Load History Search Clear

5 diagrams found

Diagram Name	Size	Download	Share
DraMS Gas Flow Diagram	432.9 kB		
DraMS Gas Flow Diagram (GSE)	237.53 kB		
DraMS Laser Diagram	27.79 kB		
Minature Scroll Pump GSE	63.98 kB		
WRP MOMA Dashboard	14.82 kB		

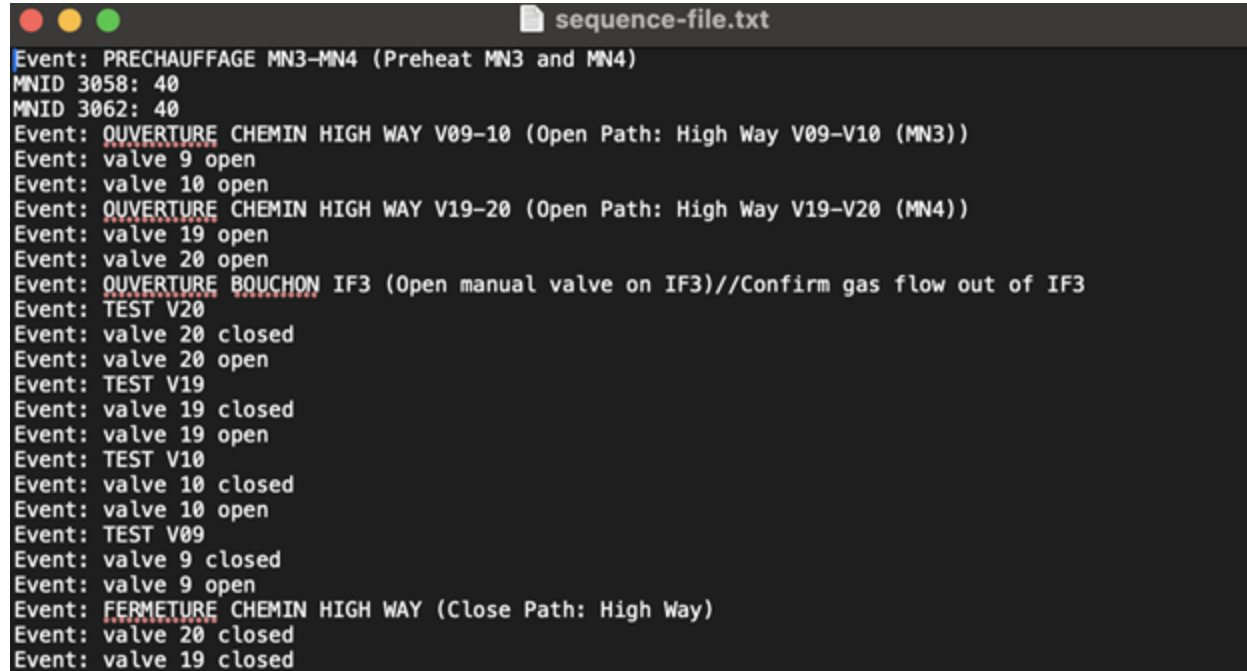
Minature Scroll Pump GSE 63.98 kB

Diagram List Collapser: Clicking this will open/collapse the list of existing diagrams. Note: the diagram list will automatically collapse after selecting a diagram, click this to reopen the diagram list.

Existing Diagrams List: The existing diagrams for the selected database are listed here.

Selected Diagram: The selected diagram is listed here.

Sequence files are text files that contain simulated data streams, one step per line. As you step through the lines of the sequence file; the diagram, switches, and indicators will reflect the simulated data.



```
Event: PRECHAUFFAGE MN3-MN4 (Preheat MN3 and MN4)
MNID 3058: 40
MNID 3062: 40
Event: OUVERTURE CHEMIN HIGH WAY V09-10 (Open Path: High Way V09-V10 (MN3))
Event: valve 9 open
Event: valve 10 open
Event: OUVERTURE CHEMIN HIGH WAY V19-20 (Open Path: High Way V19-V20 (MN4))
Event: valve 19 open
Event: valve 20 open
Event: OUVERTURE BOUCHON IF3 (Open manual valve on IF3)//Confirm gas flow out of IF3
Event: TEST V20
Event: valve 20 closed
Event: valve 20 open
Event: TEST V19
Event: valve 19 closed
Event: valve 19 open
Event: TEST V10
Event: valve 10 closed
Event: valve 10 open
Event: TEST V09
Event: valve 9 closed
Event: valve 9 open
Event: FERMETURE CHEMIN HIGH WAY (Close Path: High Way)
Event: valve 20 closed
Event: valve 19 closed
```

Sequence File Format



The format for sequence files is fairly straightforward:

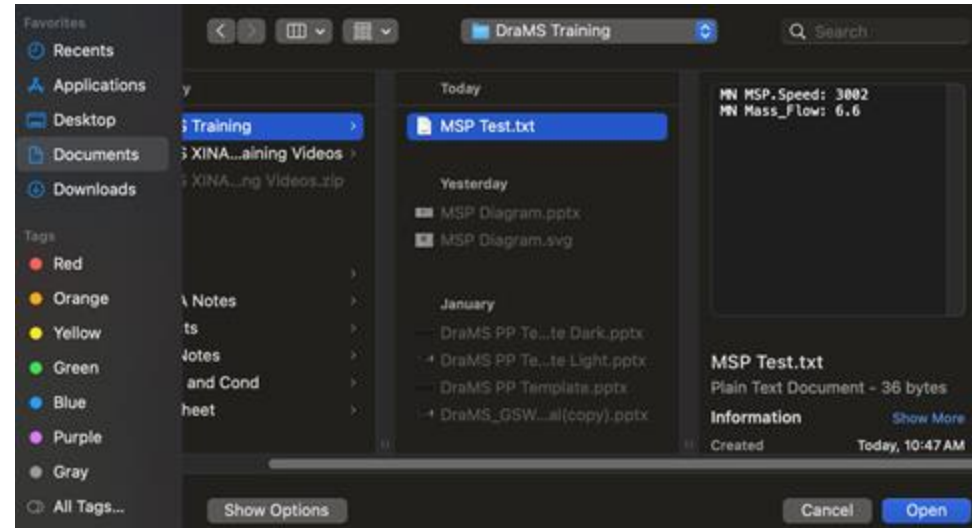
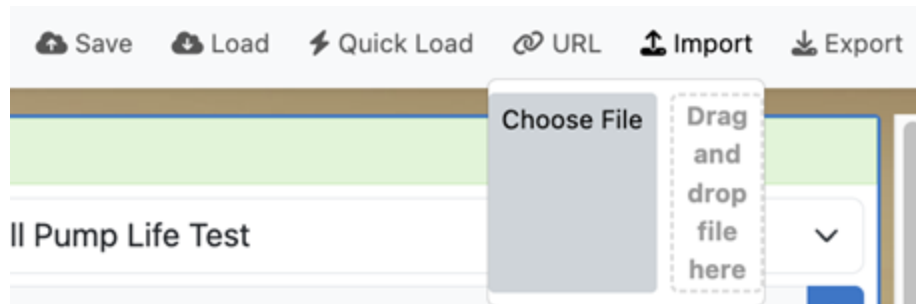
- For Event data, **Event: <event text>**, e.g. **Event: valve 1 open**
- For Mnemonic data, **MNID <mnid>: <value>**, e.g. **MNID 10: 125.3**
- Alternatively, you can use the Mnemonic name, **MN <mn name>: <value>**, e.g. **MN mrp.heater_current: 125.3**
- For timestamps, **T <timestamp><units>**, e.g. **T 125ms**. Units default to seconds or can be any of w/d/h/m/s/ms/us. A + before the timestamp will be interpreted as an offset relative to the previous, e.g. **T +10.2h**
- For comments, the line should start with **//** or **#**



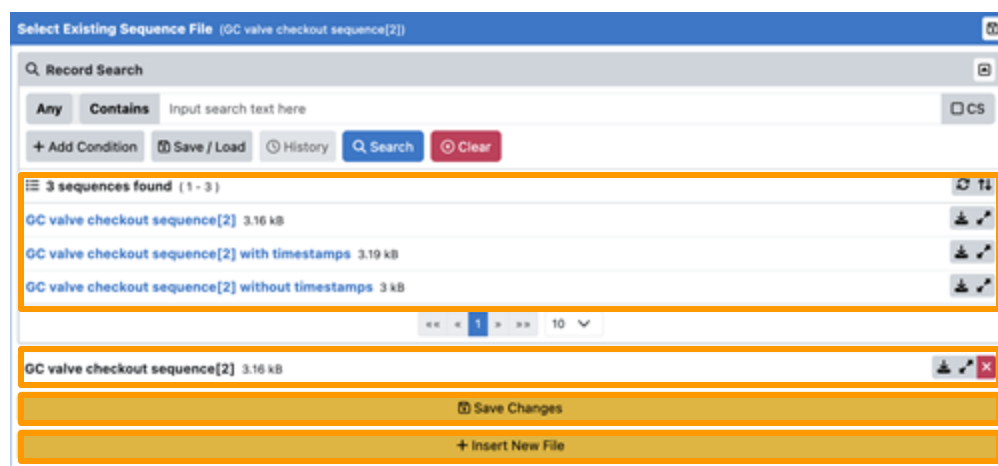
Importing Sequence Files

To upload a sequence file, simply click on the “import” button in the top-right.

Then, you can either click “Choose File,”
file the sequence text file, and click “Open.”
Or you can drag the sequence file from
your file system onto the window labeled
“Drag and drop file here.”



Sequence Files Listing/Selection



Select Existing Sequence File (GC valve checkout sequence[2])

Record Search

Any Contains Input search text here CS

+ Add Condition Save / Load History Search Clear

3 sequences found (1 - 3)

GC valve checkout sequence[2] 3.16 kB	
GC valve checkout sequence[2] with timestamps 3.19 kB	
GC valve checkout sequence[2] without timestamps 3 kB	

GC valve checkout sequence[2] 3.16 kB

Save Changes

+ Insert New File

Existing Sequence Files List: The existing sequence files for the selected database are listed here.

Selected Sequence Files: The selected sequence file is listed here.

Save Sequence File: You can save changes made to the currently selected sequence file here.

Insert New Sequence File: This button adds the currently loaded sequence file to the database.



Viewing the Selected Diagram

Diagram loaded

Diagram: Minature Scroll Pump GSE Model: Scroll Pump Life Test

State 9 / 9 MN Exhaust_Pressure: 1140

Sequence File

State #	Line #	Text
2	1	MN MSP.Speed: 3002
3	2	MN Mass_Flow: 6.6
4	3	MN MSP.Chamber_Control_Temp: 22
5	4	MN MSP.PS.Current: 0.2
6	5	MN 07_MSP_Outlet_End_Plate: 21
7	6	MN MSP.PS.Voltage: 15
8	7	MN MSP.PS.Current: 0.18
9	8	MN Exhaust_Pressure: 1140

Switches

Status	Label	Type	Mnemonic	Trigger	Override
✓	Pump Running			MSP.Speed: [10, =]	

Indicators

Status	Label	Switches	Effects	Mnemonics
✓	Chamber Control Temperature	Always On	Text, MN: MSP.Chamber_Control_Temp	MSP.Chamber_Control_Temp
✓	Pump Running	Pump Running	Fill: yellow, Stroke: none, Highlight: yellow	MSP.Speed
✓	Pump Speed	Always On	Text, MN: MSP.Speed	MSP.Speed
✓	Pump Current	Always On	Text, MN: MSP.PS.Current	MSP.PS.Current
✓	Pump Temperature	Always On	Text, MN: 07_MSP_Outlet_End_Plate	07_MSP_Outlet_End_Plate
✓	sample pressure	Always On	Text, MN: Sample_Pressure	Sample_Pressure
✓	Flow Rate	Always On	Text, MN: Mass_Flow	Mass_Flow
✓	Flow setpoint	Always On	Text, MN: Flow_Setpoint	Flow_Setpoint

Tenney Chamber

Chamber Temp: 22 C

Speed: 3002 rpm

Current: 0.18 amps

Exhaust Pressure: 1140 T

GSE Vacuum Pump

MSP Power: 15 V, 0.18 A

Running

The Diagram Summary provides some basic information and controls.

Displays all switches for the current Diagram, including their current status and override controls.

Displays all indicators for the current Diagram, including their current status.

Displays the Diagram here. Scroll to zoom and click/drag to pan. If the diagram has interactable elements, they can be clicked.



Diagram Summary

The selected Diagram's name, which is used for all exported files.

Selected state within the sequence file. Can be stepped forward/backward. This changes the data displayed in the switches and indicators.

Select the hardware model here. The model determines the data source and mnemonic definitions.

Diagram loaded

Diagram Miniature Scroll Pump GSE

Model Scroll Pump Life Test

State 4 / 123 MND 3062: 40

Sequence File

State #	Line #	Text
2	1	Event: PRECHAUFFAGE MN3-MN4 (Preheat MN3 and MN4)
3	2	MND 3058: 40
4	3	MND 3062: 40
5	4	Event: OUVERTURE CHEMIN HIGH WAY V09-10 (Open Path: High Way V09-V10 (MN3))
6	5	Event: valve 9 open
7	6	Event: valve 10 open
8	7	Event: OUVERTURE CHEMIN HIGH WAY V19-20 (Open Path: High Way V19-V20 (MN4))
9	8	Event: valve 19 open
10	9	Event: valve 20 open

Selected sequence file. Here, the sequence file can be edited or downloaded. Current state can be seen here.

Diagram Summary



Diagram loaded

Diagram ⓘ Minature Scroll Pump GSE Model ⓘ Scroll Pump Life Test

< State 9 / 9 MN Exhaust_Pressure: 1140 >

Sequence File

State #	Line #	Text
2	1	MN MSP.Speed: 3002
3	2	MN Mass_Flow: 6.6
4	3	MN MSP.Chamber_Control_Temp: 22
5	4	MN MSP.PS.Current: 0.2
6	5	MN 07_MSP_Outlet_End_Plate: 21

✎ ⓘ ⬇

Click the “pencil” icon to edit the sequence file directly on XINA. This is useful for quick adjustments in simulated data.

Click this button to download the selected sequence file to your computer.

Diagram Summary



Diagram loaded

Diagram

Model Scroll Pump Life Test

Sequence Files are simulated data streams. Each line of text is one step:

- Event: `<event text>` represents an event.
- MNID `<mnid>: <value>` represents a mnemonic value.
- MN `<mn name>: <value>` also represents a mnemonic value.
- T `<timestamp><units>` represents a timestamp. If no units are provided, the timestamp will be interpreted as seconds, but w/d/h/m/s/ms/us are all valid.
- T `+<timestamp>` follows the same rules, but represents a timestamp relative to the previous.
- `// <text>` or `# <text>` marks a line as a comment, which is ignored.

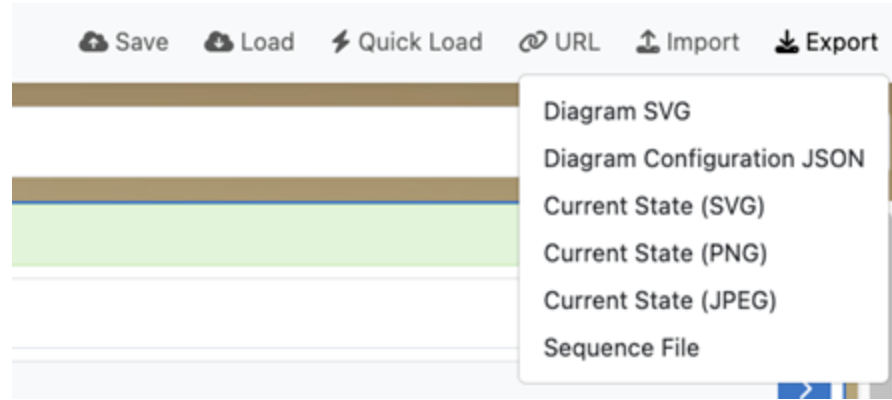
Invalid lines will be marked but ignored.

Sequence File

State #	Line #	Text
2	1	MN MSP.Speed: 3002
3	2	MN Mass_Flow: 6.6
4	3	MN MSP.Chamber_Control_Temp: 22
5	4	MN MSP.PS.Current: 0.2
6	5	MN 07_MSP_Outlet_End_Plate: 21

If you ever forget the syntax of the sequence files and want to make any edits, click the info button here. A pop up containing the sequence file syntax will appear.

Exporting Files



To export any of the files from XINA, click the “export” button in the top-right and select the file that you wish to download.

Sharing, Saving, and Loading Configurations



 Plot Configurations  Save  Load  Quick Load  URL  Export

It is possible to share and save the current state of the tool, as well as load a previously saved configuration. Please click [here](#) to view the sharing, saving, and loading tutorial.