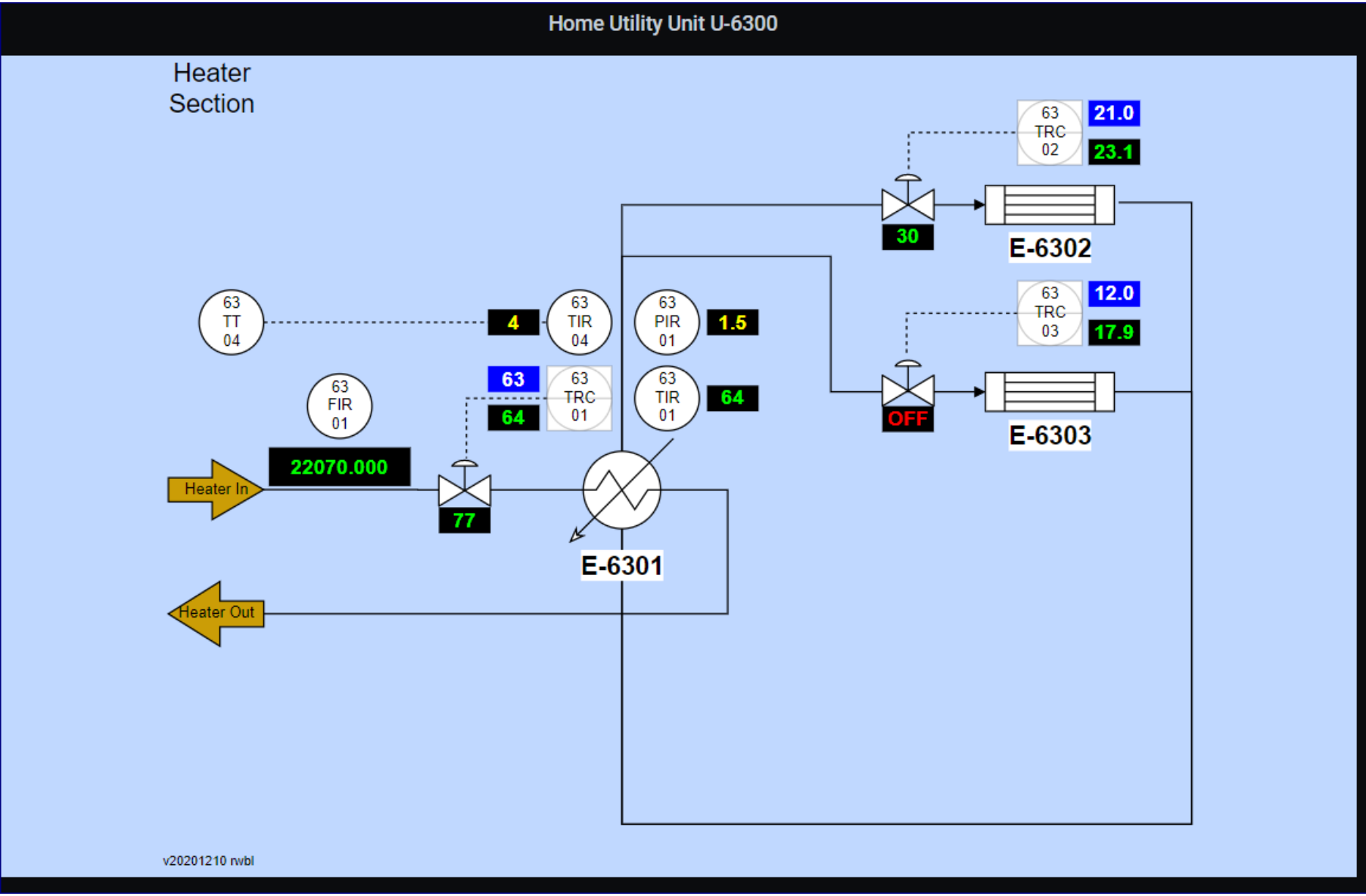
Grafana & InfluxDB & FlowCharting

Explore Flowcharting Plugin

Prototype Utility Dashboard

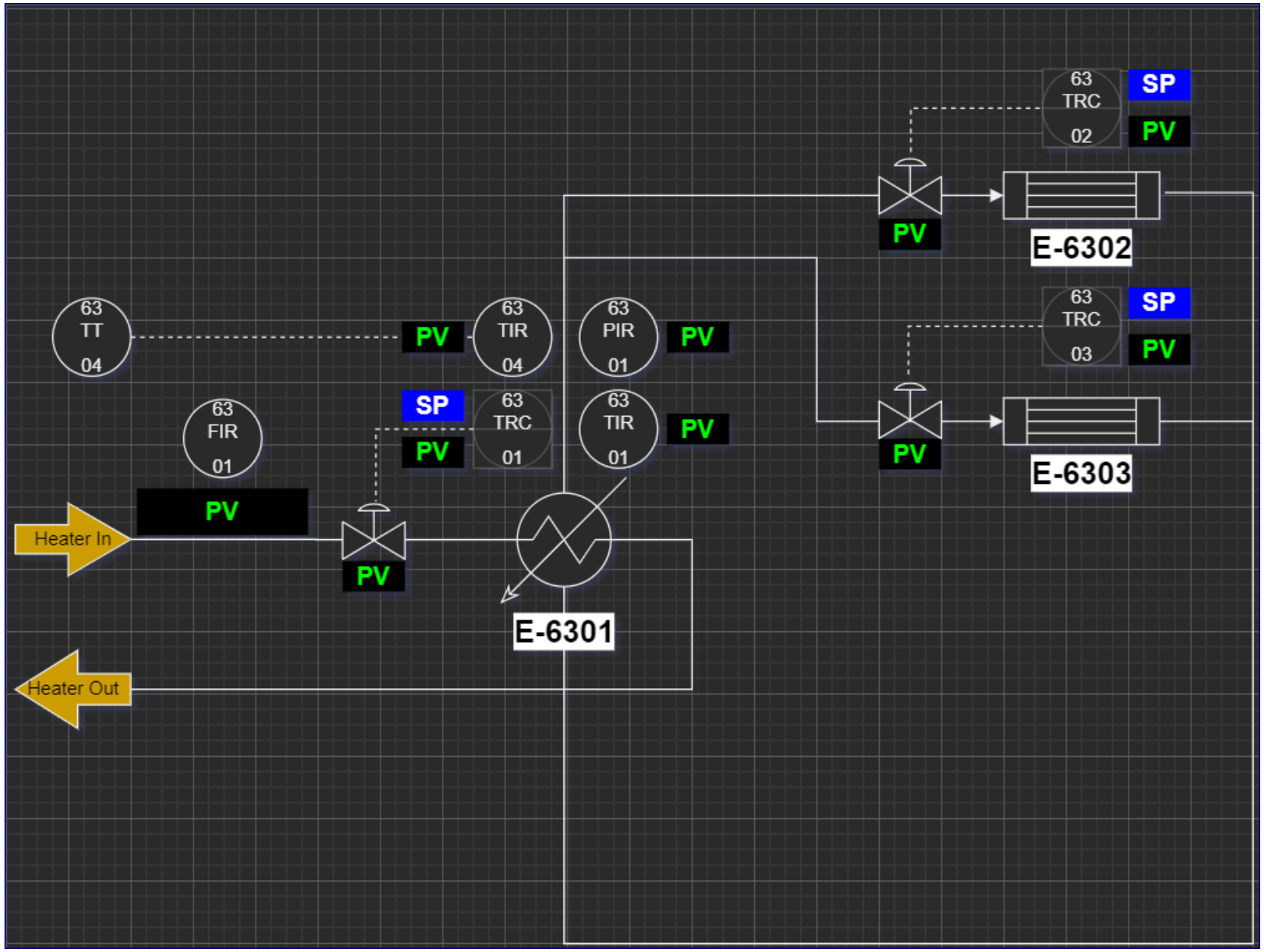
15-Dec-20 rwbl



63TRC01 63TRC02 63TRC03

Kiosk Mode, Live Data, 1-DAY Trend, Refresh 1m, Setpoint SP=Blue indicators, Process Value (SP)=Black indicators, Thresholds Value: Green, Yellow, Red

Process Flow Diagram



U-6300 Heater Section Flow Chart Diagram in edit mode.

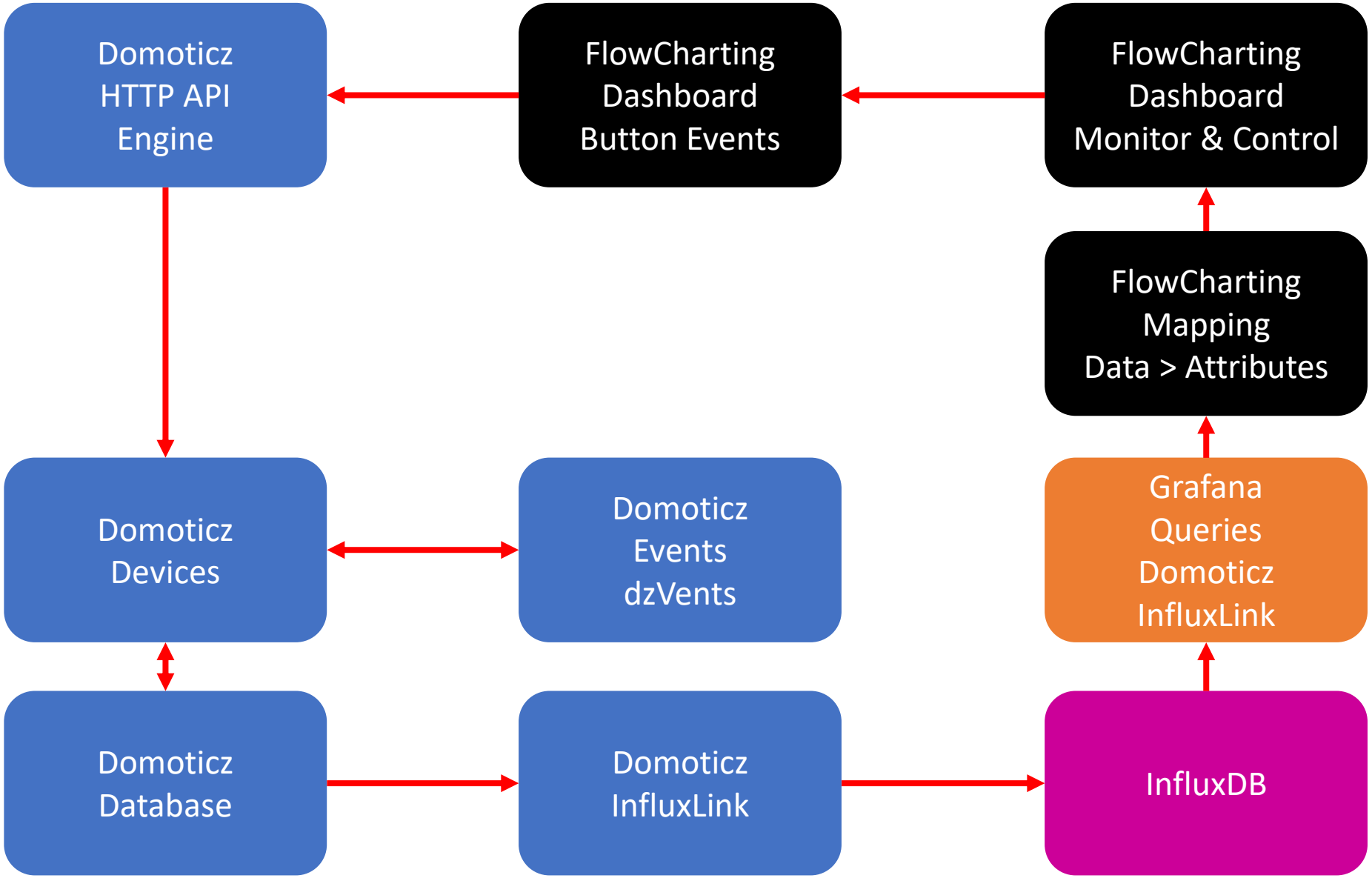
Each element has an unique drawing Id (draw.io).

Each process engineering symbol has a unique Tag (Named Identifier) and Idx (Domoticz Id).

SP = Setpoint.
PV = Process Value.

Example 63TRC02PV
Id: 60
Idx: 51
Tag: 63TRC02PV
-Unit: 63
-Function: Temperature Recorder Control
-Number: 02
-Function: Process Value

Interaction



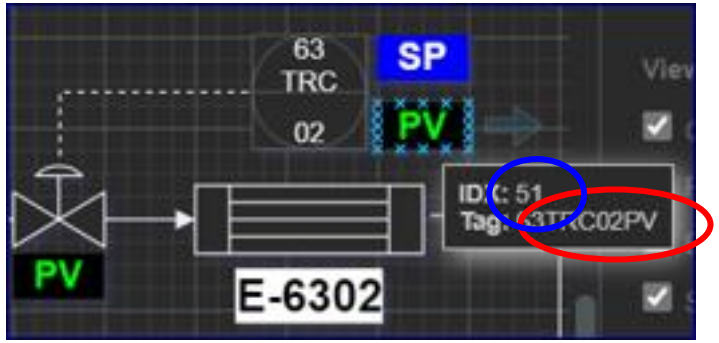
Domoticz Device Definition

Idx	Hardware	ID	Unit	Name	Type	SubType	Data
51	VirtualSensors	14083	1	63TRC02PV	Temp	LaCrosse TX3	21.5 C

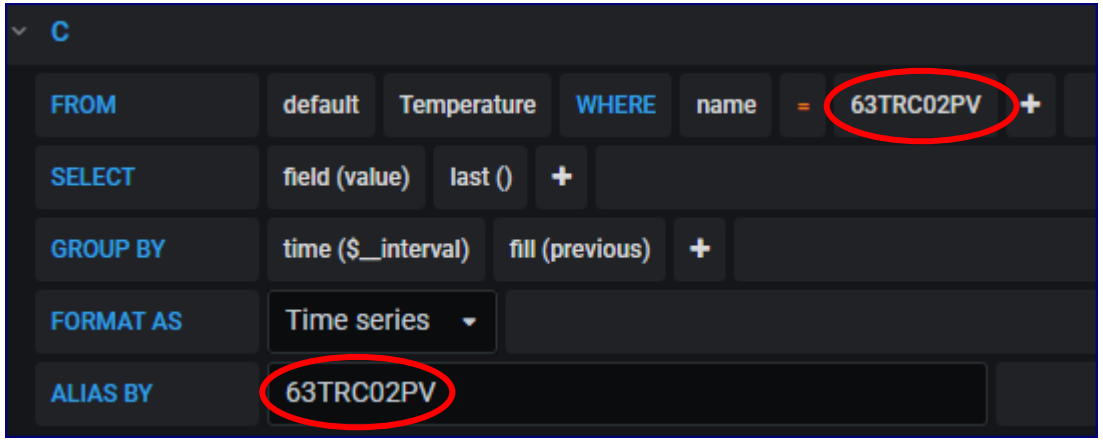
Domoticz Data Push InfluxDB

Idx	Device name	Value to send	Target type	Enabled
51	63TRC02PV	Temperature	Direct	Yes
52	63TRC02SP	Temperature	Direct	Yes
53	63TCV02PV	Percentage	Direct	Yes

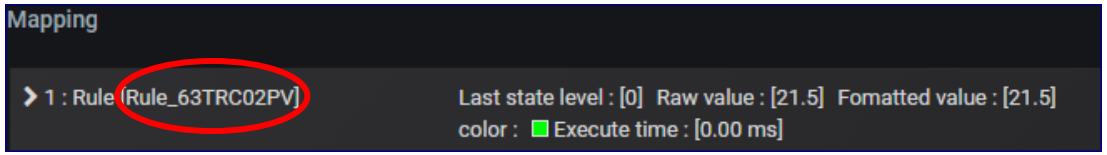
FlowCharting Draw.io



Grafana Query



FlowCharting Mapping



Heat Exchanger E-6302
Temperature controlled by
Thermostat 63TRC02

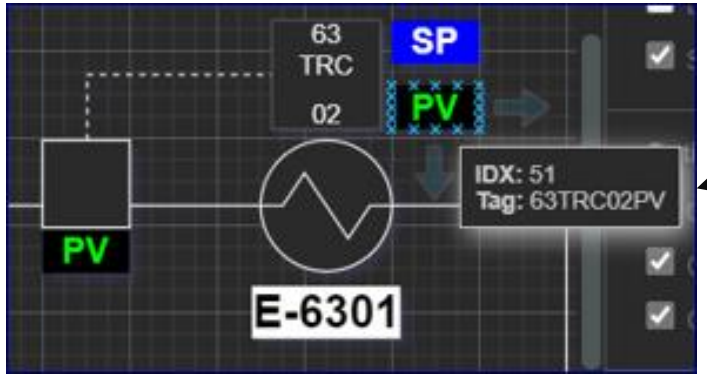
- 63TRC02SP, ID=67, IDX=52
- 63TRC02PV, ID=60, IDX=51

Valve 63TCV01

- 63TCV02PV, ID=116, IDX=53

SP = Setpoint, PV = Process Value

FlowCharting Draw.io



Heat Exchanger E-6302
Temperature controlled by
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- 63TRC02SP, ID=67, IDX=52
- 63TRC02PV, ID=60, IDX=51

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Domoticz Data Push InfluxDB

Idx	Device name	Value to send	Target type	Enabled
51	63TRC02PV	Temperature	Direct	Yes
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53	63TCV02PV	Percentage	Direct	Yes

Domoticz Device Definition

Idx	Hardware	ID	Unit	Name	Type	SubType	Data
51	VirtualSensors	14083	1	63TRC02PV	Temp	LaCrosse TX3	21.5 C

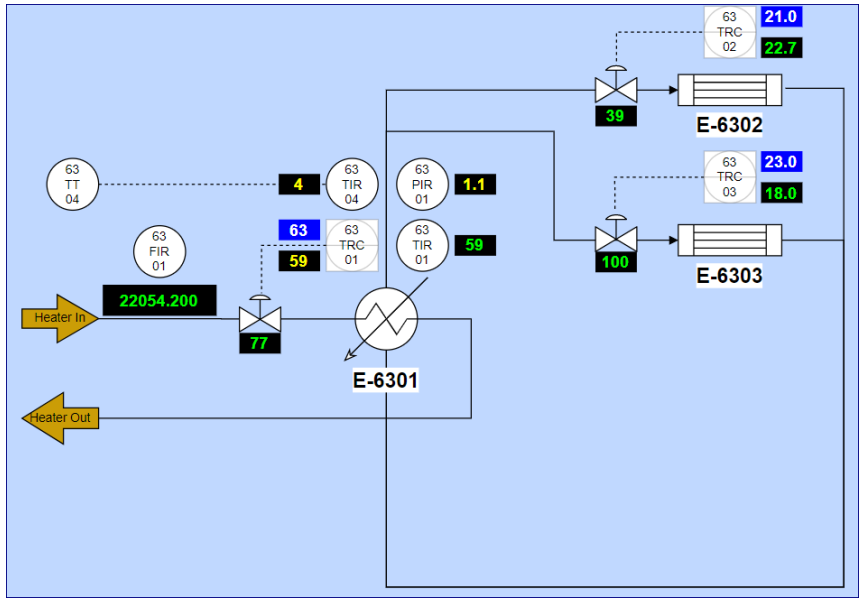
Mapping

1 : Rule [Rule_63TRC02PV] Last state level : [0] Raw value : [21.5] Fomatted value : [21.5]
color : Execute time : [0.00 ms]

C

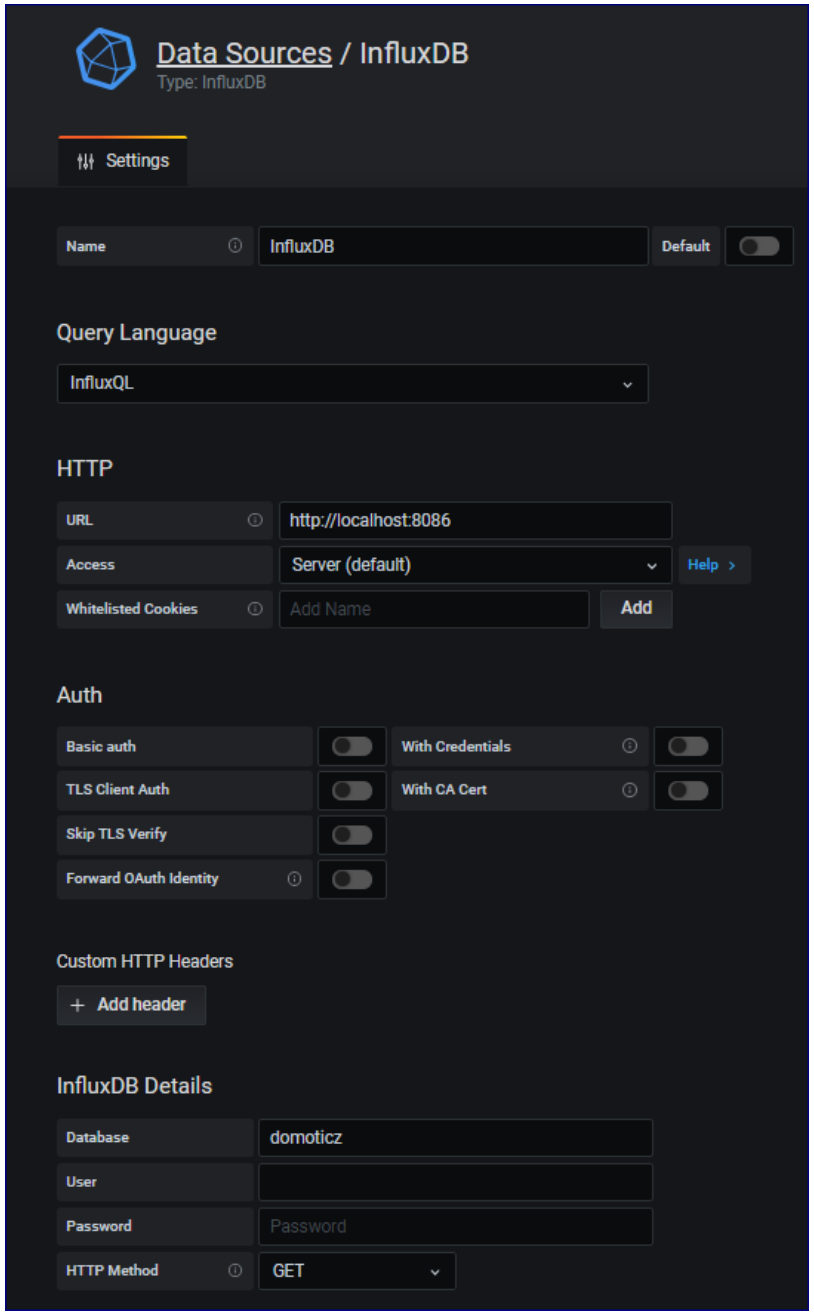
FROM	default	Temperature	WHERE	name	=	63TRC02PV
SELECT	field (value)	last ()				
GROUP BY	time ($__interval)	fill (previous)				
FORMAT AS	Time series					
ALIAS BY	63TRC02PV					

Process Flow Diagram Styling




```
Draw.io
Instrument:
Style:Fill: Transparent
Text:Helvetica,12pt,center,color:white,position:center,writing
direction:auto,wordwrap:true,formatted text:true

PV
Style:Fill:black (#000000)
Text:Helvetica,16pt,center,color:green (#00FF00),position:center,writing
direction:auto,wordwrap:true,formatted text:true

SP
Style:Fill:blue (#0000FF)
Text:Helvetica,16pt,center,color:white (#FFFFFF),position:center,writing
direction:auto,wordwrap:true,formatted text:true

Equipment
Style:Fill:gray (#2A2A2A),line:white
Text:Helvetica,20pt,center,color:white (#FFFFFF),position:center,writing
direction:auto,wordwrap:true,formatted text:true

Arrow
Style:Fill:yellow (#CB9D06),line:yellow (#CB9D06)
Text:Helvetica,12pt,center,color:black (#000000),background: white
(#FFFFFF),position:center,writing direction:auto,wordwrap:true,formatted text:true

Info
Style:Fill:false,line:false
Text:Helvetica,10pt,center,color:white (#FFFFFF),position:center,writing
direction:auto,wordwrap:true,formatted text:true
```

Data Sources / InfluxDB



Notes
The measurements Temperature are used for the two devices using their idx. The data is selected from the field(value) mean().
Important to set the GROUP BY fill(previous) to get a connected line.
The display Stacking and null value option is set to connected.

Various field settings are using override to set line or axis specifics.

Checkout the Domoticz Log – see below update.
2020-11-30 16:35:00.703 InfluxLink: value Temperature,idx=31,name=MakeLab-Temperature value=21.5

From Domoticz push data direct no matter if the value has changed.
The trigger is an Automation Event dzVents running every 5 minutes.

Domoticz Devices for the Thermostat E-6201

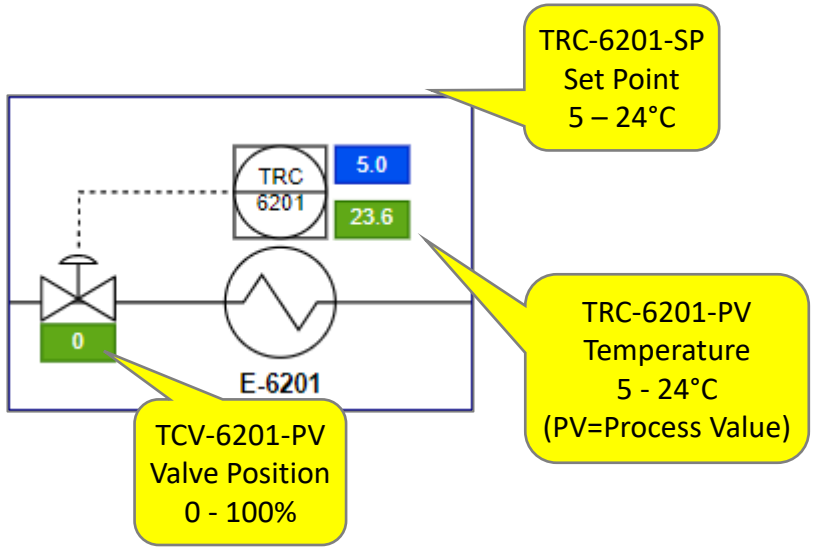
Idx	Hardware	ID	Unit	Name	Type	SubType	
51	VirtualSensors	14083	1	TRC-6201-PV	Temp	LaCrosse TX3	23.6 C
52	VirtualSensors	0014084	1	TRC-6201-SP	Thermostat	SetPoint	5.0
53	VirtualSensors	00082053	1	TCV-6201-PV	General	Percentage	0%

Domoticz Push Definition for the devices

Idx	Device name	Value to send	Target type
53	TCV-6201-PV	Percentage	Direct
52	TRC-6201-SP	Temperature	Direct
51	TRC-6201-PV	Temperature	Direct

Domoticz Log

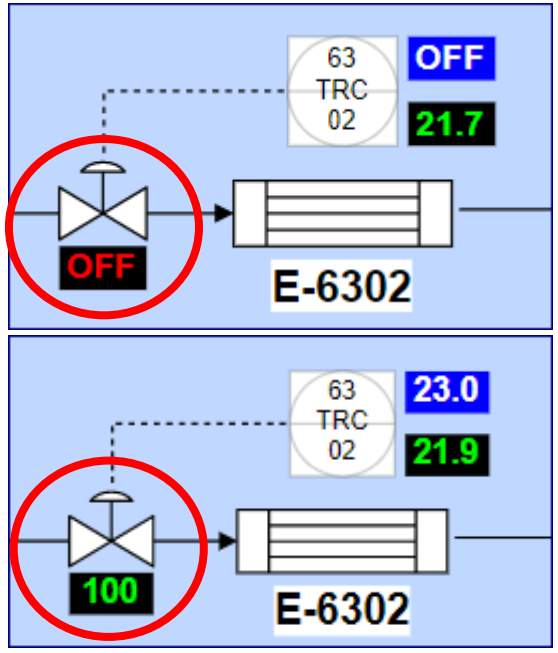
```
2020-12-04 19:33:00.370 Sending SetPoint to device....
2020-12-04 19:33:00.371 (VirtualSensors) Thermostat (TRC-6201-SP)
2020-12-04 19:33:00.567 InfluxLink: value Temperature,idx=52,name=TRC-6201-SP value=5
2020-12-04 19:33:00.568 InfluxLink: value Temperature,idx=51,name=TRC-6201-PV value=23.6
2020-12-04 19:33:00.568 InfluxLink: value Percentage,idx=53,name=TCV-6201-PV value=0
2020-12-04 19:33:00.169 Status: dzVents: Info: ------ Start internal script: u6000_control:, trigger: "every minute"
2020-12-04 19:33:00.169 Status: dzVents: Info: ------ Finished u6000_control
2020-12-04 19:33:00.170 Status: EventSystem: Script event triggered: /home/pi/domoticz/dzVents/runtime/dzVents.lua
2020-12-04 19:33:00.299 Status: dzVents: Info: Handling httpResponse-events for: "U6000E6201"
2020-12-04 19:33:00.300 Status: dzVents: Info: ------ Start internal script: u6000_control: HTTPResponse: "U6000E6201"
2020-12-04 19:33:00.318 Status: dzVents: Info: {["level"]=0.0, ["setpoint"]=5.0, ["temperature"]=23.2, ["iseid"]=1541}
2020-12-04 19:33:00.318 Status: dzVents: Info: Updating Device: 1541, SP: 5.0, PV: 23.6, L: 0.0
2020-12-04 19:33:00.331 Status: dzVents: Info: ------ Finished u6000_control
2020-12-04 19:33:00.331 Status: EventSystem: Script event triggered: /home/pi/domoticz/dzVents/runtime/dzVents.lua
```



Threshold Example

Heat Exchanger Valve Open/Close state triggered by changing setpoint.
If window is open the setpoint is set to 12°C and the valve closes or if manually set the setpoint to 5°C.
The text of the valve position and the setpoint are changed by the flowcharting mapping rule:

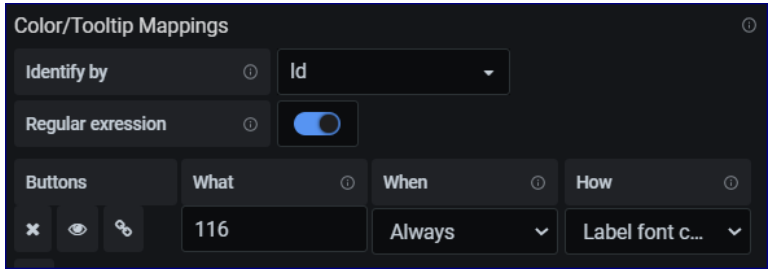
Example Rule_63TRC02PV

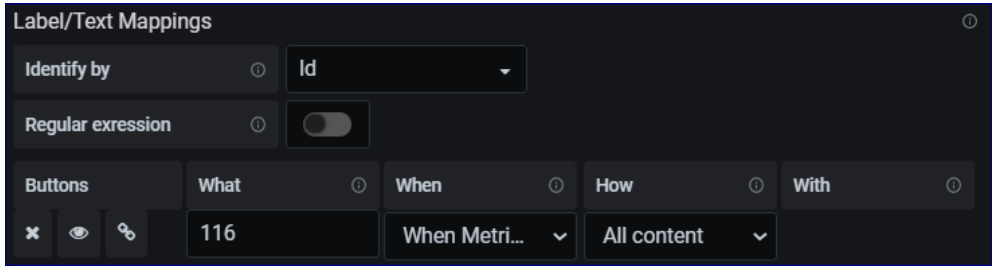


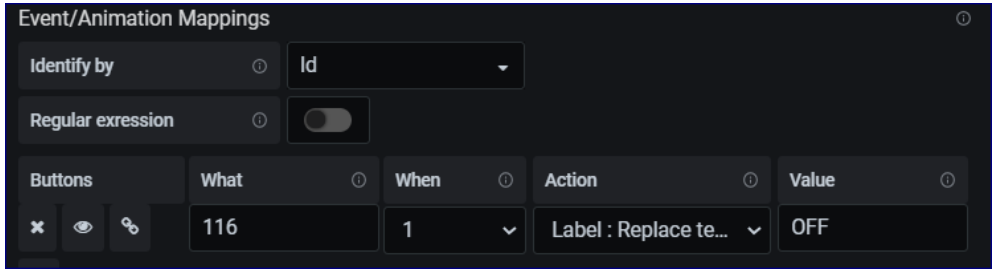
Rule_63TRC02PV (for valve controlled by 63TRC02)
If threshold level 1 (Number <= 5, Base, Color RED) is reached by the object identified with ID 166, the action is to replace the label with text OFF and the text styling is changed as defined by the threshold level.
This is handled by "Event/Animation Mappings")

If another threshold is reached, the text font color is also changed accordingly, i.e. if the valve position is > 5 the text color is green.
This is handled by the "Color/Tooltip Mappings").

The "label/Text Mappings" updates the content of the object with the actual valve position obtained from the Domoticz device.







Note
The rule mappings differ by object. For example: not all objects use the "Color/Tooltip Mappings" to change the label font color when an event is triggered, like for the setpoint object (i.e. 63TRC02SP) with the blue background. The text is changed but the color remains as defined in the object text styling.

HTML File Location: ~domoticz/www/templates/Utility-Dashboard-Manual-Input.html
URL: http://domoticz-ip:port/#/Custom/Utility-Dashboard-Manual-Input