69eATM tManager
Release 4.1

Quick Start Manual

IMPORTANT!
Before you proceed, STOP and REGISTER your module
On our website at
http://www.softing.us/support/product-registration/

FACTORY DEFAULTS:

Ethernet 1 = 192.168.1.254  Ethernet 2 = DHCP
Note: IP addresses will be scrolling on the module’s 4-character display

LOGIN
Username = admin  Password = admin
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If you wish to use the Knowledge Base or contact Customer Support, you can:

From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support
or Visit http://www.softing.us/ra/support/ and select Support.
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eATM tManager: Overview and Installation

Overview

The eATM tManager appliance provides a safe and reliable method of transmitting data between controllers and business systems (databases, applications, etc.). For a complete list of supported communication methods, check the product datasheet at https://industrial.softing.com/tmanager-compactlogix/

This manual will guide you through a simple installation. For more information on any screen, reference the software’s online help.

To configure the eATM tManager you need to:

1. Define access to the appliance (network, users, etc)
2. Create your project
3. Configure project components (adapters, endpoints, data maps, triggers, etc.)
4. Place the above components, project and appliance into RUN mode

After you complete these steps the appliance will be able to transmit data.

Definition of terms that will be used throughout the document:

<table>
<thead>
<tr>
<th>Mouse Usage:</th>
<th>Status Indicators:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double-click to select.</td>
<td>This includes triangles, squares, text colors, and exclamation marks (!).</td>
</tr>
<tr>
<td>Right-click to view a menu of options.</td>
<td>GREEN means RUNNING and active.</td>
</tr>
<tr>
<td>Hover Mouse to display a description of the icon.</td>
<td>RED means STOPPED or HALTED or ERROR.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Edit screens:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit: Puts the object in edit mode</td>
<td>YELLOW means “trigger has faulted due to data transfer errors.”</td>
</tr>
<tr>
<td>OK: Saves the object and closes the pane</td>
<td></td>
</tr>
<tr>
<td>Apply: Saves the object without closing the pane</td>
<td></td>
</tr>
<tr>
<td>Cancel: Closes the pane without saving changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GRAY means set to RUNNING, but not ACTIVE because its hierarchy is not started/running.</td>
</tr>
</tbody>
</table>
Hardware and Software Installation

1. Plug the eATM-tManager securely into the CompactLogix (1769).
2. There are two Ethernet ports on the appliance. These ports are electrically isolated from each and can be used to connect to different subnets. Connect cables to the Ethernet 1 and/or Ethernet 2 ports on the front of the eATM tManager.

**NOTE “Crossover cable”:**
If you are connecting directly from a PC to an eATM tManager, you can use the included crossover cable. In your PC’s Network Control Panel, in the TCP/IP section, set your IP address to 192.168.1.x, and your subnet to 255.255.255.0. Connect to the eATM tManager’s factory default address of 192.168.1.254.

**NOTE “License Keys”:**
All license keys come pre-installed on the eATM tManager. Your configuration firmware may be installed on multiple PC systems for support of the eATM tManager appliances. See the License Agreement included with the product.

3. Install the configuration software.

After the installation is complete, the computer’s Start / All Programs menu will have a listing for Softing / tManager eATM and its two components -- Project Editor and xATM Manager.

![Software Installation Menu](image)

These two configuration programs require that the eATM tManager be online when they are used.

**NOTE “Configuration Programs Overview”:**
The **xATM Manager** software is used to configure administrative items (network settings, time zone, time-sync, etc.) for each eATM tManager appliance.

The **Project Editor** software is used to configure connections and their transactions.

A map of the menu system for each of these programs is provided in Appendix D.
eATM tManager: xATM Manager

In this section of the manual we will use the xATM Manager software to establish a connection between the computer and the eATM tManager, configure its Ethernet ports, and synchronize its time.

Connecting to the eATM tManager

1. Launch the xATM Manager configuration software.

2. In the upper-right corner of the screen, type in the IP address of the eATM tManager appliance.

   **NOTE “IP Address”**: Connected IP addresses will be scrolling across the front of the eATM tManager. The default is **192.168.1.254**

3. Press the **RED Connection** icon.

1. When prompted, enter your username and password and press **Login**.

   **NOTE “Username and Password”**: The default username is **admin** and the default password is **admin**.

After you successfully connect, the **Connection** icon will turn **GREEN**, as show below.
Configuring the Ethernet Ports

1. Select the **Administration** tab

2. Select the **Network** tab.

To configure an Ethernet port:

**Double-click** on the **Ethernet1** or **Ethernet2** port to edit it.

Make all required changes for the port and exit by selecting **OK**.

During the edit of a port’s configuration, if you select the **Advanced Settings** icon, you will be given access to additional network settings that you can modify. See FAQ section of this document “What advanced network settings are supported?” for more information.

Information on the **Network Diagnostics** and **Network Routes** options are available in the FAQ section of this document.

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If you wish to use the Knowledge Base or contact Customer Support you can:

From within the xATM Manager or Project Editor software, select the HELP icon and then **Online Support**
or Visit [http://www.softing.us/ra/support/](http://www.softing.us/ra/support/) and select **Support**.
Setting the Time on the eATM tManager

The eATM tManager’s time clock can be synced with a variety of devices. In this example, we will sync it with the computer’s clock.

1. Select **Time Management**.
2. Select **Get Local Computer Time**.
3. Select **Set Appliance Time**.

![Time Management interface](image)

If you wish to use the Knowledge Base or contact Customer Support you can:

- From within the eATM Manager or Project Editor software, select the HELP icon and then Online Support
eATM tManager: Project Editor

Configuration Overview
We will now start using the Project Editor software to define connections. The eATM tManager configuration is based around the concept of ENDPOINTS.

The destination for all data transfers is an ENDPOINT. For example, a CompactLogix (1769) processor is an ENDPOINT, an ORACLE database is an ENDPOINT, a MSSQL database is an ENDPOINT.

- Each adapter can have multiple ENDPOINTS
- An ENDPOINT is used to define the PROPERTIES for that connection to the destination. For example, will the connection use Store&Forward, Transaction Logging or Fail-Over?

The eATM tManager configuration is subdivided into PROJECTS. These PROJECTS work autonomously to each other. Multiple PROJECTS can be running at the same time. Each PROJECT includes the adapters and their ENDPOINTS, data mapping and trigger events used in that project.

When you configure the module (using the Project Editor software) you will:

- Define the access to the module (network, users, etc)
- Create your PROJECT and its components (adapters, ENDPOINTS, data maps, triggers, etc)
- Place the above components, PROJECT and appliance into RUN mode

After you complete the above steps your module will begin transmitting data.

In this manual we will step through a simple installation. When we define the project components we will start at the top (Adapters) and work our way down the list.

For more information on any screen, reference the software’s online help by pressing [F1].
Creating New Project

You have two options when creating a new project. Both are shown in this section.

Using xATM Manager Software
To create a project from within the xATM Manager software:

1. If it’s not already running, start the xATM Manager software.
2. Make sure you are connected to the xATM_Manager using the steps in the previous section. The Connection icon should be GREEN.
3. Select the Projects tab and then select New.
4. When prompted, type in a project Name and select OK.
5. Select your new Project and press Edit to open the Project Editor for this new project.

Using the Project Editor software
To create a project from within the Project Editor software:
1. Startup the Project Editor software.
2. Connect to the eATM tManager the same way you did using the xATM Manger software.
3. Enter the IP address of your appliance (the default is 192.168.1.254, but you may have changed it in a previous section) and press the RED Connection Icon.
4. Enter your Username and Password. Both defaults are admin.
5. When the Select Project screen appears, select New.
6. When prompted, type in a Project Name and select OK.
7. Select your new Project and press Edit.

NOTE “Project Editor”:
The Project Editor can only view one project at a time. You may have multiple Project Editors open at the same time, if needed.

If you wish to use the Knowledge Base or contact Customer Support you can:
From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support or Visit http://www.softing.us/ra/support and select Support.
Adding a Controller (Automation Adapter)

Adapters define the sources and destinations of the transactions. Each input adapter can contain one or more Triggers and each output adapter can contain one or more Endpoints. Some adapters, such as the Automation Adapter, are both input and output adapters.

The Automation Adapter allows the user to view and configure controllers, bridges and other devices in the industrial environment for use with the tManager. This industrial environment is referred to as the Automation Tree (i.e. list of controllers, their tag/variable definitions, and the path to these controllers). The Automation Tree definition is shared among all projects on the eATM tManager appliance.

The Automation Adapter is both an input and an output adapter.
- The Automation Adapter can contain one or more Triggers.
- The Automation Adapter will contain at least one Endpoint for receiving information.

1. Open **Adapters**.
2. **Right-click** on **Automation** and select **Open**.

3. **Right-click** on EtherNetIP, you will see the options available for that module.
   
   Select **Connect to a new module on this network**

   Then select **CompactLogix**

4. Complete this form and select **OK**
   
   **Name**: Label for the PLC. This name will be used for the tag list which will contain the tags from this device. This must be unique name on this tManager module.
   
   **Port number**: The tManager port that you will be using to communicate to the PLC
   
   **IP Address**: The IP Address of the plc / plc’s bridge
   
   **Msg Response Timeout**: The time period the scanner will wait before assuming the connection with the PLC is broken.

If you wish to use the Knowledge Base or contact Customer Support you can:

From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support or Visit http://www.softing.us/ra/support/ and select Support.
5. When the plc has been connected and its tag list is placed in the tManager, the plc will appear in green as shown below. The color chart is shown in the table below.

Note “Tag List”:
All defined processors have a list of variables under Tag Lists in the left column. You can also access the Tag List by right-clicking on the processor and selecting Open Tag List.

Note “Update Tag List”:
Update tag list will be used later to request an updated tag list from the processor. This update is necessary when tags have been added or removed from the processor.

Adding PLC Endpoints

An endpoint defines the destination of a data transfer.

1. **Right-click** on Automation.
2. Select **New Endpoint**.
3. Enter a unique name for this Automation endpoint.
4. Select **OK**.

**Name**: The name of the endpoint.

**Adapter**: The name of the adapter that the endpoint belongs to. The link button opens the adapter for viewing or editing.

If **Use Flow Control** is set, the user can regulate the flow of messages writing to Automation (PLC) tags. More details are covered in Appendix B.
Adding Triggers

A trigger specifies when data is transacted from the controller to the business environment or when data is read from the business environment and sent to the controller.

1. **Right-click on Automation.**
2. Select **New Trigger.**
3. Enter a **Name** for the trigger.
4. Select the **Type**: Scheduled, Periodic or Event

- **Scheduled** – the trigger fires at a scheduled time if its conditions are met. The **CONDITIONAL TAGS** (if defined) are read at the scheduled time and the condition is evaluated. If scheduled conditions and the tag conditions are TRUE, the trigger fires.

- **Periodic** – scans the **CONDITIONAL TAGS** every scan period to see if the condition is met. If the condition is TRUE, the trigger fires

- **Event** – when the specified event occurs (i.e. RA MSG INSTRUCTION is enabled), the **CONDITIONAL TAGS** (if any) are then read and the condition is evaluated. If both conditions are TRUE, the trigger fires

- **CONDITIONAL TAGS** are defined in the Variable and Reference fields. The Reference field may include a variable from any controller or a constant.

Select **OK**.

**Trigger condition options:**

**Evaluate every:**
- **Month** – select the day of the month and the time of day when the trigger will be evaluated
- **Week** – select a day of the week and the time of day when the trigger will be evaluated
- **Day** – enter the time of day when the trigger will be evaluated
- **Hour** – enter the minutes and seconds after the hour when the trigger will be evaluated
- **Minute** – enter the seconds after the minute when the trigger will be evaluated

**Condition** (available for both Periodic and Scheduled triggers):
- **ALWAYS** - always fires
- **NEVER** - never fires
- **CHANGE** - fires on change of state
- **LT** - fires when Compare Value 1 < Compare Value 2
- **LTE** - fires when Compare Value 1 <= Compare Value 2
- **GT** - fires when Compare Value 1 > Compare Value 2
- **GTE** - fires when Compare Value 1 >= Compare Value 2
- **EQ** - fires when Compare Value 1 = Compare Value 2
- **NEQ** - fires when Compare Value 1 <> Compare Value 2
- **BAND** (Bitwise AND) - fires when Compare Value 1 bitwise ANDed with Compare Value 2 is non zero
- **ELT, ELTE, EGT, EGT, EEQ, ENEQ, EBAND** - these conditions are the same as the conditions above with the exception that these conditions are edge trigger conditions. They only fire once when the Condition evaluates to TRUE. The Trigger will fire again once when the Condition evaluates to FALSE, then TRUE.

If you wish to use the Knowledge Base or contact Customer Support you can :

*From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support or Visit [http://www.softing.us/ra/support/](http://www.softing.us/ra/support/) and select Support.*
Adding a Database Adapter (MSSQL)

A **MSSQL Adapter** is an output adapter and it allows you to setup a connection to a MSSQL database.

1. **Right-click** on Adapter.
2. Select **New Adapter**.
3. Select **New MSSQL Adapter**.
4. Define the **Name** used to label this device in the eATM tManager.
5. Define the **Host** by either IP address or DNS name.
6. Define the **Port** this database server listens on. For MS SQL, the default is 1433; for Oracle the default is 1521. The default port for that database type is shown.
7. Input the **Database Name** as seen on the database server.
8. Input the **Username** and **Password** as defined for your access into the database server.
9. Select **Validate Connection**. This validation attempts a connection to the database to confirm that the network settings are configured correctly.
10. Select **Enumerate Database**. The eATM tManager will request the table, view, and stored procedure information from the database.
11. Select **OK**.

**Connection Timeout** (sec): The time in seconds the adapter attempts to connect to the database before the connection fails and messages go into the store and forward queue or are dropped.

**Transaction Timeout** (sec): The time in seconds the adapter attempts to send a transaction to the database before the connection fails and messages go into the store and forward queue or are dropped.
Adding Database Endpoints (MSSQL)

As an output adapter, the MSSQL adapter can contain one or more endpoints.

1. **Right-click** on **MSSQL Device Adapter**.

2. **Select** New Endpoint.

3. **Enter a Name** for this endpoint.

   ![New Endpoint Window]

   **Adapter**: The name of the adapter that the endpoint belongs to.

   The **Link** button opens the adapter for viewing or editing.

   These options are covered in Appendix B:

   - Database Endpoint: Transaction Log (optional)
   - Database Endpoint: Store & Forward (optional)
   - Database Endpoint: Failover (optional)
Adding Maps

The next step is to define the mapping of source data to its destination by creating a map.

You can create a unidirectional map to map data from a source to a destination, or a function map to map data from a source to parameters in a function call and outputs from the function call to a destination.

In this section we will be creating a unidirectional map. Our example will use a MSSQL database table insert, a CompactLogix (1769) tag, and a couple of eATM macro values.

1. **Right-click on Maps.**
2. Select **New Map**.
3. Select **New Unidirectional Map**.

### Output Schema:

1. Select **Output Schema**.
2. Select a **Table** from the **Tables** in your database.
   1. You may only select from one table.
      
      In the example the table named **AUTO** was selected.
   2. When you select the table, the table contents will be shown in new window.
3. With the configuration of the table displayed, you will now be able to drag column names from the Schema screen into the Output Schema (right side) of the Map screen.
4. Select OK when you are done.

Input Schema:

The process will now be repeated for the Tags from the PLC.

1. Select Input Schema. The screen will display a list of possible Input sources.
2. Select Automation.
3. Select the name of the PLC you want to map to.
4. The Tags available from this processor are now displayed in a Tag window. Drag the ones you want into the Input Scheme area on the left side of the Map screen.

If you wish to use the Knowledge Base or contact Customer Support you can:

From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support or Visit http://www.softing.us/ra/support/ and select Support.
Connecting Outputs to Inputs:

To complete the map definition, the inputs need to be connected to outputs.

1. Highlight one or more items.
2. Press the \(\text{\textbf{Connect Input to Facing}}\) icon or right-click and select Connect Input to Facing.
3. Repeat steps 1 and 2 until all the inputs are mapped.

**NOTE “Connecting Inputs to Outputs”:**
- You can map one input to multiple outputs if needed.
- You can select multiple inputs and outputs with one \textit{Connect Input to Facing} statement.
- Inputs can be values supplied by eATM tManager Macros
  - Constants
  - Timestamp
  - Trigger Name including path
  - Value of the tags used in the trigger condition (Variable and Reference)
  - Reference the online \textit{Help} for more information

When you have completed your mapping, the screen will show all inputs mapped to an output.

4. Select \textit{OK} to save and close.
Adding a Database Message Path

In this example, we will create an SQL Insert Message Path to insert data into a database using an SQL INSERT statement.

1. Right-click on Message Paths.
2. Select New Path.

   ![Message Paths window]

   **Name**: The name of the message path.

   **Triggers**: The triggers that fire this message path. To fill this field, drag a trigger from the tree on the left.

   **Map**: The map the message path uses. To fill this field, drag a map from Lists configured maps on the left.

   **Endpoint**: The endpoint the message path sends data to. To fill this field, drag an endpoint from the tree on the left.

4. Drag items that you have already created from the configured items into the message path fields for Triggers, Map, and Endpoint.

5. Select OK to save and close.

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If you wish to use the Knowledge Base or contact Customer Support you can:

From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support or Visit http://www.softing.us/ra/support/ and select Support.
Starting Components

A component at any level can be stopped. The following may be stopped:

- eATM Appliance
- Projects
- Triggers
- Endpoints

For a transaction to be completed, all of the components must be Started (Running).

Starting a Trigger

When a trigger is Stopped, its icon will be displayed with a RED Box as shown below.

In Project Editor, you can start triggers in several ways:

- Select the trigger, select Edit from the top menu bar, and then select Start.
- Select the trigger and press F5.
- Right-Click on the trigger and select Run.

After the trigger is started, it’s icon will display a status triangle on the trigger icon (either gray or green depending on the Project and Module status).

**NOTE:** If either the Project or Module is not running, the icon triangle will be gray.
Starting an Endpoint

All of the Automation and Database endpoints that are associated with your triggers need to be started.

In Project Editor, you can start endpoints the same way you start triggers:

- Select the endpoint, select **Edit** from the top menu bar, and then select **Start**.
- Select the endpoint and press **F5**.
- **Right-Click** on the endpoint and select **Run**.

You can also start endpoints in xATM Manager:

- **Right-Click** on the endpoint and select **Start**.

Starting a Project

There are several methods of starting a PROJECT:

- In Project Editor, in the upper-right corner, press the button in the **Project** area.

  ![Project Status](image)

  Select **Yes** when prompted and the state will change to **Running**.

- In xATM Manager, select the **Projects** or **Status** tab, **right-click** on the project name, and select **Start**. The project ICON will change from **RED** to **GREEN**.

  ![Project Status](image)
Starting an Appliance

An appliance can be started in either Project Editor or xATM Manager.

In the top-right corner of the screen, press the button in the **Appliance** area.

Select **Yes** when prompted and the state will change to **Running**.

Monitoring Status

Now that you have started the components (trigger, endpoint, project and appliance), you can monitor the trigger and endpoint status information easily on the **PROJECT EDITOR**’s status screens.

You can use these screens to Start, Stop, and access Transaction Logs, and monitor information during development.

**NOTE “Viewing Status Information within xATM Manager vs. Project Editor”:**
This status information is available for the whole module on the **xATM_MANAGER | STATUS** screen by selecting **VIEW TRIGGER / ENDPOINT STATUS**. While the format is the same, the **xATM Manager** provided information across the appliance (i.e. all projects) and the **Project Editor** can only view one project at a time. However, you can have multiple **Project Editors** sessions open at the same time, if needed.
In xATM Manager, you can view trigger and endpoint status by clicking on **View Trigger /Endpoint Status** on the **Status** tab.

If you wish to use the Knowledge Base or contact Customer Support you can:

*From within the xATM Manager or Project Editor software, select the HELP icon 📚 and then Online Support or Visit [http://www.softing.us/ra/support](http://www.softing.us/ra/support) and select Support.*
**FAQ: How do I add my RA profile (AOP)?**

**Adding generic profile support (i.e. Supervisory Controller)**

The configuration for the supervisory controller is made using the **PROJECT EDITOR** under the **AUTOMATION ADAPTER**. All Automation adapter configurations are in effect for all the projects on the module.

For most 69eATM-tManager installations, you will have connection to the supervisory controller over EtherNet/IP on the front of the module. By default, you will see this screen:

![Edit Supervisory Controller Settings](image)

However, once you selected EtherNet/IP on this screen and you have defined a generic profile on your CompactLogix, you will see the “no controller connected” replaced with the name that you have assigned to this CompactLogix in your tManager’s Automation tree.

![Edit Supervisory Controller Settings](image)

You will be using a generic AOP (Add-On-Profile) feature in RSLOGIX5000 to configure a generic profile for your tManager. The instructions below show this RSLOGIX5000 AOP configuration of your generic profile.
Logix Profile (AOP): Status and command to/from CompactLogix
Within RSLogix5000 software you will need to setup a scheduled connection using the Generic Profile.

**EtherNet/IP Control Method**

1. Within the RSLogix5000 program, in the I/O Configuration tree, *right-click* on the Ethernet network and select *New Module*. Under *Communications*, select *Generic Ethernet Module* and select *OK*.

2. Setup your module as follows:
   - **Comm Format**: Data – DINT
   - **IP Address**: tManager's IP address
   - **Input Assembly Instance**: 1
   - **Input Size**: 24
   - **Output Assembly Instance**: 2
   - **Output Size**: 22
   - **Configuration Assembly Instance**: 3
   - **Configuration Size**: 0

3. Press *OK*.

4. Under the *Connection tab*, set the *Requested Packet Interval* to 150 ms or greater. Leave the *Unicast* box checked.

5. Press *OK*.
**Status and Control information**

The following information is passed using the supervisory controller connection no matter which Control Method is selected.

```
Supervisory Controller: The controller that is currently connected to the appliance.

Status Data From the Appliance
Index 0 (Status Bits)
- Bit 0 (Needs Attention): When this bit is on, there one or more errors that need attention that have occurred on the appliance. This means the needs attention indicator is active.
- Bit 1 (PLC Command Error): The last PLC command executed had an error.
- Bit 2 (Supervisory Confirmation Flag): This bit is not displayed in the status data. Bit 2 is set only in the controller that owns the Control portion of the AOP connection. If a backplane and an ethernetIP controller have a valid AOP connection, bit 2 will be set in one or the other (depending on the supervisory controller settings). The one with bit 2 set has control (supervisory privileges) and may send commands to the appliance. If bit 2 is clear, the connection is read-only.
  Note: multiple backplane and/or multiple ethernetIP AOP connections is NOT supported, however, one backplane controller and one ethernetIP controller may simultaneously connect, with one having Control.
- Bit 16 (Data in S & T): One or more store and forward queues are more than 1/2 full.

Index 1 (Appliance Mode): The mode of the appliance.
- 1 = appliance is halted
- 2 = appliance is suspended (free memory on the appliance is less than 10%)
- 3 = appliance is running

Index 2 (Command Trigger Echo): This index is set to the output index 0 command trigger value after the command has completed.

Index 3 (Free Running Counter): A free running counter to indicate that the appliance is still alive.

Control Commands to Appliance
Index 0 (Command Trigger): The supervisory controller must change this value to execute the command code.
Index 1 (Command Code): The supervisory controller command to the appliance.
- 0 = take no action
- 1 = go to stop mode
- 2 = go to run mode
- 4 = reset the appliance network settings
- 5 = restart the appliance
- 6 = start the project specified by project ID in command parameter
- 7 = stop the project specified by project ID in command parameter

Index 2 (Command Parameter): Parameter for supervisory controller command to the appliance.
```

**NOTE** “If a second controller needs to monitor AOP”:
The appliance may only have one master for more information see the [http://www.softing.us/ra/support/](http://www.softing.us/ra/support/) knowledgebase entry on Supervisory Controllers “AOP HIERARCHY LOGIC”.

---

*If you wish to use the Knowledge Base or contact Customer Support you can:*

*From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support or Visit [http://www.softing.us/ra/support/](http://www.softing.us/ra/support/) and select Support.*
FAQ: What advanced network settings are supported?

During the edit of a port’s configuration, if you select the Advanced Settings icon you will be given these selections:
What options are available under Network Diagnostics?

To access Network Diagnostics from within xATM_Manager software:

1. Select the **Administration** tab.
2. Select the **Network** tab.
3. Double-click on **Network Diagnostics**

See screen captures below for the available options. Online help is also available by pressing F1.
What options are available using Network Routing?

To access Network Diagnostics from within xATM_Manager software:

1. Select the Administration tab.
2. Select the Network tab.
3. Double-click on Network Routing

See screen capture below. Online help is also available on the unit by pressing F1.
FAQ: What causes the module to time-sync?
If time sync is enabled, a time sync cycle occurs
  o After a time-synch configuration change
  o After an appliance mode change
  o During appliance boot
  o At the specified frequency after configuration/mode-change-boot.

During a time-sync cycle:
  o The time of the appliance is set from the first active synch source found.
  o All the time synch destinations are set from the appliance time.
  o Logging -- Failed and successful synch sources and destinations are logged.

FAQ: What happens if one or more of the plc variables are not available when the trigger fires?
Successful completion of any map requires that “all of its PLC variables must be available” when:
  o For inputs: When the trigger fires for inputs
  o For outputs: When it receives the output values

This is true for all maps whether that map contains one plc or several plcs.

If any PLC variable is not available, the trigger is disabled and does not complete until all variables are available.

Can I use multiple PLCs my map as the source or destination?
You can map from/to multiple input and/or outputs automation devices, if needed, in your application.

Things to consider when you make that decision when using multiple automation devices:
  o Successful completion of this map requires that “all of its PLC variables must be available” when the trigger fires. This constraint is true for all maps whether that map contains one plc or several plcs.
  o If any PLC variable is not available, the trigger is disabled and does not complete until all variables are available.
  o If this constraint is not acceptable, limit your maps to one controller by use a single controller as a data concentrator.
FAQ: What are the rotary switches on the side of the module used for?
There are 3 rotary switches on your module.

Normal operating state is set to 0-0-0.

Set to Network Setting to factory default values:
To reset the network settings to their factory default values, pull the module out of the rack and set the switches to 8-8-8.

When the module powers up with the switches set to 8-8-8, there will be a message scrolling on the display that says, " ...Network interfaces have been reset to factory default values; set rotary switches to 0-0-0 ".

At this point, eth0 is reset to 192.168.1.250 and eth1 is reset to DHCP. The module will not run until you pull the module; set the switches back to 0-0-0, plug it in and it powers up.

WARNING:
In this state, you will not be able to connect to the module.

To connect to the module, you must follow the scroll display instructions, i.e., pull the module and set the switches back to 0-0-0.
Appendix A: Trouble-shooting

xATM Manager: Attention Required
This icon means that an error has been logged on the module since the SYSTEM LOG has been last viewed.

**ATTENTION REQUIRED** status is display in several locations:

1. The screen icon is ![Attention Icon]

   a. On xATM Manager **STATUS** screen (as shown below)
      When you hover the cursor over this icon, you will see the message below “**Device requires attention. Click for more details...**”.

      When you click for more details, you will see a new window displaying the **SYSTEM LOG** listing all the errors on the unit.

   b. Project Editor top toolbar

      ![Project Editor Toolbar]

      When you **click** the icon ![Attention Icon], it will open the xATM MANAGER so you may review the SYSTEM LOG.

Note: SYSTEM LOG email notification will notify the user of the existence of an event. These events are marked as ERROR.
Warning: Maximum number of any component type have been reached

If you exceed any of the configuration component limits, you will receive this error message. This error is displayed when you attempt to create a new component. See Appendix C for eATM tManager Limit Values.

Trigger: Should be firing but is not

If a trigger is not running and you believe that it should be, check the following items:

1. Is the eATM appliance RUNNING?
   
   Look in xATM Manager.

2. Is the Project RUNNING?
   
   Look in Project Editor. If the eATM appliance is not RUNNING and the Project is running state is GRAY, however, if the eATM appliance is RUNNING, the state is in GREEN

3. If they are both running, are the trigger and its endpoints all in RUN?

   Right-click and check STATUS the icon should have a GREEN triangle.

4. If they are then double-check the conditions for your trigger.

5. Check the SYSTEM LOG for errors
ICON: Possible Trigger/Endpoint icon states

The **state** of the trigger:
- ![trigger is running](image1)
- ![trigger is stopped](image2)
- ![trigger is faulted](image3)
- ![trigger is running, but the project is stopped or the appliance is halted](image4)

The **state** of the endpoint:
- ![endpoint is running](image5)
- ![endpoint is stopped](image6)
- ![endpoint is running, but the appliance is halted](image7)

An item marked with the **invalid icon** ![invalid icon](image8) means that the item is dependent on a variable which has either been deleted or the type has changed such that it is no longer compatible with its usage. This would normally happen when you update a tag list or schema. If you **hold the mouse over the invalid icon** ![invalid icon](image8), a message is displayed describing the error.

A trigger marked with the **faulted icon** ![faulted icon](image9) means that the **PLC program** does not contain one of the tags used in the trigger condition or a map which the trigger is linked to.

More information is available in the **Project Editor**’s online **HELP** under **Appliance Status**.
**ProjectEditor: Clearing Locks**

When you open a selection for EDIT, you create a lock on that configuration.
If the Project Editor is closed prior to the exit of the EDIT mode, the next person to connect to this project will see this WINDOW when they open connection.

You can select to UNLOCK all or any individual items.
Error: “the destination for the return map must be the automation adapter”

This error means that you have selected an INBOUND MAP for this SELECT Message Path which is not mapping controller to database.

Solution: In this SELECT Message Path example, select a INBOUND MAP that maps database table information to automation tags.
Project: Type Warning

This warning will be displayed when you APPLY or select OK (to save) and one or more of the INPUT fields on the left-side are not identical to the OUTPUT fields on the right-side. This error is informing you that you are responsible for confirming the data types are compatible on these items.
**Project: Dependent Objects Warning**

If other objects related to the item are STARTED, you will be asked if you wish to STOP them to apply the EDIT that you are now saving.

If you select YES, you will be supplied with a list of items that you will now want to restart.

*Warning:* If you select NO, your changes are not saved.

---

**Network troubleshooting**

See FAQ sections of this document for the **NETWORK DIAGNOSTICS** and **NETWORK ROUTES**
Appendix B: Recommended Usage

Configuration design

FAQ: What do you recommend when designing my configuration?

RESPONSE: The eATM-tManager products have several features that you should keep in mind when designing your configuration.

1. Triggers have several firing condition options:
   - **Option 1**: Tag-based (up to 2 tags) \textit{typical selection}
     - The use of tag includes comparison of a tag to a constant or to another tag.
     - These tags do not have to reside on the same device.
   - **Option 2**: Time schedule
   - **Option 3**: RA MSG INSTRUCTION
   - **Option 4**: Combinations
     - Multiple time-schedule conditions
     - Time-schedule condition(s) or MSG INSTRUCTION option combined with the Option 1 condition method.
   - **Note**: A trigger’s transaction will not be output from the tManager if any of its map’s input variables are not available when the trigger fires. If any of these variables are not available, the trigger is marked as disabled and will not retry for 60-seconds.

2. Handshake mode selection made in the trigger configuration effects when the next trigger firing occurs:
   - When combining transactions under one trigger, remember that the trigger cannot fire again until the completion of all the messages at their level of handshaking; therefore, one slow message would cause all to wait for its completion.
   - A trigger will not fire unless all the tag/variable used in both its trigger firing conditions or its maps source is not available. This disabled state is signified in the ProjectEditor trigger name marked with a yellow \(\triangle\) triangle. When disabled, the trigger will not fire any of its messages, so no transaction will occur until all the required data is available.

If you wish to use the Knowledge Base or contact Customer Support you can:

From within the eATM Manager or Project Editor software, select the HELP icon \(\square\) and then Online Support
or Visit http://www.softing.us/ra/support/ and select Support.
• When selecting handshake mode, you must consider the features that you will be using with your adapter endpoint.
  For example:
  o If you are using STOREANDFORWARD, you will use INQUE.  \textit{typical selection}
  o If you want to stop the line if your INSERT or UPDATE is not completed for any reason, you will use SentToDest
  o If you want to stop the line if your SELECT or STORED PROCEDURE WITH OUTPUTS is not completed for any reason, you will use SentToSrc

3. Status Tags
• TriggerStatusTags \textit{typical selection when trigger handshaking is required}
  o It is only used if the plc logic will be monitoring the completion status of this individual trigger.
  o For triggers with multiple message paths, there is the option of a separate status tag for each message path.
• EndpointStatusTags
  o They are only used if the plc logic will be monitoring the overall health of this connection. It is overall health because its value will only reflect the status of the last transaction to this endpoint.

4. Endpoint architecture
• Create separate endpoints for each adapter based on the properties that your transaction will require.
  For example,
  o INSERTS and UPDATES sent to a database would always utilize STOREANDFORWARD.
  o SELECT commands requests data from the database would typically not utilize STOREANDFORWARD
  o StoredProcedures utilize STOREANDFORWARD or not based on the function to be performed by this StoredProcedure
  • If you have a transaction message which might expect to be more time-consuming, then use a separate endpoint to allow faster transactions to continue while the slower transaction wait in the queue.

5. Map
• A transaction will not be output from the tManager if any of its map’s input variables are not available when the trigger sent its read request. At that time, this trigger is disabled and will not retry for 60-seconds.
• Map may contain variables (i.e. tags) from multiple plcs \textit{typical installation, one plc in a map}
  o If you wish the trigger to continue when one or more of the plcs is not available, then you would use a data concentrator plc. In that situation, the map would be using only variables from the data concentrator plc.
Transaction Log

**FAQ:** Why would I use transaction logging? And how would I setup transaction logging? *Typical used for non-automation endpoints like databases and not used for AUTOMATION endpoints*

**RESPONSE:** There are a few reasons.

I would recommend the use of transaction logging with non-AUTOMATION endpoints.

Why? If any of the following are true:

1. If you would like to see the SQL message sent to the database and its response

   **Note “Transaction log contents”:**
   
   This feature is useful in trouble-shooting because both the SUCCESSFUL and UNSUCCESSFUL transactions are logged. If UNSUCCESSFUL, the database error message is included in the log.

2. If you would like a historical record of what you sent.

   **Note “Automatic Export of module logs”:**
   
   You can have it automatically export via FTP or SMTP when a file becomes full. This feature is recommended if you wish to maintain this information for longer periods of time.

3. You have more than 2G available for the storage of your S&F and transaction log on your eATM appliance’s compact flash. Therefore, define your S&F and Transaction log sizes appropriately.

   **Note “Transaction Log memory allocation & impact on throughput speed”:**
   
   These files will be created when you save (select OK).

   For high speed applications, you may select to use TRANSACTION LOGGING only during trouble-shooting.

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*If you wish to use the Knowledge Base or contact Customer Support you can:*

*From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support or Visit [http://www.softing.us/ra/support/](http://www.softing.us/ra/support/) and select Support.*
Store & Forward (S&F)

**FAQ:** When should I use it?
And How big should I make my *Size of queue* and *Time To Live*?

**RESPONSE:** You would typically use S&F with non-AUTOMATION endpoints. It is recommended for any transaction that you would like to store on the module until its destination is once again functioning. Once available, the data is passed out in a FIFO. An example of this types are the INSERT and UPDATE database commands.

The *Time To Live* is the maximum length of time that a transaction will be saved in this S&F. After this time period, the transaction will be deleted. For your *Size of queue*, you will need to allocate enough space for the storage of your transactions during the “*Time To Live*” period that you have selected.

If you are not sure, I recommend use of the default values of (10M and INDEFINITE).

**Note “S&F size”:**

1. These files will be created when you save (select OK).
2. You cannot modify an endpoint configuration in any way useless the endpoint is STOPPED and this queue is empty.
3. I recommend that your store and forward log sizes be 10M or less. When larger sizes are selected, you will see a slow response to its selection of OK or APPLY with the larger sizes because this drive area is allocated to this purpose (i.e. S&F for this endpoint) when you save this configuration.
4. You have more than 2G available for the storage of your S&F and transaction log on your eATM appliance’s compact flash; therefore, define your S&F and Transaction log sizes appropriately.

**Note “Handshake mode selection impart of S&F”:**
Store&Forward is only valid when used in combination with triggers with a HANDSHAKE MODE of IN QUEUE or RECEIVED FROM SOURCE; therefore, no message will be placed into S&F unless these handshaking modes are selected for your message paths.
This handshaking mode selection is made on your trigger edit screen.
Automation Endpoints

**FAQ:** Why would I use multiple **AUTOMATION ENDPOINTS**?

**RESPONSE:** There are several reasons. A few of these are listed below.

1. Endpoint **STATUS TAG** feedback, if used, is set at the AUTOMATION ENDPOINT level. This tag will reflect the status of the last transaction back to its plcs via this endpoint.

2. **TRANSACTION LOGGING:** This log is **typically not used** for Automation endpoints. If you wanted to log the communication between device and this appliance for some triggers and not for other, you would use multiple **ENDPOINT**. In most cases, you will wish to log the **ENTIRE MESSAGE** or have no transaction logging; however, the flexibility of selecting the # of bytes to log per message is supported. These logs may be automatically exported as the file is full via FTP or SMTP.

**NOTE: “Transaction log”**
Transaction logging is seldom used with AUTOMATION ENDPOINTS. Its need originated in the enterprise adapter world; however, it can be useful if trouble-shooting controllers in the future. We recommend that this features is only used when it is needed then turned back off to remove its overhead on the module.

3. Endpoint handshaking for **FLOW CONTROL**, if used, is set at the AUTOMATION ENDPOINT level. While **typically not used**, you would use this feature if you wish to request data for a database for example, then hold it in the tManager (i.e. the AUTOMATION adapter’s STORE AND FORWARD) until the plc was ready to receive it.

**NOTE: “Flow Control”**
**FLOW CONTROL** includes completion success and on error feedback in its response.
- You have a **REQUEST** tag and a **RESPONSE** tag (DINT)
- If successful, **RESPONSE == REQUEST** value
- On error, **RESPONSE = negative of the REQUEST** value
- Data is written to the plc when the **REQUEST** value set to a new value which is:
  - Non-zero
  - <10,000
  - not equal to the current **RESPONSE** tag (i.e. the value of the request tag changed)
Appendix C: eATM tManager Limits

Configuration Software
There is no limit to the number of UI systems installed, so you can install the xATM Manager & Project Editor software packages on as many systems as you wish.

Appliance Configuration
The following limits are enforced on the appliance. These counts are cumulative for the entire appliance.

Example: For MaxTriggers=Z, you can have several projects that combined have Z triggers or 1 project with Z triggers.

<table>
<thead>
<tr>
<th>MaxProjects = 8</th>
<th>MaxTriggers = “x”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For your 1769 tManager, you have several trigger level options.</td>
</tr>
<tr>
<td></td>
<td>TriggerGroup1 MaxTriggers = 8</td>
</tr>
<tr>
<td></td>
<td>TriggerGroup2 MaxTriggers = 16</td>
</tr>
<tr>
<td></td>
<td>TriggerGroup3 MaxTriggers = 25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MaxMaps = 25</th>
<th>MaxPaths = 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaxAdapters = 16</td>
<td>MaxAutomation = 32</td>
</tr>
<tr>
<td>• Each adapter definition for a database, JMS, etc uses one of these adapter counts</td>
<td></td>
</tr>
<tr>
<td>• 1 adapter is related to each project is automatically allocated to Automation</td>
<td></td>
</tr>
<tr>
<td>• All PLCs are under this 1 adapter/project</td>
<td></td>
</tr>
<tr>
<td>• Any adapter may be used in any combination allowed by you license purchase.</td>
<td></td>
</tr>
<tr>
<td>• Automation Adapter contains an AUTOMATION TREE. Inside this tree, you may only be connected to a maximum of x controllers.</td>
<td></td>
</tr>
<tr>
<td>• Recommend usage level maximum of 16 automation devices</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MaxEndpoints = 25</th>
<th>Tag/Variable Count Limit = n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• No enforced tag limit during configuration</td>
</tr>
</tbody>
</table>

NOTE: “System Limit modification”
If your application requires a greater number contact technical support (support@softing.us) to discuss your application.

If you exceed any of these configuration component limits, you will receive this error message. This error message is displayed when creating a new component after the maximum has been reached.
Appendix D: Functionality and Hierarchy of the Configuration Programs

After the configuration software is installed, the computer’s Start / All Programs menu will have a listing for Online Development Inc / tManager eATM and its two components -- Project Editor and xATM Manager.

These two configuration programs require that the eATM tManager be online when they are used.

The xATM Manager software is used to configure administrative items (network settings, time zone, time-sync, etc.) for each eATM tManager appliance. The Project Editor software is used to configure connections and their transactions.

A map of the menu system for each of these programs is shown below.

<table>
<thead>
<tr>
<th>xATM Manager functionality:</th>
<th>Project Editor functionality:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Administration tab</strong></td>
<td>Creation of the components inside individual projects</td>
</tr>
<tr>
<td>o Network tab</td>
<td>o Adapters</td>
</tr>
<tr>
<td>▪ Appliance name</td>
<td>o AUTOMATION (PLC Connection)</td>
</tr>
<tr>
<td>▪ Ethernet ports</td>
<td>▪ Triggers</td>
</tr>
<tr>
<td>▪ Network Diagnostics (PING, etc.)</td>
<td>▪ Endpoints</td>
</tr>
<tr>
<td>▪ Networking Route</td>
<td>o Non-PLC adapter</td>
</tr>
<tr>
<td>o Time Management tab</td>
<td>▪ Endpoints</td>
</tr>
<tr>
<td>▪ Time zone/sync source/manual</td>
<td>▪ Triggers (Non-PLC&amp;non- database)</td>
</tr>
<tr>
<td>o System tab</td>
<td><strong>Maps</strong> (mapping source to destination)</td>
</tr>
<tr>
<td>▪ Appliance Backup/Restore</td>
<td>o Message Paths</td>
</tr>
<tr>
<td>▪ Appliance Restart/Shutdown</td>
<td>o Schemas</td>
</tr>
<tr>
<td>o Update tab</td>
<td>o XML database column</td>
</tr>
<tr>
<td>▪ Firmware Update</td>
<td><strong>Tag Lists</strong></td>
</tr>
<tr>
<td>▪ Retrieve Support Information</td>
<td>o List for variables for each Automation endpoint</td>
</tr>
<tr>
<td>▪ Reset to factory default</td>
<td>o Request update</td>
</tr>
<tr>
<td>o License Management tab</td>
<td><strong>Tables/Views</strong></td>
</tr>
<tr>
<td>▪ View/Update/RequestFile</td>
<td>o Procedures/Functions</td>
</tr>
<tr>
<td>o Configure logs tab</td>
<td>o Database stored procedures</td>
</tr>
<tr>
<td>▪ Location / contract / description</td>
<td><strong>Application</strong></td>
</tr>
<tr>
<td>o General tab</td>
<td>o Export Cross-reference</td>
</tr>
<tr>
<td>▪ Appliance Version/SerialNumber</td>
<td>o Create NEW projects, triggers, endpoints, etc</td>
</tr>
<tr>
<td>o Users tab</td>
<td>o Switch projects</td>
</tr>
<tr>
<td>▪ Define users and select their access level</td>
<td>o Import Schema</td>
</tr>
<tr>
<td><strong>Status tab</strong></td>
<td>o Enumerate Schema (Automation)</td>
</tr>
<tr>
<td>View individual appliance status</td>
<td>o Module Connect/Exit (Disconnect)</td>
</tr>
<tr>
<td>o System log &amp; Audit log (View&amp;Export)</td>
<td><strong>Edit</strong></td>
</tr>
<tr>
<td>o Projects by name</td>
<td>o Start/Stop/Edit/Delete</td>
</tr>
<tr>
<td>▪ Endpoints by name</td>
<td>o Copy/Cut/Paste</td>
</tr>
<tr>
<td>Right-click to:</td>
<td>o Search&amp;Replace (tag names, etc)</td>
</tr>
<tr>
<td>• Start/Stop</td>
<td>o Project Settings (Project Status Tag)</td>
</tr>
<tr>
<td>• Flush Messages</td>
<td></td>
</tr>
<tr>
<td>• Reset Failover</td>
<td></td>
</tr>
<tr>
<td>• Clear statistics</td>
<td></td>
</tr>
<tr>
<td>o Trigger &amp; endpoint statistics</td>
<td></td>
</tr>
</tbody>
</table>
### xATM Manager functionality:

- **Projects tab**
  - Create/Delete
  - Import/Export
  - Copy/Paste/Rename
  - Start/Stop
  - Edit (which starts Project Editor)

- **Appliance Browser** (Left panel)
  - Monitor multiple eATM tManager appliances on subnet
  - NET: Define and scan subnets
  - Connect to modules
  - Edit projects (with Project Editor)

- **View**
  - Appliance Browser
  - Full screen
  - License agreement

- **Help**
  - Context help
  - Online support
  - About this program

- **Edit projects** (folder icon)

### Project Editor functionality:

- **Status**
  - Logs (module wide)
    - View & Export
    - System log
    - Audit log
  - Logs (project wide)
    - View & Export Transaction logs
    - View Statistics
      - Triggers statistics
        - As well as the ability to by component
          - Start/Stop/Open
          - View its log
          - Reset statistics
      - Endpoints statistics
        - As well as the ability to by component
          - Start/Stop/Open
          - View its log
          - Flush Messages
          - Reset Failover
          - Reset statistics
  - Tag View (Automation variables read/write values)

- **View**
  - Appliance Browser
  - Full screen
  - Close panes

- **Help**
  - Context help
  - Online support
  - About this program

- **Manager appliance** (Return to xATM MANAGER with connection maintained to this eATM appliance)

- **Attention required** (triangle with !) (Selection opens SYSTEM LOG and clear Attention required flag)

- **User to change user**

- **Appliance** status Running/Halted & button to change status

- **Project** status Running/Stopped & button to change status

- **Plug icon** status of Project Editor connect to tManager (Green) and disconnect (Red) & this button changes the status

---

If you wish to use the Knowledge Base or contact Customer Support you can:

- From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support
Appendix E: PC Minimum System Requirements

The eATM tManager configuration applications require:

- .NET 4.6.1 SP1
- Windows 7 (64-bit) and Windows 10 (64-bit)
- Minimum Pentium 400MHz 4 GB RAM
  Recommended: Pentium 1 GHz or higher, 8 GB or more of RAM

Appendix F: Module Installation -- Power and Distance Rating

The 69eATM-tManager has the following power requirements and distance rating:

- 5V 313mA
- 24V 185mA
- Pwr. Supp. Dist. Rating of 4
If you wish to use the Knowledge Base or contact Customer Support you can:

From within the xATM Manager or Project Editor software, select the HELP icon and then Online Support.
or Visit http://www.softing.us/ra/support/ and select Support.