MDT SOFTWARE SOLUTIONS

Integrated Version Control and Disaster Recover

MITSUBISHI ELECTRIC

MDTSOFTWARE
Automation Change Management

In modern manufacturing operations, adjustments to automation programs are essential to maximize performance, but can also put the plant at risk for downtime and quality issues if the changes are not managed effectively. Integrating directly with Mitsubishi Electric technology, MDT AutoSave provides superior change management for Mitsubishi Electric products including MELSEC PLCs, and CNCs. An interactive environment with background monitoring allows complete control over device programs including secured user and workstation access, disaster recovery, controlled editor operations, and automatic change notification.
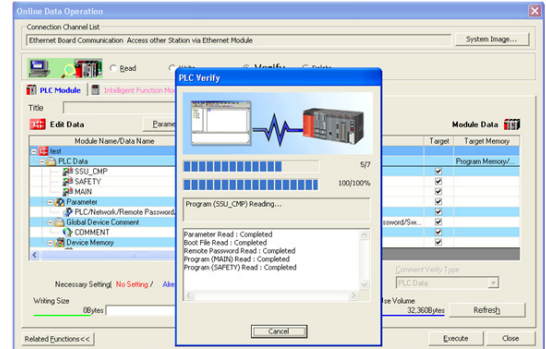
Key Features

- AutoSave integrates directly with Mitsubishi Electric GX Works2 PLC Programming Software and CNC remote monitoring software. AutoSave provides version control, archival backups, change detection and notification, historical tracking, secured user and workstation, disaster recovery, and controlled editor operations.

- AutoSave protects against downtime and errors by providing complete data and system backup with automatic recovery, and integration security.

- A periodic comparison of the program running in each device is made against the program copy on file in AutoSave to identify any differences, protecting users and assets.

- The AutoSave GX Works2 module supports both single file format and Workspace.

e-F@ctory
Alliance

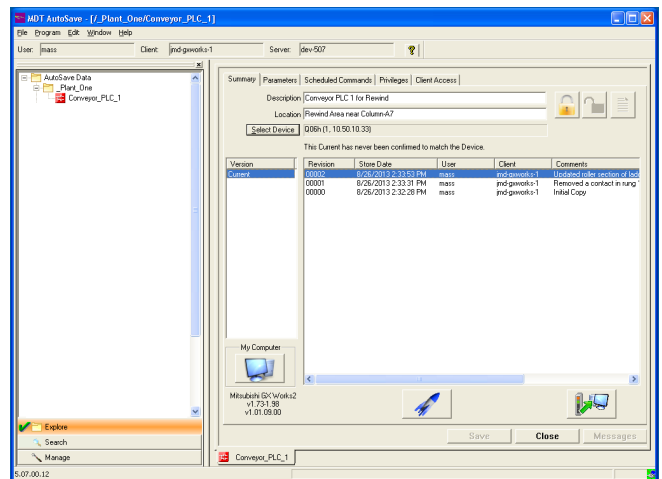**Detailed Change Identification with GX Works2**

The compare functionality of the AutoSave GX Works2 module provides an overall summary of the differences between the device and the revision, as well as details of logic changes. AutoSave can compare any two copies of a program to each other, or the processor, to detect and identify changes that may have been unknown or unauthorized, thus protecting your process, people, and equipment.

No.	Object Type	Data(Verify Source)	Data(Verify Destination)	Verify Result
1	Program File	MAIN	MAIN	Mismatch
2	Program File	SAFETY	SAFETY	Match
3	Program File	SSU_CMP	SSU_CMP	Match
4	Parameter	PLC/Network	PLC/Network	Match
5	Global Device Comment	COMMENT		Source Only
6	Device Memory		Device Data	Dest. Only

Common Central Repository of all Program Changes with Automated Retrieval

AutoSave unifies plant automation software under one common user interface, resulting in a secure, well documented, controlled environment that dramatically reduces coordination constraints, wasted effort, and safety issues. The key to rapid recovery is the ability to access and download the correct automation program to the device. In providing a common central repository of all program changes, MDT AutoSave can ensure that if a device fails, the most current copies of program logic and documentation are available so plant operations can be restored quickly and correctly.

MDTSOFTWARE
Automation Change Management

MITSUBISHI ELECTRIC

AutoSave Change Management
Support for **Mitsubishi GX Works2**

PRODUCT OVERVIEW

The AutoSave suite of products provides the software tools needed to manage all your automation programs. It controls and tracks the changes to your industrial programmable devices and program sources including GX Works2 projects.

AutoSave works with the GX Works2 Programming and Maintenance Tool software via the API file provided by Mitsubishi to offer you both an interactive environment and background monitoring, resulting in a comprehensive change management solution. You have complete control over your device programs including:

- Uploads, Launch for Edits, and Comparisons
- Historical Tracking
- Automatic Change Notification
- Quick Disaster Recovery
- On-going Support of Editor Version Updates

Mitsubishi GX Works Supports two styles of project formats: Single File format and Workspace format (comprised of a directory of files), both of which are supported via the AutoSave module.

CLIENT / SERVER / AGENT

The AutoSave support is comprised of the AutoSave client installed on the user workstation, an AutoSave server acting as the master control center that coordinates all change-related programming activities and stores PLC/HMI project files, and an agent providing distributed processing efficiencies for the server.
This module requires the Mitsubishi API installed on each client or agent upon which it is run. The API files provide the required tools with which to perform uploads, launch, and comparison to device.

ARCHIVED CONTENTS

The entire project directory is saved as a unit and archived. The entire project is restored to the client whenever needed for subsequent use.

SECURED PROGRAM ACCESS

The AutoSave client interface allows users to access the AutoSave functions using a login and password. At log in, the AutoSave server determines the level of access to the different folders and programs permitted to the user and the client PC. Additionally, AutoSave provides audit trails and historical tracking.

VERSION CONTROL

When the user requests a program via AutoSave, the file becomes locked and indicates who has the file checked out. The system denies access to others while the program is in use. When the user completes editing and saves the changes, AutoSave prompts for a revision note, creates a new current copy, relegates the previous current copy to a numbered ancestor, and unlocks the program.

UPLOAD

The upload command performs a 'read from PLC' using the Mitsubishi API. It is the equivalent of performing a GX Works2 software 'Online -> Read from PLC' option. The client/agent first retrieves the current copy files from the server, uploads the files from the device, and then compresses the program's files and saves them to the server, creating a new current copy.
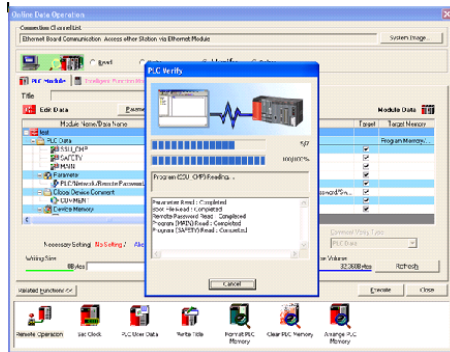
DOWNLOAD

Downloads are performed manually as the API provided does not support the operation.

COMPARISON FEATURES

Comparisons are performed in different manners:

The *revision to revision* comparison compares the ladder logic for the revisions selected and provides details of the differences.

The *device comparison* compares the entire project via the verify operation and also uploads and compares any ladder details. Summary and detail information is available.

No.	Object Type	Data(Verify Source)	Data(Verify Destination)	Verify Result
1	Program File	MAIN	MAIN	Mismatch
2	Program File	SAFETY	SAFETY	Match
3	Program File	SSU_CMP	SSU_CMP	Match
4	Parameter	PLC/Network	PLC/Network	Match
5	Global Device Comment	COMMENT		Source Only
6	Device Memory		Device Data	Dest. Only

COMPARISON ON DEMAND

Compare any two revisions of the program, such as current, local, ancestor, or version, to each other or to the device. As implied by its name, this comparison is done on a demand basis and may be performed from any client with access to the device program.

AUTOMATED COMPARISON

The module allows for scheduled, unattended comparisons of flexibly configured groups of programs. Using Mitsubishi GX Works2 Programming and Maintenance Tool to perform the actual upload, AutoSave can compare the device copy to the current copy or compare the current copy to a selected version copy. This module supports the AutoUpdate feature that enables AutoSave to update the server with a new current copy if the existing current copy is determined to be different than the device.

NOTIFICATION

Notification email can be automatically sent to selected users when comparisons or revision changes are made.

SUPPORTED DEVICES

Mitsubishi GX Works2 Programming and Maintenance Tool software supports the Mitsubishi family of controllers, .

COMMUNICATIONS

All communications information for a project is stored within the project itself. AutoSave configuration provides agent services to specific zones.

ON-GOING UPDATES

This module receives on-going updates when new versions are released. Please check with your sales representative regarding the current range of supported versions of this module.

System Highlights	
Client: Real-time Ancestry	✔
Server: Auto Unattended Operation	✔
Agent: Parallel/Distributed Processing	✔
Secured Program Access	✔
Version Control with file compression	✔
Device Upload	✔
Client Highlights	
Compare	✔
Editor Launch	✔
Server / Agent Highlights	
Time-Base Scheduling	✔
AutoCompare	✔
AutoNotify	✔
AutoUpdate	✔

AutoSave Change Management
Support for **Mitsubishi GX Developer**

PRODUCT OVERVIEW

The AutoSave suite of products provides the software tools needed to manage all your automation programs. It controls and tracks the changes to your industrial programmable devices and program sources including Mitsubishi GX Developer programs.

AutoSave works directly with the GX software to offer you both an interactive environment and background monitoring, resulting in a comprehensive change management solution. You have complete control over your device programs including:

- Secure editor launch of off-line; access is then available for on-line and download
- Historical tracking and audit trails
- Automatic change notification
- Quick disaster recovery
- On-going support of editor version updates

CLIENT / SERVER / AGENT

The AutoSave GX module plugs into the AutoSave client which is installed on each user workstation. An AutoSave server acts as the master control center that coordinates all change-related programming activities and stores device project files, and an agent provides distributed processing efficiencies for the server.

ARCHIVED CONTENTS

All necessary Mitsubishi GX Developer program files from the project path (defaulted to c:\MELSEC but user-configurable) are saved as a complete unit and restored to the client or agent whenever needed for subsequent use.

SECURED PROGRAM ACCESS

The AutoSave client interface allows users to access the AutoSave functions using a login and password. At login, AutoSave determines the level of access to the different folders and programs permitted to the user and the client PC.

VERSION CONTROL

When the user requests a program via AutoSave, the file becomes locked and indicates who has the file checked out. The system denies access to others during the program's use. When the user completes editing and saves the changes, AutoSave prompts for a revision note, creates a new current, relegates the previous current to a numbered ancestor, and unlocks the program.

UPLOAD

A client-based upload (using the local client copy of GX Developer) from the device first retrieves the current copy files for the local PC, uploads the logic, data, and Standard RAM files from the device to the client and then all the program's files are saved to the server, creating a complete new current copy.

A server-based upload employs the AutoSave agent technology and affords the capability of performing the upload from a client that cannot communicate with the processor or that does not have GX Developer installed.
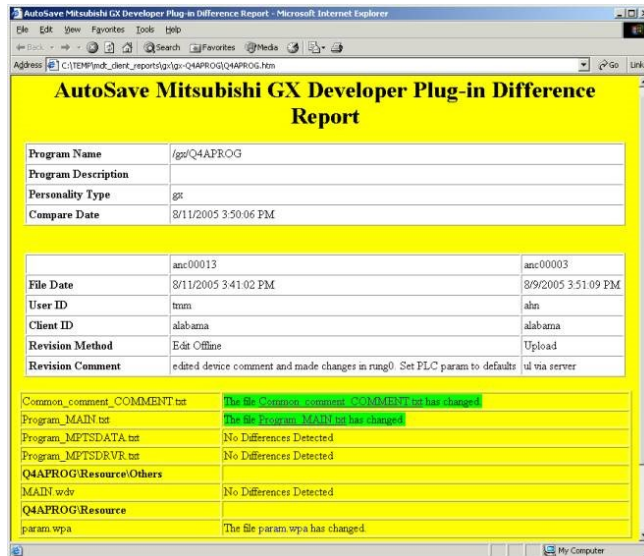
DOWNLOAD

Download is accessed from within the launched GX off-line session, available with either the current copy or a named version.

COMPARISON FEATURES

Comparisons can be configured for each program to be either detailed or quick binary. Selections can vary between agents based on their .ini file settings. Additionally, a program can be set to compare the device memory and/or resource.

COMPARISON ON DEMAND

Compare any two revisions of the program, such as current, local, ancestor, or version, to each other or to the device. This user-requested comparison is done as needed and may be performed from any client granted access to the device program.

AUTOMATED COMPARISON

The module provides scheduled, unattended comparisons of flexibly configured groups of programs. Using GX software installed on the agent to perform the actual upload, AutoSave can compare the device copy to the current copy or compare the current copy to a selected version (permanent copy). This module supports the **AutoUpdate** feature that enables AutoSave to update the server with a new current copy if the existing current copy is determined to be different than the device.

NOTIFICATION

Notification e-mail can be automatically sent to selected users when comparisons or changes are made.

COMMUNICATIONS

Device communications via Ethernet for the client and agent have been tested. Additional communication methods may require additional funding for development and testing at the discretion of MDT.

ON-GOING UPDATES

This module receives on-going updates when new versions of Mitsubishi GX Developer are released. Please check with your sales representative regarding the current range of supported versions of this module.

System Highlights	
Client: Real-time Ancestry	✔
Server: Auto Unattended Operation	✔
Agent: Parallel/Distributed Processing	✔
Secured Program Access	✔
Version Control with file compression	✔
Device Upload	✔
Device Download	✔
Client Highlights	
Compare	✔
Editor Launch Off-line	✔
Server / Agent Highlights	
Time-Base Scheduling	✔
AutoCompare	✔
AutoNotify	✔
AutoUpdate	✔

AutoSave Change Management
Support for **Mitsubishi C64 CNC**

PRODUCT OVERVIEW

The AutoSave suite of products provides the software tools needed to manage all your automation programs. It controls and tracks the changes to your industrial programmable devices and program sources including Mitsubishi C64 CNC projects using Remote Monitor.

AutoSave works directly with the Remote Monitor software to offer you both an interactive environment and background monitoring, resulting in a comprehensive change management solution. You have complete control over your device programs including:

- Secure Editor Offline for Edits and Downloads
- Upload
- Compare - Scheduled and On-Demand
- Historical Tracking
- Automatic Change Notification
- Quick Disaster Recovery
- Case-by-Case Updates

CLIENT / SERVER / AGENT

The AutoSave CNC module plugs into the AutoSave client which is installed on each user workstation. An AutoSave server acts as the master control center that coordinates all change-related programming activities and stores CNC project files, and an agent provides distributed processing efficiencies for the server.

ARCHIVED CONTENTS

The contents of the Mitsubishi Remote Monitor project directory folder are archived. The entire project is saved and restored to the client of agent whenever needed for subsequent use.

SECURED PROGRAM ACCESS

The AutoSave client interface allows users to access the AutoSave functions using a login and password. At login, the AutoSave server determines the level of access to the different folders and programs permitted to the user.

VERSION CONTROL

When the user requests a program via AutoSave, the file becomes locked and indicates who has the file checked out. The system denies access to others while the program is in use. When the user completes editing and saves the changes, AutoSave prompts for a revision note, creates a new current copy, relegates the previous current copy to a numbered ancestor, and unlocks the program.

UPLOAD

A client– or agent-based upload (using the local copy of Mitsubishi Remote Monitor) from the device to the server of the entire project including logic, data, and Standard RAM files. The data is uploaded from the device to the client or agent and then the project's files are saved to the server, creating a new current copy.

DOWNLOAD

The offline operation (either from the current copy or a named version) launches the Remote Monitor Tool from which the user can download all or part of the program to the CNC. AutoSave creates a new current copy.

Mitsubishi CNC Remote Monitor **Product Profile**

COMPARISON FEATURES

Comparisons utilize a text-based compare of the .prg and .prm files of the data set. Since the SRAM.BIN always compares as different, there is an option to not report its differences (based on a binary comparison).
Examples:

SRAM.BIN compared:

Program Summary

Program Name	/ahn_area/mits/Q4A_CNC	
Program Description		
Personality Type	mits-cnc	
Compare Date	2005-09-28 12:43:15	

	Anc_00002	Anc_00001
File Date	2005-09-28 12:42:48	2005-09-28 11:27:50
User ID	ahn	ahn
Client ID	alabama	alabama
Method	Local to Current	Upload
Revision Comment	save new - with ALL.PRM edited. N1P.. - N9P.. deleted	ul via client

ALL.PRM	The file ALL.PRM has changed.

SRAM.BIN not compared:

Program Summary

Program Name	/ahn_area/mits/Q4A_CNC	
Program Description		
Personality Type	mits-cnc	
Compare Date	2005-09-28 12:55:22	

	Anc_00006	Processor Copy
File Date	2005-09-28 12:54:11	2005-09-28 12:55:22
User ID	ahn	
Client ID	alabama	
Method	Local to Version	
Revision Comment	restore	

ALL.PRM	The file ALL.PRM has changed.
SRAM.BIN	The file SRAM.BIN has changed.

Detail Differences

ALL.PRM Compare Report

Ancestor 00002	Ancestor 00001
	N1P40
	N2P00
	N3P00
	N4P00
	N5P00
	N6P00
	N7P00
	N8P00
	N9P04

COMPARISON ON DEMAND

Compare any two revisions of the program - current, local, ancestor, or version - to each other or to the device. This comparison is initiated by a user and may be performed from any client computer with access to the device program.

AUTOMATED COMPARISON

The module supports scheduled, unattended comparisons of flexibly configured groups of programs. Using Remote Monitor software installed on the agent to perform the actual upload, AutoSave compares the device copy to the current copy or compare the current copy to a selected version. This module supports the AutoUpdate feature to update the server with a new current copy if the current copy differs from the device.

NOTIFICATION

Notification email is automatically sent to selected users when comparisons or changes are made.

SUPPORTED DEVICES

Remote Monitor Tool programming software supports the Mitsubishi C64 CNC family of devices.

COMMUNICATIONS

Remote Monitor Tool is capable of communicating to a Mitsubishi CNC by means the programming port Ethernet. All communication between the client/agent and the CNC must be operational before configuring them in AutoSave.

CASE-BY-CASE UPDATES

This module receives version updates on a case-by-case basis depending on customer needs and market demand. Please check with your sales representative regarding the current range of supported versions of this module.

System Highlights	
Client: Real-time Ancestry	✓
Server: Auto Unattended Operation	✓
Agent: Parallel/Distributed Processing	✓
Secured Program Access	✓
Device Upload	✓
Client Highlights	
Compare	✓
Compare Selected Logic or Data Blocks	✓
Edit Offline	✓
Server / Agent Highlights	
Time-Base Scheduling	✓
AutoCompare	✓
AutoNotify	✓
AutoUpdate	✓

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AutoSave Change Management
Support for **Mitsubishi C70 CNC**

PRODUCT OVERVIEW

The AutoSave suite of products provides the software tools needed to manage all your automation programs. It controls and tracks the changes to your industrial programmable devices and program sources including Mitsubishi C70 CNC projects.

AutoSave works directly with the Mitsubishi Runtime API' EZNC and EZPC software to offer you both an interactive environment and background monitoring, resulting in a comprehensive change management solution. You have complete control over your device programs including:

- Upload
- Compare - Scheduled and On-Demand
- Secure Check Out, Check In for Edits
- Historical Tracking
- Automatic Change Notification
- Quick Disaster Recovery
- On-going Editor Version Updates

CLIENT / SERVER / AGENT

The AutoSave C70 CNC module plugs into the AutoSave client which is installed on each user workstation. An AutoSave server acts as the master control center that coordinates all change-related programming activities and stores PLC project files, and an agent provides distributed processing efficiencies for the server.

ARCHIVED CONTENTS

The contents of the C70 CNC project directory folder are archived. The entire project is saved and restored to the client of agent whenever needed for subsequent use.

SECURED PROGRAM ACCESS

The AutoSave client interface allows users to access the AutoSave functions using a login and password. At login, the AutoSave server determines the level of access to the different folders and programs permitted to the user.

VERSION CONTROL

When the user requests a program via AutoSave, the file becomes locked and indicates who has the file checked out. The system denies access to others while the program is in use. When the user completes editing and saves the changes, AutoSave prompts for a revision note, creates a new current copy, relegates the previous current copy to a numbered ancestor, and unlocks the program.

UPLOAD

The Upload command calls the Mitsubishi API to perform an upload over Ethernet. The software is required on any client or agent performing uploads. The upload gathers the All.PRM and SRAM.BIN file from the device. The device must be stopped (or E-Stopped, but not in Run Mode) to retrieve these files. The specified data is uploaded from the device to the client or agent and the project's files are saved to the server, creating a new current copy.

DOWNLOAD

Restoring a Mitsubishi C70 Controller from AutoSave for restoring the SRAM.bin to a CNC to rollback to a prior state involves obtaining the needed revision files from AutoSave and moving them to a FAT32 formatted Compact Flash card.

COMPARISON FEATURES

Binary comparisons of files 'line-by-line' are performed by AutoSave with the report presented in HTML format.

COMPARISON ON DEMAND

Compare any two revisions of the program - current, local, ancestor, or version - to each other or to the device. This comparison is initiated by a user and may be performed from any client computer with access to the device program.

AUTOMATED COMPARISON

The module supports scheduled, unattended comparisons of flexibly configured groups of programs. Using the Mitsubishi API installed on the agent to perform the actual upload, AutoSave can compare the device copy to the current copy or compare the current copy to a selected 'permanent' version. This module supports the AutoUpdate feature to update the server with a new current copy if the current copy differs from the device.

NOTIFICATION

Notification email is automatically sent to selected users when comparisons or changes are made.

SUPPORTED DEVICES

The module supports the Mitsubishi C70 CNC family of devices.

COMMUNICATIONS

The module uses the communication stored in the project with communications to the project via Ethernet.

ON-GOING UPDATES

This module receives on-going updates when new versions are released. Please check with your sales representative regarding the current range of supported versions of this module.

System Highlights	
Client: Real-time Ancestry	✓
Server: Auto Unattended Operation	✓
Agent: Parallel/Distributed Processing	✓
Secured Program Access	✓
Version Control w/file compression	✓
Device Upload	✓
Client Highlights	
Compare	✓
Server / Agent Highlights	
Time-Base Scheduling	✓
AutoCompare	✓
AutoNotify	✓
AutoUpdate	✓

AutoSave Change Management
Support for **Mitsubishi GX IEC Developer**

PRODUCT OVERVIEW

The AutoSave suite of products provides the software tools needed to manage all your automation programs. It controls and tracks the changes to your industrial programmable devices and program sources including Mitsubishi GX IEC projects.

AutoSave works directly with the GX IEC software to offer you both an interactive environment and background monitoring, resulting in a comprehensive change management solution. You have complete control over your device programs including:

- Secure application Launch for Edits and Downloads
- Historical Tracking
- Automatic Change Notification
- Quick Disaster Recovery
- On-going Editor Version Updates

CLIENT / SERVER / AGENT

The AutoSave GX IEC module plugs into the AutoSave client which is installed on each user workstation. An AutoSave server acts as the master control center that coordinates all change-related programming activities and stores PLC project files, and an agent provides distributed processing efficiencies for the server.

ARCHIVED CONTENTS

The contents of the GX IEC project directory folder are archived. The entire project is saved and restored to the client of agent whenever needed for subsequent use.

SECURED PROGRAM ACCESS

The AutoSave client interface allows users to access the AutoSave functions using a login and password. At login, the AutoSave server determines the level of access to the different folders and programs permitted to the user.

VERSION CONTROL

When the user requests a program via AutoSave, the file becomes locked and indicates who has the file checked out. The system denies access to others while the program is in use. When the user completes editing and saves the changes, AutoSave prompts for a revision note, creates a new current copy, relegates the previous current copy to a numbered ancestor, and unlocks the program.

UPLOAD

A client-based upload (using the local copy of GX IEC) from the device to the server affords the user the option to select a single program or the entire project. The specified data is uploaded from the device to the client and then the project's files are saved to the server, creating a new current copy.

DOWNLOAD

Using the local copy of GX IEC, a client-based download to the device enables the user to select the current copy or any other available revision with which to update the processor. In all cases, AutoSave creates a new current copy.

LAUNCH

This operation launches the GX IEC Developer editing software in *offline* mode with the selected AutoSave current or version program. You can download whole or changed parts to the PLC in this mode

COMPARISON FEATURES

Binary comparisons are performed by AutoSave with the report presented in HTML format. A comparison of the hardware configuration is optional. Summary and detail information is available.

Ancestor 00005		Processor Copy	
LD	M1	LD	M1
RST	M10	AND	M3
LD	M10	OUT	M2
INCP	D100	LDI	M2
(* *)		OUT	M3
LD	X100		
OUT	M8191		
LD=	D0		
	D1		

COMPARISON ON DEMAND

Compare any two revisions of the program - current, local, ancestor, or version - to each other or to the device. This comparison is initiated by a user and may be performed from any client computer with access to the device program.

AUTOMATED COMPARISON

The module supports scheduled, unattended comparisons of flexibly configured groups of programs. Using GX IEC software installed on the agent to perform the actual upload, AutoSave can compare the device copy to the current copy or compare the current copy to a selected 'permanent' version. This module supports the AutoUpdate feature to update the server with a new current copy if the current copy differs from the device.

NOTIFICATION

Notification email is automatically sent to selected users when comparisons or changes are made.

SUPPORTED DEVICES

GX IEC Developer programming software supports the Mitsubishi family of devices.

COMMUNICATIONS

The module uses the communication stored in the project with communications to the project via Ethernet. An alternate setup may be configured for the AutoSave agent.

ON-GOING UPDATES

This module receives on-going updates when new versions of GX IEC are released. Please check with your sales representative regarding the current range of supported versions of this module.

System Highlights	
Client: Real-time Ancestry	✓
Server: Auto Unattended Operation	✓
Agent: Parallel/Distributed Processing	✓
Secured Program Access	✓
Version Control w/file compression	✓
Device Upload	✓
Device Download	✓
Client Highlights	
Compare	✓
Compare Selected Logic or Data Blocks	✓
Editor Controlled Actions/ User Rights	✓
Editor Launch	✓
Server / Agent Highlights	
Time-Base Scheduling	✓
AutoCompare	✓
AutoNotify	✓
AutoUpdate	✓