EcoStruxure Automation Expert Platform

EcoStruxure Automation Expert - Al Assistant User Guide

EIO000005740.00 08/2025



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The information provided in this document contains general descriptions, technical characteristics and/or recommendations related to products/solutions.

This document is not intended as a substitute for a detailed study or operational and site-specific development or schematic plan. It is not to be used for determining suitability or reliability of the products/solutions for specific user applications. It is the duty of any such user to perform or have any professional expert of its choice (integrator, specifier or the like) perform the appropriate and comprehensive risk analysis, evaluation and testing of the products/solutions with respect to the relevant specific application or use thereof.

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Safety Information

Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death

A DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

A CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Document

Document Scope

This document describes how to install and use EcoStruxure Automation Expert - Al Assistant with EcoStruxure Automation Expert Platform. With EcoStruxure Automation Expert - Al Assistant, you can generate and explain the code, view references, and generate test code.

For further information, see documents in the EcoStruxure Automation Expert Platform Help.

Validity Note

This document has been updated for the release of EcoStruxure Automation Expert Platform V24.1.

Product Related Information

AWARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.¹
- Test each implementation of a system for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control and to NEMA ICS 7.1 (latest edition), Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems or their equivalent governing your particular location.

AWARNING

UNINTENDED EQUIPMENT OPERATION

- Only use software approved by Schneider Electric for use with this
 equipment.
- Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Care must be taken and provisions made for use of the telecommunication or Internet access capabilities as a remote control means to avoid inadvertent consequences of commanded machine operation, smart relay state changes, or alteration of data memory or machine operating parameters.

AWARNING

UNINTENDED EQUIPMENT OPERATION

- Ensure that there is a local, competent, and qualified observer present when operating from a remote location.
- Configure and install a means of local control over the starting or stopping of the equipment such that it can be maintained regardless of the remote commands sent to it.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

General Cybersecurity Information

In recent years, the growing number of networked machines and production plants has seen a corresponding increase in the potential for cyber threats, such as unauthorized access, data breaches, and operational disruptions. You must, therefore, consider all possible cybersecurity measures to help protect assets and systems against such threats.

To help keep your Schneider Electric products secure and protected, it is in your best interest to implement the cybersecurity best practices as described in the Cybersecurity Best Practices document.

Schneider Electric provides additional information and assistance:

- · Subscribe to the Schneider Electric security newsletter.
- Visit the Cybersecurity Support Portal web page to:
 - Find Security Notifications.
 - Report vulnerabilities and incidents.
- Visit the Schneider Electric Cybersecurity and Data Protection Posture web page to:
 - Access the cybersecurity posture.
 - Learn more about cybersecurity in the cybersecurity academy.
 - Explore the cybersecurity services from Schneider Electric.

Product Related Cybersecurity Information

Use this product inside a secure industrial automation and control system. Total protection of components (equipment/devices), systems, organizations, and networks from cyber attack threats requires multi-layered cyber risk mitigation

measures, early detection of incidents, and appropriate response and recovery plans when incidents occur.

AWARNING

POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

- Change default passwords at first use to help prevent unauthorized access to device settings, controls, and information.
- Disable unused ports/services and default accounts, where possible, to minimize pathways for malicious attacks.
- Place networked devices behind multiple layers of cyber defenses (such as firewalls, network segmentation, and network intrusion detection and protection.
- Apply the latest updates to your operating system and software.
- Use cybersecurity best practices (for example, least privilege, separation of duties) to help prevent unauthorized exposure, loss, modification of data and logs, interruption of services, or unintended operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Related Documents

Title of Documentation	Reference Number
EcoStruxure Automation Expert Platform - Quick Start Guide	EIO0000005358 (ENG)
Schneider Electric Software Installer - User Guide	EIO0000002848 (ENG)

To find documents online, visit the Schneider Electric download center (www.se. com/ww/en/download).

Information on Non-Inclusive or Insensitive Terminology

As a responsible, inclusive company, Schneider Electric is constantly updating its communications and products that contain non-inclusive or insensitive terminology. However, despite these efforts, our content may still contain terms that are deemed inappropriate by some customers.

Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in the information contained herein, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives and general automation, this may include, but is not limited to, terms such as *safety*, *safety function*, *safe state*, *fault*, *fault reset*, *malfunction*, *failure*, *error*, *error message*, *dangerous*, etc.

Among others, these standards include:

Standard	Description
IEC 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2023	Safety of machinery: Safety related parts of control systems.
	General principles for design.
EN 61496-1:2020	Safety of machinery: Electro-sensitive protective equipment.
	Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2015	Safety of machinery - Emergency stop - Principles for design
IEC 62061:2021	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2021	Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions.
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive

In addition, terms used in the present document may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term zone of operation may be used in conjunction with the description of specific hazards, and is defined as it is for a hazard zone or danger zone in the Machinery Directive (2006/42/EC) and ISO 12100:2010.

NOTE: The aforementioned standards may or may not apply to the specific products cited in the present documentation. For more information concerning the individual standards applicable to the products described herein, see the characteristics tables for those product references.

Operational Limitations of Al-Assisted Engineering Systems

Artificial Intelligence (AI)-assisted engineering systems, including generative and retrieval-based models, are increasingly used to support engineering workflows. These systems have inherent limitations that may result in errors or inconsistencies, even when relevant data is available in the model or knowledge base.

All outputs generated by the assistant, particularly those involving automation or control code, must be reviewed and validated through standard engineering quality assurance procedures before use in production environments.

▲WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not include executable code delivered by Al-Assisted engineering systems in an operational machine or process without thoroughly testing your entire application.
- Perform a safety-related analysis for the application and the devices installed.
- Ensure that the Program Organization Units (POUs) are compatible with the devices in the system and have no unintended effects on the proper functioning of your machine or process.
- Provide independent methods for critical control functions (emergency stop, conditions for limit values being exceeded, etc.) according to a safety-related analysis, respective rules, and regulations.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

User feedback is actively used to enhance the accuracy of the assistant, contextual understanding, and reliability over time.

1. Variability in Responses

- Description: Identical queries may produce different outputs across sessions.
- Cause: The assistant uses probabilistic generation, which can yield multiple, seemingly valid interpretations.
- Best Practice: For repeatable tasks, use structured prompts and document validated outputs.

2. Factual Inaccuracies Despite Available Data

- Description: The assistant may generate inaccurate or misleading information, even when the accurate data exists in the knowledge base or model.
- Cause: Generative models do not guarantee deterministic retrieval or synthesis, and may overlook or misinterpret relevant context.
- **Best Practice**: Always validate outputs against official Schneider Electric documentation and the established standards of your organization. Use precise and context-rich prompts to help improve reliability.

3. Incomplete or Misaligned Code Outputs

- **Description**: Code generated or retrieved may be incomplete or incompatible with your specific Schneider Electric system configuration.
- Cause: Limited context or partial matches in the retrieval process.
- Best Practice: Include system-specific details in queries. Review and test all code thoroughly before deployment.

4. Outdated or Irrelevant Retrievals

- Description: The assistant may retrieve legacy content or documents that are no longer applicable.
- Cause: The knowledge base includes historical data that may not reflect present-day standards.
- Best Practice: Report outdated content for review and revision.

5. Conflicting Information Across Sources

- Description: Responses may include contradictory statements or code examples.
- **Cause**: The assistant integrates content from multiple Schneider Electric sources, which may reflect differing practices or legacy standards.
- **Best Practice**: Use the most recent and Schneider Electric documentation. Consult your engineering guidelines when discrepancies arise.

Installing EcoStruxure Automation Expert - Al Assistant for EcoStruxure Automation Expert Platform

Prerequisite

Confirm you have installed the Schneider Electric Software Installer.

For more information, see the Schneider Electric Software Installer - User Guide and the EcoStruxure Automation Expert Platform - Quick Start Guide. See Related Documents, page 8.

Installation Procedure

The following table describes how to install EcoStruxure Automation Expert - Al Assistant:

Step	Action
1	Launch the Schneider Electric Software Installer from the desktop icon. Click on Install new software.
	NOTE: If you wish to modify an existing installation by adding other components, select instead Modify installed software .
2	Click the Release Notes option to review the Release Notes.
	NOTE: Consult the Release Notes for information on receiving the credentials for logging into EcoStruxure Automation Expert - Al Assistant.
3	Select the source as Online .
	Under Product , choose one of the following:
	EcoStruxure Automation Expert Platform to install only EcoStruxure Automation Expert Platform, or
	EcoStruxure Automation Expert – Motion to install EcoStruxure Automation Expert Platform along with additional packages.
	Select the latest version and click Next .
4	Select EcoStruxure Automation Expert - Al Assistant, then click Next .
5	Review the license agreement, and if you agree, click Start Installation .
6	Wait for the installation process to complete. Upon completion, a confirmation message will appear. Click OK , then click Next .
7	Click Finish to exit Schneider Electric Software Installer.

Logging In

Step	Action
1	Log in to EcoStruxure Automation Expert Platform.
	For more information, see the EcoStruxure Automation Expert Platform - Quick Start Guide. See Related Documents, page 8.
2	Click the EcoStruxure Automation Expert – Al Assistant icon in the upper right corner of the EcoStruxure Automation Expert Platform home page.
	Schneider Schneider
3	In the Activate Al Assistant window, enter your subscription credentials and click Submit.
	Activate Al Assistant
	Enter your Al Assistant subscription credentials to activate the application.
	Submit
	Result: You are redirected to EcoStruxure Automation Expert - Al Assistant.

Using EcoStruxure Automation Expert - Al Assistant

Programming Prompt Guidelines

To help improve clarity, consistency, and reusability in Al-assisted programming prompts, use the following structure when defining a prompt:

1. Essential Context Information

Start your prompt by specifying the following details:

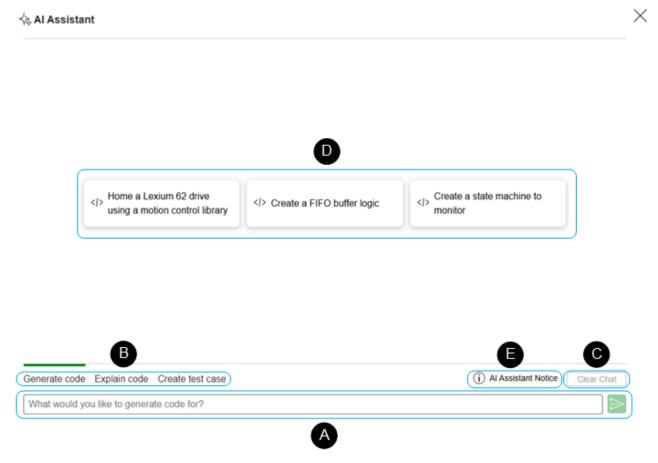
- Controller Type: Specify the controller type (M262 or PacDrive).
- **Drive Type** (if applicable): Specify the drive type used in the application.
- Library (if known): Specify the relevant library or function block being used.

2. Prompt Structure

- Focus on one functionality per prompt to maintain clarity and modularity.
- Build incrementally: start with a basic version of the functionality and progressively expand it in subsequent prompts.

Overview

The default window for EcoStruxure Automation Expert - Al Assistant is the **Generate code** view:



A EcoStruxure Automation Expert - Al Assistant window. Use this area to enter your prompt.

B Allows the selection of one of the following output types:

- Generate code, see Generate Code, page 16
- Explain code, see Explain Code, page 21
- Create test case, see Create Test Case, page 24

C Clear Chat. Removes the chat conversation history.

D Prompt examples provide sample prompts to help guide your input.

E Al Assistant Notice. This feature is built on artificial intelligence and generates automated responses that may not always be accurate, complete, or up to date. Do not rely solely on this information for decision-making. You had acknowledged interacting with the product and accepted the terms and conditions in the Schneider Electric End User License Agreement and Privacy Policy. If it is not the case that you, as the user of the product, had installed and acknowledged the End User License Agreement, click this button now and review the terms and conditions set forth.

AWARNING

UNINTENDED EQUIPMENT OPERATION

- Do not include executable code delivered by Al-Assisted engineering systems in an operational machine or process without thoroughly testing your entire application.
- Perform a safety-related analysis for the application and the devices installed.
- Ensure that the Program Organization Units (POUs) are compatible with the devices in the system and have no unintended effects on the proper functioning of your machine or process.
- Provide independent methods for critical control functions (emergency stop, conditions for limit values being exceeded, etc.) according to a safety-related analysis, respective rules, and regulations.

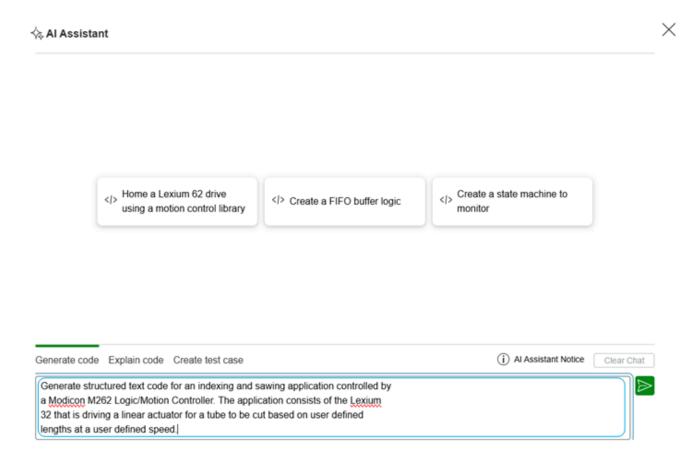
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Generate Code

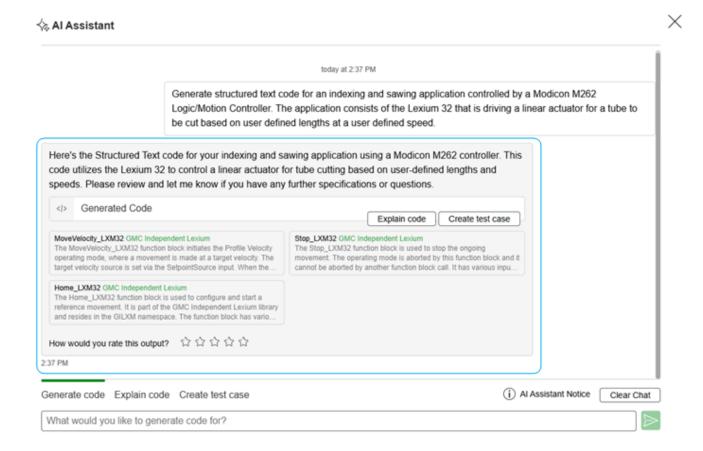
In the **Generate Code** window, you can enter controller-related prompts and view the chat history, which remains available until it is manually cleared or the browser window is refreshed. You can use the example prompt below to generate code.

Example prompt:

Generate structured text code for an indexing and sawing application controlled by a Modicon M262 Logic/Motion Controller. The application consists of the Lexium 32 that is driving a linear actuator for a tube to be cut based on user defined lengths at a user defined speed.

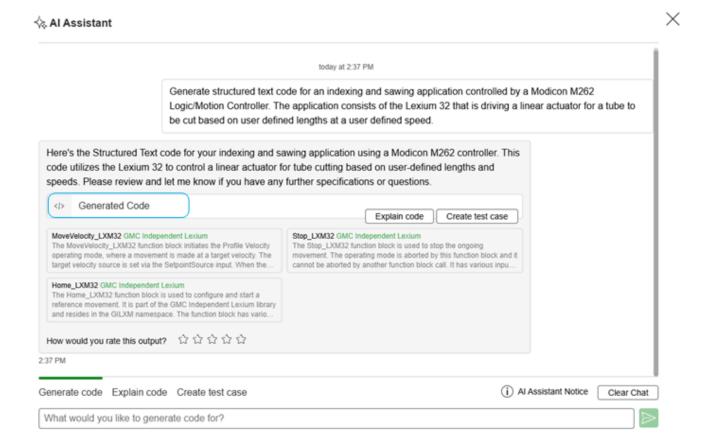


After submitting the prompt, EcoStruxure Automation Expert - Al Assistant generates a response based on your input:



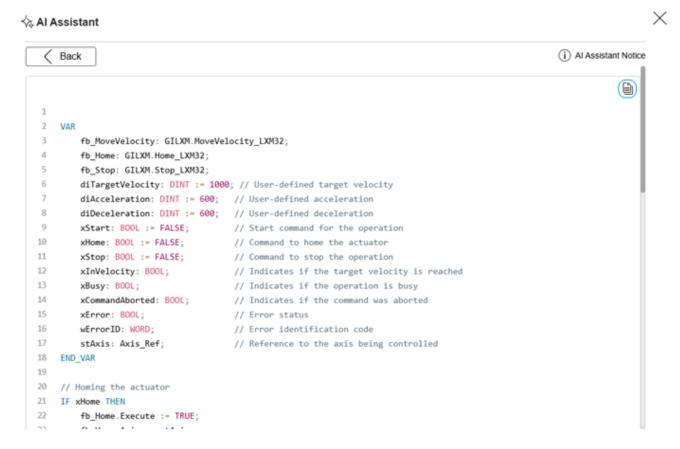
Generated Code

After submitting your prompt, click Generated Code:



Result: The Generated Code window appears.

NOTE: EcoStruxure Automation Expert - Al Assistant-generated content must be reviewed for accuracy before use.

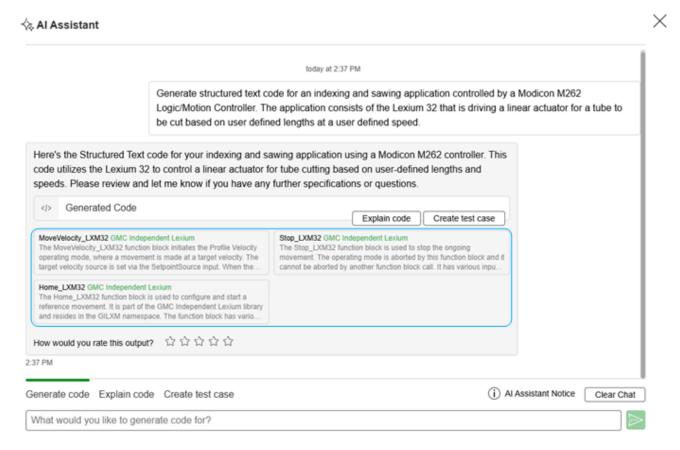


With the generated code, you can:

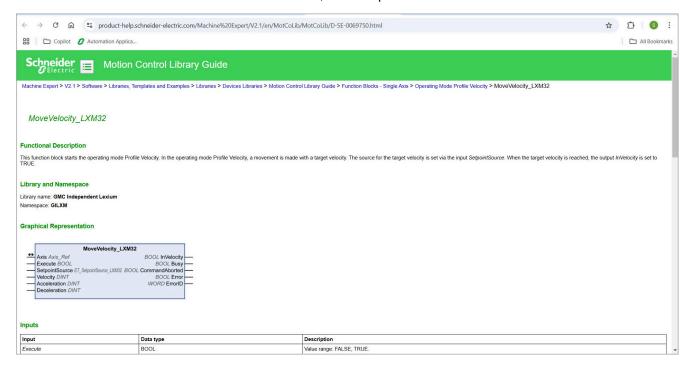
- Click the copy icon to copy the code output and paste it into the Explain code tab for an explanation. For more information, see Explain Code, page 21.
- Click the copy icon to copy the code output and paste it into the Create test case tab to create a test case. For more information, see Create Test Case, page 24.

References

The **References** window displays additional information related to the generated content:



Clicking a link in the **References** window opens the corresponding reference in a new browser window, for example:

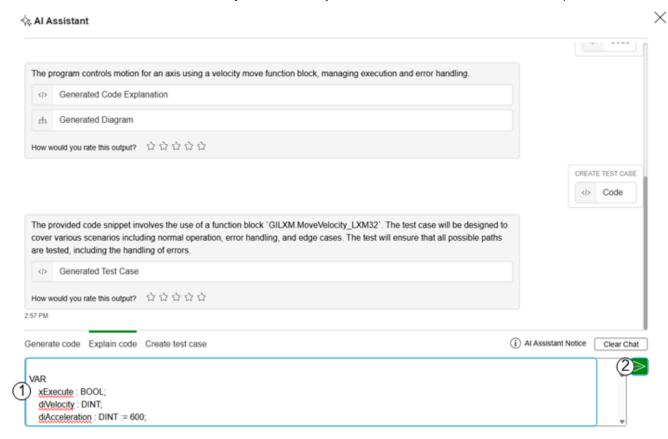


Explain Code

There are two ways to generate an explanation of the generated code:

1. Manual Input

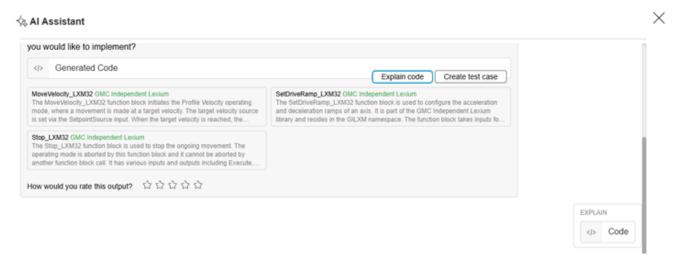
Copy the code output from the **Generated Code** window, paste it into the text entry box on the **Explain code** $^{\textcircled{1}}$ tab, and click **Send** $^{\textcircled{2}}$ or press **Enter**.



NOTE: You can also copy and paste code from other sources, such as programming software, for explanation.

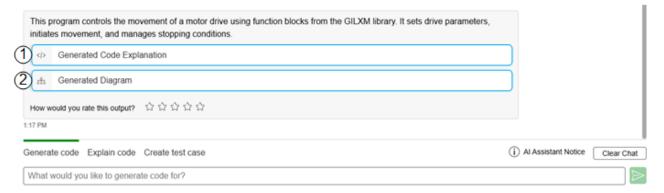
2. Direct Interaction

Click the **Explain code** ①.



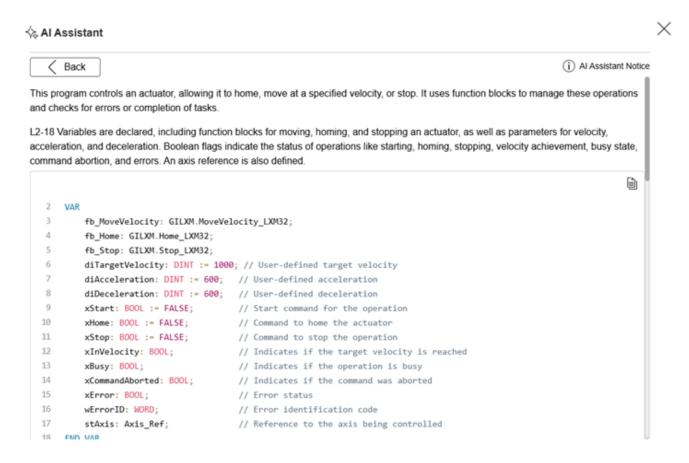
For a more detailed explanation, use the following options:

- 1. Generated Code Explanation button.
- 2. Generated Diagram button.



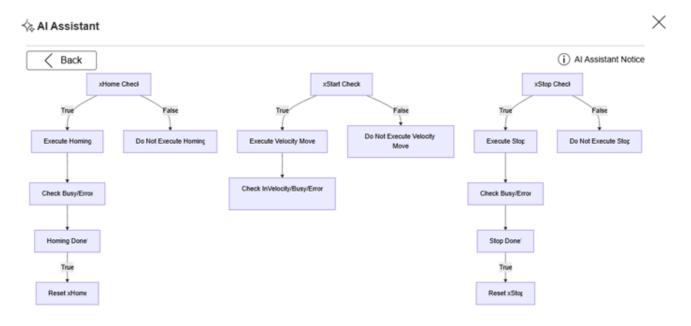
1. Generated Code Explanation

Breaks down the code into logical and functional sections. Each section is described in natural language, highlighting its purpose and key operations.



2. Generated Diagram

Provides a visual representation of the code structure and flow.



Create Test Case

There are two ways to test the generated content:

1. Manual Input

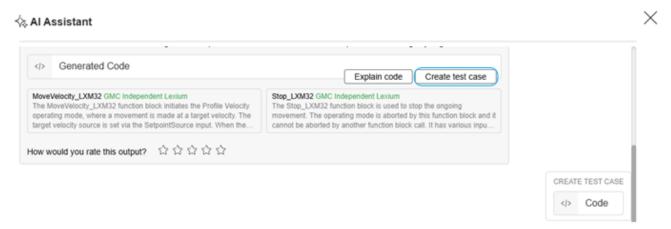
Copy the generated content from the **Generated Code** window, paste it into the text entry box on the **Create test case** $^{\textcircled{1}}$ tab, and click **Send** $^{\textcircled{2}}$ or press **Enter**.



NOTE: You can also copy and paste code from other sources, such as programming software, for explanation.

2. Direct Interaction

Click Create test case.

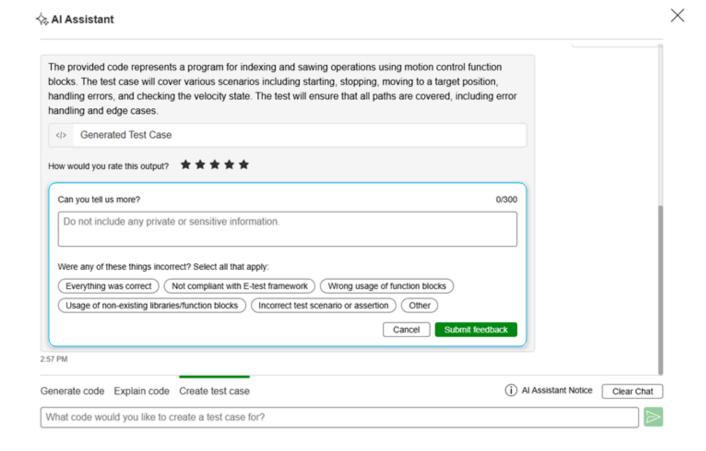


Click **Generated Test Case** to display the test case. Afterward, you can copy and paste the test case into the targeted programming environment for eventual execution and testing.

Feedback

You can provide feedback on the quality of the generated content. Providing feedback helps EcoStruxure Automation Expert - Al Assistant improve over time.

Use the star rating system to evaluate the output. Optionally, add comments to provide more detailed feedback. You can submit additional feedback or skip this step.



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