

TAC Vista[®] IV



WORK BOOK



Engineering
Classic
Networks



Preface

Welcome to the Workbook for Engineering Classic Networks with TAC Vista IV.

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Engineering Classic Networks

Workbook

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1 Introduction

This Workbook describes a defined set of exercises for a specific training scenario. For information of specific products we refer you to the manual of the product in question.

For information on how to install software we refer you to the instructions delivered with the software.

1.1 Structure

This Workbook describes a number of exercises to carry out. They will give the information on what to do, and are shortly described in this document.

A detailed description of how to do the tasks can be found in the Getting Started section of the corresponding manual.

Information such as why and alternative ways to do each task can be found in the Reference section of the same manual.

The information found in the Getting Started section and in the Reference section will also be concisely described in a supplementary overhead slide series.

1.2 *Emphasized text*

Throughout the workbook four specially marked texts might be used.

**Note!**

Note is used for emphasizing certain information.

**Hint!**

Hints is used to emphasis processes that may ease operation.

**Caution!**

Is used when caution is needed.

**Warning!**

Warning is used to emphasize on operations that can cause serious problems if not handled correctly.

2 *Planning the LonWorks Network*

Purpose

After finishing this task you should be familiar with the Case Study and our training solution of the system.

Task description

The task is in some aspects similar to the early stages of a project:

- Reading descriptions
- Selecting material
- Naming devices
- Determining a suitable structure.

Create a Project File Folder on your training computer.

While performing this task, refer to the corresponding chapter in the Manual "Engineering Classic Network". In particular, review information about identifying and naming the devices that are used.

In addition, you will document the parts of the project and the Neuron ID strings for the devices that are used.

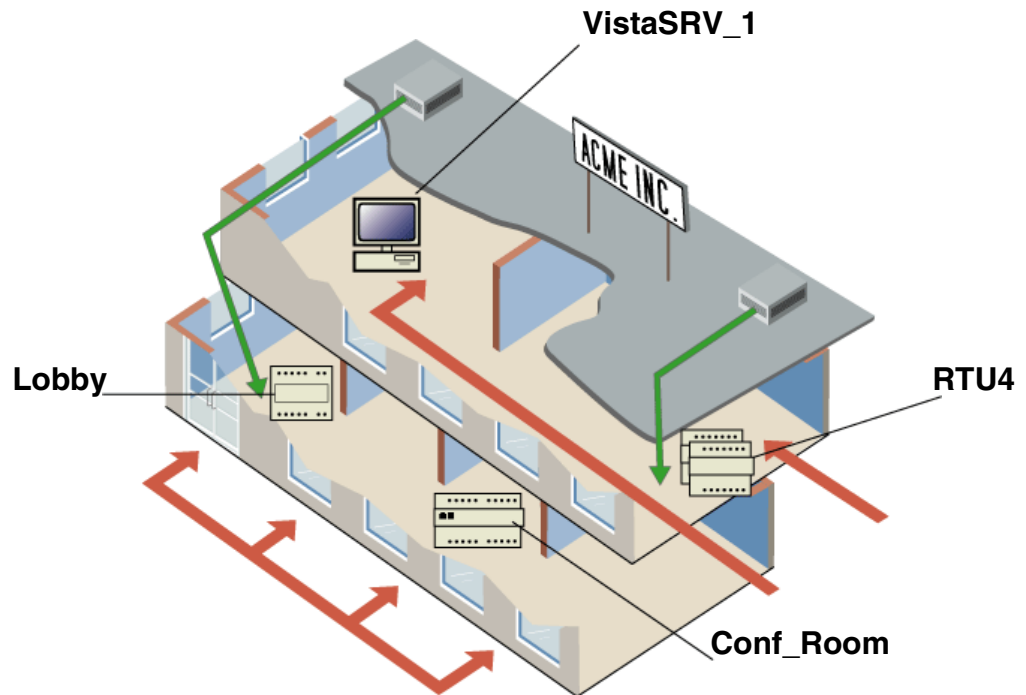
2.1 *Creating the Folder Structure*

- ❑ Create a Project Folder according to the structure advised in the manual "Engineering Classic Network".

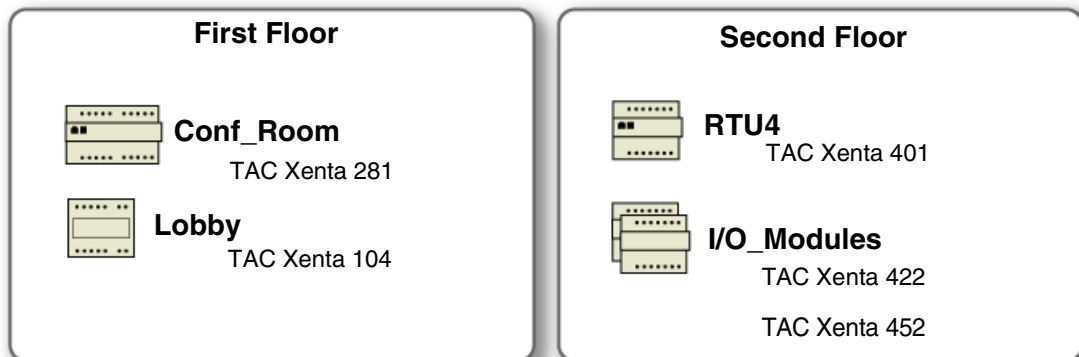
2.2 *Case Study*

- ❑ Start planning the Network we will build by reading the "Case study" (chapter 2.2) in the Manual "Engineering Classic Networks". Become familiar with our solution, the Network structure and the set of devices to be used in the training examples.

Our solution of the Case study

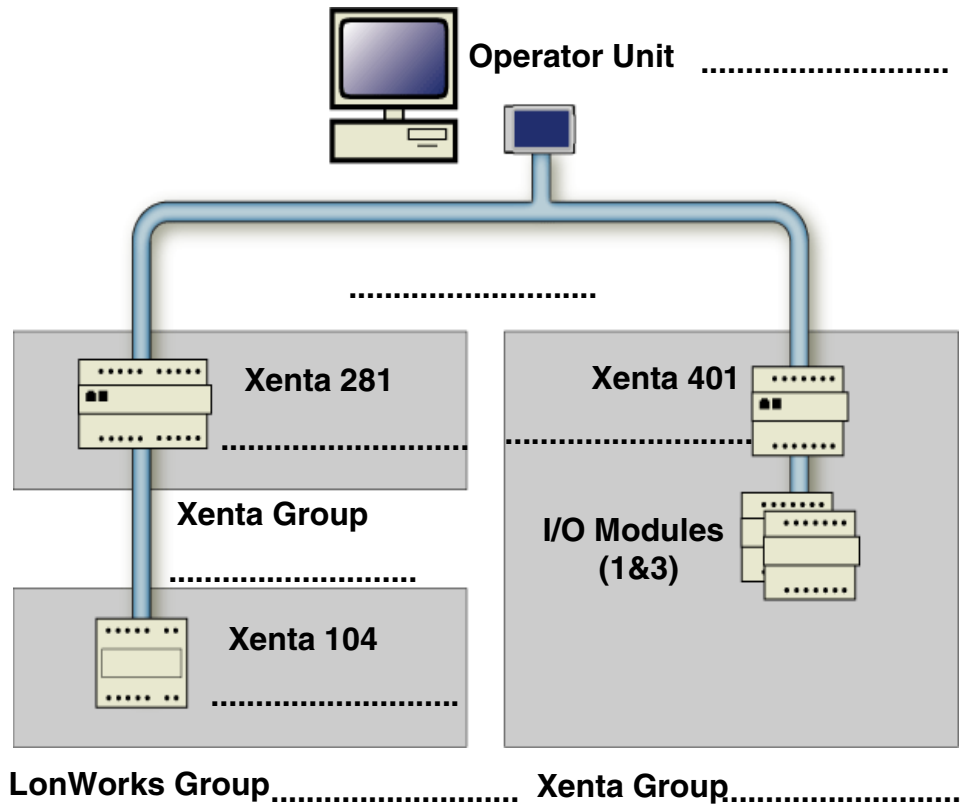


The Devices we use



2.3 The Network structure

- ❑ Complete the illustration below with names for the Operator Unit, Network Name, Name of the Groups and Devices, all according to the manual "Engineering Classic Network".



2.4 *Recording Neuron IDs for the training equipment*

The first stage of commissioning includes preparation in your TAC office. These tasks include reviewing specifications from an installer and checking devices.

In the coming exercises you will use devices listed below. Take a moment and **note the Neuron ID** for each device you will be using.

Each device has a label upon which you can find the Neuron ID string.

One TAC Xenta 401, RTU4

Neuron ID.....

One I/O module TAC Xenta 422, RTU4

Neuron ID.....

One I/O module TAC Xenta 452, RTU4

Neuron ID.....

One TAC Xenta 281, Conference Room

Neuron ID.....

One TAC Xenta 104, Lobby (Xenta 103 can be used)

Neuron ID.....

3 *Building the LonWorks Network*

To assist you in performing the task in this chapter, refer to the following:

- printed copies of the instructor's overhead slides
- The manual "Engineering Classic Networks"

Purpose

After finishing this task, you will know how to use TAC Vista Explorer to create a TAC Vista LonWorks network with a LonTalk adapter and TAC Xenta devices.

Task description

The task is to create the network consisting of selected devices according to our solution the "Case Study".

The task is carried out in a sequence in which some of the steps can be performed in the engineers' office, without the physical devices connected.

The Network and various devices are created in a top-down tree structure.

During this exercise you will create the following objects in the TAC Vista database:

- Operators Unit
- LonTalk adapter
- LonWorks Network
- TAC Xenta groups
- A LonWorks Group
- Three TAC Xenta devices, one in each group.

Several ways to assign Neuron IDs to devices are mentioned. When you are working at the office, you can enter the Neuron IDs by typing the string in their appropriate field.

Use the "Add a Xenta device" wizard when creating TAC Xenta devices, and the "Add a LonWorks Device" wizard when creating the LonWorks device.

During this exercise, you will run the Vista Explorer in Engineering mode during design.

Throughout the exercise, you will use the Tree View pane together with the List View pane and their sub menus to perform the different tasks.

Commissioning and downloading of the network/devices can not be done until the physical network is operating. The downloading procedure is described in a coming exercise.

TAC Vista System Mode

When creating TAC Xenta devices, we need to work with the TAC Vista System in Engineering mode.

The TAC Vista System mode applies to all users. Possible other operator units, and activities, using the database, will be subjected to the mode.

For several steps in the exercise, we must use **Engineering mode**.

To view the most detailed information, use the List View pane with the setting **View/Listview/Details**.

Requirements

Before you can start creating the network, the following must be installed:

- The Vista Workstation IV including the Vista Explorer, and TAC Menta 4
- An installed LonTalk adapter (LTA adapter), suitable for your computer.
- The Privilege License Server with the Engineering Licence File.

3.1 *Creating the Network Database*

Before you start building the network you must plan the structure of the network, the number of Xentas your network should contain etc.

In a previous section you have noted the Neuron ID strings for each device you will use. You will use the strings during the following stages.

When you have completed all preparations for starting to create the network the next step is to define which TAC Vista Server Database you wish to operate on.

- Use the **Vista Server Setup** to select the database folder that you created in the project folder.
- Start the **TAC Vista Server** and the program **TAC Vista Explorer**. Log in to TAC Vista Server.

3.2 *Renaming the Operator Unit*

- Rename the operators unit "**VistaSrv_1**".

3.3 *Creating the LTA Port*

- Create an LTA port called "**LTA_1**".

3.4 *Creating the LonWorks Network*

- Next, create a LonWorks Network and assign the network the name "**ACME_Inc**".

3.5 *Creating the TAC Xenta Groups*

- Create the two TAC Xenta groups called "**1st_Floor**" and "**2nd_Floor**".

3.6 *Creating the Xenta Devices*

- In the Xenta Group "**1st_Floor**", create a TAC Xenta 281 type of device and call it "**Conf_Room**".
- Let the system assign the subnet and node address.

In this exercise, we use a method suitable for working at office, where we don't have the devices connected to a working network. We assumed that we have the Neuron ID string for the devices available in a list or on a drawing.

- Define the Neuron ID for the unit, by typing the string into the appropriate field.
- Assign the Menta application called "**Conf_Room.mta**".

- The next Xenta unit to create is the device in the Xenta Group "2nd_Floor". It is a TAC Xenta 401 with external I/O-modules. Name this unit "**RTU4**".
- Let the system assign the subnet and node address.
- Define the Neuron ID for the unit. Type the string into the appropriate field.
- Assign the Menta application file called "**RTU4.mta**" located in the folder/provided on the floppy disk.

Executable code for the application will be generated automatically when we, later, make the commission and download.

Observe that, if an application contains a menu-tree for an operator panel (Xenta OP), the menu-tree must have been generated when the application was programmed.

Do not Commission and Download now.

3.6.1 Neuron IDs of the I/O modules

The application file for RTU4 defines five Xenta I/O modules - two of the type Xenta 422 and three of the type Xenta 452. We will use only one of each type Xenta 422 and Xenta 452. Use the I/O-module 1 (for the 422 type) and I/O-module 3 (for the 452 type).

- Enter the Neuron IDs for the I/O modules 1 and 3.

In the training equipment we don't have the hardware for the other I/O-modules so we will not assign them Neuron IDs.

When the Xenta 401, including I/O-modules, is complete, you can download the network parameters for the device. We will however create another type of a device before we commission and download.

We will add a LonWorks unit to the TAC Xenta Network.

3.7 Creating the LonWorks Group

- Create a LonWorks group with the name "**1st_Floor_LW**".

3.8 Creating the LonWorks Unit

- Create the device in the LonWorks group and name it "**Lobby**".
- Let the system define the subnet and node address.
- Specify the Neuron ID for the device by typing the string manually.
- Also specify the XIF-file that contains the information about the LonWorks device. Here we use the file system and browse to find the file **X104W01.xif**, which is the file for the Xenta 104.

When finished, an icon representing the unit "Lobby" will appear in the Tree View pane, and all its signals will be visible in the List View pane.

The system should now be complete. In a coming exercise we will commission and download the devices. This is the work that is performed on site, i.e., with a network physically connected and ready for operation.

4 *Commissioning and Downloading the LonWorks Network*

To assist you in performing the task in this chapter, refer to the following:

- printed copies of the instructor's overhead slides
- The "Engineering Classic Networks" manual

Purpose

After finishing this task you will know how to use TAC Vista Explorer to commission and download a TAC Vista LonWorks network.

Task description

This is the final part of a suggested working method where previous parts of the work have been prepared at the engineer's office, without the physical devices connected. The exercise represents the work that is carried out on site and with a physical network connected and in operation.

During the exercise, we use the previously built network and operate on the devices now having them connected to a network in use.

Commissioning and downloading are performed for the units and the status of the units are observed.

TAC Vista System Mode

When creating TAC Xenta devices, we need to work with the TAC Vista System in the Engineering mode.

The TAC Vista System mode applies to all users. Possible other operator units, and activities, using the database, will be subjected to the mode.

In this exercise we can use either mode.

We also suggest that the List View pane is used with the setting **View/Listview/Details** to have the most detailed information available.

4.1 *Configuring the LTA Adapter Card*

For the Classic type of LonWorks Network, we will use the LTA adapter card with an NSI-application.

- Check that your LTA adapter card is running an NSI application and is communicating properly.

4.2 *Commissioning and Downloading*

Our complete network structure is finished and can be downloaded to the devices. This stage also represent the part of the engineering where we must have the physical network operating and the Xenta devices connected.

We can choose between commissioning and downloading to devices one at a time or to start the procedure for all devices on one command.

- Commission and Download** all devices in the network.
- When you are finished, right-click to **Refresh**. After the restart of the Xenta devices, which can take an amount of time, the color signal on the icons for the devices should now be green, signaling that they are on-line. The Screen Tip should state "Commissioned" for each device.

4.2.1 *Observing Signals of the LonWorks Device*

To see values of the network variables e.g., SNVT's we can drag and drop the signal(s) into the **Status Watch** pane and view the status/values there.

- In the **List View** pane, mark the signal(s) you want to observe. Drag and drop them into the **Status Watch** pane. In the column value, we can operate on the variable by marking a field and selecting from the drop down menu alternatives.

Engineering mode/Operating mode

The mode you are in controls the signal information you can see.

- In Engineering mode - see the status of the signals as they are in the Vista database.
- In Operating mode - see the status of the signals in the Xenta 103 unit.

Please observe that the operators command has no override or forcing priority here; the local process behavior will adjust the ordered status/value.

4.3 *Operator Panel (OP) Menus*

If your training equipment includes an Operator panel (OP), do the following:

- ❑ Check that the operators panel is used with the setting/mode **TA Mode**.
- ❑ Check that the first two menu levels, shown by a connected Operator panel (OP), includes the names of Xenta groups and devices as they are created in the Tree View pane.

4.4 Transferring the Database to the Site PC

If our commissioning work has been carried out with a separate engineering PC, you must also transfer the database from this engineering PC to the site PC.

In the training we do not carry out this work

4.5 Creating the TAC Vista Database on the site PC

The creating of the database includes selecting the correct database folder in the Vista setup and also checking the name of the LonTalk adapter. Finally a check of all devices in Operation mode to make sure they are online is carried out.

In the training we do not carry out this work

4.6 Documenting the Network

Now that we have finished the commissioning and downloading of the LonWorks Network, we should document the network.

It is recommended that you use the TAC Vista System documentation tool.

For more information about the System documentary tool, refer to the TAC Vista Basic Functions manual.

5 *Creating a Logical Unit*

To assist you in performing the task in this chapter, refer to the following:

- printed copies of the instructor's overhead slides
- The "Engineering Classic Networks" manual

Purpose

After finishing this task you should know how to create logical units for the purpose of presenting customized views in TAC Vista explorer

Task description

The task is to create a Logical Unit in which a set of points is presented.

This exercise includes:

- Creating a logical unit.
- Adding signals from devices to the logical unit.
- Removing signals from the device from the logical unit.
- Obtaining dynamically updated values from devices, using the operating mode of the TAC Vista Explorer.

During the exercise, we use the previously built network and operate on the devices while they are connected to a network in use.

TAC Vista System Mode

When creating TAC Xenta devices, we need to work with the TAC Vista System in the Engineering mode.

The TAC Vista System mode applies to all users. Possible other operator units, and activities, using the database, will be subjected to the mode.

In this exercise we can use either mode.

To view the most detailed information, use the List View pane with the setting **View/Listview/Details**.

5.1 *Creating the Logical Unit*

- ❑ In the **Tree View** pane, select the root folder (TAC Vista) and right-click to get the submenus. Select **New/Logical Unit** and give

the folder the name "**Supply_Fan**" in the empty text box adjacent to the Logical Unit icon.

5.2 Adding Shortcuts

Add signals to the logical unit by dragging signals into the logical unit.

- ❑ Select and add all the signals (11 pcs) in the program module (sub icon) **SFAN** in the **RTU4**. The signals should then be found in the logical unit "Supply_Fan", represented by shortcuts.

5.3 Removing Shortcuts

You can create several shortcuts for each signal. The first created shortcut to a signal is called primary shortcut and is created in a "protected" status. Removing these primary shortcuts calls for some additional operations; we must unprotect them before we are allowed to delete them.

- ❑ Use the right-click **Authority** command and uncheck the box **Protected DB-Object** for the shortcuts. After a **Refresh** you can delete them.

6 *Replacing a Menta Application*

To assist you in performing the task in this chapter, refer to the following:

- printed copies of the instructor's overhead slides
- The "Engineering Classic Networks" manual

Purpose

After finishing this task you should know how to replace an application in a freely programmable TAC Xenta device using TAC Vista Explorer

Task description

The task in this chapter is to replace the Menta applications in the "Conf_Room" device.

During the exercise, we use the previously-built network and operate on the devices while they are connected to a network in use.

In the exercise, you will:

- Replace the application file in the TAC Vista database with a new application file from the file system. (The new application file will then automatically be saved as a copy in the Vista database.)
- Observe and interpret the "Commission Required" flag and the Screen Tip.
- Commission the device again. Observe the changes in the flag and Screen Tip.
- Notice the consequences when the application specifies changes in the number of I/O modules.

TAC Vista System Mode

When creating TAC Xenta devices, we need to work with the TAC Vista System in the Engineering mode.

The TAC Vista System mode applies to all users. Possible other operator units, and activities, using the database, will be subjected to the mode.

In this exercise we can use either mode.

To view the most detailed information, use the List View pane with the setting **View/Listview/Details**.

6.1 Replacing the Application

- ❑ Replace the application in the Xenta device "Conf_Room". Use the replacement Menta application file "**R_Conf_Room.mta**" in the project folder.

Executable code for the application will be generated automatically when we make the commission and download.

Observe that if the application contains a menu-tree for an operators panel (OP), the generation of the tree is automatically done **ONLY** if the Xenta device is of the Xenta 280 type. Otherwise, the menu-tree must have been generated when the application was programmed.

Observe the status of the device icon and the "Screen Tip" after a Refresh.

6.1.1 Commissioning and Downloading

- ❑ Perform a **Commission and Download** and **Refresh**, observe again the asterisk after the device name and the Screen Tip.

6.1.2 Replacing Applications with I/O Modules

The presence of external I/O modules impacts the replacement of applications:

- No external I/O modules specified in replacement application - no implications.
- I/O modules - when replacing an application for a Xenta device with I/O modules, check for possible changes in number and types. (They are specified from the application file.)
- More I/O modules - if the new application specifies an increased number of I/O-modules, they must also have their address(es), Neuron ID, Subnet, Node specified.

7 *Replacing TAC Xenta Devices*

To assist you in performing the task in this chapter, refer to the following:

- printed copies of the instructor's overhead slides
- The "Engineering Classic Networks" manual

Purpose

After finishing this task you should know how to replace Xenta devices and I/O-modules using the TAC Vista Explorer.

Task description

The task is to replace the device type Xenta 401 including one of its I/O-modules.

During this exercise, we use the previously built network and operate on the devices while they are connected to a network in use.

This exercise includes:

- Physically removing a Xenta device and an I/O module from the training equipment.
- Putting in replacement units.
- Using different ways to enter the Neuron ID for Xenta devices and I/O modules and entering the Neuron ID string into the Vista database.
- Commissioning the devices again.
- Observing changes in online/offline information.

TAC Vista System Mode

When creating TAC Xenta devices, we need to work with the TAC Vista System in the Engineering mode.

The TAC Vista System mode applies to all users. Possible other operator units, and activities, using the database, will be subjected to the mode.

In this exercise we can use either mode.

To view the most detailed information, use the List View pane with the setting **View/Listview/Details**.

7.1 Replacing a TAC Xenta Device

- Remove the Xenta 401 (RTU4) device from the training panel and insert another device of the same type.
- After a **Refresh**, observe the actual state of the device icon and the **Screen Tip**.
- Enter the Neuron ID string for the replacement unit.
- Do a **Commission and Download** of the replaced device.

After doing **Refresh**, observe the color signal on the icon (online signal), the asterisk after the device name, and the Screen Tip.

7.2 Replacing an I/O Module

- Remove from the training panel the Xenta 422 I/O module (module 1), bound to the Xenta 401 and insert another module of the same type.
- Enter the Neuron ID for the replacement module.
- Do a **Commission and Download** of the replaced device.

After doing **Refresh**, observe the color signal on the icon (online signal), the asterisk after the device name, and the Screen Tip.

8 *Modifying a Menta Application*

To assist you in performing the task in this chapter, refer to the following:

- printed copies of the instructor's overhead slides
- The "Engineering Classic Networks" manual

Purpose

After finishing this task the you should know how to modify the Menta application for a Xenta device in the network.

Task description

The task is to add a signal into an existing application for a Xenta device and ensure it is functioning properly.

During the exercise, we use the previously built network and operate on the devices while they are connected to a network in use.

This exercise includes:

- Opening the TAC Menta programming tool.
- Modifying the application file in the TAC Vista database by adding a signal.
- Saving the revised application in the Vista database using commands in the Menta programming tool.
- Observing the existence of the new signal in the database.
- Becoming familiar with finding signals in the views.
- Observing and interpreting the "Commission Required" flag and the Screen Tip.
- Commissioning the device again.
- Observing changes in flag and Screen Tip again.

TAC Vista System Mode

When creating TAC Xenta devices, we need to work with the TAC Vista System in the Engineering mode.

The TAC Vista System mode applies to all users. Possible other operator units, and activities, using the database, will be subjected to the mode.

In this exercise we can use either mode.

To view the most detailed information, use the List View pane with the setting **View/Listview/Details**.

8.1 Adding a Signal in TAC Menta

- ❑ Modify the Menta application in the Xenta device called "RTU4". In this case we suggest that you add a signal of analog input type, name it "**Modified**" and make the signal public. Use a non-linear analog input (thermistor type) and assign (bind) it to the Module 3 terminal ref.B4.

As this is an exercise only we do not need to connect the signal to another block.

8.2 Generating Code

The executable code is automatically generated when downloading to the Xenta device. Here we check for errors only.

Observe that if an application contains a menu-tree for an operators panel (OP), the generation of the tree is automatically done ONLY if the Xenta device is of the Xenta 280 type. Otherwise, the menu-tree must have been generated when the application was programmed.

- ❑ Enter the Menta simulating mode to check that there were no errors, save the revised version in the Vista database, and leave Menta.

8.3 Observing the Signal in the Vista database

- ❑ Verify that the database now includes the new signal by looking for the the signal "Modified" in the List View pane. It should be included in the sub-icon RTU4. Do also a **Refresh** (F5) to see actual state of the RTU4 unit. Observe the device icon and the Screen Tip.

8.4 Commissioning and Downloading

- ❑ Perform a **Commission and Download** and after a **Refresh**, again observe the asterisk after the device name and the Screen Tip.

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