



# **MT Alliance – MT-Calc Quick Setup Guide**

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## **1 Introduction**

### **1.1 Using this document**

This guide is intended for technicians installing MT-EEPR modules and sensor nodes. It is not a complete user guide, but rather a simple step-by-step summary of the basic instructions for the installation of an MT-EEPR module.

A complete user guide and a user manual covering specifically the stand alone operation (using the board's local interface) are available.

### **1.2 Conventions used in this document**

For your convenience, several screen captures have been added to describe the procedures. Some images contain numbered balloons to help illustrate the procedure.

Finally, **bold** text is used for emphasis or to highlight technical terms.

### **1.3 The MT-Calc**

The MT-Calc is a generic feature and we will use the MT-EEPR application as an example to explain it

## 2 Step by Step Procedure

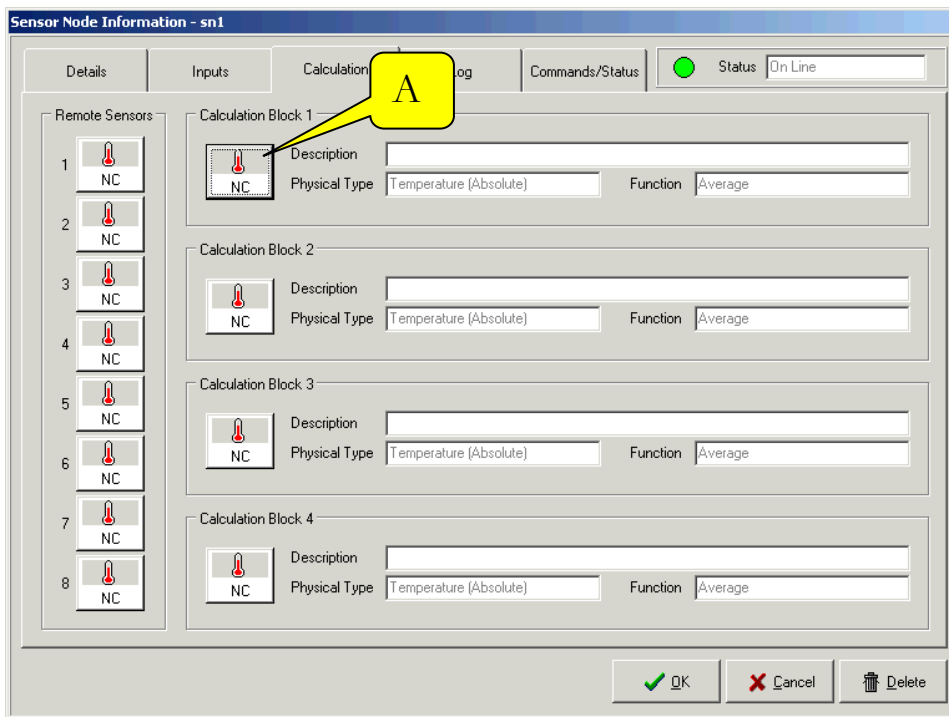
It is assumed that the Sensor Node button is dropped and the MT-EEPR module and the Sensor Node is powered and connected to the network.

### 2.1 Installation and configuration of the Sensor Nodes (Univ Sen Node MT-500 or MT-3208)

It is necessary to configure the Sensor Nodes (Univ Sen Node MT500) before installing the MT-EEPR modules. These sensor nodes, as of version 4.1, support calculations on air temperatures that are used by the EEPR nodes and on defrost termination temperatures used by the Circuit nodes.

The steps required to configure such a node are, typically:

- 1- Install a Sensor Node, as usual.
- 2- In the Sensor Node, go to the **Calculation** tab.



3- Click on the button (A). The following window opens:

sn1 - Calculation Block 1

Description: EEPR A1

Physical Type: Type: Temperature (Absolute selected, Differential unselected)

Function: Operator: Minimum

Sources: Local: 1, 2, 3, 4 (checked); 5, 6, 7, 8 (unchecked). Remote: 1, 2, 3, 4, 5, 6, 7, 8 (unchecked)

Range: Maximum: 327.6 °C; Minimum: -273.1 °C

Network: Max Send Time: 0 m 30 s; Min Send Time: 0 m 3 s; Send On Delta: 0.5 °C

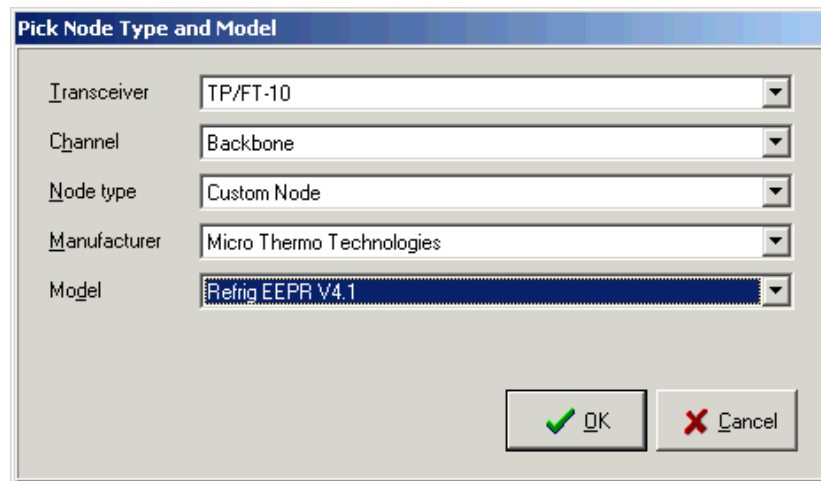
Buttons: OK, Cancel

4- Configure the following points:

- A) Enter a description for the calculation block (Ex: Circuit using it)
- B) Select **Temperature** in the Physical Type drop-down list.
- C) Select the sensors that will be used in the calculations.
- D) Leave other default values as is.

## 2.2 Installation of the MT-EEPR Module in MT Alliance

1. In the **Subsystems** menu, select your subsystem or click the desired subsystem button. In the **Mode** menu, select **Configuration**. When entering this mode, a **Components** toolbox appears in the bottom right corner of the window. It contains all the items that can be dropped in the view.
2. Select the view that you created at the previous step by clicking on the tab displaying its name.
3. Drag and drop a **Node** icon from the toolbox to your process system view. As soon as the icon is dropped, the **Node Definition** window opens. Select the item representing the site installation in each drop-down list. Click the **OK** button to finish or **Cancel** to delete the node.



\*\*\* To move an icon, select it and drag it with the left mouse button while holding the CTRL key.

After the node is dropped, it must be configured and associated with the controller. The Installation steps (steps 4, 5 and 6 below) are deferred in the case of an off-line configuration (the physical node being unavailable.)

1. Click the node icon. The **Custom Node Information** dialog box opens.
2. Select the **Details** tab.
3. Type a unique name for the node in the **Identification** field and, optionally, in the **Notes** field.
4. Select the **Commands/Status** tab.
5. In the **Installation** group, click the **Install** button.
6. The **Install a Custom Node** dialog box opens and requests you to press the **Service** button of the EEPR Node. For manual entry, please refer to the

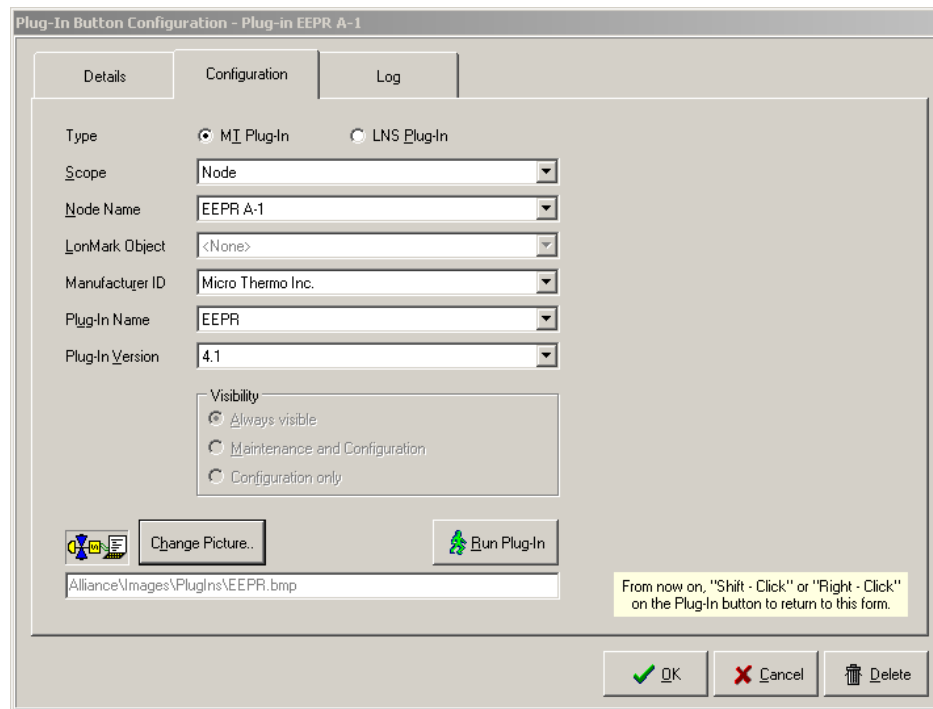
“Node Installation” manual. As soon as the node’s Service button is pressed, the software download begins. The plug-in loads the firmware into the node. Once the load is completed, the window buttons are activated.

7. Click **OK** to close the window.
8. Click **YES** to accept and save the changes.

### 2.3 Adding the Plug-in

At this stage, the MT-EEPR controller contains the firmware, but the CPs (Configuration Properties) still have default values. The EEPR Plug-In is used to enter site specific information; it calculates the CPs and loads them into the node. It is used also to monitor the process.

1. Drag and drop a **Plug-in** icon from the toolbox to the desired location on the view. Click on the plug-in icon to configure it.
2. The **Plug-In Information** dialog box opens.



3. Type the information as it is shown in the table below:

Details Tab – General Group	
Identification	<i>Type a unique and appropriate name</i>

Configuration Tab	
Type	MT Plug-In
Scope	Node
Node Name	<i>Use the name that you gave to the node</i>
Manufacturer ID	Micro Thermo Inc.
Plug-in Name	EEPR
Plug-in Version	4.1

4. Click **OK** to save the settings and close the dialog box or click **Cancel** to undo the changes.

## 2.4 Network Variable Connections (Bindings)

Network variables need to be bound to other nodes, for normal operation. Connections are shown in the table below.

Please refer to the typical EEPR Configuration figure, on page 12, for a global configuration overview.

Output Node	NV	Input Node	NV
~RackA.SGr1	nvoSP	EEPRA1-5	nviSucGrXSP
~RackA.SGr1	nvoSpStPt	EEPRA1-5	nviSucGrXSPStPt
SNX	nvoUnivCalc1X	EEPRA1-5	nviAirTempX
~RackA.CkC1	nvoCircStatusX	EEPRA1-5	nviCircStatusX
EEPRA1-5	nvoStatusX	~RackA.CkC1	nviEEPRStatusX
<sup>1</sup> RTU1	nvoSpaceTemp	EEPRA1-5	nviSpaceTemp
RTU1	nvoRH	EEPRA1-5	nviSpaceRH

**N.B Create all connections for all MT-EEPR modules and create necessary circuit bindings for all variable indicated by X5.**

<sup>1</sup> The binding of nvoSpaceTemp and nvoRH may be deferred until HVAC nodes become available to provide ambient temperature and relative humidity.



## 2.5 Adding Custom Points to the Interface

Given the availability of data in the Plug-In's Process page, it is suggested to drop only three custom points for each circuit. They are described in the table below:

### Circuit 1

Node	Id	Type	Physical Type	NV
EEPRA1-5	A1 Setpoint	Command	Temperature	nviAirTempStPt.Standby_cool
EEPRA1-5	A1 Temp	Measure	Temperature	nvoAirTemp.Standby_cool
EEPRA1-5	A1 % Open	Measure	Percent	nvoY_Pos1

### Circuit 2

Node	Id	Type	Physical Type	NV
EEPRA1-5	A2 Setpoint	Command	Temperature	nviAirTempStPt.unoccupied_cool
EEPRA1-5	A2 Temp	Measure	Temperature	nvoAirTemp.unoccupied_cool
EEPRA1-5	A2 % Open	Measure	Percent	nvoY_Pos2

### Circuit 3

Node	Id	Type	Physical Type	NV
EEPRA1-5	A3 Setpoint	Command	Temperature	nviAirTempStPt.occupied_heat
EEPRA1-5	A3 Temp	Measure	Temperature	nvoAirTemp.occupied_heat
EEPRA1-5	A3 % Open	Measure	Percent	nvoY_Pos3

### Circuit 4

Node	Id	Type	Physical Type	NV
EEPRA1-5	A4 Setpoint	Command	Temperature	nviAirTempStPt.Standby_heat
EEPRA1-5	A4 Temp	Measure	Temperature	nvoAirTemp.Standby_heat
EEPRA1-5	A4 % Open	Measure	Percent	nvoY_Pos4

### Circuit 5

Node	Id	Type	Physical Type	NV
EEPRA1-5	A5 Setpoint	Command	Temperature	nviAirTempStPt.unoccupied_heat
EEPRA1-5	A5 Temp	Measure	Temperature	nvoAirTemp.unoccupied_heat
EEPRA1-5	A5 % Open	Measure	Percent	nvoY_Pos5

## 2.6 EEPR Configuration Using the Plug-In

The following represents the most specific aspects of setting up an EEPR module.

- 1- Go to the **System** page and configure the following points:
  - a) Select the valve series. (Sporlan, Alco 12 Volts or Alco 24 Volts)
  - b) Enter the number of circuits on this module (1 to 5)
  - c) Select the type of refrigerant (R22, R507 or R404A)
  - d) Enter the value that you intend to use as a set point for the suction pressure (it will be used by default)

EEPR V4.1 - Plug IN EEPR

System | Circuits | Valves | **Process** | Board Layout | Log

**Node Configuration**

Node Type: EEPR V2

Valve Series: Sporlan CDS

Number of Circuits (On this Node): 5

Disable Board Interface (Use it Only for Display):

Node Interface Settings | Node Set Up

**Configuration Management**

Name: <Adhoc>

Plugin Status: MODIFIED (01-30-2004 10:11:29)

Load | Save As | Delete

Import | Export | Report

**Environment Settings**

Refrigerant Type: R22

Number of Suction Groups: 1

SG Label: SG-1

Default SG Set Pts as: Pressure

Default Set Point: 20.0 psig

**Network Settings**

Receive Heart Beat: 1 m 30 s

Min Send Time: 0 m 5 s

Max Send Time: 0 m 30 s

**Warning:**

The Receive Heartbeat, Min Send Time and Max Send Time are field default values. Changing these values can alter the network traffic performance.

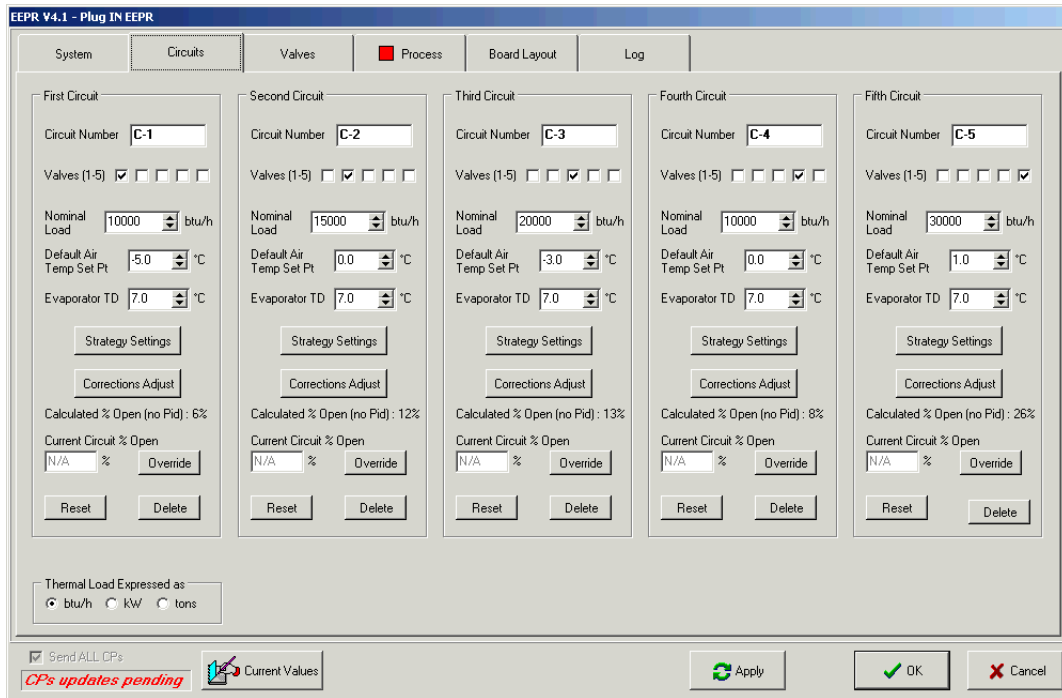
Restore Defaults

Send ALL CPs  
*CPs updates pending*

Current Values

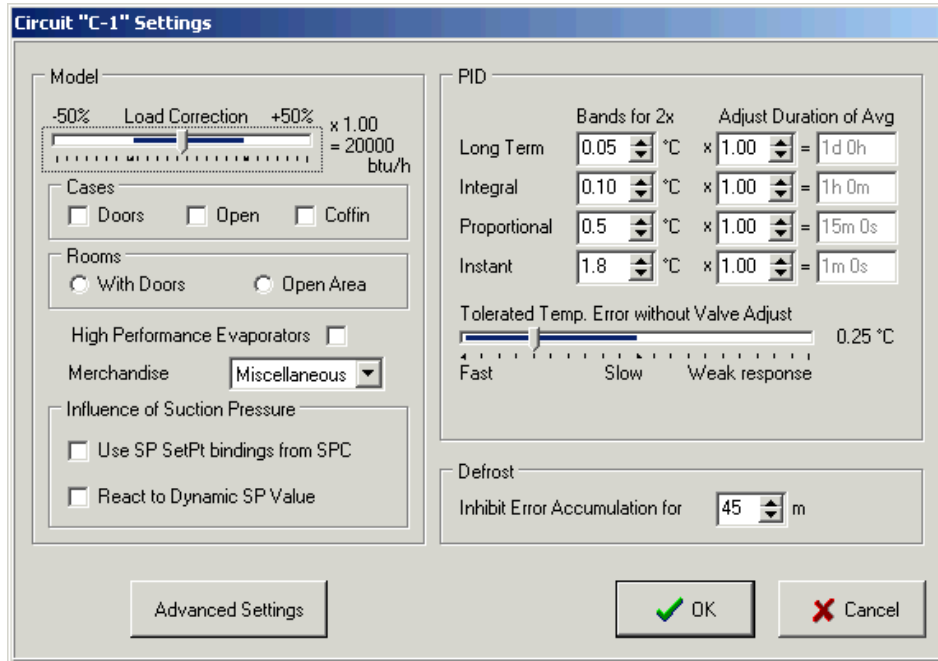
Apply | OK | Cancel

2- For each circuit, go in the **Circuit** page and configure the following points:

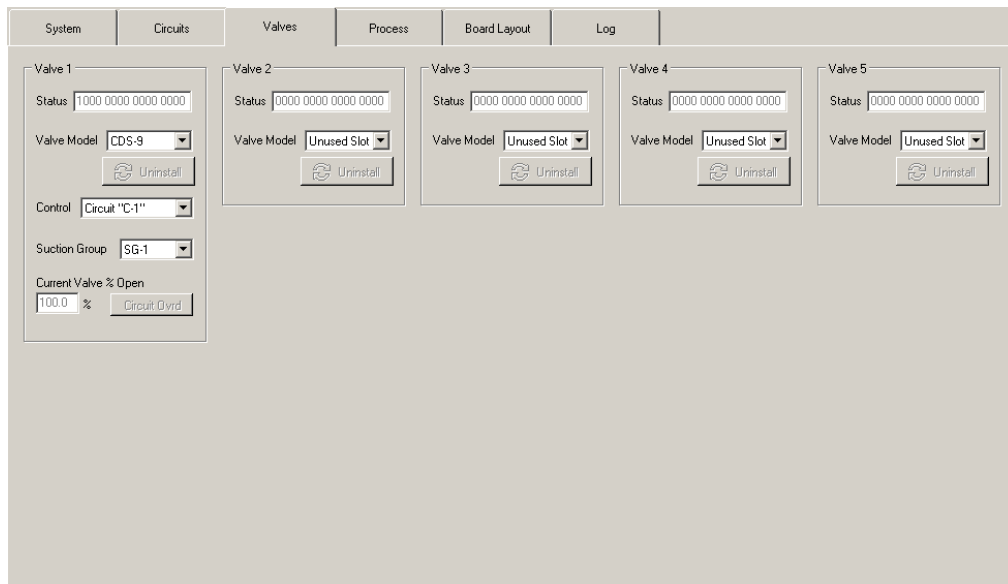


- Select the valve assigned to the circuit (Typically, valve 1 to circuit 1, valve 2 to circuit 2, etc...)
- Enter the circuit's nominal thermal load (as given by the manufacturer, usually specified at 75°F and 55%RH ambient)
- Enter the intended air temperature set point (it will be used by default)
- Enter the nominal value of TD (TD being the temperature difference between the sensor and the saturated temperature of the evaporator (the nominal value is that specified by the case manufacturer, typically measured at 75°F ambient, 55% RH.) For refrigerated rooms, the TD as defined herein will be somewhat higher than that of the evaporator itself, because the sensor is usually installed in the return air flow. You may accept the suggested value if it is unknown.
- Click on **Strategy Settings** (see the "Settings" screen on the next page)
- Select the case's type: **Doors, Open** or **Coffin**
- g)** OR select the refrigerated room type: **With Doors** or **Open Area**
- Select the product type of circuit in the drop-down list
- If the circuit is equipped with high performance evaporators, clicking on the relevant check box will change the suggested TD, provided it has never been edited.

- j) If you specify the type of merchandise, the default values of the relevant parameters will be adjusted automatically, provided they have never been edited.



- 3- Go to the **Valve** page and configure the following points for each valve:



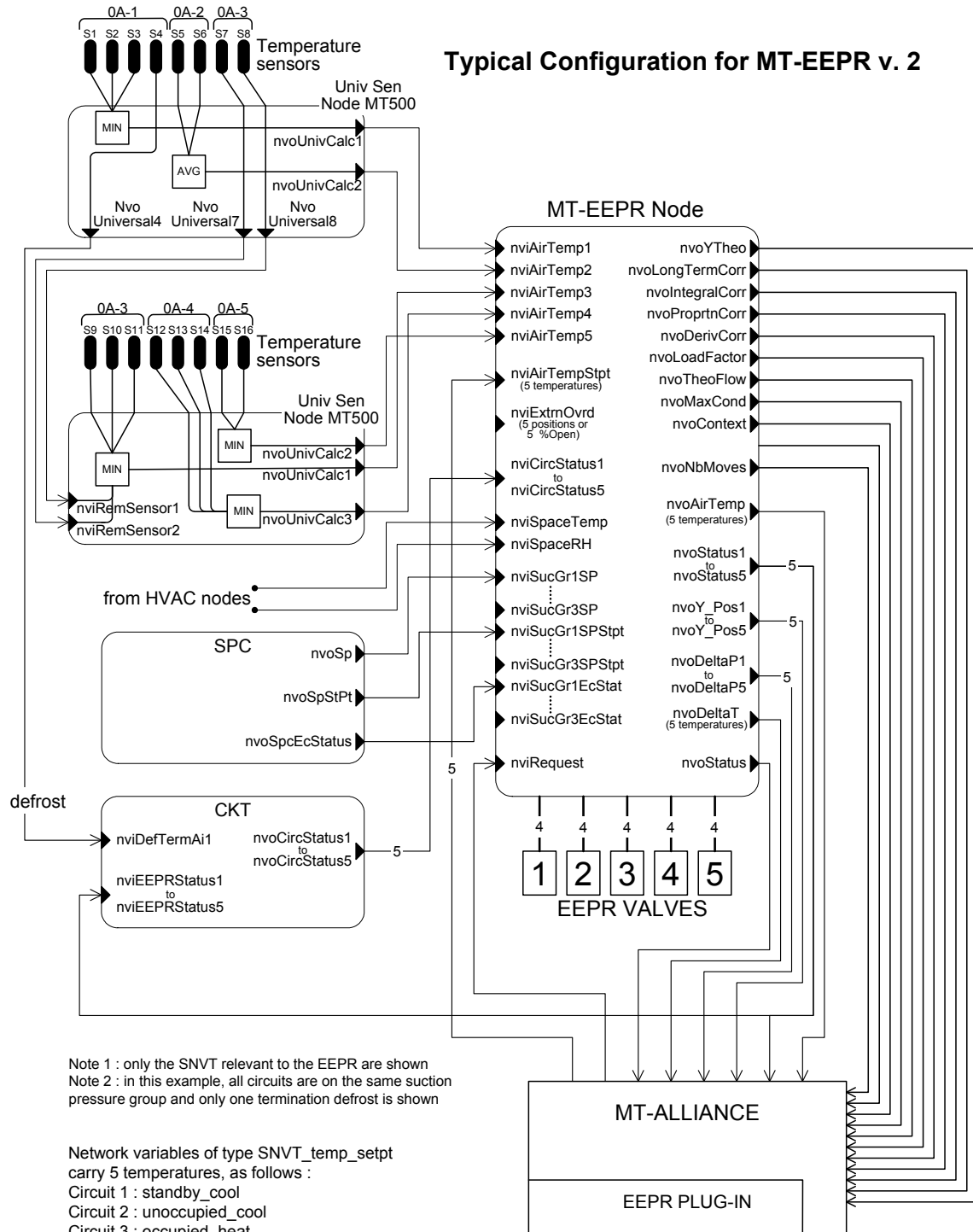
- Select the valve model in the drop-down list
- Select the control type in the drop-down list (**Circuit** in this case)

- c) Leave the default value (SG-1) for the Suction Group
- 4- Apply changes by clicking on the **Apply** button in the bottom of the plug-in window:

The process can now be monitored via the **Process** page.

### 3 Typical EEPR Configuration

The figure below shows the bindings between an EEPR node and the other nodes (SPC, Sensor, Circuit, HVAC) in a typical application.



## 4 Revision History

REV	Description	Revised by	Date
0.1	Creation of the document, modeled from 71-GEN-0093 (PDF intérimaire)	RL	18-feb-04
0.2	Cover page and formatting	ER	30-Mar-2015