



DraMS Diagram Editor

DraMS Ops Training

robert.g.barbour@nasa.gov

eric.i.lyness@nasa.gov

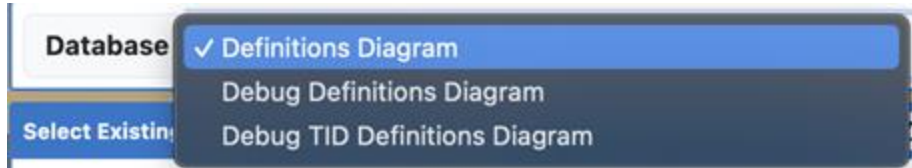


- **Mnemonics:** A named data channel or field
Example: A temperature sensor or a boolean state
- **Model:** A separate system with independent data
Example: Engineering model or flight model
- **Events:** A text label with for an instance in time.
Example: 01-17-2025 12:32:21 “Started the pump”
- **Diagrams:** 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



The Diagram Editor tool allows you to create and manage responsive diagrams and dashboards. While you can view data here, the Diagram Viewer and Diagram Simulator are better suited for that purpose. The layout of the Diagram Editor is almost identical to the Diagram Viewer, so please refer to the [Diagram Viewer tutorial](#) for an introduction.

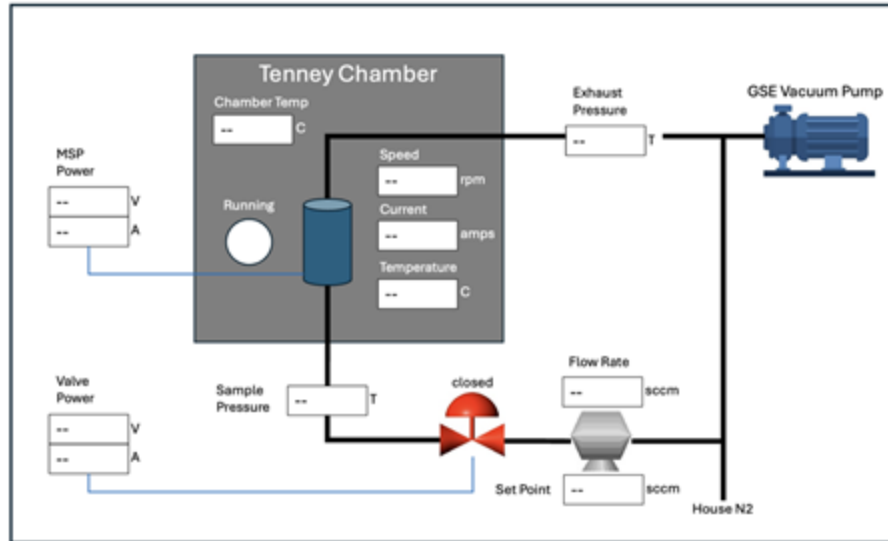
Selecting a Diagram (Database Selection)



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

XINA can accept any .SVG file. An SVG file is an image file that consists of a list of objects and their attributes. XINA can modify the objects' attributes.

Software such as Inkscape can be used to edit SVG files. Powerpoint slides can also be saved as SVG files.

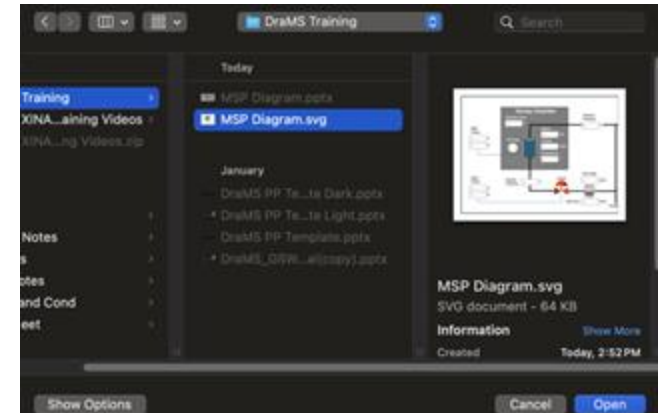
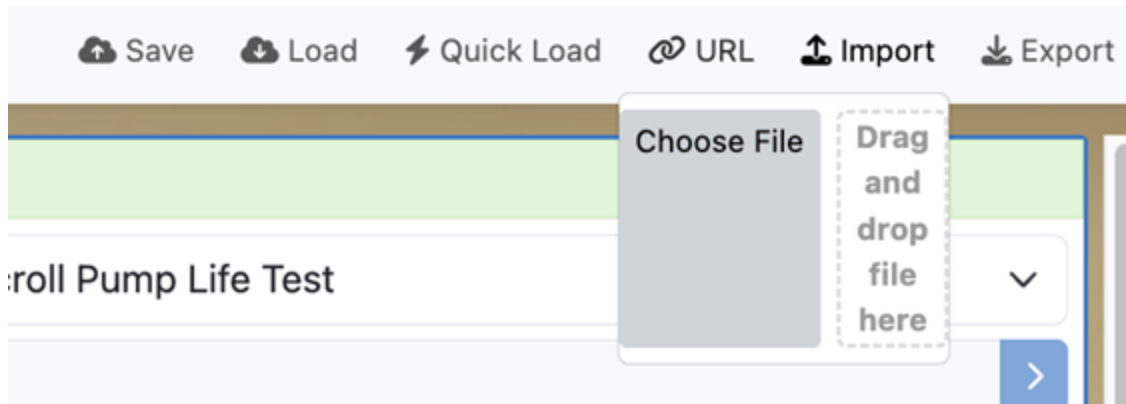


Uploading SVG Files to XINA



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

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



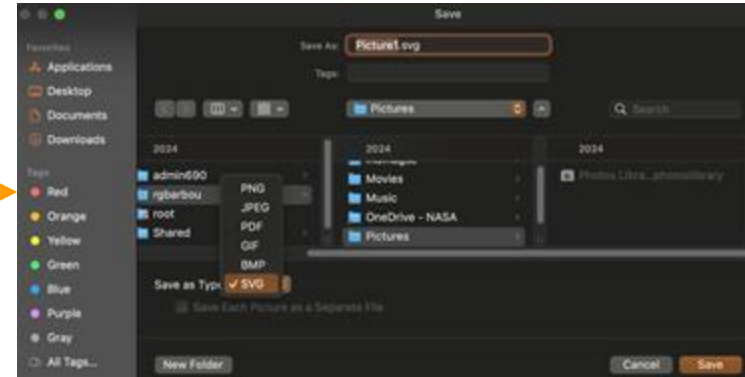
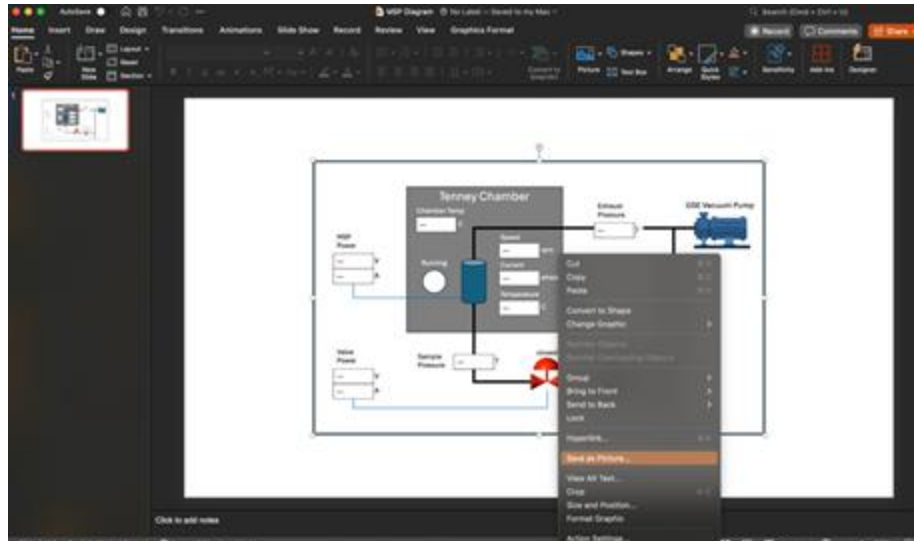
How to make an SVG in Powerpoint



The easiest way to create an SVG image is in Powerpoint.

Once your diagram on Powerpoint is finished, highlight the whole diagram, right click on it, then click on “Save as Picture.”

Open the dropdown menu next to “Save as Type” and select “SVG.”



Creating/Updating Diagrams

Select Existing Diagram

Record Search

Any Contains Input search text here CS

+ Add Condition Save / Load History Search Clear

5 diagrams found (1 - 5)

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	 

« « 1 » » 10 ▾

No diagram selected

 Save Changes

+ Create New Record

List of existing diagrams.

Button to save changes made to the currently selected diagram.

Button to add the current diagram to the selected database.

Creating Switches



Diagram loaded

Diagram 1 Minature Scroll Pump GSE Model 1 Scroll Pump Life Test

2025-01-08 11:08:48.146 (UTC-05:00) State 22 / 22

Switches

Status	Label	Type	Mnemonic	Trigger	Override	Edit
X	Pump Running		Mnemonic	MSP.Speed: [10, =]		
✓	valve state		Mnemonic	MSP.InletValve.Current: [0.1, =]		

Indicators

Status	Label	Switches	Effects	Mnemonics	Edit	Apply	Clear
✓	Chamber Control Temperautre	Always On	Text, MN: MSP.Chamber_Control_Temp	MSP.Chamber_Control_Temp			
X	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			
✓	exhaust pressure	Always On	Text, MN: Exhaust_Pressure	Exhaust_Pressure			
✓	MSP Power Voltage	Always On	Text, MN: MSP.PS.Voltage	MSP.PS.Voltage			

Click the “+” icon here to open a window to configure a new switch. There are three types of switches.

Switch Types (Event)

Event switches are turned on by an event matching the “Start” text, and turned off by an event matching the “Stop” text.

Create New Switch

Label

Name

☒ Automatic

Type

Event

Mnemonic

Logical

Event Options

Start

☐ CS

Stop

☐ CS

Undo Changes

Create + Indicator

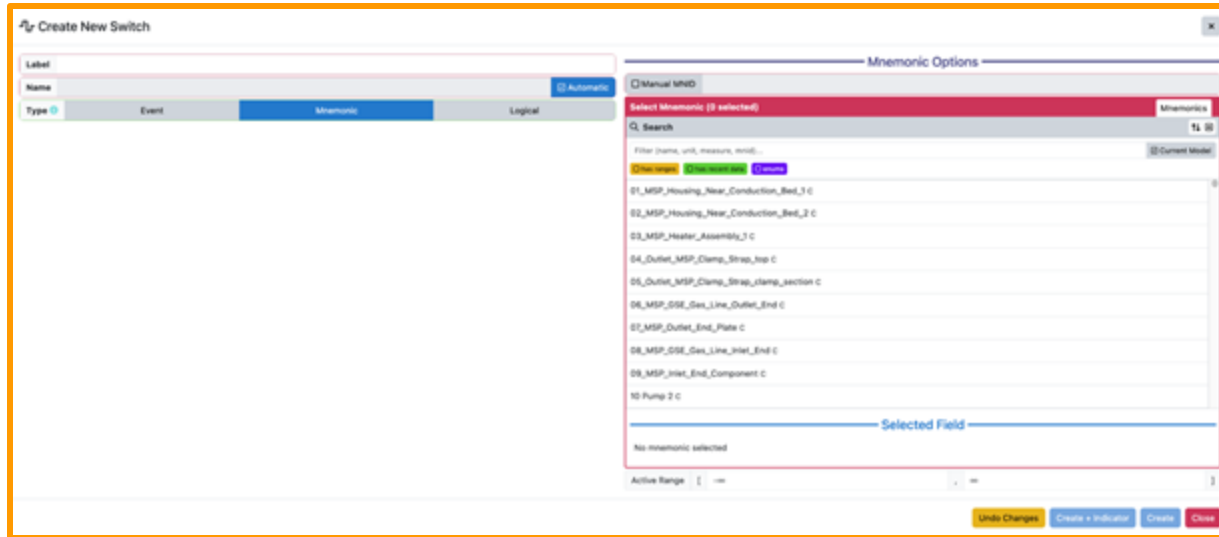
Create

Close

For instance, the text message “Pump Running” could be used to set a switch called “Pump On” = True, the text message “Pump Stopped” is used to make “Pump On” = False.

Switch Types (Mnemonic)

Mnemonic switches are active while the selected mnemonic value is within the specified range.



The screenshot shows the 'Create New Switch' dialog box. On the left, there are tabs for 'Label', 'Name', 'Type', 'Event', 'Mnemonic', and 'Logical'. The 'Mnemonic' tab is selected. On the right, there is a 'Mnemonic Options' section with a 'Select Mnemonic (0 selected)' button and a search bar. Below the search bar is a list of mnemonics: 01_MSP_Housing_Near_Conduction_Bed_3 C, 02_MSP_Housing_Near_Conduction_Bed_3 C, 03_MSP_Heater_Assembly_3 C, 04_Outlet_MSP_Clamp_Strap_3 C, 05_Outlet_MSP_Clamp_Strap_3 C, 06_MSP_GSE_Gas_Line_Outlet_End C, 07_MSP_Outlet_End_Plate C, 08_MSP_GSE_Gas_Line_Inlet_End C, 09_MSP_Inlet_End_Component C, and 10 Pump 2 C. At the bottom, there is a 'Selected Field' section with the text 'No mnemonic selected' and an 'Active Range' section with a range of '0' to '1'. Buttons at the bottom include 'Undo Changes', 'Create + Indicator', 'Create', and 'Close'.

For instance, the switch called “Pump Running” is set to True when the “MSP.Speed” mnemonic has a value greater than 10.

Switch Types (Mnemonic)



Logical switches are defined based on whether certain other switches are active.

Create New Switch

Label

Name

Type

Event

Mnemonic

Logical

Automatic

Logical Options

Add Requirement

Requirement

Remove

Filter switches...

Pump Running (pump-running)

valve state (valve-state)

Undo Changes

Create + Indicator

Create

Close

Updating Switches

Switches					
Status	Label	Type	Trigger	Override	Edit
✗	Pump Running	Mnemonic	MSP.Speed: [10, ∞]		
✓	valve state	Mnemonic	MSP.InletValve.Current: [0.1, ∞]		

Diagram Switch Editor

Label

Pump Running

Name

pump-running

Automatic

Type

Event

Mnemonic

Logical

Mnemonic Options

Manual MNID

1354

Select Mnemonic (MSP.Speed)

Mnemonics

Q Search

Filter (name, unit, measure, mnid)...

Has ranges

Has recent data

Is active

01_MSP_Housing_Near_Conduction_Bed_1 C

02_MSP_Housing_Near_Conduction_Bed_2 C

03_MSP_Heater_Assembly_1 C

04_Outlet_MSP_Clamp_Strip_top C

05_Outlet_MSP_Clamp_Strip_clamp_section C

06_MSP_GSE_Gas_Line_Outlet_End C

07_MSP_Outlet_End_Plate C

08_MSP_GSE_Gas_Line_Inlet_End C

09_MSP_Inlet_End_Component C

10 Pump 2 C

Selected Field

MSP.Speed RPM

Active Range

[10 , ∞]

Remove

Undo Changes

Apply + Indicator

Apply

Close

Click the “pencil” icon next to an existing switch to open the switch editor.

Creating Indicators

Indicators are SVG objects that change based on Switches or mnemonics.

Diagram loaded

Diagram Minature Scroll Pump GSE

Switches

Status	Label	Type	Trigger	Override	Edit
X	Pump Running	Mnemonic	MSP.Speed: [10, =]	☐	☐
✓	valve state	Mnemonic	MSP.InletValve.Current: [0.1, =]	☐	☐

Indicators

Status	Label	Switches	Effects	Mnemonics	Edit	Apply	Clear
✓	Chamber Control Temperautre	Always On	Text, MN: MSP.Chamber_Control_Temp	MSP.Chamber_Control_Temp	☐	☐	☐
X	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	☐	☐	☐
			07_MSP_Outlet_End_Plate	07_MSP_Outlet_End_Plate	☐	☐	☐
			Sample_Pressure	Sample_Pressure	☐	☐	☐
			Mass_Flow	Mass_Flow	☐	☐	☐
			Flow_Setpoint	Flow_Setpoint	☐	☐	☐
			Exhaust_Pressure	Exhaust_Pressure	☐	☐	☐
			MSP.PS.Voltage	MSP.PS.Voltage	☐	☐	☐

Create New Indicator

Label

Name

Description none

Filter Switches...

Switches ☐ Pump Running valve state

Effects

Fill ☐ None default

Stroke ☐ None default

Highlight ☐ none

A Text Effect ☐ None Static Mnemonic Value

Select Mnemonics (2 selected)

Search

Filter (name, unit, measure, mod):

Chamber

Chamber

Chamber

01_MSP_Housing_Near_Conduction_Bed_1 C

02_MSP_Housing_Near_Conduction_Bed_2 C

03_MSP_Heater_Assembly_1 C

04_Outlet_MSP_Clamp_Strip_top C

05_Outlet_MSP_Clamp_Strip_clamp_section C

06_MSP_GSE_Gas_Line_Outlet_End C

07_MSP_Outlet_End_Plate C **SELECTED**

08_MSP_GSE_Gas_Line_Inlet_End C

09_MSP_Inlet_End_Component C

10 Pump 2 C

Selected Fields

No mnemonic selected

Undo Changes

Create

Close

Click the “+” icon here to open a window to configure a new indicator.

Updating Indicators

Status	Label	Switches	Effects	Mnemonics	Edit	Apply	Clear
✓	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			

Indicator Editor

Label: Chamber Control Temperature

Name: chamber-control-temperature Automatic

Description: none

Always On

Filter Switches...

Switches: Pump Running valve state

Effects

Fill: None default

Stroke: None default

Highlight: none

A Text Effect: None Static Mnemonic Value

Mnemonic: MSP.Chamber_Control_Temp

Precision: 1

Select Mnemonics (MSP.Chamber_Control_Temp)

Q Search

Filter (name, unit, measure, mmid)...

has image
has short desc
status

01_MSP_Housing_Near_Conduction_Bed_1 C
02_MSP_Housing_Near_Conduction_Bed_2 C
03_MSP_Heater_Assembly_1 C
04_Outlet_MSP_Clamp_Strip_top C
05_Outlet_MSP_Clamp_Strip_clamp_section C
06_MSP_GSE_Gas_Line_Outlet_End C
07_MSP_Outlet_End_Plate C
08_MSP_GSE_Gas_Line_Inlet_End C
09_MSP_Inlet_End_Component C
10 Pump 2 C

Selected Fields

MSP.Chamber_Control_Temp

Remove

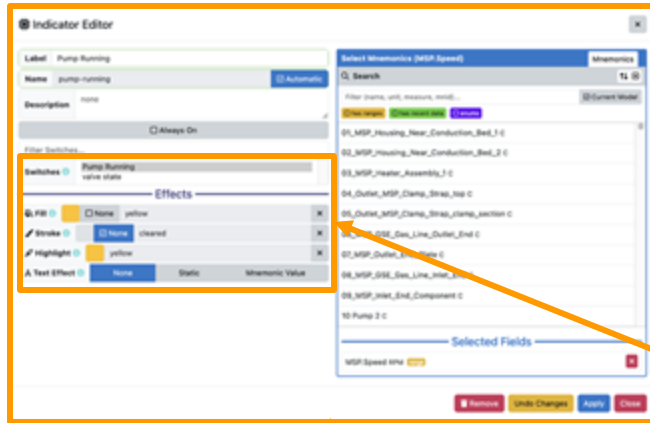
Undo Changes

Apply

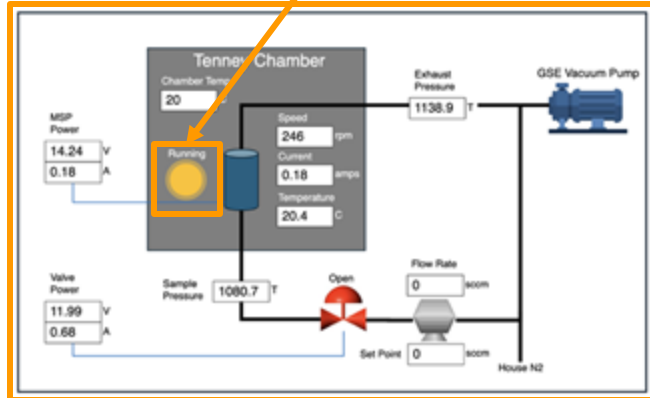
Close

Click the “pencil” icon next to an existing indicator to open the indicator editor. Here, the indicator can be fully reconfigured. Once you are satisfied, click “Apply.”

Indicator Configuration



When configuring an indicator, select a switch/mnemonic, then configure an effect when the switch is True. Different indicators have different effects.



For the “Pump Running” indicator, if the “Pump Running” switch is True, the circle under the “Running” label on the diagram fills in yellow.

Applying Indicators

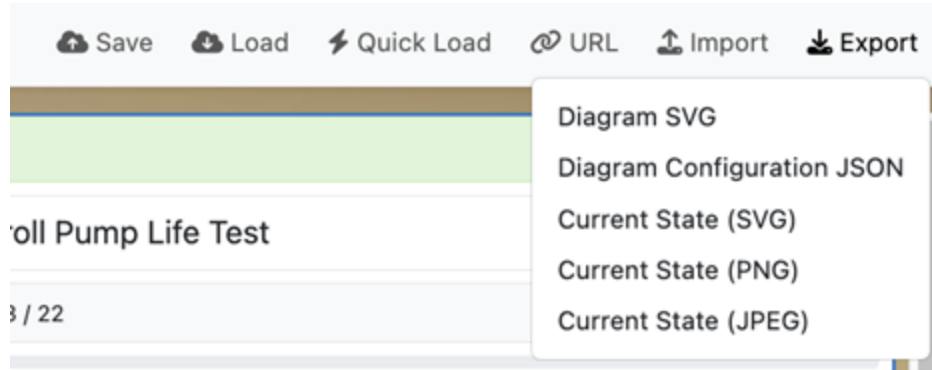


Indicators

Status	Label	Switches	Effects	Mnemonics	Edit	Apply	Clear
✓	Chamber Control Temperature	Always On	Text, MN: MSP.Chamber_Control_Temp	MSP.Chamber_Control_Temp	[Pencil]	[Green Arrow]	[Red X]
✗	Pump Running	Pump Running	Fill: yellow, Stroke: none, Highlight: yellow	MSP.Speed	[Pencil]	[Green Arrow]	[Red X]
✓	Pump Speed	Always On	Text, MN: MSP.Speed	MSP.Speed	[Pencil]	[Green Arrow]	[Red X]
✓	Pump Current	Always On	Text, MN: MSP.PS.Current	MSP.PS.Current	[Pencil]	[Green Arrow]	[Red X]
✓	Pump Temperature	Always On	Text, MN: 07_MSP_Outlet_End_Plate	07_MSP_Outlet_End_Plate	[Pencil]	[Green Arrow]	[Red X]

Applying "Chamber Control Temperature" (1 element)

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.