Altivar Distributed PAC Module VW3A3530D

User Guide

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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.

⚠ 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.

⚠ 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.

Qualification Of Personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product. In addition, these persons must have received safety training to recognize and avoid hazards involved. These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product, by changing the settings and by the mechanical, electrical and electronic equipment of the entire system in which the product is used. All persons working on and with the product must be fully familiar with all applicable standards, directives, and accident prevention regulations when performing such work.

Intended Use

This product is a drive for three-phase synchronous and asynchronous motors and intended for industrial use according to this manual. The product may only be used in compliance with all applicable safety regulations and directives, the specified requirements and the technical data. Prior to using the product, you must perform a risk assessment in view of the planned application. Based on the results, the appropriate safety measures must be implemented. Since the product is used as a component in an entire system, you must ensure the safety of persons by means of the design of this entire system (for example, machine design). Any use other than the use explicitly permitted is prohibited and can result in hazards. Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.

Before You Begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

⚠WARNING

UNGUARDED EQUIPMENT

- Do not use this software and related automation equipment on equipment which does not have point-of-operation protection.
- Do not reach into machinery during operation.

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

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, government regulations, etc. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only you, the user, machine builder or system integrator can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine and, therefore, can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, you should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the

operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and serious injury can occur. Software products alone cannot protect an operator from injury. For this reason the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of-operation protection must be coordinated with the related automation equipment and software programming.

NOTE: Coordination of safeties and mechanical/electrical interlocks for point-of-operation protection is outside the scope of the Function Block Library, System User Guide, or other implementation referenced in this documentation.

Start-up And Test

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check be made and that enough time is allowed to perform complete and satisfactory testing.

⚠WARNING

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

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

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and temporary grounds that are not installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove all temporary grounds from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

Operation And Adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1-1995 (English version prevails):

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.

- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

Cybersecurity Generalities

Overview

The objective of Cybersecurity is to help provide increased levels of protection for information and physical assets from theft, corruption, misuse, or accidents while maintaining access for their intended users.

No single Cybersecurity approach is adequate. Schneider Electric recommends a defense-in-depth approach. Conceived by the National Security Agency (NSA), this approach layers the network with security features, appliances, and processes.

The basic components of this approach are:

- Risk assessment
- A security plan built on the results of the risk assessment
- A multi-phase training campaign
- Physical separation of the industrial networks from enterprise networks using a demilitarized zone (DMZ) and the use of firewalls and routing to establish other security zones
- System access control
- Device hardening
- Network monitoring and maintenance

This chapter defines the elements that help you configure a system that is less susceptible to cyber-attacks.

Network administrators, system integrators and personnel that commission, maintain or dispose of a device should:

- Apply and maintain the device's security capabilities. See Device Security Capabilities sub-chapter for details
- Review assumptions about protected environments. See Protected Environment Assumptions sub-chapter for details
- Address potential risks and mitigation strategies. See Product Defense-in-Depth sub-chapter for details
- Follow recommendations to optimize cybersecurity

For detailed information on the system defense-in-depth approach, refer to the following TVDAs:

- How Can I Reduce Vulnerability to Cyber Attacks in the Control Room (STN V2) on se.com.
- How can I Design and build a robust cybersecurity system for EcoStruxure Automation Expert systems.

  NOTE: This TVDA is available through your local Schneider Electric Services contact or Customer Care Center on (www.se.com/CCC).

To submit a Cybersecurity question, report security issues, or get the latest news from Schneider Electric, visit the Schneider Electric website.

⚠WARNING

POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

- Configure the security of the ATV dPAC to help prevent unauthorized access to device settings 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).
- Use cybersecurity best practices (for example: least rights, separation of duties) to help prevent unauthorized exposure, loss or 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.

Use the getting started with ATV dPAC manual to get more information on configuring ATV dPAC security.

Protected Environment Assumption

Machines, controllers, and related equipment are usually integrated into networks. Unauthorized persons and malware may gain access to the machine as well as to other devices on the network/fieldbus of the machine and connected networks via insufficiently secure access to software and networks.

⚠WARNING

UNAUTHORIZED ACCESS TO THE MACHINE VIA SOFTWARE AND NETWORKS

- In your hazard and risk analysis, consider all hazards that result from access to and operation on the network/fieldbus and develop an appropriate cybersecurity concept.
- Verify that the hardware infrastructure and the software infrastructure into which the machine is integrated as well as all organizational measures and rules covering access to this infrastructure consider the results of the hazard and risk analysis and are implemented according to best practices and standards covering IT security and cybersecurity (such as: ISO/IEC 27000 series, Common Criteria for Information Technology Security Evaluation, ISO/ IEC 15408, IEC 62351, ISA/IEC 62443, NIST Cybersecurity Framework, Information Security Forum - Standard of Good Practice for Information Security, SE recommended Cybersecurity Best Practices*).
- Verify the effectiveness of your IT security and cybersecurity systems using appropriate, proven methods.

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

(*) : SE Recommended Cybersecurity Best Practices can be downloaded on SE.com.

Before considering cybersecurity practices on the device, please pay attention to following points:

- Cybersecurity governance – available and up-to-date guidance on governing the use of information and technology assets in your company.
- Perimeter security – installed devices, and devices that are not in service, are in an access-controlled or monitored location.

- Emergency power – the control system provides the capability to switch to and from an emergency power supply without affecting the existing security state or a documented degraded mode.
- Firmware upgrades – the ATV dPAC firmware upgrades can be found in the EcoStruxure Automation Expert software installer archive folder.
- Controls against malware – detection, prevention, and recovery controls to help protect against malware are implemented and combined with appropriate user awareness.
- Physical network segmentation – the control system provides the capability to:
  - Physically segment control system networks from non-control system networks.
  - Physically segment critical control system networks from non- critical control system networks.
- Logical isolation of critical networks – the control system provides the capability to logically and physically isolate critical control system networks from non-critical control system networks. For example, using VLANs.
- Independence from non-control system networks – the control system provides network services to control system networks, critical or non-critical, without a connection to non-control system networks.
- Excluding TLS based protocols, Encrypt protocol transmissions over all external connections using an encrypted tunnel, TLS wrapper or a similar solution.
- Zone boundary protection – the control system provides the capability to:
  - Manage connections through managed interfaces consisting of appropriate boundary protection devices, such as: proxies, gateways, routers, firewalls, and encrypted tunnels.
  - Use an effective architecture, for example, firewalls protecting application gateways residing in a DMZ.
  - Control system boundary protections at any designated alternate processing sites should provide the same levels of protection as that of the primary site, for example, data centers.
- No public internet connectivity – access from the control system to the internet is not recommended. If a remote site connection is needed, for example, encrypt protocol transmissions.
- Resource availability and redundancy – ability to break the connections between different network segments or use duplicate devices in response to an incident.
- Manage communication loads – the control system provides the capability to manage communication loads to mitigate the effects of information flooding types of DoS (Denial of Service) events.
- Control system backup – available and up-to-date backups for recovery from a control system failure.

Security Policy

⚠WARNING

ACCESSIBILITY LOSS

- Setup a security policy to your device and ensure that you're following the backup policy with EcoStruxure Automation Expert to restore your device in case of accessibility loss.
- Define and regularly review the password policy.
- Periodic change of the passwords, Schneider Electric recommends a modification of the password each 90 days.

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

Cybersecurity helps to provide:

- Confidentiality (to help prevent unauthorized access)
- Integrity (to help prevent unauthorized modification)
- Availability/authentication (preventing the denial of service and assuring authorized access)
- Non-repudiation (preventing the denial of an action that took place)
- Traceability/detection (logging and monitoring)

Norm IEC 62443 is the worldwide standard for security of industrial control system (ICS) networks.

From the norm definition, ATV dPAC is considered as Embedded Device of the ICS network, and has been designed following the norm IEC 62443-4-1 and the technical security requirements are defined in compliance with norm IEC 62443-4-2.

ATV dPAC security features prevent the unauthorized disclosure of information via eavesdropping or casual exposure.

For an efficient security, the instructions and procedures should structure the roles and responsibilities in terms of security within the organization; in other words, who is authorized to perform what and when. These should be known by the users.

The anti-intrusion and anti-physical access to any sensitive installation should be set up.

All the security rules implemented in the ATV dPAC are in complement of the points above.
The device does not have the capability to transmit data encrypted using the . If other users gained access to your network, transmitted information can be disclosed or subject to tampering.

⚠WARNING

CYBERSECURITY HAZARD

- For transmitting data over an internal network, physically or logically segment the network, the access to the internal network needs to be restricted by using standard controls such as firewalls.
- For transmitting data over an external network, encrypt protocol transmissions over all external connections using an encrypted tunnel, TLS wrapper or a similar solution.

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

Any computer using EcoStruxure Automation Expert, EcoStruxure Automation Device Maintenance, SoMove, DTM or Webserver should have an updated anti-virus, anti-malware, anti-ransomware application activated during the use.

Product Defense-in-Depth

Use a layered network approach with multiple security and defense controls in your IT and control system to minimize data protection gaps, reduce single-points of failure and create a strong cybersecurity posture. The more layers of security in your network, the harder it is to breach defenses, take digital assets or cause disruption.

Device Security Capabilities

ATV dPAC offers the following security features:

Threats	Desired security property on Embedded Device	ATV dPAC security features
Information disclosure	confidentiality	Password encrypted in a non-reversible way
		User access control
		TLS based protocol to secure communication integrity
Tampering	Device integrity	Cryptographic signature of firmware package
Denial of Service	Availability	Device backup/restore
Spoofing/Elevation of privilege	User Authenticity / Authorization	Strong password policy
		Access control commissioning through EcoStruxure Automation Expert, EcoStruxure Automation Device Maintenance, OPC UA, Webserver
		Access control local using the Graphic Display Terminal (VW3A1111)
		Access control commissioning tools Modbus TCP
		Access control commissioning tools WebServer
Repudiation	Non-repudiability	Syslog

Confidentiality

Information confidentiality capacity prevents unauthorized access to the device and information disclosure.

- The user access control helps on managing users that are authorized to access the device. Protect user credential at usage.
- The user’s passwords are encrypted in non-reversible way at rest
- The TLS security capabilities help protect the confidentiality of information through secure protocols that employ cryptographic algorithms, key sizes and mechanisms used to help prevent unauthorized users from reading information in transit, (ie: SSH, SFTP and HTTPS)

Information affecting the security policy of the device is encrypted in transit.

Device Integrity Protection

The device integrity protection prevents unauthorized modification of the device with tampered or spoofed information.

This security capability helps protect the authenticity and integrity of the firmware running on the ATV dPAC and facilitates protected file transfer: digitally signed firmware is used to help protect the authenticity of the firmware running on the ATV dPAC and only allows firmware generated and signed by Schneider Electric.

Cryptographic signature of the firmware package executed at the firmware update

Availability

The control system backup is essential for recovery from a control system failure and/or misconfiguration and participate on preventing denial of service. It also helps ensure global availability of the device by reducing operator overhead on security application/deployment.

These security capabilities help manage control system backup with the device:

- Independent security policy import/export for local secure backup and security policy sharing with other devices.
- Complete device backup/restore available on local HMI, DTM and FDR.

User Authenticity and Authorization

The user authentication helps prevent the repudiation issue by managing user identification and prevents information disclosure and device integrity issues by unauthorized users.

These security capabilities help enforce authorizations assigned to users, segregation of duties and least rights:

- User authentication is used to identify and authenticate software processes and devices managing accounts
- Device Password policy and password strength configurable using SoMove, DTM or Webserver
- Authorization managed according to channels

In line with user authentication and authorization, the device has access control cryptographic features to check user credential before access is granted to the system.

In the ATV dPAC, the control of accessibility to the settings, parameters, configuration, and logging database is done with a user authentication after "Log in", with a name and password.

The ATV dPAC controls the access through:

- EcoStruxure Automation Expert.
- EcoStruxure Automation Device Maintenance.
- SoMove DTM (Ethernet connection).
- Webserver

Syslog

The security event logging prevents the repudiation issues by ensuring traceability and detection of any service executed and affecting the security policy of the device.

These security capabilities support the analysis of security events, help protect the device from unauthorized alteration and records configuration changes and user account events:

- Machine and human-readable reporting options for current device security settings.
- Audit event logs to identify:
  - The ATV dPAC configuration modification.
  - The device users' activity (login, logout, etc...).
  - The device firmware updates.
  - Audit storage capacity of 500 event logs by default.
  - Timestamps, including date and time, match ATV clock.

For further information about Syslog, refer to EcoStruxure Automation Expert User Manual.

Potential Risks and Compensating Controls

Address potential risks using these compensating controls:

Area	Issue	Risk	Compensating controls
User accounts.	Default account settings are often the source of unauthorized access by malicious users.	If you do not change default password or disable the user access control, unauthorized access can occur.	Ensure User access control is enabled on all the communication ports and change the default passwords to help reduce unauthorized access to your device.
Secure protocols.	Modbus serial, Modbus TCP, EtherNet/IP, SNMP, SNTP, HTTP protocols are insecure. The device does not have the capability to transmit data encrypted using these protocols.	If a malicious user gained access to your network, they could intercept communication.	For transmitting data over internal network, physically or logically segment your network. For transmitting data over external network, encrypt protocol transmissions over all external connections using an encrypted tunnel, TLS wrapper or a similar solution. See Protected Environment Assumptions.
Physical access to the device	The device does not have the capability to restrict the access to the local HMI	If a malicious user physically gains access to your device, they can take unauthenticated control of the process and configuration of your device. (ie: they can reset the password and the security)	Ensure your device and its local HMI are in a secure area with restricted access

Product Related Information

⚠WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop, overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines (1).
- Each implementation of the product must be individually and thoroughly tested for proper operation before being placed into service.

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

(1) For USA: 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.

About the Book

Document Scope

This document provides instructions on installing, configuring, and operating the ATV dPAC (distributed Programmable Automation Controller). It includes guidance on:

- Setting up the associated drive.
- Programming the drive.
- Assisting with maintenance and diagnostics.

Validity Note

This documentation is valid for the Altivar drives.

The technical characteristics of the devices described in the present document also appear online. To access the information online:

Step	Action
1	Go to the Schneider Electric home page www.se.com.
2	In the **Search** box type the reference of a product or the name of a product range. • Do not include blank spaces in the reference or product range. • To get information on grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the **Product Datasheets** search results and click on the reference that interests you. If you entered the name of a product range, go to the **Product Ranges** search results and click on the product range that interests you.
4	If more than one reference appears in the **Products** search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the datasheet.
6	To save or print a datasheet as a .pdf file, click **Download XXX product datasheet**.

The characteristics that are described in the present document should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the document and online information, use the online information as your reference.

Related Documents

Use your tablet or your PC to quickly access detailed and comprehensive information on all our products on www.se.com.

The website provides the information you need for products and solutions:

- The whole catalog for detailed characteristics and selection guides.
- The CAD files to help design your installation, available in over 20 different file formats.
- All software and firmware to maintain your installation up to date,
- A large quantity of White Papers, Environment documents, Application solutions, Specifications to gain a better understanding of our electrical systems and equipment or automation.

- All the User Guides related to your drive are listed below:

Title of Documentation	Reference Number
Discover catalog for EcoStruxure Automation Expert	DIA3ED2201101 (English), DIA3ED2201101 (French)
Modicon M251/M580 Distributed PACs and Altivar Drives with EcoStruxure™ Automation Expert Hardware Reference Guide	EIO0000004217 (English)
EcoStruxure Automation Expert Applications Design Guidelines - Reference Manual	EIO0000004686 (English)
Altivar Lexium - Instruction Sheet - Option Modules	S1A45591 (English)
Altivar Option Modules - Instruction sheets	VW3A3420 (digital encoder interface module) NHA80730.01 (digital encoder interface module - Instruction Sheet) , VW3A3422 (analog encoder interface module) — NVE19304.01 (analog encoder interface module - Instruction Sheet), VW3A3203 (extended I/O module - discrete 6I/2O - analog 2I) — EAV76404.01 (Extension module of Digital and Analog I/O - Instruction Sheet), VW3A3204 (extended relay module - 3 relays) — EAV76405.02 (Extension module of Output relays - Instruction Sheet), VW3A3424 (HTL encoder interface module) — QGH1764000 (HTL encoder interface module 12/15/24 Vdc - Instruction Sheet), VW3A3423 (resolver interface module) — NVE19307.01 (resolver interface module - Instruction Sheet)
ATV dPAC user guide	NNZ13577 (English), NNZ13578 (French), NNZ13579 (German), NNZ13580 (Spanish), NNZ13581 (Italian), NNZ13582 (Chinese), NNZ13583 (Portuguese)
ATV dPAC VW3A3530D Product data sheet	English
How to Configure ATV dPAC VW3A3530D in EcoStruxure Automation Expert - Video	How to Configure ATV dPAC in EAE v21.1
EcoStruxure Automation Expert - How to Videos	Youtube Playlist: EcoStruxure Automation Expert How-to Videos
Getting Started with ATV dPAC VW3A3530D	JYT50503 (English), JYT50505 (French), JYT50511 (German), JYT50507 (Spanish), JYT50508 (Italian), JYT50513 (Chinese), JYT50517 (Portuguese)
EcoStruxure Automation Device Maintenance Altivar User Manual	JYT50472 (English)
EcoStruxure Automation Device Maintenance - Software	• V2.0: EADM (Chinese, English, French, German, Italian, Spanish) • V2.1: EADM_V2.1 (English) • V3.0: EADM_V3.0 (English) • V3.1: EADM_V3.1 (English)
SoMove - FDT	SoMove_FDT (Chinese, English, French, German, Italian, Portuguese, Spanish, Turkish)
ATV340 Getting Started - Video	FAQ FA367923 (English)
ATV340 Getting Started	NVE37643 (English), NVE37642 (French), NVE37644 (German), NVE37646 (Spanish), NVE37647 (Italian), NVE37648 (Chinese), NVE37643PT (Portuguese), NVE37643TR (Turkish)
ATV340 Installation Manual	NVE61069 (English), NVE61071 (French), NVE61074 (German), NVE61075 (Spanish), NVE61078 (Italian), NVE61079 (Chinese), NVE61069PT (Portuguese), NVE61069TR (Turkish)
ATV340 Programming Manual	NVE61643 (English), NVE61644 (French), NVE61645 (German), NVE61647 (Spanish), NVE61648 (Italian), NVE61649 (Chinese), NVE61643PT (Portuguese), NVE61643TR (Turkish)
ATV340 – DTM	ATV340_DTM_Library_EN (English), ATV340_DTM_Lang_FR (French), ATV340_DTM_Lang_DE (German), ATV340_DTM_Lang_SP (Spanish), ATV340_DTM_Lang_IT (Italian), ATV340_DTM_Lang_CN (Chinese)
ATV600 Getting Started	EAV63253 (English), EAV63254 (French), EAV63255 (German), EAV63256 (Spanish), EAV63257 (Italian), EAV64298 (Chinese), EAV63253PT (Portuguese), EAV63253TR (Turkish)
ATV630, ATV650 Installation Manual	EAV64301 (English), EAV64302 (French), EAV64306 (German), EAV64307 (Spanish), EAV64310 (Italian), EAV64317 (Chinese), EAV64301PT (Portuguese), EAV64301TR (Turkish)
ATV600 Programming Manual	EAV64318 (English), EAV64320 (French), EAV64321 (German), EAV64322 (Spanish), EAV64323 (Italian), EAV64324 (Chinese), EAV64318PT (Portuguese), EAV64318TR (Turkish)
ATV600 – DTM	ATV6xx_DTM_Library_EN (English - to be installed first), ATV6xx_DTM_Lang_FR (French), ATV6xx_DTM_Lang_DE(German), ATV6xx_DTM_Lang_SP (Spanish), ATV6xx_DTM_Lang_IT (Italian), ATV6xx_DTM_Lang_CN (Chinese)
ATV900 Getting Started	NHA61578 (English), NHA61579 (French), NHA61580 (German), NHA61581 (Spanish), NHA61724 (Italian), NHA61582 (Chinese), NHA61578PT (Portuguese), NHA61578TR (Turkish)

Title of Documentation	Reference Number
ATV930, ATV950 Installation manual	NHA80932 (English), NHA80933 (French), NHA80934 (German), NHA80935 (Spanish), NHA80936 (Italian), NHA80937 (Chinese), NHA80932PT (Portuguese), NHA80932TR (Turkish)
ATV900 Programming manual	NHA80757 (English), NHA80758 (French), NHA80759 (German), NHA80760 (Spanish), NHA80761 (Italian), NHA80762 (Chinese), NHA80757PT (Portuguese), NHA80757TR (Turkish)
ATV900 – DTM	(English - to be installed first), ATV9xx_DTM_Lang_FR (French), ATV9xx_DTM_Lang_DE (German), ATV9xx_DTM_Lang_SP (Spanish), ATV9xx_DTM_Lang_IT (Italian), ATV9xx_DTM_Lang_CN (Chinese)
Recommended Cybersecurity Best Practices	CS-Best-Practices-2019-340 (English)

You can download these technical publications and other technical information from our website at www.se.com/en/download

Terminology

The technical terms, terminology, and the corresponding descriptions in this manual normally use the terms or definitions in the relevant standards.

In the area of drive systems this includes, but is not limited to, terms such as **error, error message, failure, fault, fault reset, protection, safe state, safety function, warning, warning message**, and so on.

Among others, these standards include:

- IEC 61800 series: Adjustable speed electrical power drive systems
- IEC 61508 Ed.2 series: Functional safety of electrical/electronic/programmable electronic safety-related
- EN 954-1 Safety of machinery - Safety related parts of control systems
- EN ISO 13849-1 & 2 Safety of machinery - Safety related parts of control systems.
- IEC 61158 series: Industrial communication networks - Fieldbus specifications
- IEC 61784 series: Industrial communication networks - Profiles
- IEC 60204-1: Safety of machinery - Electrical equipment of machines – Part 1: General requirements

In addition, the term **zone of operation** is used in conjunction with the description of specific hazards, and is defined as it is for a **hazard zone** or **danger zone** in the EC Machinery Directive (2006/42/EC) and in ISO 12100-1.

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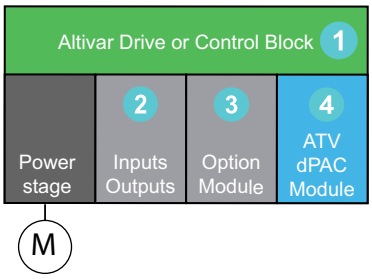
ATV dPAC General Hardware Overview

ATV Distributed PAC Description

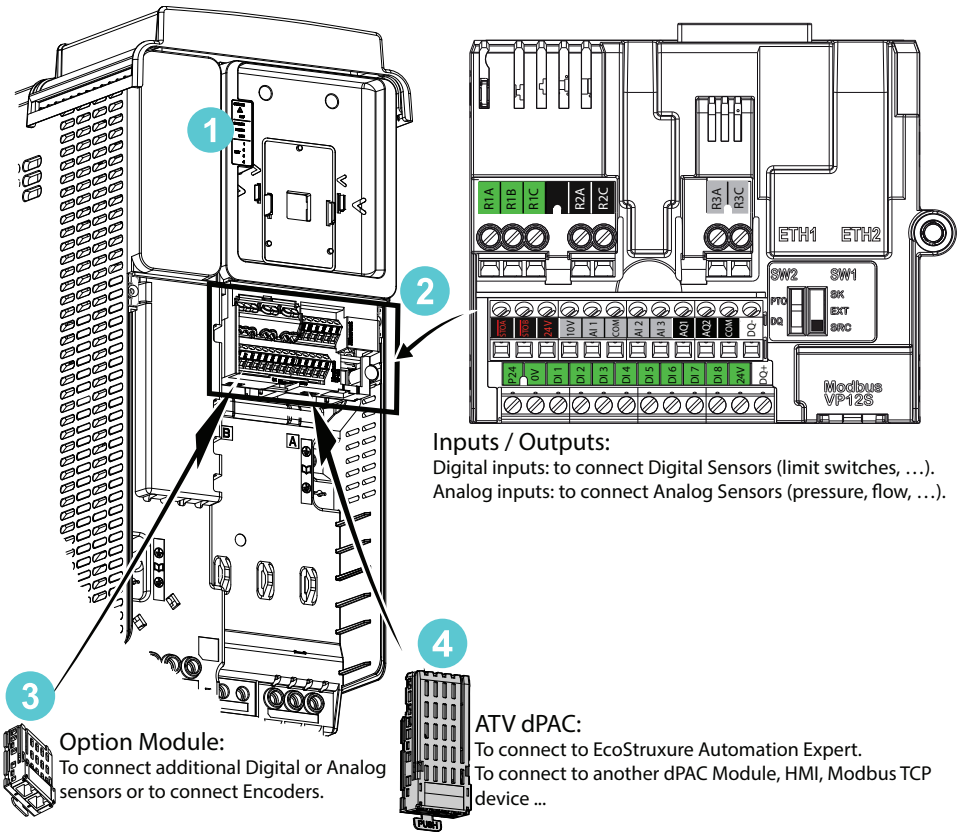
Overview

The ATV Distributed PAC (for Altivar distributed Process Automation Controller) is an option module (4) for Altivar variable speed drives (1). The catalog number of this option module is VW3A3530D.

Block diagram



Physical view



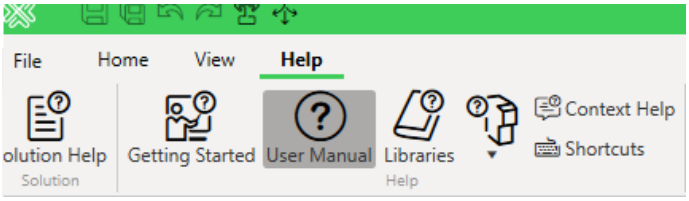
The Altivar Distributed PAC module is part of the EcoStruxure Automation Expert hardware controller range. EcoStruxure Automation Expert is a new category of software defined automation, enabling next- generation integrated architectures and Industry 4.0 solutions. This IEC 61499 distributed Programmable Automation Controller can be used in highly distributed and drive centric architectures.

The Altivar Distributed PAC is a drive-integrated controller that supports Altivar Machine 340, Altivar Process 600 and 900 variable speed drives. In addition to controlling the motor, it supports standard Altivar Process and Altivar Machine embedded I/O, and extended I/O, relay and encoder modules.

It includes 16MB program memory, dual RJ45 Ethernet sockets and supports 8 Modbus/TCP clients, OPC UA **server/client** and KeyPad HMI.

Depending on the specific drive type used for ATV Distributed PAC integration, the standards and certifications must be checked in the corresponding ATV340/600/900 manual.

Software configuration, programming, and commissioning are achieved with the EcoStruxure Automation Expert software described in the *EcoStruxure Automation Expert User Manual*, accessible from the software help tab.



Power Supply

The power supply of ATV Distributed PAC is provided by the host Altivar Drive (See Electrical Requirements, page 64).

Inputs/ Outputs

The ATV Distributed PAC (VW3A3530D) controller doesn't have embedded I/O. However, it can use all the standard I/O available on the corresponding Altivar Process and Altivar Machine drives, and these can be expanded with additional I/O modules.

The ATV Distributed PAC can control or use the data from the following drives interfaces:

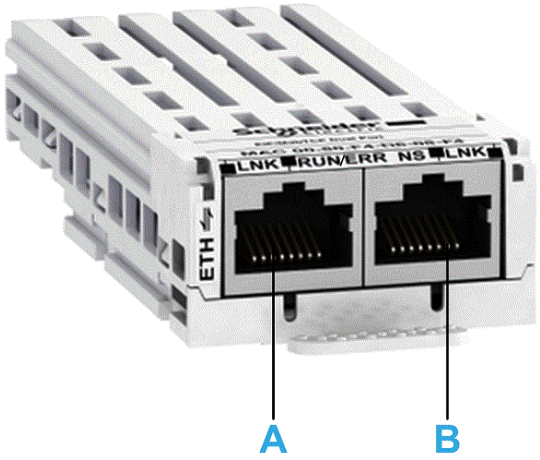
- Variable Speed Drive for motor control.
- Embedded drive Inputs and outputs(e.g., digital inputs, analog inputs, analog outputs and relays).
- Digital encoder interface option module VW3A3420.
- Analog encoder interface option module VW3A3422.
- Resolver interface option module VW3A3423.
- HTL encoder interface option module VW3A3424.
- Extended I/O moduleVW3A3203.
- Extended relay module VW3A3204.
- ATV340 embedded encoder (available on drives with power equal to or lower than 22 kW).

  NOTE: The option modules are supported by ATV Distributed PAC V3.1IE03 and later firmware versions.

Communication

The ATV Distributed PAC can communicate with its host (the drive), over Ethernet (See Ethernet Port).

The following figure illustrates the ATV Distributed PAC VW3A3530D module with one dual port Ethernet switch:



Item	Description	Comment
A	Port A	RJ45 connector - Ethernet port
B	Port B	RJ45 connector - Ethernet port

Run/Stop

During application development, the ATV Distributed PAC can be operated externally by an EcoStruxure Automation Expert software command.

During operation, the ATV Distributed PAC saved boot project can start the controller and its application automatically, at power-up.

There is no Run/Stop button on the product.

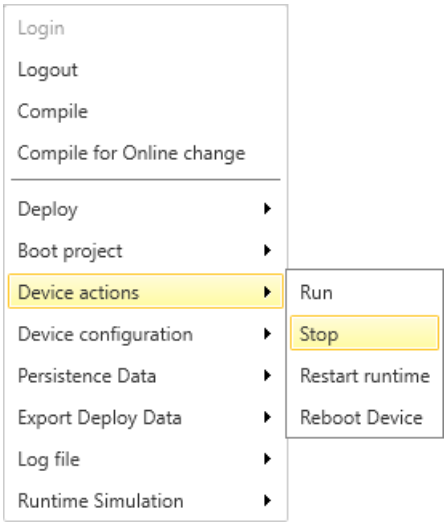
Memory

This table describes the different types of memory embedded to the ATV Distributed PAC:

Memory Type	Size	Used
RAM	16 Mbytes of which 12 Mbytes available for the application and communication services	To execute the application.
Flash	16 Mbytes	To save the program (and data in case of a power interruption).

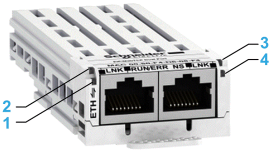
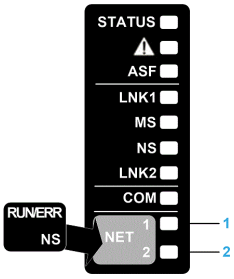
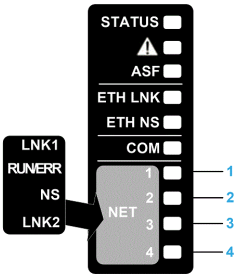
NOTE: deploy Online Change troubleshooting

When performing a deploy Online Change using “EcoStruxure Automation Expert”, if the RAM memory of the ATV Distributed PAC module is too low (<1MB), it will reject the online change action, due to a heavy running application. In this case, follow these steps to deploy your program to the ATV Distributed PAC module:

Step	Action
1	Stop **Device Actions**. 
2	Clean. 
3	Deploy. 

Status LEDs

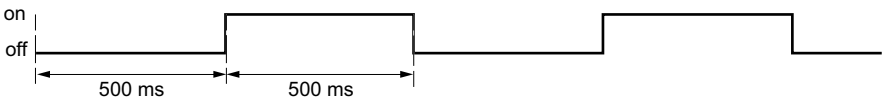
The following figures shows the LED indicators depending on the host Altivar drive:

ATV340 (power ≤ 22 kW)	ATV340 (power > 22 kW) ATV900	ATV600
Display on ATV Distributed PAC	Display on the control block of the host drive	Display on the control block of the host drive
		
Legend: 1. LNK1 2. RUN/ERR 3. NS 4. LNK2	1. RUN/ERR 2. NS	1. LNK1 2. RUN/ERR 3. NS 4. LNK2

This figure shows the difference between the fast flash and the slow flash:

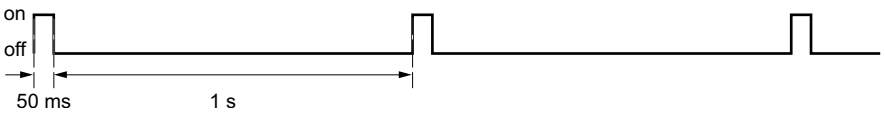
Fast flash (blinking)

The light flashes for 0.5 seconds, then remains off for 0.5 seconds, and this cycle repeats every 1 second.



Slow flash

The light flashes once for 50 milliseconds, then remains off for the rest of the second, and this cycle repeats every second



The following table describes the system status LEDs:

Label	Function Type	Color & Status	RT States	Description
NS	Network Status	OFF	NA	The device does not have an IP address or is powered off.
		Blinking Green	STOPPED CLEAN	The device has a valid IP address. The drive is not controlled by the ATV dPAC application.
		Green ON	RUNNING	The ATV dPAC application controls the drive.
		Blinking Red Green	NA	Power on testing (temporary state).
		Blinking Red	STOPPED CLEAN ERROR HALT	ATV dPAC CNF state while controlling the drive (connection closed or timed out).
		Red ON	STOPPED	Duplicated IP on the network.

Label	Function Type	Color & Status	RT States	Description
RUN/ERR	Module Status	OFF	NA	No power is supplied to the ATV dPAC.
		Blinking Green	STOPPED CLEAN	The controller has a valid application that is stopped.
		Green ON	RUNNING	The controller is running a valid application.
		Blinking Red Green	NA	Power on testing (temporary state).
		Blinking Red	NA	The controller is rebooting after being suspended.The device has detected a recoverable error (external error).
		Red ON	ERROR HALT	The device has detected a non-recoverable error.
LNK1	Not used	NA	NA	NA
LNK2	Not used	NA	NA	NA

Firmware Version Compatibility

The following table shows the contents of EcoStruxure Automation Expert installation package for different versions.

ATV Distributed PAC System Compatibility

EAE(1) version	SEDP archive	ATV Distributed PAC VW3A3530-D firmware version	ATV340 firmware version	ATV6xx firmware version	ATV9xx firmware version	EADM(2) version	Labels of the Graphic Display Terminal (VW3A1111)	Date
20.2.20318.-07	SEDP_ATVD_20.2.321.01	3.1IE02_B05-20.2.321.01	3.1IE94_B12	2.6IE94_B12	3.1IE94_B12	20.2.310.1	—	December 2020
21.1.21139.-10	SEDP_ATVD_21.1.132.02	3.1IE04_B03-21.1.132.00	3.1IE94_B13	2.6IE94_B13	3.1IE94_B13	20.2.351.2	—	July 2021
21.2.21346.-08	SEDP_ATVD_21.2.21342.-00	3.1IE06_B04-21.2.21342.-00	3.4IE94_B02	3.5IE94_B02	3.5IE94_B02	V3.0.191	1.24	December 2021
22.0.22181.-16	SEDP_ATVD_22.0.22179.-00	3.1IE07B06-22.0.22179.-00	3.4IE94_B04	3.5IE94_B04	3.5IE94_B04	3.0.203	1.38	July 2022
22.1.23130.-00	SEDP_ATVD_22.1.23130.-00	3.1IE10_B02-22.1.23130.-00	V3.6IE94_B04	3.7IE94_B04	3.8IE94_B04	3.1.147	1.43	June 2023
23.0.23211.-00	SEDP_ATVD_23.0.23211.-00	3.1IE12_B07-23.0.23211.-00	3.6IE94_B04	3.7IE94_B04	3.8IE94_B04	3.2.124	1.45	July 2023
23.1.23345.-00	SEDP_ATVD_23.1.23345.-00	3.1IE15-B02_23.1.23345.-00	3.6IE94_B04	3.7IE94_B04	3.8IE94_B04	3.2.124	1.45	December 2023
24.0.24180.-00	SEDP_ATVD_24.0.24180.-00	3.1IE18-B02_24.0.24180.-00	V3.7IE94_B05	V3.8IE94_B05	V3.9IE94_B05	3.2.138	1.52	July 2024
24.1	SEDP_ATVD_24.1*	3.1IE21B0*_24.1	V4.2IE94_B0*	V4.2IE94_B0*	V4.2IE94_B0*	V3.3.138	1.58	December 2024

(1) EcoStruxure Automation Expert

(2) EcoStruxure Automation Device Maintenance

The ATV Distributed PAC is compatible with:

- ATV340 drives with, at least, V1.8IE94 software version.
- Altivar Process ATV600 (ATV630, ATV650) drives with, at least, V2.6IE94 software version.
- Altivar Process ATV900 (ATV930, ATV950) drives with, at least, V2.3IE94 software version.

In case of incompatible version between the drive and the ATV Distributed PAC, **[Internal Error 6]** ınFb is triggered. A firmware update can be performed using EcoStruxure Automation Device Maintenance. For more information contact your local Schneider Electric Services.

Maximum Hardware Configuration

Maximum supported number of I/O

The following tables display the maximum supported number of I/Os, depending on the drive type and the I/Os expansion module.

Maximum supported number of I/O for Altivar 9··

	Discrete Input	Analogue Input	Discrete Output	Analogue Output	Relay Output
ATV9··	10	3	2	2	3
Additional Input Output module VW3A3203	6	2	2	0	0
Total I/O	16	5	4	2	3

Maximum supported number of I/O for Altivar 6··

	Discrete Input	Analogue Input	Discrete Output	Analogue Output	Relay Output
ATV6··	8	3	0	2	3
Additional Input Output module VW3A3203	6	2	2	0	0
Total I/O	14	5	2	2	3

Maximum supported number of I/O for Altivar 340·····E

	Discrete Input	Analogue Input	Discrete Output	Analogue Output	Relay Output
ATV340·····E	8	3	1	2	3
Additional Input Output module VW3A3203	6	2	2	0	0
Total I/O	14	5	3	2	3

Supported option modules

The following modules can be used in the drive, in addition to the ATV Distributed PAC.

Extended I/O module

Additional Component	Discrete Input	Analogue Input	Discrete Output	Analogue Output	Relay Output
Additional Input Output module VW3A3203	6	2	2	0	0
additional output module VW3A3204	0	0	0	0	3

Encoder interface module

Product Or Component Type	Reference	Range Compatibility
Digital encoder interface module	VW3A3420	• Altivar Process ATV900 • Altivar Machine ATV340
Analog encoder interface module	VW3A3422	• Altivar Process ATV900 • Altivar Machine ATV340
Resolver interface module	VW3A3423	• Altivar Process ATV900 • Altivar Machine ATV340
HTL encoder interface module	VW3A3424	• Altivar Process ATV900 • Altivar Machine ATV340

NOTE: For ATV340 with power equal to or lower than 22 kW is sold with an embedded digital encoder interface. For more information, refer to the product installation manual.

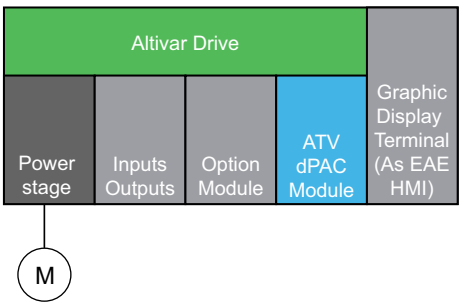
Hardware Architectures

Introduction

The ATV Distributed PAC is a control system that offers a scalable solution with optimized configurations and an expandable architecture.

Local architecture

The following figure defines the local architecture configuration:



The ATV Distributed PAC can be used as a standalone controller, providing an optimized local configuration, using a combination of the following:

- ATV Distributed PAC module, running the process application.
- Altivar Variable Speed Drive, controlling the motor.
- Inputs and outputs embedded in the drive, to connect sensors and control external devices.
- Inputs and outputs option modules, to extend the I/O capacity.

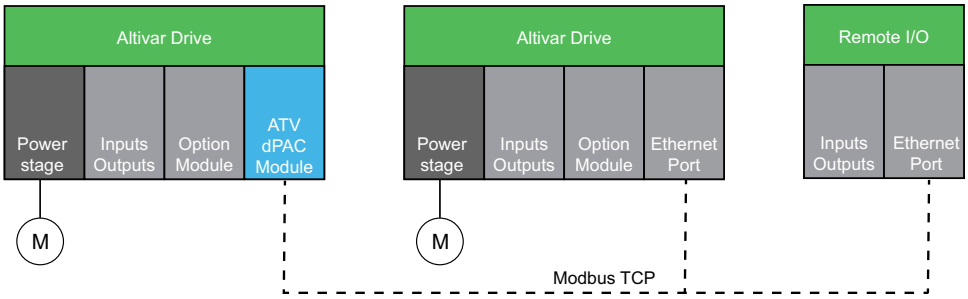
- Encoders interfaces option modules, for speed or position control.
- Altivar Graphic Display Terminal, to display and set process application data.
- Communication services can also be used for system-level integration (OPC UA server, Modbus server, …).

  NOTE: The following are supported from ATV Distributed PAC software version V3.1IE04 (EcoStruxure Automation Expert v21.1) and later:

  - VW3A3203 extended I/O module.
  - VW3A3204 extended relay module.
  - VW3A3420 (digital), VW3A3422 (analog), VW3A3423 (resolver) and VW3A3424 (HTL) option encoder interface modules.
  - ATV 340 embedded encoder (on drives with power equal to or lower than 22 kW).

Remote architecture

The following figure defines the remote architecture configuration:



The ATV Distributed PAC can control remote Modbus TCP devices, using a combination of the following:

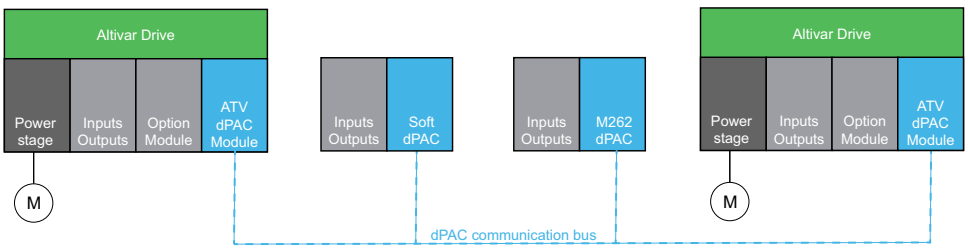
- ATV Distributed PAC module (Modbus TCP client, controlling other devices listed below).
- Altivar drives via Ethernet port (Modbus TCP server, without ATV dPACmodule).
- Distributed I/O, such as Advantys STB Digital I/O modules or TM3 Bus Coupler for I/O modules.
- Other Modbus TCP server devices.

Communication services can also be used for system-level integration, such as:

- OPC Unified Architecture Server (OPC UA Server), to interface the process application with SCADA Systems.
- Modbus server, to control the process application running in the ATV Distributed PAC over Modbus TCP.

Distributed architecture

The following figure defines the distributed architecture configuration:



The ATV Distributed PAC can be integrated in a distributed architecture, running a part of the process application, and natively exchanging data through the

EcoStruxure Automation Expert bus connection. It can be used in combination with the following controllers:

- ATV Distributed PAC
- M251 Distributed PAC
- M262 Distributed PAC
- M580 Distributed PAC
- Soft Distributed PAC (for example, running on server).

While integrated in a distributed architecture, the ATV dPAC can still leverage its integrated and optional I/Os, Modbus TCP devices control capability, and other communication services, to provide maximum flexibility.

Maximum configuration

The maximum configuration supported is:

- **Local**: The control block (the part of the drive controlling the motor) and all embedded inputs/outputs of the drive.
- **Remote**: Supports up to 13 Modbus TCP server devices.
- **Distributed**: Supports up to 16 (ATV Distributed PAC, M251 Distributed PAC, M580 Distributed PAC or soft Distributed PAC).

  NOTE:

  - The following devices are supported by ATV Distributed PAC software version **V3.1IE03** and later:
    - ATV340 embedded encoder (available on drives with power equal to or lower than 22 kW),
    - VW3A3420, VW3A3422, VW3A3423 and VW3A3424 option encoder interface modules (digital, analog, resolver and HTL),
    - VW3A3203 extended I/O module,
    - VW3A3204 extended relay module.
  - The maximum configuration depends on OPC UA services activation, Bus Cycle Time, usage of EcoStruxure Automation Expert libraries, and other services. Use the light Hardware CAT for designing maximum configuration.
  - The configuration with Altivar drives in remote architecture is done with SoMove using pre-configured .psx files (one for each drive family). For more information refer to SE.FieldDevice online help.
  - In some environments, a maximum configuration populated by high consumption modules and the maximum distance allowable between the devices may lead to bus communication errors, despite being allowed by the EcoStruxure Automation Expert software. In such cases, it's important to analyze the power consumption of the modules chosen for your configuration and the minimum cable distance required by your application, and possibly seek to optimize your choices.

The maximum configuration supported by ATV Distributed PAC depends on the combination of application logic and services used. In general, it is advised to keep the controller CPU load below 60%.

The maximum configuration described below is an example of a combination of functions and services. The ATV Distributed PAC CPU load remains below the 60% limit, with all the following services running simultaneously:

- **Altivar I/Os:**
  - Embedded IO (DI x 8 & DO x 1 & AI x 3 & AO x 2).
  - Extended IO module (DI x 6 & AI x 2).
  - Bus cycle time = 50 ms.
  - 30% data changing every 50 ms.

- **Reliable Cross-Communication:**
  - 200 INT.
  - 100% data changing every 100 ms.
- **Modbus TCP Client:**
  - 6 devices controlled x 28 variables (20 WORD IN & 8 WORD OUT).
  - Bus cycle time = 80 ms.
  - 35% data changing every 200 ms.
- **Modbus TCP Server:**
  - 1 master connection (50 WORD).
  - Bus cycle time = 250 ms.
  - 50% data changing every 250 ms.
- **HMI:**
  - 100 variables (50 INT & 50 BOOL).
  - 100% data changing every 100 ms.
- **OPC-UA server:**
  - 2000 OPC UA Tags (variables).
  - 100% data changing every 500 ms.
- **Archiving:**
  - 50 INT.
  - 100% data changing every 500 ms.

NOTE:

- The maximum configuration depends on application logic complexity, Bus Cycle times, usage of EcoStruxureAutomation Expert libraries, OPC UA services activation and other services. ATVSpeedControl‘light’ Hardware CATs may be used when designing large or CPU-intensive applications.
- The I/O scanner configuration of the Altivardrives in remote architecture should bedone with SoMove, using the ‘dPAC’ I/O scanner profile. For more information refer to SE.FieldDeviceonline help.

Accessories

Overview

This section describes the accessories and cables.

Graphic Display Terminal (VW3A1111)

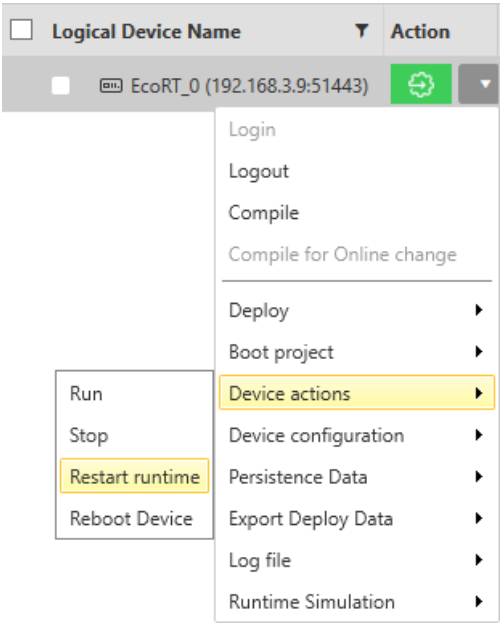
Reference	Component	Description and Use	Quantity
VW3A1111	Graphic Display Terminal (VW3A1111)	• Real-time clock with a 10 years backup battery, to monitor the time when the power is off. • Pixel resolution 240 x 160 with a capacity to display 8 lines of messages. • Protection IP65. **NOTE:** Graphic Display Terminal (VW3A1111) is not delivered with ATV340 and cabinet integration products (ATV600●●●●●Z, ATV900●●●●●Z). (ATV900 and ATV600 are equiped with the Graphic Display Terminal as standard)	1

VW3A1112	Remote Mounting Kit	• For remote mounting of the graphic display terminal (VW3A1111) on the enclosure door. • It requires a remote-mounting cordset.	1
VW3A1104R10 VW3A1104R30 VW3A1104R50 VW3A1104R100	Remote-mounting cordset (1 m, 3 m, 5 m, 10 m)	To wire the drive to the remote-mounting kit. It is equipped with 2 RJ45 connectors.	1
ZB5AZ905	Tightening tool	For remote mounting kit.	1
TCSXCNA-MUM3P	USB/Mini B USB cable	To connect the display terminal to a PC for updating the labels of the display terminal.	1

If the Controller Application menu does not appear on the Graphic Display Terminal after you configure security operation, you need to restart the runtime.

To do this in EcoStruxure Automation Expert, follow these steps

1. Open the **Deploy and Diagnostics** tab.
2. Select **Device actions**.
3. Select **Restart runtime**.



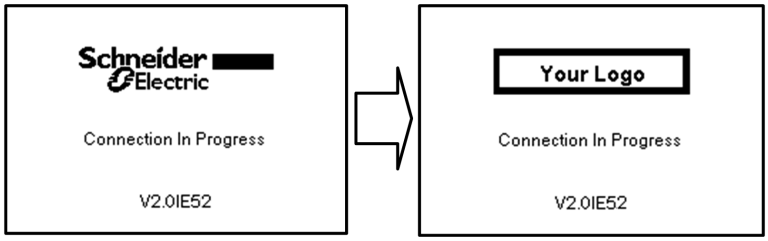
NOTE:

- In EcoStruxure Automation Expert 24.1, the Controller Application menu is found on the main menu **9. Controller Application** of the Graphic Display Terminal for all ATV drives.
- In EcoStruxure Automation Expert 24.0:
  - For ATV6•• and ATV9••, the menu is on the main menu **9. Controller Application**.
  - For ATV340, the menu is inside the **6. Communication menu**.

For more information refer to the Altivar drive catalogs.

- Altivar Machine ATV340 - Catalog
- Altivar Process ATV600 - Catalog
- Altivar Process ATV900 - Catalog

How to change the logo displayed when the Graphic Display Terminal turns on?



Starting from firmware version V2.0 of the graphic display terminal (VW3A1111) (it is displayed when you start the drive on the graphic display terminal), you can change the logo displayed when the Graphic Display Terminal turns on. By default, it shows the Schneider-Electric logo. To customize it:

1. Create Your Logo:
   - Design your logo and save it as a bitmap file (.bmp) named **`logo_ini`**.
   - Ensure the logo is in black & white and measures 137x32 pixels.
2. Connect to a Computer:
   - Use a USB cable to connect the Graphic Display Terminal to your computer.
3. Transfer the Logo:
   - Copy your **`logo_ini.bmp`** file into the **`KPCONF`** folder on the Graphic Display Terminal.

When you restart the Graphic Display Terminal, your custom logo appears. If the Schneider-Electric logo still appears, check the characteristics of the file and its location.

Ethernet cables

Reference	Description	Details	Length
490NTW000••	Ethernet shielded cable for DTE connections	Standard cable, equipped with RJ45 connectors at each end for DTE. CE compliant.	2, 5, 12, 40, or 80 m (6.56, 16.4, 39.37, 131.23 or 262.5 ft)
490NTW000••U		Standard cable, equipped with RJ45 connectors at each end for DTE. UL compliant.	2, 5, 12, 40, or 80 m (6.56, 16.4, 39.37, 131.23, or 262.5 ft)
TCSECE3M3M••S4		Cable for harsh environment, equipped with RJ45 connectors at each end. CE compliant.	1, 2, 3, 5, or 10 m (3.28, 6.56, 9.84, 16.4, 32.81 ft)
TCSECU3M3M••S4		Cable for harsh environment, equipped with RJ45 connectors at each end. UL compliant.	1, 2, 3, 5, or 10 m (3.28, 6.56, 9.84, 16.4, 32.81 ft)

ATV Distributed PAC Features

EcoStruxure Automation Expert interface

The ATV Distributed PAC supports standard EcoStruxure Automation Expert interfaces, as described in the following table.

Item	Description
Application execution	EcoStruxure Automation Expert IEC 61499 application execution, with configurable cycle time (10 ms minimum).
Discovery	Auto-discovery in EcoStruxure Automation Expert build-time tool.
Security	ATV Distributed PAC security management in EcoStruxure Automation Expert build-time tool.
Native Human Machine Interface	Built-in support for EcoStruxure Automation Expert HMI (Magelis/ Harmony HMI or PC HMI).
Native Controller-to-controller communication	Built-in cross-communication capability for EcoStruxure Automation Expert (Distributed PAC-to-Distributed PAC).

Native Altivar drive interface

The ATV Distributed PAC supports direct interfaces to its Altivar host, as described in the following table:

Item	Description
Motor control	The ATV Distributed PAC application can connect with the ATV variable speed drive motor control, using dedicated Hardware CATs in EcoStruxure Automation Expert build-time tool.
Embedded Inputs / Outputs	The ATV Distributed PAC application can connect with the ATV embedded inputs and outputs (product-dependent: digital inputs/outputs, analog inputs/outputs, relays, STO, …), using dedicated Hardware CATs in EcoStruxure Automation Expert build-time tool.
Extended Inputs / Outputs Option modules	The ATV Distributed PAC application can connect with the ATV extended I/O option modules (product-dependent: digital inputs/outputs, analog inputs/outputs, relays, …), using dedicated Hardware CATs in EcoStruxure Automation Expert build-time tool.
Encoder interface Option modules	The ATV Distributed PAC application can connect with the ATV encoder interface option modules (product-dependent), using dedicated Hardware CATs in EcoStruxure Automation Expert build-time tool.
Drive internal variables	The ATV Distributed PAC application can access all internal variables of the ATV drive, either on-event (using dedicated Service Function Blocks) or cyclically, using dedicated Hardware CATs in EcoStruxure Automation Expert build-time tool.
Graphic Display Terminal	The ATV Distributed PAC application can connect with the ATV Graphic Display Terminal, to display process data, using a specific configurator, and a dedicated Hardware CAT in EcoStruxure Automation Expert build-time tool.
Native drive Modbus TCP server	Access the ATV drive variables with any external Modbus client, using the native drive Modbus TCP server. **NOTE:** This server cannot be used for motor control, when ATV Distributed PAC runs ATVSpeedControl and similar Hardware CATs.

Altivar drive commissioning

The ATV Distributed PAC supports integrated commissioning features within its Altivar host, as described in the following table.

Item	Description
Hardware CATs property editor	The ATV Distributed PAC host drive can be partially commissioned using the Properties Editor of the dedicated Hardware CATs, in EcoStruxure Automation Expert build-time tool.
Web Server	The ATV Distributed PAC host drive can be partially commissioned using the secure Embedded ATV web server, through ATV Distributed PAC ethernet connections.

Fast Device Replacement

Presentation

The Fast Device Replacement (FDR) service makes it easier to maintain drives and ATV dPAC controllers on an Ethernet network. If a drive or ATV dPAC needs to be replaced, this service automatically sets up the new device.

The new ATV dPAC (FDR client) retrieves:

- Its IP addresses and the FDR file path from a DHCP server.
- The FDR file from an FTP server if the ATV dPAC is not configured in local configuration.

In practice, the DHCP server and the FTP server are the same device (EcoStruxure Control Expert M580 or M340, EcoStruxure Machine Expert M262 or dedicated PCs).

The FDR file contains:

- The ATV dPAC application (boot project, IEC61499 logic, configuration, persistent data ...etc.)
- The Ethernet parameters (configuration of I/O scanning, FDR ...etc.)
- The drive parameters (drive , functions, application ...etc.)

The FDR service is based on identification of the device by a **Device Name**. In the case of the ATV dPAC, this is represented by the **[Device Name]** PAN**[DEVICE NAME]** *PAn* parameter.

The configuration of the FDR service is accessible via the Graphic Display Terminal or the embedded webserver.

NOTE: Check that all the network devices have different **Device Name**.

The FDR server controls duplication of **Device Name** (it does not assign an IP address that has already been assigned and is active).

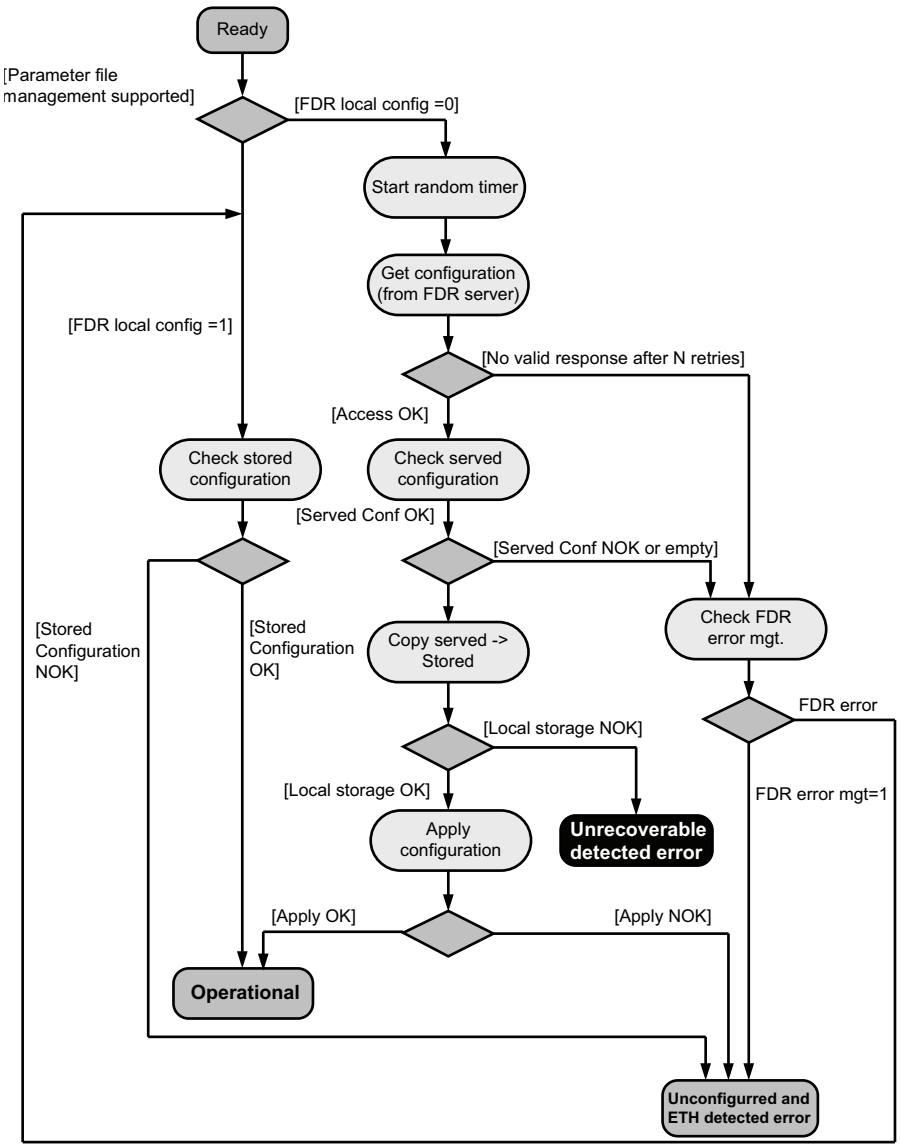
If the same IP address is supplied on 2 devices, a**[External Error]** EPF1 or a **[Fieldbus Error]** EPF2 will be triggered.

If the FDR service has been enabled, the Ethernet adapter attempts to restore its IP addresses on each power-up. Each time the procedure has detected error, the Ethernet adapter reiterates its FDR requests (DHCP).

After assigning the Ethernet adapter IP addresses, if the configuration is not downloaded successfully, the Ethernet embedded triggers a **[FDR 1 Error]** FDR1, while the Ethernet adapter (option card) triggers a **[FDR 2 Error]** FDR2

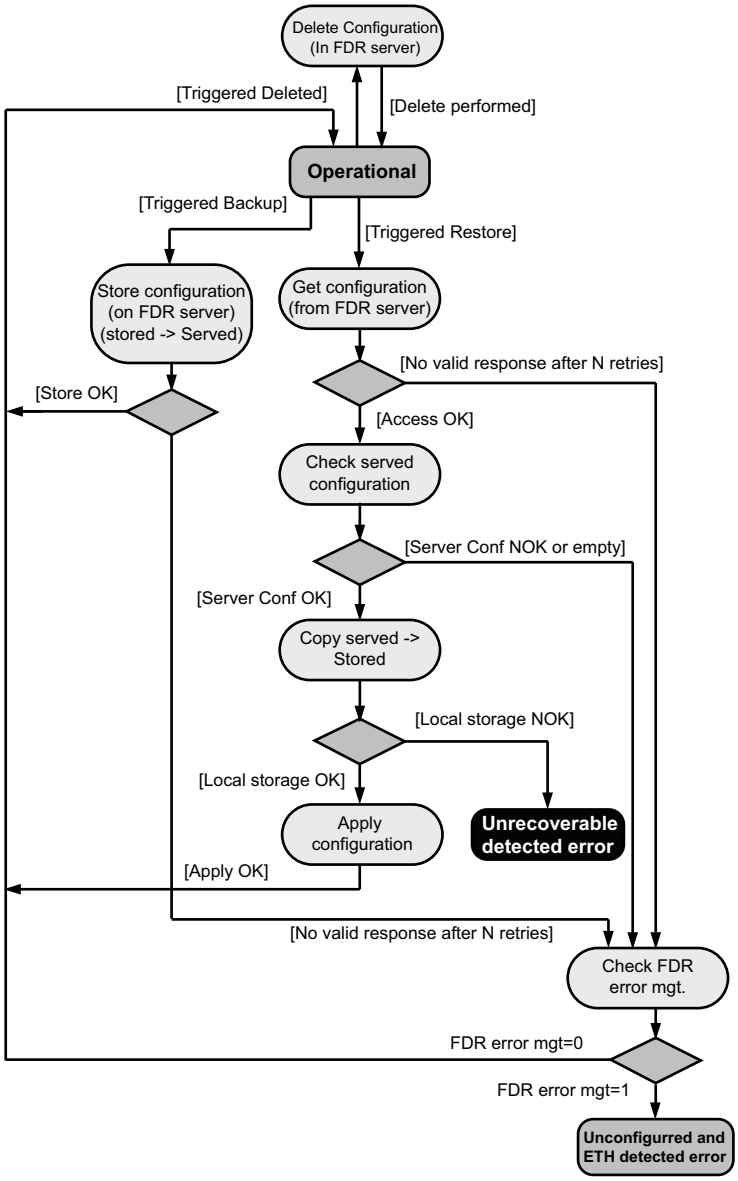
NOTE: FDR does not handle the cyber configuration (SECP file).

Startup Detailed Behavior



NOTE: In the diagram, **configuration** includes both the ATV dPAC application and the drive configuration.

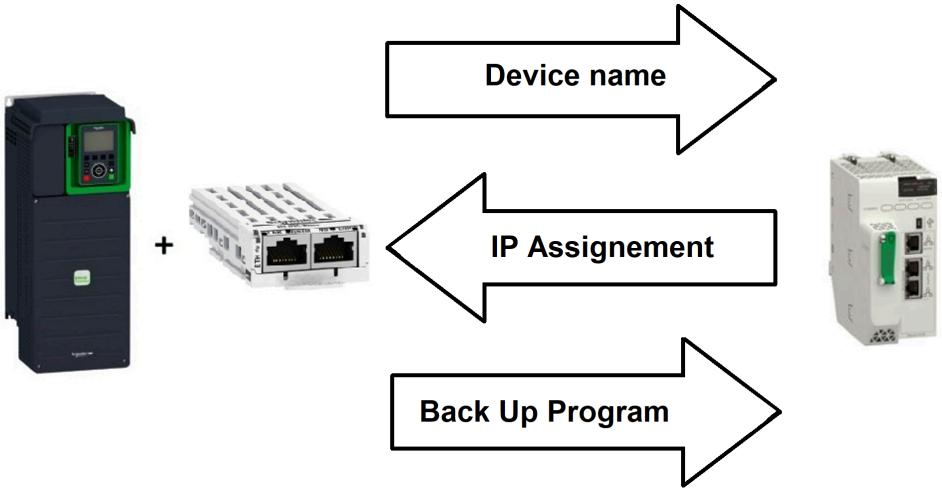
FDR Operation Behavior



NOTE: In the diagram, **configuration** includes both the ATV dPAC application and the drive configuration.

Local Configuration

Presentation



IP Assignment Save

If the ATV dPAC parameter configuration is local, the FDR server only assigns the following IP addresses:

- IP address.
- Subnet mask.
- Gateway IP address.

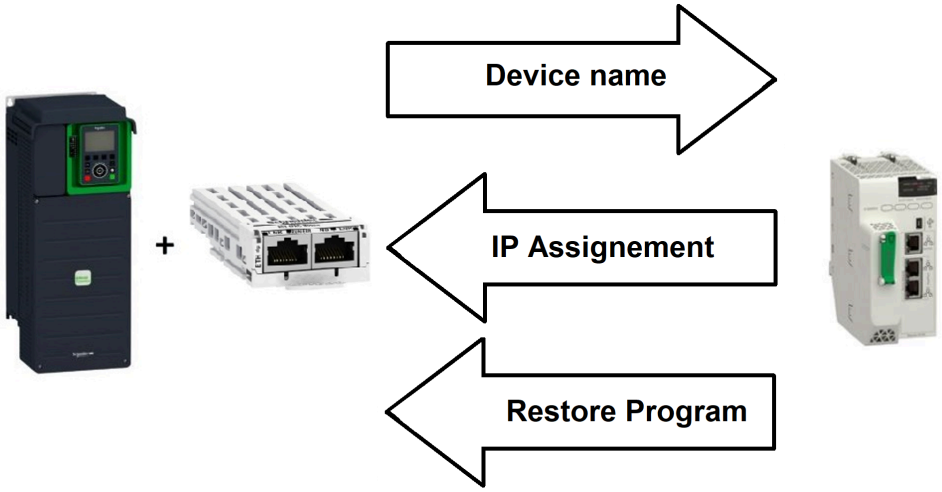
On connection to the network, the ATV dPAC automatically saves its application in the FDR server.

Drive Connection Procedure

Step	Action	Description
1	Configure the FDR server	Refer to the PLC manual or the Fast Device Replacement section in EcoStruxure software.
2	Configure the ATV dPAC	In the **[Communication]** Com- , **[Comm parameters]** CnP- menu, **[Eth Module Config]** Eth- submenu: • Configure **[ETH Option IP Mode]** InIO = **[DHCP]** dHCP. • Configure **[ETH Option IP Mode]** IM10 = **[DHCP]** DHCP • Configure **[IP Mode Ether. Embd]** IM00 = **[DHCP]** DHCP • Enable the FDR service via the Graphic Display Terminal. • Type the device name, **DEVICE NAME**, in the **[Communication]** Com- , **[Comm parameters]** CnP- menu, **[Eth Module Config]** Eth- submenu.
3	Turn off the drive	Turn off the ATV dPAC and then back on again (control voltage supply if a separate power supply is being used), otherwise the device name is not taken into account.
4	Connect the drive to the network	Connect the ATV dPAC and the FDR server (PLC) to the Ethernet network.

Downloaded Configuration

Presentation



IP Assignment Save

If the ATV dPAC application has been downloaded, the FDR server assigns the following addresses:

- IP address,
- Subnet mask,
- Gateway IP address,
- FDR server IP address.

Limitations

The FDR service is able to store the current configuration of the drive, but does not provide the possibility to store multi-parameters configurations.

ATV dPAC Parameters (Configuration)

In the procedure described below, the ATV dPAC application file is transferred to the FDR server, via the Ethernet network, using a manual save command.

Step	Action	Description
1	Configure the ATV dPAC	In the **[Communication]** C o M -, **[Comm parameters]** C M P - menu, **[Eth Module Config]** E t o - submenu: • Leave the IP address **[ETH Option IP]** , C I 1 , C I 2 , C I 3 , C I 4 at the value **[0.0.0.0]** 0 0 0 0. • Type the device name, **DEVICE NAME**, in the **[Communication]** C o M -, **[Comm parameters]** C M P - menu, **[Eth Module Config]** E t o - submenu.
2	Turn off the drive	Turn off the drive and then back on again (control voltage if a separate power supply is being used), otherwise the device name is not taken into account
3	Connect the ATV dPAC to the fieldbus	Connect the ATV dPAC and the FDR server (PLC) to the Ethernet fieldbus.
4	Configure the FDR server (see the PLC manual)	The server downloads the IP addresses to the Ethernet adapter.

Step	Action	Description
		Check that the operation has proceeded correctly: you can also check, in the **[Communication]** COM, **[Eth Module Config]** ETO submenu. Whether the **[IP address]** IC11,IC12, IC13, IC14, **[Mask]** IM11, IM12, IM13, IM14 and **[Gateway]** IG11, IG12, IG13, IG14 parameters have values other than **[0.0.0.0]**.
5	Create boot project	Deploy your EcoStruxure Automation Expert application to the ATV dPAC, then create a boot project.
6	Supply the FDR server with the ATV dPAC application file	Send a save command to the FDR server using the Graphic Display Terminal or embedded webserver.
7	Check that the system is operational	If the save operation has not been successful, the adapter detects a communication error which, in factory settings mode, triggers a **[FDR 2 Error]** FDR2.

Replacing an ATV dPAC

For replacing an ATV dPAC, it is necessary to follow the procedure below:

Step	Action	Action
1	Configure the ATV dPAC	In the **[Communication]** COM -, **[Comm parameters]** CMP - menu, **[Eth Module Config]** ETO - submenu. • Leave the IP address **[ETH Option IP]** IC11 IC12 IC13 IC14 at the value **[0.0.0.0]** 0 0 0 0. • Type the device name, **DEVICE NAME**, in the **[Communication]** COM -, **[Comm parameters]** CMP - menu, **[Eth Module Config]** ETO - submenu.
2	Turn off the drive	Turn off the drive and then back on again (control voltage if a separate power supply is being used), otherwise the device name is not taken into account
3	Connect the ATV dPAC to the fieldbus.	Connect the ATV dPAC and the FDR server (PLC) to the Ethernet fieldbus.
4	Check that the ATV dPAC is operational.	Check that the operation has proceeded correctly. If downloading has not been possible after a period of 2 min following assignment of the IP addresses, the adapter detects a communication error which, in factory settings mode, triggers an **[FDR 2 Error]** FDR2.

Remote devices and I/O support

The ATV Distributed PAC supports remote inputs and outputs, as described in the following table:

Item	Description
Modbus TCP client	The ATV Distributed PAC supports a Modbus TCP client, configured using the EcoStruxure Automation Expert build-time tool
Multiple device control	The ATV Distributed PAC can control up to 8 Modbus TCP devices, including: • Altivar drives. • Altivar soft starters. • TeSys motor starters. • PowerLogic meters. • Harmony Hub wireless sensors. • Remote I/O using TM3BCEIP bus coupler. • Other Modbus equipment.
Easy integration of Altivar Modbus devices	The ATV Distributed PAC (as well as any other type of Distributed PAC) can easily control ATV Modbus devices. using dedicated Hardware CATs, in EcoStruxure Automation Expert build-time tool.

Centralized diagnostics and data

The ATV Distributed PAC supports centralized diagnostics and data, as described in the following table:

Item	Description
Archiving	The ATV Distributed PAC supports EcoStruxure Automation Expert Archiving server for centralized SQL data archiving.
SysLog	The ATV Distributed PAC supports a secure SysLog server for centralized remote diagnostics.

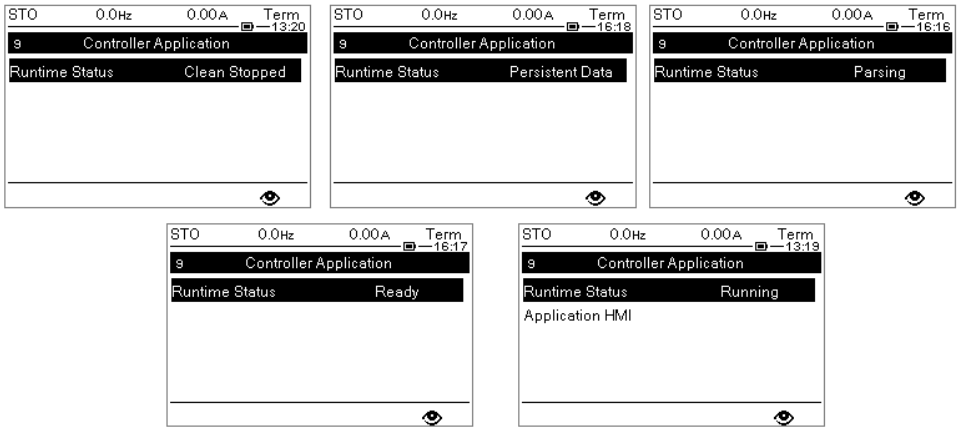
Runtime Status [DSTA] monitoring

The ATV dPAC status can be displayed on the graphic Display Terminal status bar

To monitor the Runtime Status on the Graphic Display Terminal, follow these steps:

1. Press the Home button.
2. Select **[9 Controller Application]** on Altivar Process ATV6••, or ATV9••, or ATV340.
3. Monitor the value of **Runtime Status**.

The following figures display some of the values that the **Runtime Status** can take:



Runtime Status [DSTA] can take up to 16 values:

Name on The Graphic Display Terminal	RunTime name	Description
Stopped	STOPPED	Device contains a project and is stopped
Cold Starting	COLD_STARTING	Device is performing a cold start
Warm Starting	WARM_STARTING	Device is performing a warm start
Parsing	PARSING	Device is parsing a full project
Cleaning	CLEANING	Device is cleaning the project
Ready	READY	Device is ready to perform a cold or warm start
Running	RUNNING	Device is running
Preparing OC	PREPARING_OC	Device is preparing for the parsing of online change data

Name on The Graphic Display Terminal	RunTime name	Description
Parsing OC	PARSING_OC	Device is parsing the online change data
Swapping OC	SWAPPING_OC	Device is performing an online change swap
Cleaning OC	CLEANING_OC	Device is purging unused FB instances and obsolete types after an OC
RollingBack OC	ROLLINGBACK_OC	Device is rolling back from an error in ParsingOC
Error Stopped	ERROR_STOPPED	Device has stopped due to an error
Clean Stopped	CLEAN_STOPPED	Device has stopped and contains no loaded project
Persistent DATA	RM_OR_RST_PERS_DATA	Device is removing or restoring the persistent data
Unknown	UNKNOWN	Device state is unknow

Additional communication channels

In addition to the above, the ATV Distributed PAC supports the communication channels described in the following table:

Item	Description
Modbus TCP server	The Modbus TCP server allows external Modbus clients to control the ATV Distributed PAC application.
OPC-UA client/server	The secure OPC UA client or server can be used to monitor the ATV Distributed PAC application for the control room.
IOT server	The NetIO, MQTT and Websocket server can be used to access to the ATV Distributed PAC application from ProLeit software or other IOT clients.

NOTE: The communication interfaces of the drive remain operational, when using ATV Distributed PAC:

- Embedded Modbus Serial.
- Embedded Modbus TCP (if available, product-dependent).
- EtherNet/IP (if available, product-dependent).

⚠WARNING

LOSS OF CONTROL

- **Monitor Communications:** Use a function like the *Keep Alive* application to detect any communication interruptions in all circumstances.
- **Implement a Fallback Mode:** If needed, ensure there's a backup plan that safely shuts down the entire system.
- **Conduct a full commissioning test:** Perform a full commissioning test to make sure the communication interruption detection works effectively.

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

Drive parameters mailbox

Overview

The Drive Parameters Mailbox allows exchanging the values of specific parameters between the ATV dPAC and the drive.

There are two types of parameters:

1. Non-persistent exchange parameters **[DEP•]** (• from 0 to J):
   - 20 non-persistent exchange parameters.
   - Not saved by the drive over a restart (when it is turned off and on again).
2. Persistent exchange parameters **[DSP•]** (• from 0 to J):
   - 20 persistent exchange parameters.
   - Saved by the drive and retained over a drive restart (when device is turned off and on again), for example in case of power loss.

These parameters can be read and written by the ATV dPAC and are used for various purposes, such as:

- Exposing ATV dPAC data to the communication ports (Modbus TCP or Modbus Serial) of the drive.
- Allowing Ethernet network separation using the embedded Ethernet port of the drive (bridging 2 different Ethernet networks, with separate IP ranges)*.
- Exposing data for EtherNet/IP server of the drive (explicit exchanges only), using the CIP path of the variables. You can refer to the ATV communication parameters Excel file. This file is provided in EcoStruxure Automation Expert software installer archive folder, in the following location, installer archive folder: **Firmware > SEDP_ATVD > Altivar communication parameters**).
- Saving ATV dPAC data in the drive when it is turned off to retrieve them when it is turned on.

* Product-dependent.

Non-Persistent exchange parameters management

The following table displays the list of Non-Persistent (exchange) parameters and their addresses:

ID	Address	Description	Type	Low limit	High limit
DEP0	17810	dPAC Exchange 0	INT	-32767	32767
DEP1	17811	dPAC Exchange 1	INT	-32767	32767
DEP2	17812	dPAC Exchange 2	INT	-32767	32767
DEP3	17813	dPAC Exchange 3	INT	-32767	32767
DEP4	17814	dPAC Exchange 4	INT	-32767	32767
DEP5	17815	dPAC Exchange 5	INT	-32767	32767
DEP6	17816	dPAC Exchange 6	INT	-32767	32767
DEP7	17817	dPAC Exchange 7	INT	-32767	32767
DEP8	17818	dPAC Exchange 8	INT	-32767	32767
DEP9	17819	dPAC Exchange 9	INT	-32767	32767
DEPA	17820	dPAC Exchange 10	INT	-32767	32767
DEPB	17821	dPAC Exchange 11	INT	-32767	32767
DEPC	17822	dPAC Exchange 12	INT	-32767	32767
DEPD	17823	dPAC Exchange 13	INT	-32767	32767

ID	Address	Description	Type	Low limit	High limit
DEPE	17824	dPAC Exchange 14	INT	-32767	32767
DEPF	17825	dPAC Exchange 15	INT	-32767	32767
DEPG	17826	dPAC Exchange 16	INT	-32767	32767
DEPH	17827	dPAC Exchange 17	INT	-32767	32767
DEPI	17828	dPAC Exchange 18	INT	-32767	32767
DEPJ	17829	dPAC Exchange 19	INT	-32767	32767

These parameters can be read or written by the ATV dPAC and the drive:

- On-event, using the **ATV_DD_IN** and ATV_DD_OUT function blocks.
- Cyclically, using the **ATVCyclicScanner** hardware CAT, if their value changes frequently.

  NOTE: Manual parameter entry in **ATVCyclicScanner** is required. These parameters should be selected carefully, as the ATV dPAC IO scanner input and output tables are limited to 32 parameters of 16 bits each, including parameters from other hardware CATs.

Persistent exchange parameters management

The following table displays the list of persistent parameters and their addresses:

ID	Address	Description	Type	Low limit	High limit
DSP0	17830	dPAC Persistent 0	INT	-32767	32767
DSP1	17831	dPAC Persistent 1	INT	-32767	32767
DSP2	17832	dPAC Persistent 2	INT	-32767	32767
DSP3	17833	dPAC Persistent 3	INT	-32767	32767
DSP4	17834	dPAC Persistent 4	INT	-32767	32767
DSP5	17835	dPAC Persistent 5	INT	-32767	32767
DSP6	17836	dPAC Persistent 6	INT	-32767	32767
DSP7	17837	dPAC Persistent 7	INT	-32767	32767
DSP8	17838	dPAC Persistent 8	INT	-32767	32767
DSP9	17839	dPAC Persistent 9	INT	-32767	32767
DSPA	17840	dPAC Persistent 10	INT	-32767	32767
DSPB	17841	dPAC Persistent 11	INT	-32767	32767
DSPC	17842	dPAC Persistent 12	INT	-32767	32767
DSPD	17843	dPAC Persistent 13	INT	-32767	32767
DSPE	17844	dPAC Persistent 14	INT	-32767	32767
DSPF	17845	dPAC Persistent 15	INT	-32767	32767
DSPG	17846	dPAC Persistent 16	INT	-32767	32767
DSPH	17847	dPAC Persistent 17	INT	-32767	32767
DSPI	17848	dPAC Persistent 18	INT	-32767	32767
DSPJ	17849	dPAC Persistent 19	INT	-32767	32767

These parameters can be read or written by the ATV dPAC and the drive:

- On-event, using the **ATVPersistEvent** function block, if their values do not change frequently (e.g. actual system state).
- Cyclically, using the **ATVPersistCyclic** function block, if their values change frequently.

NOTE:

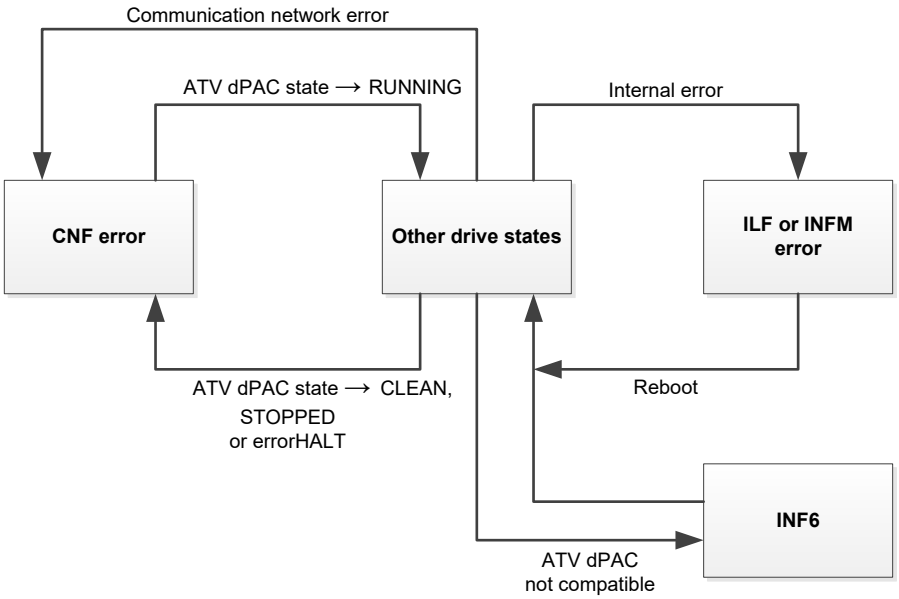
- Refer to SE.IoATV Library guide, to know how to configure these function blocks.
- Manual parameter entry in **ATVCyclicScanner** is required. Select the parameters carefully as the ATV dPAC IO scanner input and output tables are limited to 32 parameters of 16 bits each, including parameters from other hardware CATs.
- For EtherNet/IP communication, only **[DSP0]** and **[DSPA]** can be used, with their CIP path. You can refer to the ATV communication parameters Excel file. This file is provided in EcoStruxure Automation Expert software installer archive folder, in the following location, installer archive folder: **Firmware > SEDP_ATVD > Altivar communication parameters**).
- Persistent exchange parameters are saved in persistent memory only when the drive is turned off, or in case of power loss. While the drive is on, they function the same way as the non-persistent exchange parameters.

Controller States and Specific Behavior

Overview

This chapter describes the specific behavior related to the ATV Distributed PAC operating modes. The part common to EcoStruxure Automation Expert controller offer is described in the 'Operating Modes' chapter in the EcoStruxure™ Automation Expert Reference Guide.

Operating States for ATV Distributed PAC and Altivar Drives



The drive operating mode machine is different from the ATV Distributed PAC operating mode machine. With ATV Distributed PAC, the drive continues to follow its operating state machine.

- The drive remains in Operating State Fault **[Fieldbus Com Interrupt]** $C\,n\,F$ if ATV Distributed PAC is in the operating mode CLEAN, STOPPED or errorHALT. The drive switches from this state when ATV Distributed PAC is in operating mode RUNNING.

- If a communication network error is detected by the ATV Distributed PAC, ATV Distributed PAC switches to errorHALT operating mode and **[Fieldbus Com Interrupt]** $C n F$ is triggered by the drive.

  NOTE: The drive response to a **[Fieldbus Com Interrupt]** $C n F$ error can be configured via the parameter **[Fieldbus Interrupt Resp]** $C L L$.
- If an internal error is detected, **[Internal Link Error]** $, L F$ or **[Internal Error 22]** $, n F 0$ is triggered by the drive depending on the error.
- In case of **[Internal Error 6]** $, n F 6$, the ATV Distributed PAC is not supported by the firmware of the drive. Verify the version compatibility.

For more information on the drive errors, refer to the drive Programming Manual.

Local reset of the ATV Distributed PAC security

Overview

If the device password has been forgotten, the user can reset the security of the ATV Distributed PAC, using the drive's Graphic Display Terminal (VW3A1111).

Prerequisites

- Update the firmware package of:
  - The Drive (Refer to the firmware update with EcoStruxure Automation Device Maintenance chapter for more details on this step).
  - The ATV Distributed PAC (Refer to the firmware update with EcoStruxure Automation Device Maintenance chapter for more details on this step).
- Update the labels and languages of the Graphic Display Terminal (VW3A1111) (Refer to the firmware update with EcoStruxure Automation Device Maintenance chapter for more details on this step).

  NOTE: The table below shows the firmware versions that allows this feature (Local reset of the ATV Distributed PAC security).

Device	ATV6xx	ATV9xx	ATV340	ATV Distributed PAC
Firmware Version greater than	V3.7IE94_B04	V3.8IE94_B04	V3.6IE94_B04	V3.1IE09B01-22.1.23006.00

Procedure

1. **Local reset the security on the Graphic Display Terminal (VW3A1111)** by following these steps: **[Main menu] > [Communication] > [Comm parameters] > [Distributed PAC config] > set [Distributed PAC Security Reset] to Yes > click the OK button to accept the warning message**

   NOTE: While the application keeps running security is not yet reset.

   NOTE: you need to take the appropriate steps to stop the application, and power-down the drive.

   ⚠WARNING

   UNAUTHENTICATED ACCESS AND PROCESS OPERATION

   Setting this parameter to YES, default credentials will allow access to the ATV dPAC, at the next device power-up.

   Do not set this parameter to YES if your machine or process is accessible to unauthorized personnel either directly or via a network.

   Power-cycle the device, and re-configure security to run the application.

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

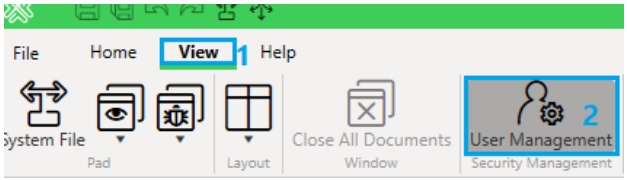
2. Restart the drive manually

3. **Reset the password of your existing solution in EcoStruxure Automation Expert:**

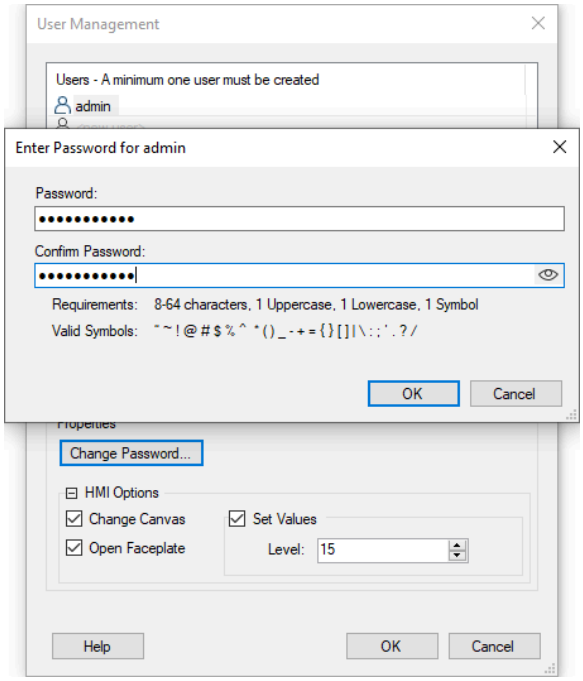
   NOTE: This step will only be needed if you have forgotten the password of your existing solution, if this is not the case create a new solution with your chosen credentials and skip this step.

   NOTE: The credentials of your solution will be the new credentials of your ATV Distributed PAC module.

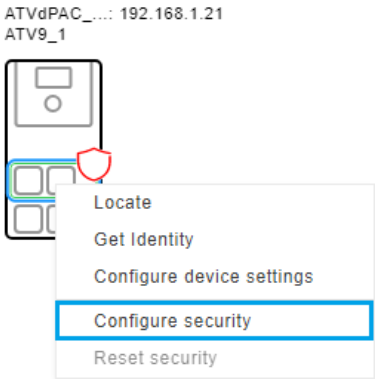
   a. **click on View window > click on User Management**



   b. **Click on the existing username > click on change password > set the new password of the solution**

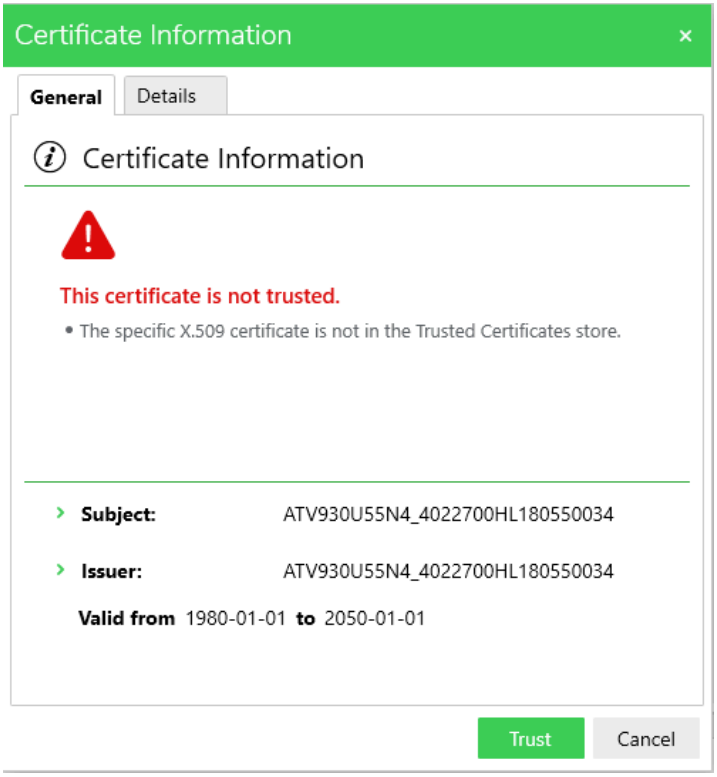


4. **Configure the security of your existing solution in EcoStruxure Automation Expert :**
   a. Open the system tab 
   b. **Select Physical devices > drag and drop your ATV Drive > Add an ATV Distributed PAC communication card > set its IP Address**
   c. Start monitoring 
   d. Right click on the ATV Distributed PAC device to configure the security

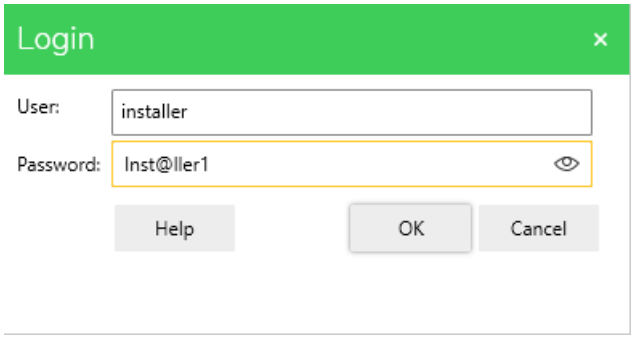


NOTE: Some firewall software may block device security configuration. If you are unable to configure the device, disable the firewall or consult your system administrator.

   e. Trust the certificate information.



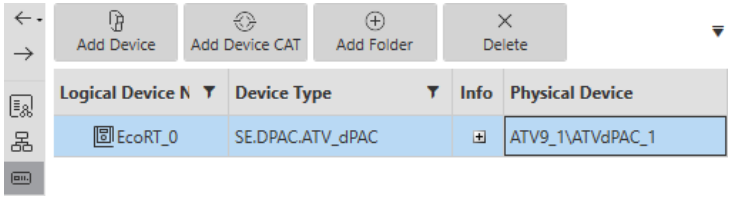
   f. Use the default credentials to login



NOTE: The default credentials are:

- User: `installer`
- Password: `Inst@ller1`

g. In logical devices, **Add a device that has SE.Distributed PAC.ATV_ Distributed PAC as a type > Link it to your existing device**



5. Open the Deploy and Diagnostic editor, do the following:
   - Compile the solution
   - Login using the EcoStruxure Automation Expert user management credentials.
   - Deploy the solution
   - Run device actions

You can now start the local HMI using the EcoStruxure Automation Expert user management credentials.

NOTE: The credentials of your ATV Distributed PAC module are the EcoStruxure Automation Expert user management credentials.

Local reset of the ATV Distributed PAC to factory settings

Overview

Local reset of ATV Distributed PAC to factory settings allows you to reset the configuration of the ATV Distributed PAC to its factory state (to enroll it in a different application for example). This reset allows you to:

- Reset IP/network settings back to factory settings.
- Erase the NTP settings.
- Remove the application, boot project, persistent data and logs from memory.
- Erase the ecoRT logs.
- Clear certificates and reset the authentication back to:
  - Username: `installer`
  - Password: `Inst@ller1`

NOTE: Local reset of ATV Distributed PAC to factory settings does not reset the firmware of your device.

Prerequisites

- Update the firmware package of:
  - The Drive (Refer to the firmware update with EcoStruxure Automation Device Maintenance chapter for more details on this step).
  - The ATV Distributed PAC (Refer to the firmware update with EcoStruxure Automation Device Maintenance chapter for more details on this step).
- Update the labels and languages of the Graphic Display Terminal (VW3A1111) (Refer to the firmware update with EcoStruxure Automation Device Maintenance chapter for more details on this step).

  NOTE: The table below shows the firmware versions that allows this feature (Local reset of the ATV Distributed PAC to factory settings).

Device	ATV6xx	ATV9xx	ATV340	ATV Distributed PAC
Firmware Version greater than	3.8IE94_B01	3.9IE94_B01	3.7IE94_B01	3.1IE17B0*_ 24.0

Procedure

Follow these steps to local reset your ATV Distributed PAC device to factory settings:

Step	Action
1	On the Graphic Display Terminal (VW3A1111): **[Main menu] > [Communication] > [Comm parameters] > [Distributed PAC] > [DRFO] > set [Distributed PAC Factory Reset] to Yes > click the OK button to accept the warning message** **NOTE:** • While the application keeps running security is not yet reset. • you need to take the appropriate steps to stop the application, and turn off the drive. **⚠WARNING** **UNAUTHENTICATED ACCESS AND PROCESS OPERATION** Setting this parameter to YES, default credentials will allow access to the ATV dPAC, at the next device power-up. Do not set this parameter to YES if your machine or process is accessible to unauthorized personnel either directly or via a network. Power-cycle the device, and re-configure security to run the application. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**
2	Restart the drive manually.
3	After restarting your device, your ATV Distributed PAC is reset to factory settings and its new credentials are: • User: `installer` • Password: `Inst@ller1`

ATV Distributed PAC Communication

ATV Distributed PAC Integrated Communication Ports

Dual Ethernet Port

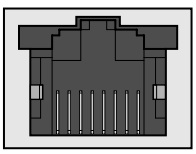
The ATV Distributed PAC is equipped with one dual Ethernet port switch.

This table describes the different Ethernet characteristics:

Characteristic	Description
Services	EcoStruxure Automation Device Management protocol.
	EcoStruxure Automation Expert protocol. • Native EcoStruxure Automation Expert HMI support (Magelis/Harmony HMI or PC HMI). • Native EcoStruxure Automation Expert cross-communication (Distributed PAC-to-Distributed PAC).
	Modbus TCP/IP protocol server.
	Modbus TCP/IP protocol client.
	OPC UA server. **NOTE:** • You can use up to 2,000 OPC UA Tags. However, note that this might use up to 5 MB of the 12 MB available for application in the ATV dPAC. • Refer to **EcoStruxure Automation Expert User Manual** for details on how to use this feature.
	OPC UA client. **NOTE:** Refer to **EcoStruxure Automation Expert User Manual** for details on how to use this feature.
	NTP client.
	Syslog server.
	EcoStruxure Automation Expert Archive protocol.
	ATV Secured Embedded web server.
	ATV Modbus TCP server.
Connector type	RJ45.
Auto negotiation	From 10 Mbps half duplex to 100 Mbps full duplex.
Cable type	Shielded.
Automatic cross-over detection	Yes.

Pin assignment

This figure shows the RJ45 Ethernet connector pin assignment:



8 7 6 5 4 3 2 1

This table describes the RJ45 Ethernet connector pins:

Pin N	Signal
1	TD+
2	TD-
3	RD+
4	NA
5	NA
6	RD-
7	NA
8	NA

Drive Embedded Communication Ports

The communication interfaces of the drive remain operational, when using ATV Distributed PAC.

- Embedded Modbus Serial.
- Embedded Modbus TCP (Ethernet/IP if available).

Connecting the Controller (ATV Distributed PAC) to a PC

Prerequisites

To transfer, run, and monitor the applications, connect the ATV Distributed PAC to a PC, that has EcoStruxure Automation Expert installed, using an Ethernet connection.

NOTICE
INOPERABLE EQUIPMENT Always connect the communication cable to the PC before connecting it to the controller. **Failure to follow these instructions can result in equipment damage.**

The default IP address is 0.0.0.0 for both Ethernet ports.

The default mask is 0.0.0.0.

Connection to EcoStruxure Automation Device Maintenance

If there is a need for a firmware update, perform the following actions to connect the controller to the PC

Step	Action
1	Connect the Ethernet cable to the PC.
2	Connect the Ethernet cable to either one of the Ethernet ports on the ATV Distributed PAC.
3	Perform DPWS discovery (IPv6 connection) to connect from EcoStruxure Automation Device Maintenance.
4	Login and update the firmware, set the IPv4 address you need with EcoStruxure Automation Device Maintenance.
5	Use IPv4 address to connect from EcoStruxure Automation Expert.

Connection to EcoStruxure Automation Expert

If the firmware is up to date, perform the following actions:

Step	Action
1	Connect the Ethernet cable to the PC.
2	Connect the Ethernet cable to either one of the Ethernet ports on the ATV Distributed PAC.
3	Add the ATV drive and ATV Distributed PAC under Physical Topology in **EcoStruxure Automation Expert**, then configure the IP address using properties tab of ATV Distributed PAC.
4	Start the system monitoring and configure security using default credentials. Login - installer Password - Inst@ller1 **NOTE:** Use the Graphic Display Terminal (VW3A1111) to enable security for the ATV drive and the ATV Distributed PAC
5	Login and Deploy the EcoStruxure Automation Expert solution.
NOTE: It is also possible to set the IPv4 address with **EcoStruxure Automation Expert**.	

ATV Distributed time management

Overview

Use this procedure to set the initial time on your device.

Real Time Clock (RTC)

Overview

The ATV Distributed PAC includes an RTC to provide system date and time information, and to support related functions requiring a real-time clock. To continue to monitor time when power is off, a non-rechargeable battery is required (see reference below).

This table shows how RTC drift is managed:

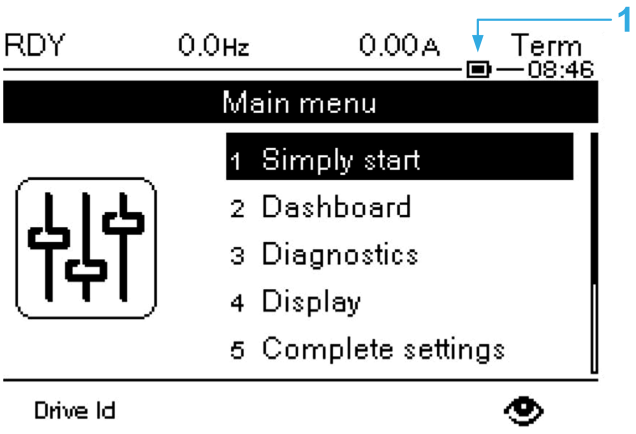
RTC Characteristics	Description
RTC drift	Less than 60 seconds per month without any user calibration at 25 °C (77 °F)

NOTE: It's mandatory to have a Graphic Display Terminal (VW3A1111) for ATV 340 to monitor the RTC when the power is off.

Battery of the Graphic Display Terminal (VW3A1111)

ATV Distributed PAC controller uses a battery located in the Graphic Display Terminal (VW3A1111): the Graphic Display Terminal (VW3A1111) must remain connected to the Altivar drive.

A battery icon on the Graphic Display Terminal (VW3A1111) indicates if the battery is depleted or absent.



Legend:
1 Battery icon

The Graphic Display Terminal (VW3A1111) is not delivered with ATV340 drives and ATV600, ATV900 cabinet integration drives. It must be ordered separately.

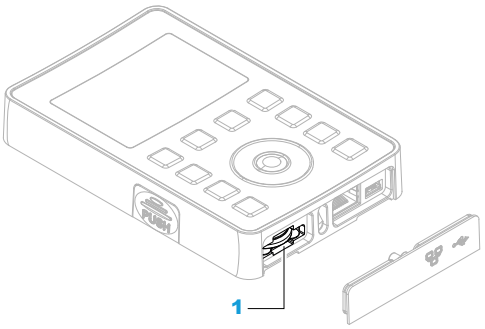
In the event of a power interruption, the backup battery maintains the RTC for the controller.

This table shows the characteristics of the battery:

Characteristics	Description
Use	In the event of a transient power outage, the battery powers the RTC.
Backup life	At least 2 years at 25 °C maximum (77 °F). At higher temperatures, the time is reduced
Battery monitoring	Yes
Replaceable	Yes
Controller battery type	Lithium coin cell, type Panasonic CR2032

Location of the Battery in the Graphic Display Terminal (VW3A1111)

The battery is located at the bottom of the Graphic Display Terminal (VW3A1111) (see 1 in the figure below):



Installing or Replacing the Battery

While lithium batteries are preferred due to their slow discharge and long life, they can present hazards to personnel, equipment and the environment and must be handled properly.

⚠DANGER

EXPLOSION, FIRE OR CHEMICAL BURNS

- Replace with identical battery type
- Follow all the instructions of the battery manufacturer
- Remove all replaceable batteries before discarding unit
- Recycle or properly dispose of used batteries
- Protect battery from any potential short-circuit
- Do not recharge, disassemble, heat above 100 °C (212 °F), or incinerate
- Use your hands or insulated tools to remove or replace the battery
- Maintain proper polarity when inserting and connecting a new battery

Failure to follow these instructions will result in death or serious injury.

To install or replace the battery, follow these steps:

Battery Installation

Step	Action
1	Ensure that the power is off.
2	Remove the Graphic Display Terminal (VW3A1111) from the drive or the remove mounting kit.
3	Remove the strip at the bottom of the Graphic Display Terminal (VW3A1111)
4	Remove the battery from the battery holder
5	Insert the new battery into the battery holder in accordance with the polarity markings on the battery
6	Put back the strip at the bottom of the Graphic Display Terminal (VW3A1111)
7	Put back the Graphic Display Terminal (VW3A1111) at its previous location
8	Power on the drive (or at least the control part in case of separate supply mode).
9	Set the internal clock

Initial time settings

Overview

Use the **NTP** (Network Time Protocol) Server Configuration dialog to synchronize the clock of the selected device to a time value provided by an **NTP** server. This allows you to configure the server information for the ATV Distributed PAC **NTP** client, using time zone settings to ensure accurate local time.

NOTE: The **NTP** server can be disabled to prevent the **NTP** client from synchronizing with any **NTP** server.

Use **DST** (Daylight Savings and Time zone) to automatically adjust the clock of your device forward or backward by a specified amount at the start and end of daylight saving time periods. Additionally, you can use **DST** to change the time zone of your device, configure the time zone information of your device to GMT offset, or to Daylight saving time, etc. This configuration is used by the **NTP** client if active, and by local time management otherwise. Therefore, if you set the device time via EcoStruxure Automation Expert or the Graphic Display Terminal, it will be affected by the **DST** configuration.

NOTE: Disabling the **DST** settings, sets the GMT offset to 0.

Prerequisites

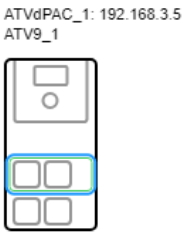
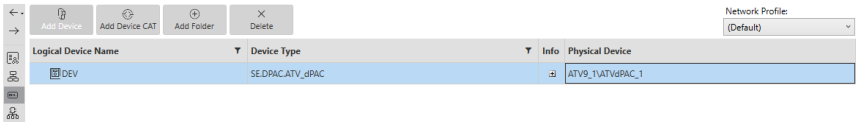
- Update the firmware package of:
  - The Drive (Refer to the firmware update with EcoStruxure Automation Device Maintenance chapter for more details on this step).
  - The ATV dPAC (Refer to the firmware update with EcoStruxure Automation Device Maintenance chapter for more details on this step).
- Update the labels and languages of the Graphic Display Terminal (VW3A1111) (Refer to the firmware update with EcoStruxure Automation Device Maintenance chapter for more details on this step).

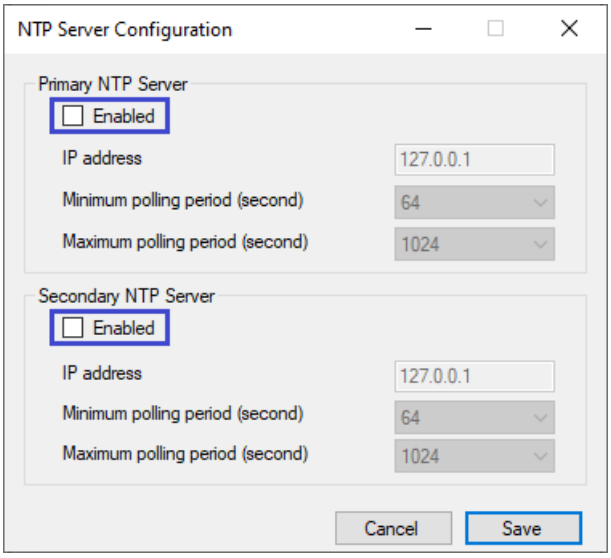
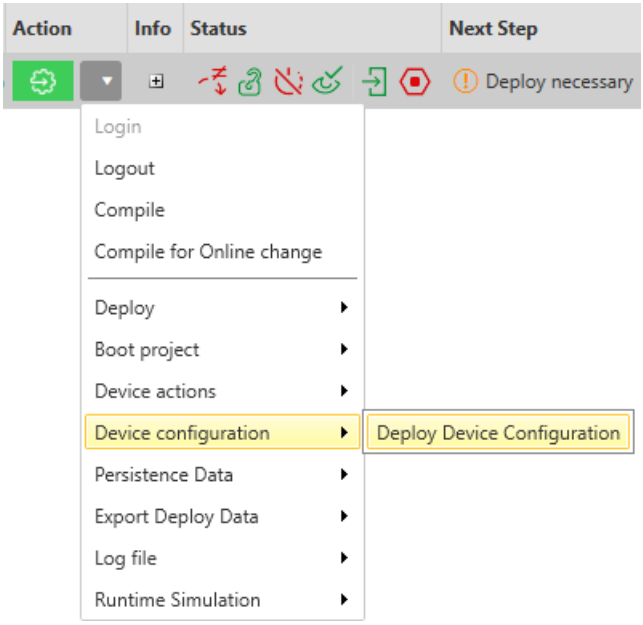
NOTE: The table below shows the firmware versions that allow this feature (Time management).

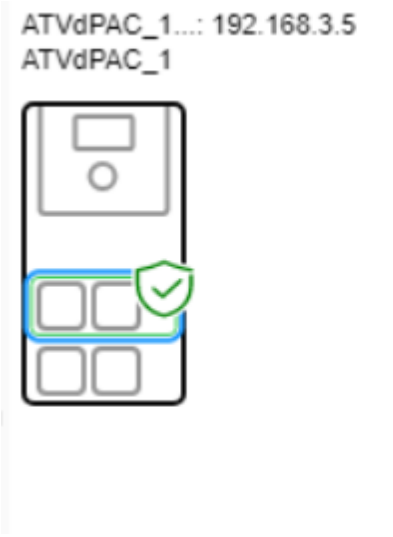
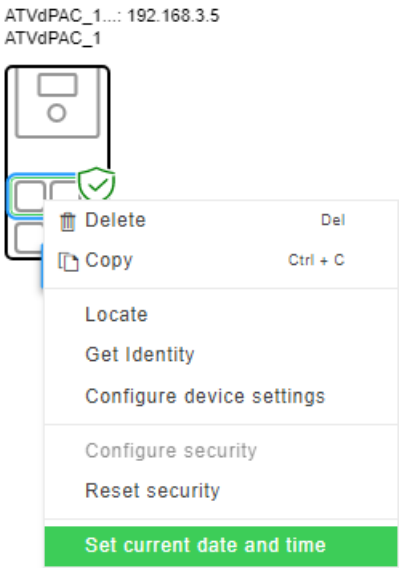
Device	ATV6··	ATV9··	ATV340	ATV dPAC	Altivar Labels for Graphic Display Terminal (VW3A1111)
Firmware Version greater than	23.0.23211.-00 3.7IE94_B04	23.0.23211.-00 3.8IE94_B04	23.0.23211.-00 3.6IE94_B04	23.1.23313.-00 3.1IE14B05	1.45

NTP and DST configuration in EcoStruxure Automation Expert

Follow this procedure to set the initial time on your device:

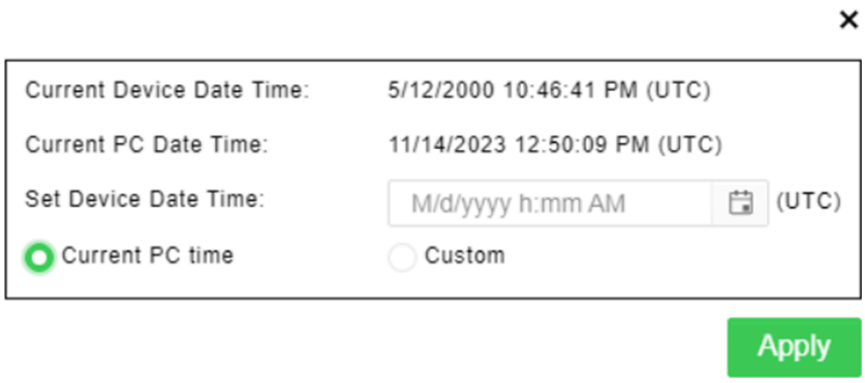
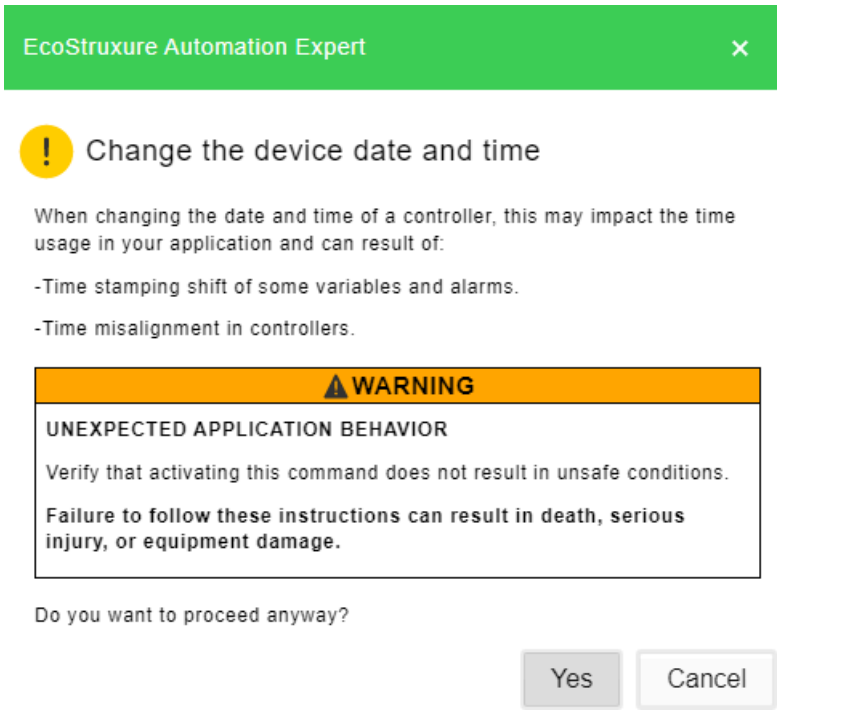
Step	Action
1	Open EcoStruxure Automation Expert software.
2	Open your solution (or create a new one).
3	Add an ATV dPAC in the Physical Devices 1. Open the system tab. 2. Open the Physical Devices. 3. Drag and drop your drive. 4. Click on the drive added to display its properties. 5. In the properties window, select **ATV dPAC** as a **Communication Card Reference**. 6. Select the added port to display its properties. 7. In the properties window, type the IPV4 Address of your ATV dPAC. 
4	Add an ATV dPAC device in the Logical Devices 1. Open the Logical Devices. 2. Add a device that has the type **SE.DPAC:ATV_dPAC**. 3. Connect your device (already created in the Physical Devices) to it. 
5	Disable the NTP Server in the Logical Devices 1. Select the added device to display its properties. 2. Click the ellipsis button  of the of the NTP Server , to open the NTP Server Configuration window. 3. Uncheck the Primary NTP Server and the secondary NTP Server. 4. Click Save.

Step	Action
	
6	Login and deploy device configuration 1. Open the Deploy and Diagnostic tab. 2. Compile your solution. 3. Login to your device using the credentials. 4. Deploy device configuration (select deploy and restart)  5. Login again to your device.

Step	Action
7	**NOTE:** Follow the instructions written in this step (step 7) only if the security is not configured, otherwise, move directly to step 8. 1. Open the Physical Devices. 2. Select Start Monitoring icon  3. Right click on your device, then select **Reset security**. 4. Right click on your device, select **Configure Security**, then select **Trust**.  **NOTE:** In case you cannot select **Reset Security**, try to disable the PC firewall and/ or restart your device. If the problem persists, consult your system administrator.
8	Right click on your device, then select **Set current date and time**. 

Manual time setting in EcoStruxure Automation Expert

If you do not have the NTP server use the following procedure to manually set the time of your device.

Step	Action
1	You can either select **Current PC time** or custom then type the date and time, to set device date and time.
2	Click **Apply**. 
3	Click **Yes** to confirm the safety message. 

NOTE: The **DST** and **NTP** server configuration can be used separately.

ATV dPAC Installation

ATV dPAC General Information

Mechanical data

ATV dPAC weight: 0.15 kg

ATV dPAC dimensions: 41 x 109 x 23.25 mm (1.61 x 4.29 x 0.91 in)

Environmental characteristics

Refer to Schneider Electric website and/or to the Installation Manual of Altivar drives

Certifications and Standards

Refer to Schneider Electric website and/or to the Installation Manual of Altivar drives

Installation and Maintenance Requirements

Before Starting

Read and understand this chapter before beginning the installation of your system.

The use and application of the information contained herein require expertise in the design and programming of automated control systems. Only you, the user, machine builder or integrator, can be aware of all the conditions and factors present during installation and setup, operation, and maintenance of the machine or process, and can therefore determine the automation and associated equipment and the related safeties and interlocks which can be effectively and properly used. When selecting automation and control equipment, and any other related equipment or software, for a particular application, you must also consider any applicable local, regional or national standards and/or regulations.

Pay particular attention in conforming to any safety information, different electrical requirements, and normative standards that would apply to your machine or process in the use of this equipment.

Disconnecting Power

Ensure that the power is off before installing or uninstalling any option modules.

Read and understand these instructions before performing any procedure with this device.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Only appropriately trained persons who are familiar with and fully understand the contents of the present manual and all other pertinent product documentation and who have received all necessary training to recognize and avoid hazards involved are authorized to work on and with this device system.
- Installation, adjustment, repair and maintenance must be performed by qualified personnel.
- Verify compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of all equipment.
- Only use properly rated, electrically insulated tools and measuring equipment.
- Do not touch unshielded components or terminals with voltage present.
- Prior to performing any type of work on the device system, block the motor shaft to prevent rotation.
- Insulate both ends of unused conductors of the motor cable.
- Do not short across the DC bus terminals or the DC bus capacitors or the braking resistor terminals.

Failure to follow these instructions will result in death or serious injury.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Before performing work on the device system:

- Disconnect all power, including external control power that may be present. Take into account that the circuit breaker or main switch does not de-energize all circuits.
- Place a “Do Not Turn On” label on all power switches related to the device system.
- Lock all power switches in the open position.
- Wait 15 minutes to allow the DC bus capacitors to discharge.
- Verify the absence of voltage. (1)

Before applying voltage to the device system:

- Verify that the work has been completed and that the entire installation cannot cause hazards.
- If the mains input terminals and the motor output terminals have been grounded and short-circuited, remove the ground and the short circuits on the mains input terminals and the motor output terminals.
- Verify proper grounding of all equipment.
- Verify that all protective equipment such as covers, doors, grids is installed and/or closed.

Failure to follow these instructions will result in death or serious injury.

Refer to the installation manual of the product. See Related Documents.

Programming Considerations

⚠WARNING

UNANTICIPATED 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.

Operating Environment

In addition to the **Environmental Characteristics**, refer to **Product Related Information** in the beginning of the present document for important information regarding installation in hazardous locations for this specific equipment.

⚠WARNING

UNANTICIPATED EQUIPMENT OPERATION

Install and operate this equipment according to the conditions described in the Environmental Characteristics.

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

Installation Considerations

⚠WARNING

UNANTICIPATED EQUIPMENT OPERATION

- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Install and operate this equipment in an enclosure appropriately rated for its intended environment and secured by a keyed or tooled locking mechanism.
- Use the sensor and actuator power supplies only for supplying power to the sensors or actuators connected to the module.
- Power line and output circuits must be wired and fused in compliance with local and national regulatory requirements for the rated current and voltage of the particular equipment.
- Do not use this equipment in safety-critical machine functions unless the equipment is otherwise designated as functional safety equipment and conforming to applicable regulations and standards.
- Do not disassemble, repair, or modify this equipment
- Do not connect any wiring to reserved, unused connections, or to connections designated as No Connection (N.C.).

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

Installation of the ATV dPAC

Before Starting

Verify that the module catalog number marked on the label is the same as that on the delivery note corresponding to the purchase order.

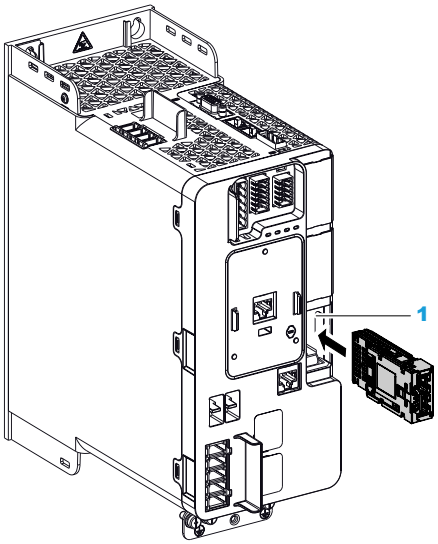
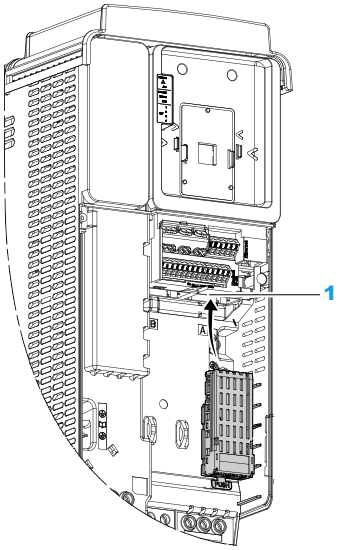
Remove the ATV dPAC module from its packaging and verify that it has not been damaged in transit.

Verify that the ATV dPAC is compatible with the drive firmware version. Refer to Firmware Version Compatibility.

Insertion of the ATV dPAC

The table provides the procedure for insertion of the ATV dPAC in the drive:

Step	Action
1	Ensure that the power is off.
2	Locate the module slot A on the bottom of the control part (or GP-FB on ATV340 with power equal to or lower than 22kW.
3	Insert the ATV dPAC in the corresponding slot.
4	Add the corresponding sticker on the LED front panel of the drive. **NOTE:** There is not sticker for ATV340 with power equal to or lower than 22kW. In this case, the used LEDs are located on the module itself
5	Verify that the module is correctly inserted and locked mechanically in the drive.

ATV340 (power ≤ 22 kW)	**ATV340 (power > 22 kW), ATV600 and ATV900**
	
1: GP-FB Slot	**1**: Module slot A

Removal of the ATV dPAC

The table provides the procedure for removal of the ATV dPAC option module from the drive:

Step	Action
1	Ensure that the power is off.
2	Press the strip.
3	Remove the module while maintaining the strip pressed,

Additional information

For more information on the installation refer to the Instruction Sheet S1A45591 provided with the ATV dPAC or on www.se.com

Electrical requirements

Wiring best practices

ATV dPAC is inserted inside Altivar drive. For the wiring related to the drive, refer to the section Drive Wiring available inside the installation of the drive (See Related Documents)

This paragraph describes the wiring guidelines and associated best practices to be respected when using the ATV dPAC system.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires except under the specific conditions specified in the appropriate hardware guide for this equipment.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Replace and secure all covers, accessories, hardware, cables, and wires and confirm that a proper ground connection exists before applying power to the unit.
- Use only the specified voltage when operating this equipment and any associated products.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop, power outage and restart
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines.1
- Each implementation of this equipment must be individually and thoroughly tested for proper operation before being placed into service.

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

NOTE: 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.

These requirements must be applied when wiring an ATV dPAC system:

- Communication wiring must be kept separate from the power wiring. Route these 2 types of wiring in separate cable ducting.
- Verify that the operating conditions and environment are within the specification values.
- Use twisted pair, shielded cables for networks, and fieldbus.

Use shielded, properly grounded cables for all communication connections. If you do not use shielded cable for these connections, electromagnetic interference can cause signal degradation. Degraded signals can cause the controller or attached modules and equipment to perform in an unintended manner.

⚠WARNING

UNANTICIPATED EQUIPMENT OPERATION

- Use shielded cables for all communication signals.
- Ground cable shields for all communication signals at a single point.
- Route communication separately from power cables.

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

NOTE: Multipoint grounding is permissible if connections are made to an equipotential ground plane dimensioned to help avoid cable shield damage in the event of power system short-circuit currents.

For more details, refer to Grounding Shielded Cables, page 68.

NOTE: Surface temperatures may exceed 60 °C (140 °F).

To conform to IEC 61010 standards, route primary wiring (wires connected to power mains) separately and apart from secondary wiring (extra low voltage wiring coming from intervening power sources). If that is not possible, double insulation is required such as conduit or cable gains.

DC Power supply characteristics & wiring

The power supply of the ATV dPAC is provided by the host Altivar drive. For the characteristics and wiring related to the power supply of the drive, refer to the installation manual of the drive (See Related Documents).

Depending on the drive wiring, there are two different modes to energize the ATV dPAC:

- With the drive powered by the power supply stage,
- With Separate Control Stage of the Drive. The control part and the power part of the drive are separated. The external control power supply must meet the requirements given in the installation manual of the drive.

⚠⚠DANGER

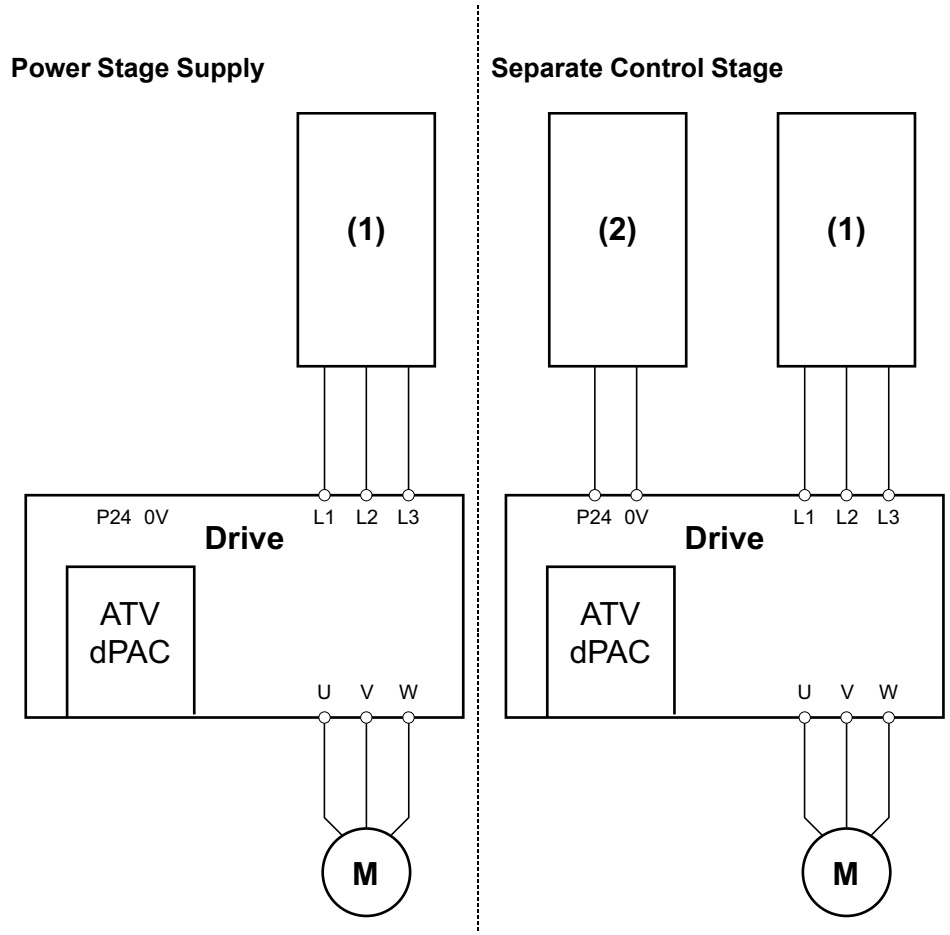
ELECTRIC SHOCK CAUSED BY INCORRECT POWER SUPPLY UNIT

The +24VDC supply voltage is connected with many exposed signal connections in the device.

- Use a power supply unit that meets the PELV (Protective Extra Low Voltage) requirements.

Failure to follow these instructions will result in death or serious injury.

DC Power Supply Wiring



Legend: **(1)** Power — **(2)** Control

Power interruption

With separate control stage, the duration of power interruptions where the ATV dPAC is able to continue normal operation varies depending upon the load on the outputs of the drive and the presence of option module, it can be shorter than 1 ms. With power stage supply, the duration of power interruptions where the ATV dPAC is able to continue normal operation varies but a minimum of 10 ms is maintained as specified by IEC standards. To sustain longer power interruption, it is advisable to use power stage supply.

When planning the management of the power supplied to the controller, you must consider the power interruption duration due to the fast cycle time of the controller.

There could potentially be many scans of the logic and consequential updates to the I/O image table during the power interruption, while there is no external power supplied to the inputs, the outputs or both depending on the power system architecture and power interruption circumstances.

⚠WARNING

UNANTICIPATED EQUIPMENT OPERATION

- Individually monitor each source of power used in the controller system including input power supplies, output power supplies and the power supply to the controller to allow appropriate system shutdown during power system interruptions.
- The inputs monitoring each of the power supply sources must be unfiltered inputs.

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

Grounding the ATV dPAC system

ATV dPAC is inserted inside Altivar drive. For the grounding related to the drive, refer to the installation of the drive (See Related Documents).

Regarding the ATV dPAC, the following requirements must be applied.

⚠WARNING

UNANTICIPATED EQUIPMENT OPERATION

- Use shielded cables for all digital and analog I/O signals and communication signals.
- Ground cable shields at a single point.
- Route communication cables and I/O cables separately from power cables

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

1 Multi-point grounding is permissible if connections are made to an equi-potential ground plane dimensioned to help avoid cable shield damage in the event of power system short-circuit currents

Firmware update

Abstract

This chapter contains important information about the hardware, the firmware, and the software delivery of the product ATV Distributed PAC. Read the chapter before using the product.

Product information

The table below shows the contents of EcoStruxure Automation Expert installation package for different versions.

ATV Distributed PAC System Compatibility

EAE[1] version	SEDP archive	ATV Distributed PAC VW3A3530-D firmware version	ATV340 firmware version	ATV6xx firmware version	ATV9xx firmware version	EADM[2] version	Labels of the Graphic Display Terminal (VW3A1111)	Date
20.2.20318.-07	SEDP_ ATVD_ 20.2.321.01	3.1IE02_ B05- 20.2.321.01	3.1IE94_ B12	2.6IE94_ B12	3.1IE94_ B12	20.2.310.1	—	December 2020
21.1.21139.-10	SEDP_ ATVD_ 21.1.132.02	3.1IE04_ B03- 21.1.132.00	3.1IE94_ B13	2.6IE94_ B13	3.1IE94_ B13	20.2.351.2	—	July 2021
21.2.21346.-08	SEDP_ ATVD_ 21.2.21342.-00	3.1IE06_ B04- 21.2.21342.-00	3.4IE94_ B02	3.5IE94_ B02	3.5IE94_ B02	V3.0.191	1.24	December 2021
22.0.22181.-16	SEDP_ ATVD_ 22.0.22179.-00	3.1IE07B06- 22.0.22179.-00	3.4IE94_ B04	3.5IE94_ B04	3.5IE94_ B04	3.0.203	1.38	July 2022
22.1.23130.-00	SEDP_ ATVD_ 22.1.23130.-00	3.1IE10_ B02- 22.1.23130.-00	V3.6IE94_ B04	3.7IE94_ B04	3.8IE94_ B04	3.1.147	1.43	June 2023
23.0.23211.-00	SEDP_ ATVD_ 23.0.23211.-00	3.1IE12_ B07- 23.0.23211.-00	3.6IE94_ B04	3.7IE94_ B04	3.8IE94_ B04	3.2.124	1.45	July 2023
23.1.23345.-00	SEDP_ ATVD_ 23.1.23345.-00	3.1IE15- B02_ 23.1.23345.-00	3.6IE94_ B04	3.7IE94_ B04	3.8IE94_ B04	3.2.124	1.45	December 2023
24.0.24180.-00	SEDP_ ATVD_ 24.0.24180.-00	3.1IE18- B02_ 24.0.24180.-00	V3.7IE94_ B05	V3.8IE94_ B05	V3.9IE94_ B05	3.2.138	1.52	July 2024
24.1	SEDP_ ATVD_24.1*	3.1IE21B0*_ 24.1	V4.2IE94_ B0*	V4.2IE94_ B0*	V4.2IE94_ B0*	V3.3.138	1.58	December 2024

[1] EcoStruxure Automation Expert

[2] EcoStruxure Automation Device Maintenance

NOTE:

- To upgrade/downgrade any firmware versions between 21.2 and 23.0, it is recommended to use the latest version of EcoStruxure Automation Device Maintenance 3.2 (available in EcoStruxure Automation Expert 23.0 installation package).
- To upgrade/downgrade any firmware versions between 20.2 and 21.2, it is recommended to use the version of EcoStruxure Automation Device Maintenance which is compatible with the current firmware of the drive or the ATV Distributed PAC, as well as the ATV Plugin (available in EcoStruxure Automation Expert installation package, to enable the firmware update).

The table below shows the Firmware upgrade/downgrade compatibility for the ATV Distributed PAC module:

ATV Distributed PAC Firmware upgrade/downgrade Compatibility

From\ to	20.2.20318.07 3.1IE02_B05	21.1.21139.10 3.1IE04_B03	21.2.21346.08 3.1IE06_B04	22.0.22181.16 3.1IE07_B06	22.1.23019.67 3.1IE09_B01	23.0
20.2.20318.07 3.1IE02_B05	N/A	Yes(1)	No	No	No	No
21.1.21139.10 3.1IE04_B03	No	N/A	Yes(2)	No	No	No
21.2.21346.08 3.1IE06_B04	No	No	N/A	Yes(2)	Yes(2)	Yes(2)
22.0.22181.16 3.1IE07_B06	No	No	Yes(3)	N/A	Yes(2)	Yes(2)
22.1.23019.67 3.1IE09_B01	No	No	Yes(3)	Yes(3)	N/A	Yes(2)
23.0	No	No	Yes(3)	Yes(3)	Yes(3)	N/A

(1) To update the firmware for this specific case only:

- Use EcoStruxure Automation Device Maintenance 20.2.351.2.
- Install Automation Device Maintenance - ATV Plugin 20.2.351.2 (available in EcoStruxure Automation Expert 21.1 installation package) to enable the firmware update, refer to the Readme file instructions for further information.

(2) To update the firmware use the latest version of EcoStruxure Automation Device Maintenance 3.2 (available in EcoStruxure Automation Expert 23.0 installation package).

(3) Downgrading is possible but not recommended, as new features will not be supported.

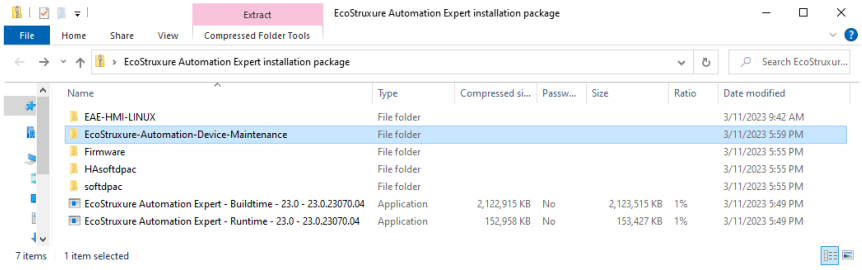
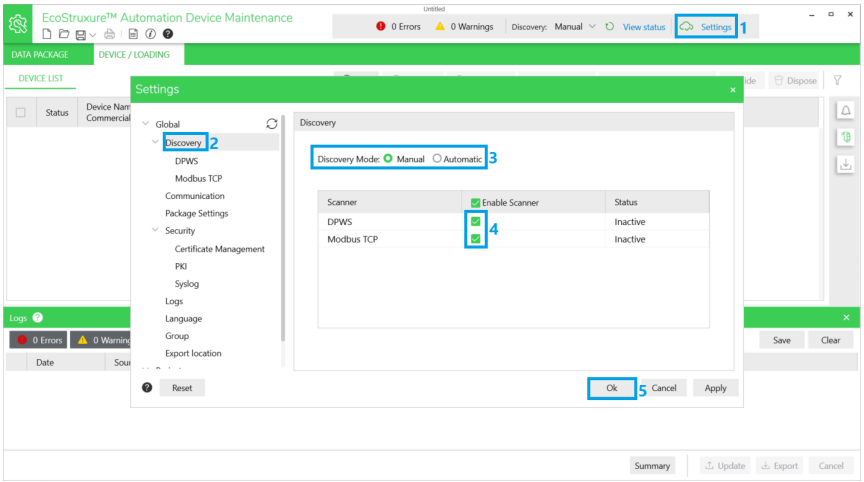
NOTE: After updating to firmware version 21.1 or later, you may notice a Security File Corrupt [SPFC] error, restart the drive to clear the error.

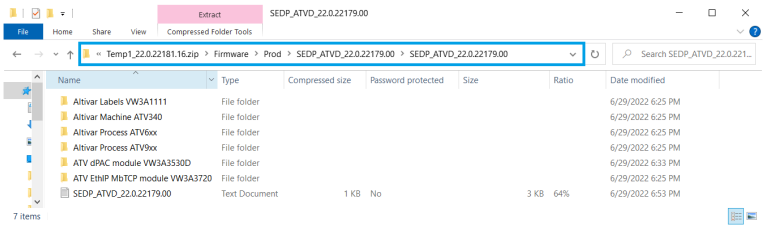
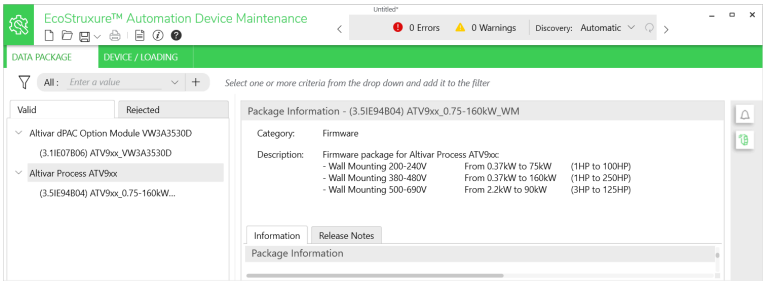
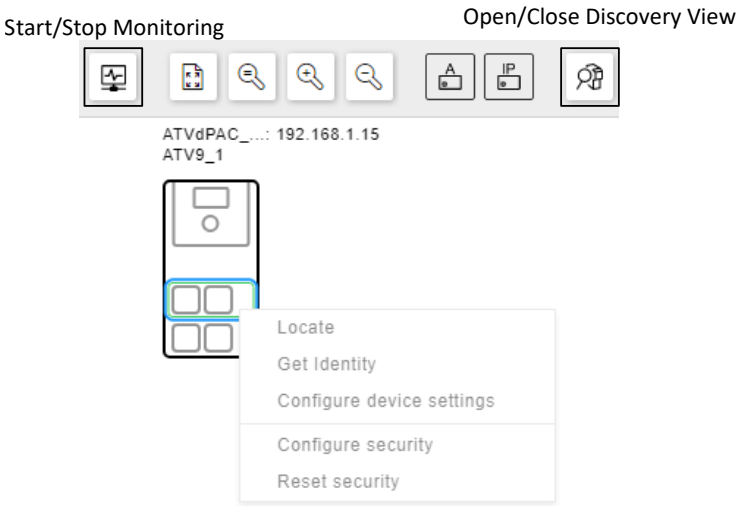
Pre-configuration

There are four main steps to update the firmware of the device:

1. Pre-configuration.
2. Update the ATV drive firmware.
3. Update the ATV Distributed PAC firmware.
4. Update the labels and languages of the Graphic Display Terminal (VW3A1111).

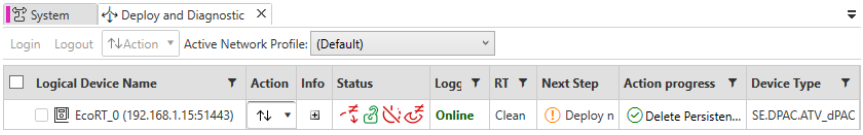
Use the following instructions to setup the firmware with EcoStruxure Automation Device Maintenance.

Step	Action
1	Download and install EcoStruxure Automation Device Maintenance (Available in EcoStruxure Automation Expert installation package)  **NOTE:** • To upgrade/downgrade any firmware versions between 21.2 and 23.0, it is recommended to use the latest version of EcoStruxure Automation Device Maintenance 3.2 (available in EcoStruxure Automation Expert 23.0 installation package). • To upgrade/downgrade any firmware versions between 20.2 and 21.2, it is recommended to use the version of EcoStruxure Automation Device Maintenance which is compatible with the current firmware of the drive or the ATV Distributed PAC, as well as the ATV Plugin (available in EcoStruxure Automation Expert installation package, to enable the firmware update).
2	Configure the discovery mode **NOTE:** You can select the device discovery mode as **Automatic** or **Manual** discovery. In case of: • **Automatic** discovery, the tool will periodically send information over the network in the background and receive information from the responding devices. • **Manual** discovery, you can manually discover the devices connected in the network when required. 1. Click **Settings** menu. 2. Click **Discovery**. 3. Select the **Discovery mode** (**Automatic** or **Manual**) 4. Select the scanners that will be taking part in discovery (**DPWS**-IPv6 and **Modbus TCP**-IPv4). Use this setting to help prevent scanning of any devices that you want to avoid. 5. Click **OK**.  **NOTE:** For more information about how to configure the scanners (**DPWS** and **Modbus TCP**), refer to EcoStruxure Automation Device Maintenance online help.
3	Copy-paste the ATV Firmware packages (*.fwp files and *.sedp files), to the default EcoStruxure Automation Device Maintenance Data Packages folder: by default it is *C:\Users\Public\Documents\Schneider Electric\Data Packages* **NOTE:** • Always update the firmware of the Altivar drive and the ATV Distributed PAC to match the version of EcoStruxure Automation Expert, as mentioned in ATV Distributed PAC system compatibility table.

Step	Action
	• The firmware packages can be found in EcoStruxure Automation Expert installation package (**Example: EcoStruxure Automation Expert installation package > Firmware > Prod > SEDP_ATVD_*.zip**)  The copied and pasted packages will then be displayed in EcoStruxure Automation Device Maintenance in **DATA PACKAGE** tab. 
4	Before updating the firmware: • Confirm that EcoStruxure Automation Expert version supports the firmware version you are installing. • Close EcoStruxure Automation Expert discovery view in the Topological View. • Stop EcoStruxure Automation Expert monitoring in the Topological View is recommended. 

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>5</td><td>Before updating the firmware, confirm that the ATV Distributed PAC runtime state is CLEAN, READY, or STOPPED as follows:
<table>
<tr><th>ATV Distributed PAC State</th><th>Upgrade Status</th></tr>
<tr><td>CLEAN</td><td>ALLOWED</td></tr>
<tr><td>READY</td><td>ALLOWED</td></tr>
<tr><td>STOPPED</td><td>ALLOWED</td></tr>
<tr><td>RUNNING</td><td>ALLOWED
NOTE: EcoStruxure Automation Device Maintenance stops the ATV Distributed PAC if its in the run state before starting the firmware update. It’s not mandatory to stop using EcoStruxure Automation Expert.</td></tr>
<tr><td>ONLINE CHANGE</td><td>REFUSED</td></tr>
<tr><td>ERRORHALT</td><td>REFUSED</td></tr>
</table>
NOTE: When an ATV Distributed PAC application is in Running state:

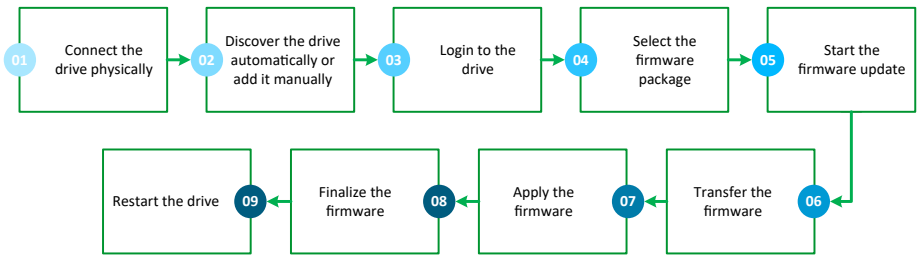
https connection blocks changing the IP settings.
mbap connection authorizes the connected device to change the IP settings but a reset will take place.



</td></tr>
</table>

ATV drive firmware update

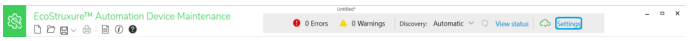
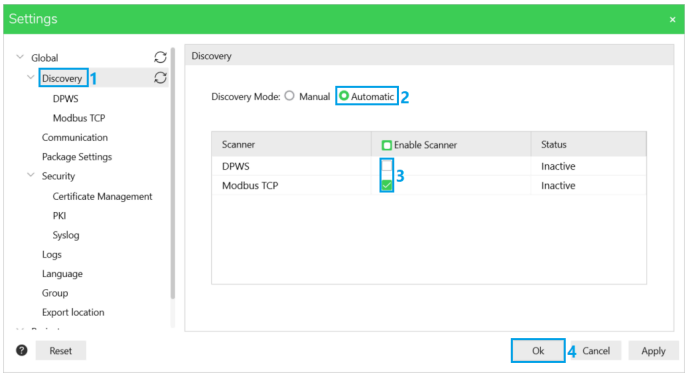
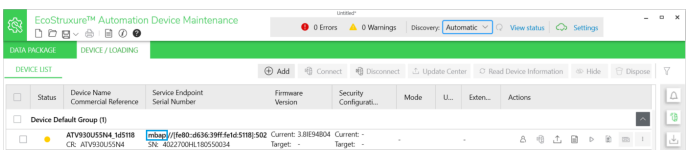
Use the following instructions to update the drive firmware with EcoStruxure Automation Device Maintenance.



NOTE: The steps 06, 07, 08 and 09 are done automatically by EcoStruxure Automation Device Maintenance, you only need to confirm the safety message related to the steps 06, 07 and 08.

The following procedure is used with EcoStruxure Automation Device Maintenance 3.2, thus, it can be used to update any firmware version between 21.2 and 23.0

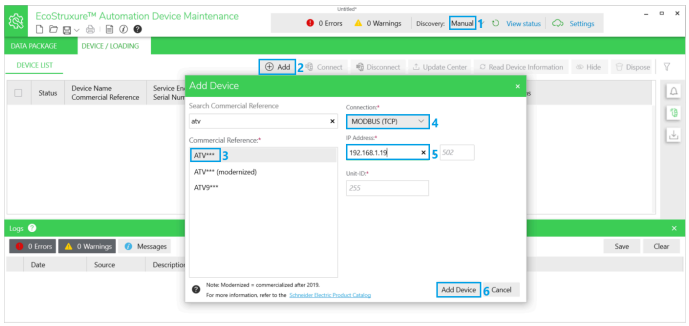
step	Action
01	Connect the drive physically For drives supporting Ethernet protocol, connect the Ethernet cable between the device embedded Ethernet port and the computer where EcoStruxure Automation Device Maintenance is running, then turn on the drive if it is not already on.  **NOTE:** The firmware update of ATV340 < 22kW (ATV340U07N4 to ATV340D22N4) cannot be done over embedded Ethernet port. To update it you can either connect your drive to Ethernet option module port, or to modbus serial line port using TCSMCNAM3M002P cable.
02	Discover the drive automatically or add it manually • Discover the drive automatically

Step	Action
1	Select **Settings** from EcoStruxure Automation Device Maintenance toolbar. 
2	Updating the settings 1. Select **Discovery** 2. Select **Automatic** 3. Deselect **DPWS** and Select **Modbus TCP**. 4. Click **Ok**.  **NOTE:** For ATV drive, firmware automatic discovery is always performed using the Modbus TCP scanner.
3	**Result:** The drive is added automatically using **Modbus TCP** scanner (**mbap**- IPv4) in **DEVICE / LOADING** tab.  **NOTE:** Some firewall software may block the discovery. If you are unable to discover the device, disable firewall or consult your system administrator.

NOTE: If the automatic discovery is not working, then add the drive manually.

step	Action

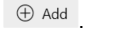
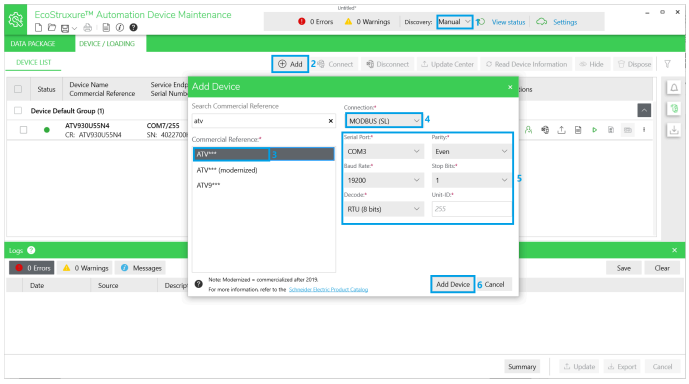
- Add the drive manually using **Modbus TCP** scanner (**mbap**-IPv4)

Step	Action
1	Select **Manual** from **Discovery** drop-down menu (to prevent the cyclic data change effect between **DPWS** and **Modbus TCP** scanner.
2	Click **Add**  .
3	Select the **Commercial Reference** of your drive. **NOTE:** To add the drive manually using **Modbus TCP** scanner (**mbap**-IPv4), select **ATV*****, not **ATV*** (modernized)**.
4	Select **MODBUS (TCP)** for **Connection**.
5	Type the **IP Address** of your drive.
6	Click **Add Device**. The figure below shows all the steps: 

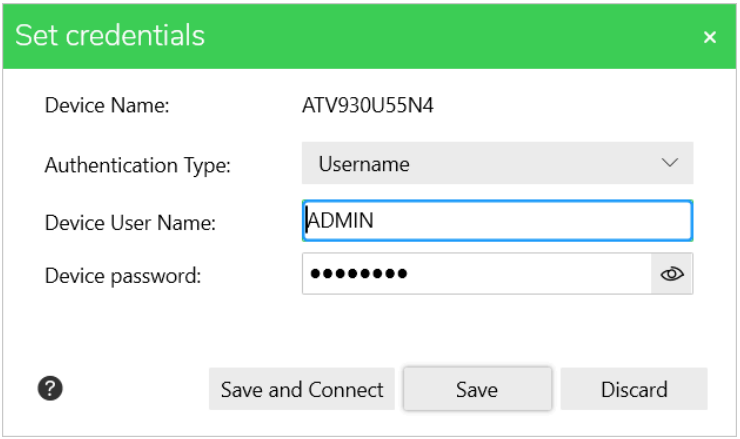
NOTE: if the drive manual add feature using **Modbus TCP** scanner is not working, then add it using **Modbus serial line** scanner.

- Add the drive manually using **Modbus serial line** scanner for firmware update in case Ethernet protocol is not supported. To add a device.

NOTE: For ATV drives, the physical connection can be done using TCSMCNAM3M002P cable.

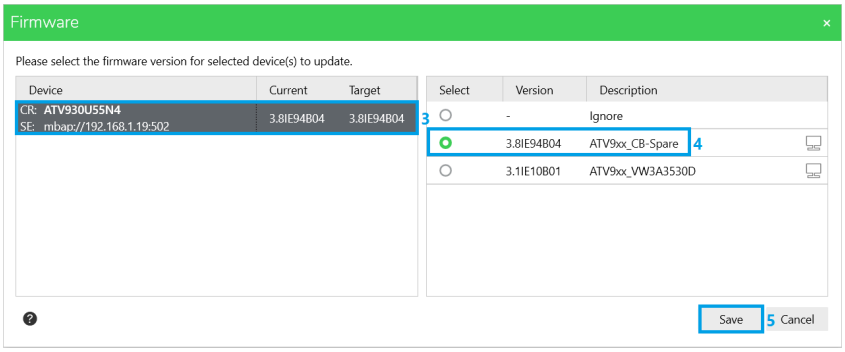
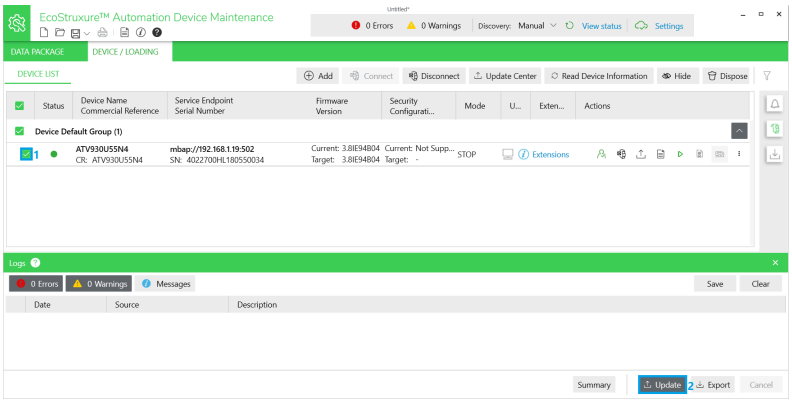
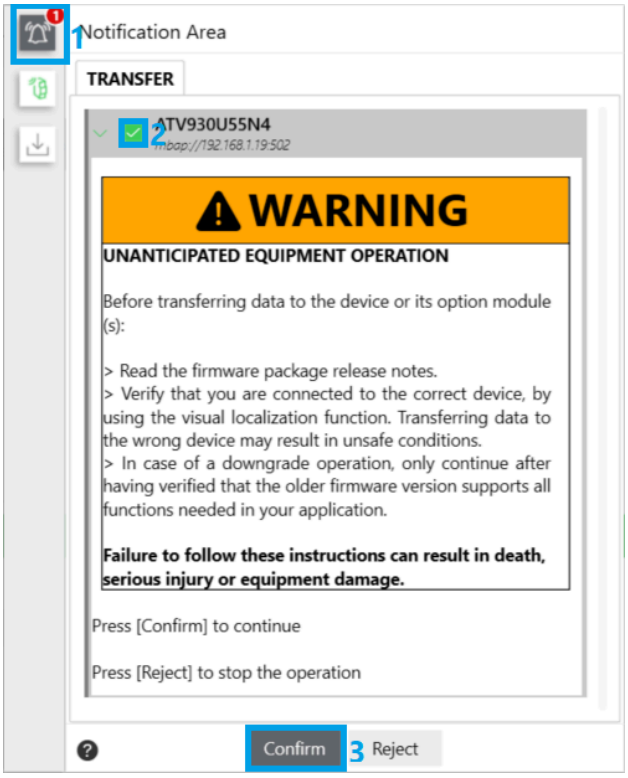
Step	Action
1	Select **Manual** from **Discovery** drop-down menu (to prevent the cyclic data change effect between **DPWS** and **Modbus TCP** scanner.
2	Click **Add**  .
3	Select the **Commercial Reference** of your drive. **NOTE:** Add the drive manually using **Modbus serial line** scanner, select **ATV*****, not **ATV*** (modernized)**.
4	Select **MODBUS (SL)** for **Connection**.
5	According to the laptop port you used to physically connect your drive, update the port settings (**Serial Port**, **Parity**, **Baud Rate**, **Stop Bits**, and **Decode**)
6	Click **Add Device**. 

step	Action
	NOTE: Modbus SL connection offers limited information, compared to DPWS. Consequently, data such as the Serial Number and the Mode are not retrieved from the devices.
03	Login to the drive

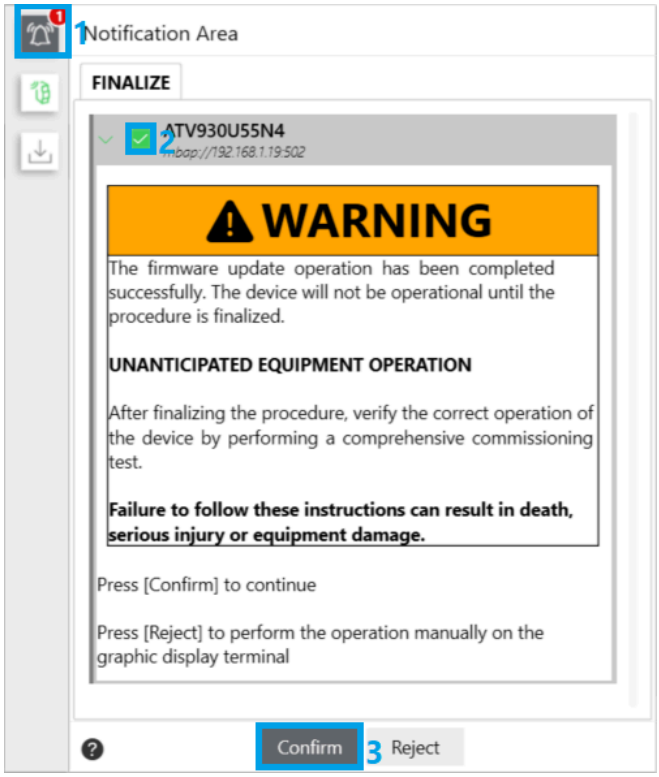
Step	Action
1	Click **Set credentials** icon
2	Type the credentials • For **Device User Name**, type `ADMIN` • For **Device password**, type the drive embedded Ethernet credentials.  **Where to find the default password?** If the password has not been modified via SoMove or Webserver, the drive default embedded Ethernet credentials can be used, and is available from the Graphic Display Terminal (VW3A1111) : • If your drive is physically connected to the embedded Ethernet port: **[Main Menu] > [Communication] COM > [Comm parameters] CMP > [Embd Eth Config] ETE > [User authentication] SECE > [Default Pwd Eth] WDPE**. • If your drive is physically connected to the Ethernet option module port: **[Main Menu] > [Communication] COM > [Comm parameters] CMP > [Opt Eth Config] ETO > [User authentication] SECO > [Default Pwd Eth Opt] WDPO**. **How to reset the password?** If the password has been modified but you don't know the new credentials, the drive default embedded Ethernet credentials can be reset from the Graphic Display Terminal (VW3A1111) : • If your drive is physically connected to the embedded Ethernet port: **[Main Menu] > [Communication] COM > [Comm parameters] CMP > [Embd Eth Config] ETE > [User authentication] SECE > [Reset Eth Embd Pwd] RWPE > [Yes] Yes**. • If your drive is physically connected to the Ethernet option module port: **[Main Menu] > [Communication] COM > [Comm parameters] CMP > [Opt Eth Config] ETO > [User authentication] SECO > [Reset Eth Opt Pwd] RWPO > [Yes] Yes**. **NOTE:** if you add the drive manually using **Modbus serial line** scanner, you can login using *Anonymous* **Authentification Type** (Credentials are not needed).
3	Click **Save and Connect**.

NOTE: If the security status is *Disabled* you can use the *Anonymous* **Authentication Type** to login.

04	Select the firmware package 1. Click **Update Center** icon . 2. Click **Firmware**. 3. Select the check boxes of the devices that you want to update. 4. Select the correct firmware package. 5. Click **Save**.

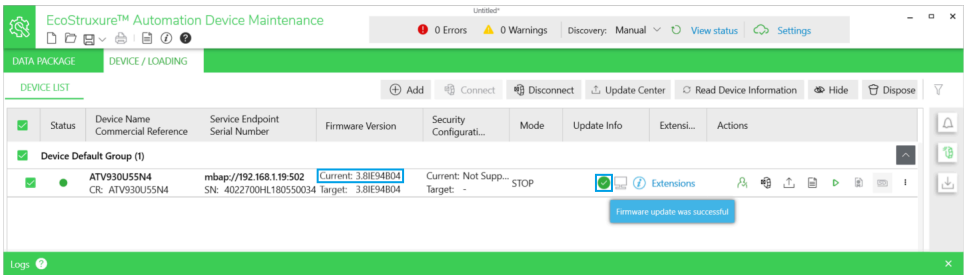
step	Action
	
05	Start the firmware update 1. Select the device that you want to update. 2. Click **Update**.  3. Click **Next** > **Next** > **Next** > **Confirm**.
06	Transfer the firmware When the firmware update is started, you will receive a notification in the **Notification Area**. 1. Click  icon to open the **Notification Area**. 2. Select the message by activating the check box. 3. Click **Confirm**. 

step	Action
07	Apply the firmware When the firmware is transferred, you will receive a notification in the **Notification Area**. 1. Click icon to open the **Notification Area**. 2. Select the message by activating the check box. 3. Click **Confirm**. 
08	Finalize the firmware When the firmware is applied, you will receive a notification in the **Notification Area**. 1. Click icon to open the **Notification Area**. 2. Select the message by activating the check box. 3. Click **Confirm**.

step	Action
	
09	When the firmware is finalized 1. Press **OK** on the Graphic Display Terminal (VW3A1111). 2. Restart the drive.

Result:

When the firmware update is complete, the current firmware version is updated and the update info shows the icon ✔ indicating that the firmware update was successful.

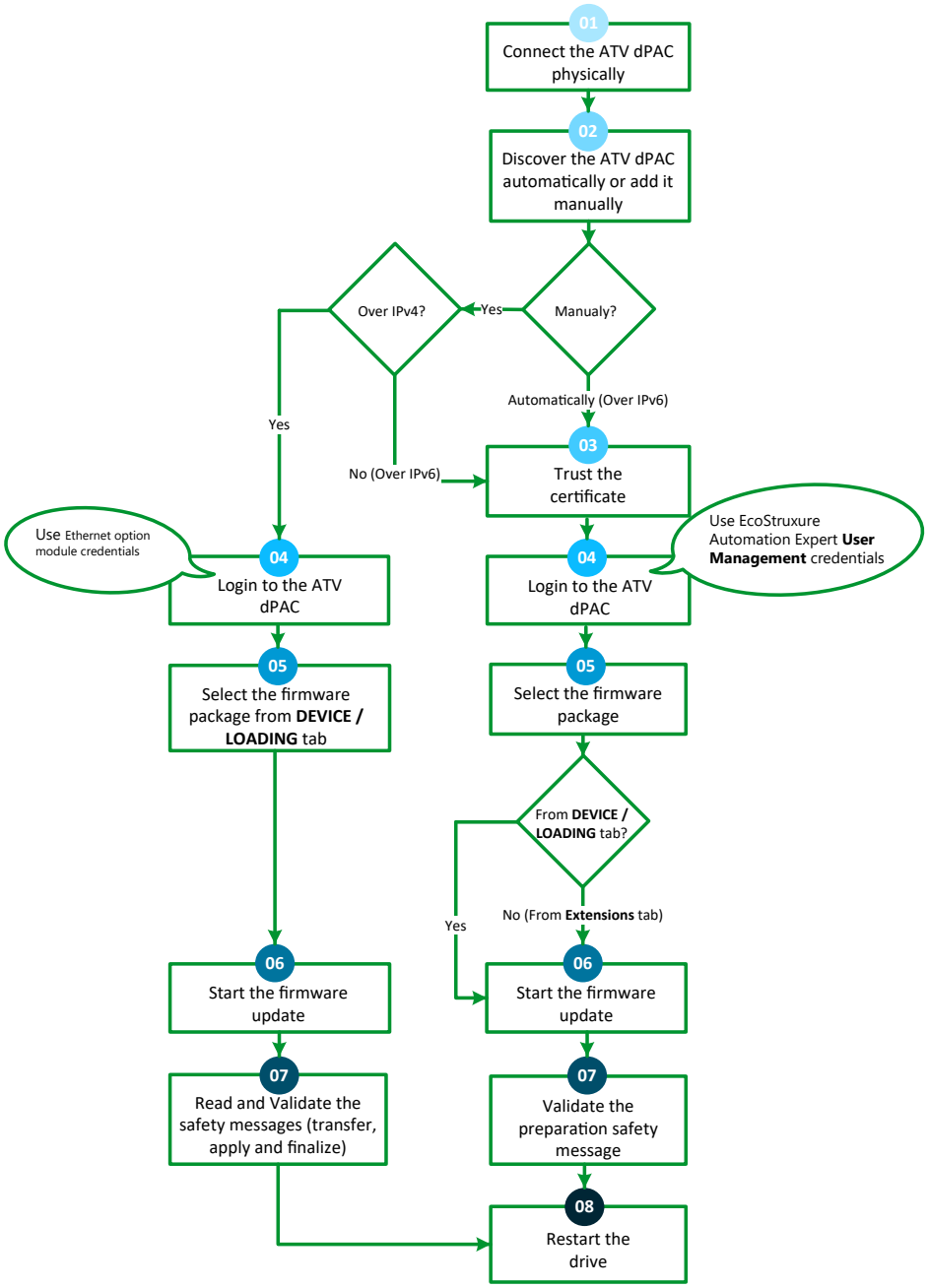


NOTE:

- Refer to the EcoStruxure Automation Device Maintenance User Manual (JYT50472) for more information.
- User access levels (with different authorizations) are defined for the application. User access level 3 is required in order to perform firmware updates.

ATV Distributed PAC firmware PAC

Use the following instructions to update the drive firmware with EcoStruxure Automation Device Maintenance.


01
Connect the ATV dPAC physically
02
Discover the ATV dPAC automatically or add it manually
Manualy?
Yes
Over IPv4?
Yes
No (Over IPv6)
Automatically (Over IPv6)
03
Trust the certificate
Use Ethernet option module credentials
04
Login to the ATV dPAC
Use EcoStruxure Automation Expert **User Management** credentials
04
Login to the ATV dPAC
05
Select the firmware package from **DEVICE / LOADING** tab
05
Select the firmware package
From **DEVICE / LOADING** tab?
Yes
No (From **Extensions** tab)
06
Start the firmware update
06
Start the firmware update
07
Read and Validate the safety messages (transfer, apply and finalize)
07
Validate the preparation safety message
08
Restart the drive

Refer to the following table to decide which scanner to use:

Connection type	MODBUS (TCP) scanner (mbap protocol and *.fwp file)	DPWS scanner (https protocol and*.sedp file)	
		From DEVICE/ LOADING tab (*_ATVhost.sedp file)	From EXTENSIONS tab (*_Extension. sedp file)
From 20.2 to 21.1	Yes	N/A(1)	N/A(2)
From 21.1 to 21.2	Yes	N/A(1)	N/A(2)
From 21.2 to 22.0	Yes	Yes(3)	N/A(2)
From 21.2 to 22.1	Yes	Yes(3)	Yes(3)
From 21.2 to 23.0	Yes	Yes(3)	Yes(3)
From 22.0 to 21.2	Yes	N/A(1)	N/A(2)
From 22.0 to 22.1	Yes	Yes(3)	Yes(3)
From 22.0 to 23.0	Yes	Yes(3)	Yes
From 22.1 to 21.2	Yes	N/A(1)	N/A(2)
From 22.1 to 22.0	Yes	Yes(3)	N/A(2)
From 22.1 to 23.0	Yes	Yes	Yes
From 23.0 to 21.2	Yes	N/A(1)	N/A(2)
From 23.0 to 22.0	Yes	Yes(3)	N/A(2)
From 23.0 to 22.1	Yes	Yes(3)	Yes(3)

(1): *_ATVhost.sedp file does not exist for this version.

(2): *_Extension.sedp file does not exist for this version.

(3): An error may occur after the firmware update is complete, although, the firmware update is successful.

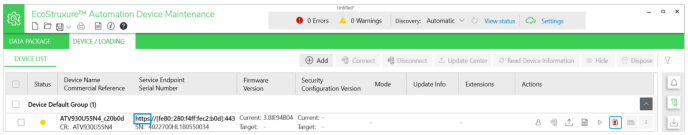
NOTE:

- You need to update the firmware of ATV Distributed PAC after updating the firmware of the drive with the appropriate firmware version.
- The following procedure is used with EcoStruxure Automation Device Maintenance 3.2, thus, it can be used to update any firmware version between 21.2 and 23.0

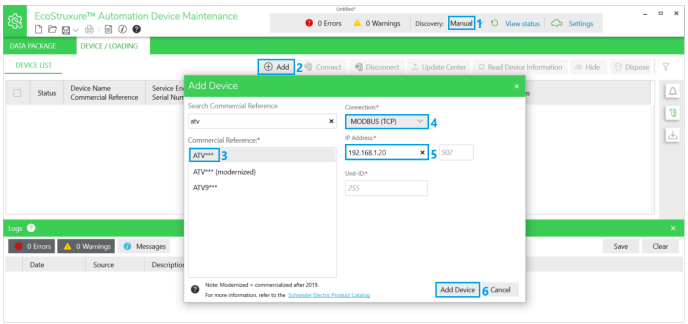
Step	Action
01	Connect the ATV Distributed PAC physically Connect the Ethernet cable between the ATV Distributed PAC port and the computer where EcoStruxure Automation Device Maintenance is running, then turn on the drive if it is not already on. 
02	Discover the ATV Distributed PAC automatically or add it manually

Step	Action

- Discover the drive automatically

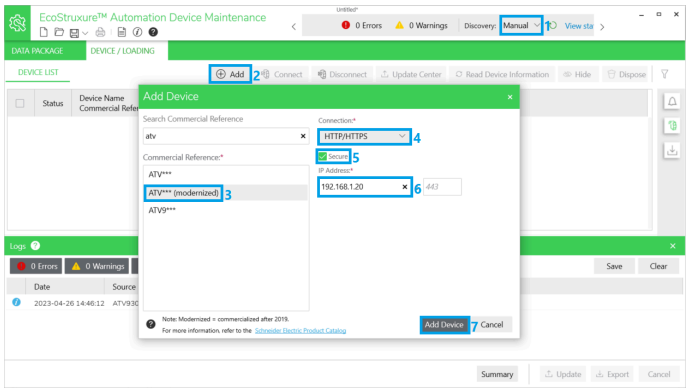
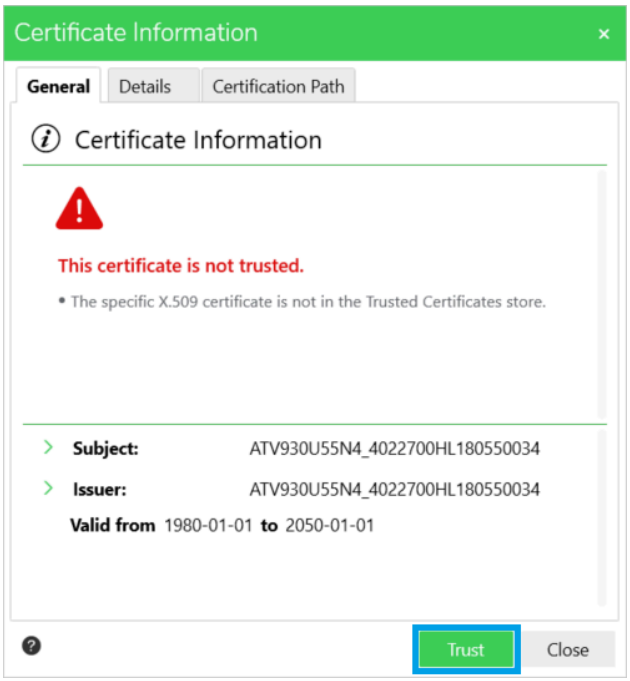
Step	Action
1	Select Automatic from **Discovery** drop-down menu to perform automatic discovery. 
2	**Result:** The ATV Distributed PAC is added automatically using **DPWS** scanner (**https**-IPv6) in **DEVICE / LOADING** tab.  **NOTE:** Some firewall software may block the discovery. If you are unable to discover the device, disable firewall or consult your system administrator.

- Add the ATV Distributed PAC manually using **Modbus TCP** scanner (**mbap**-IPv4)

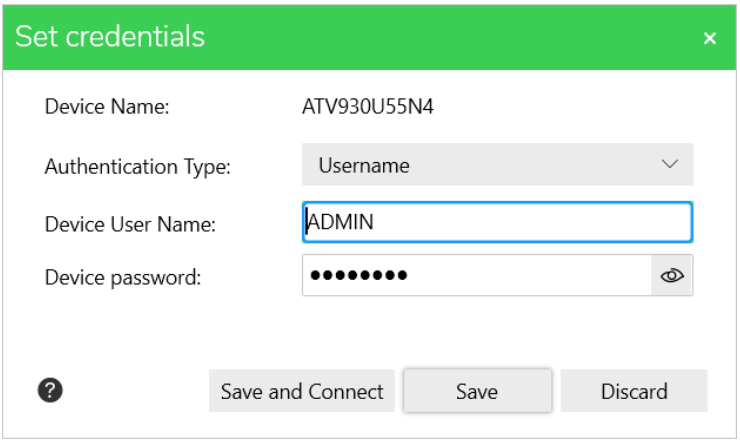
Step	Action
1	Select **Manual** from **Discovery** drop-down menu.
2	Click **Add**  in the **DEVICE / LOADING** tab to add a new device.
3	Select the **Commercial Reference** of the drive hosting your ATV Distributed PAC. **NOTE:** To discover the ATV Distributed PAC manually using **Modbus TCP** scanner (**mbap**-IPv4), select **ATV*****, not **ATV*** (modernized)**.
4	Select **MODBUS (TCP)** for **Connection**.
5	Type the **IP Address** of your ATV Distributed PAC.
6	Click **Add Device**. The figure below shows all the steps: 

- Discover the ATV Distributed PAC manually using **DPWS** scanner (**https**-IPv6)

Step	Action
1	Select **Manual** from **Discovery** drop-down menu.
2	Click **Add**  in the **DEVICE / LOADING** tab to add a new device.
3	Select the **Commercial Reference** of the drive hosting your ATV Distributed PAC. **NOTE:** To discover the ATV Distributed PAC manually using **DPWS** scanner (**https**-IPv6), select **ATV*** (modernized)**, not **ATV*****.
4	Select **HTTP/HTTPS** for **Connection**.
5	Activate the check box **Secure**.

Step	Action
	6 — Type the **IP Address** of your ATV Distributed PAC. 7 — Click **Add Device**. The figure below shows all the steps: 
03	**NOTE:** Follow this step only if you discover your ATV Distributed PAC using **DPWS** scanner (**https**-IPv6). 1. Click **Device certificate** icon. 2. Click **Trust**. 
04	Login to the ATV Distributed PAC

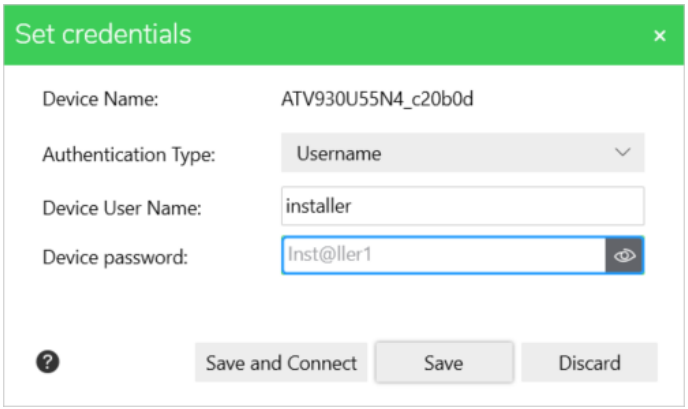
Step	Action
	Login the ATV Distributed PAC over Modbus TCP scanner (mbap-IPv4) discovery

Step	Action
1	Click **Set credentials** icon
2	Type the credentials For **Device User Name**, type `ADMIN` For **Device password**, type the Ethernet option module credentials.  **NOTE:** : • If the password is not modified via SoMove or Webserver, the default Ethernet option module credentials can be used, and are available from the Graphic Display Terminal (VW3A1111) in: **[Main Menu] > [Communication] COM > [Comm parameters] CMP > [Opt Eth Config] ETO > [User authentication] SECO > [Default Pwd Eth Opt] WDPO** • If the password is modified but you don't know the new credentials, the drive Ethernet option module credentials can be reset from the Graphic Display Terminal (VW3A1111) in: **[Main Menu] > [Communication] COM > [Comm parameters] CMP > [Opt Eth Config] ETO > [User authentication] SECO > [Reset Eth Opt Pwd] RWPO > [Yes] Yes**
3	Click **Save and Connect**.

Login the ATV Distributed PAC over DPWS scanner (https-IPv6) discovery

Step	Action
1	Click **Set credentials** icon
2	Type the credentials • **Case 1:** The security is not Configured (New user credentials). ◦ For **Device User Name**, type `installer`. ◦ For **Device password**, type `Inst@ller1`.

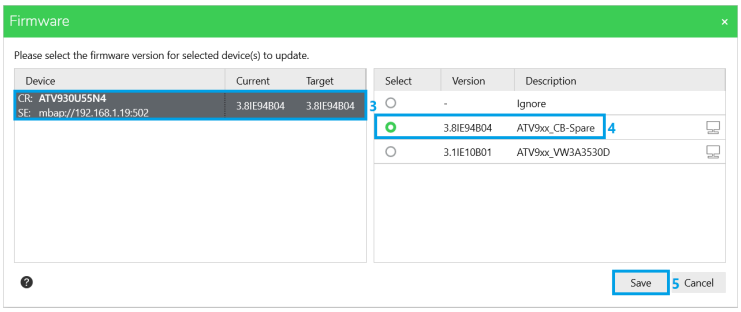
Step	Action
	Login the ATV Distributed PAC over DPWS scanner (https-IPv6) discovery (Continued)

Step	Action
	 • **Case 2:** The security is configured: use EcoStruxure Automation Expert **User Management** credentials. **NOTE:** If the security is configured but you don't know EcoStruxure Automation Expert **User Management** credentials, the **User Management** credentials can be reset, refer to the chapter Local reset of the ATV Distributed PAC security, page 44 for more information. **NOTE:** For firmware version 21.1 (3.1IE04_B03) or earlier, use EcoStruxure Automation Device Maintenance webserver credentials, available in the Graphic Display Terminal (VW3A1111) if the security is enabled, or Anonymous login if the security is disabled
3	Click **Save and Connect**.

05

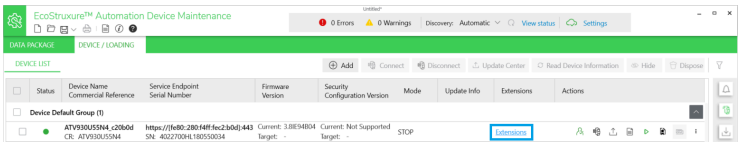
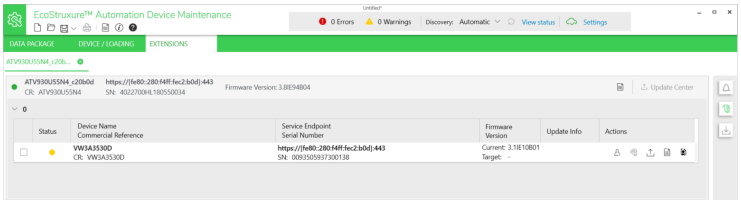
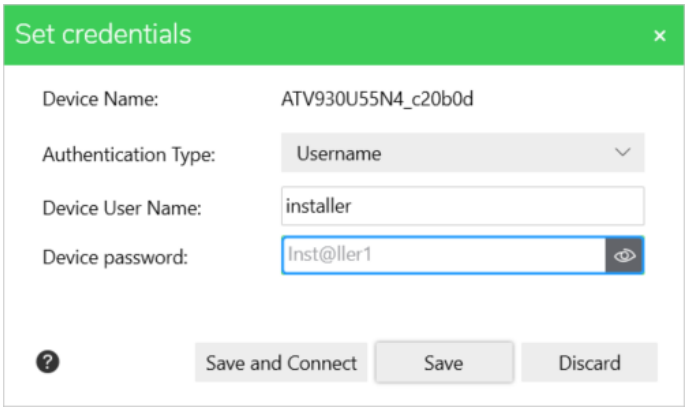
Select the firmware package

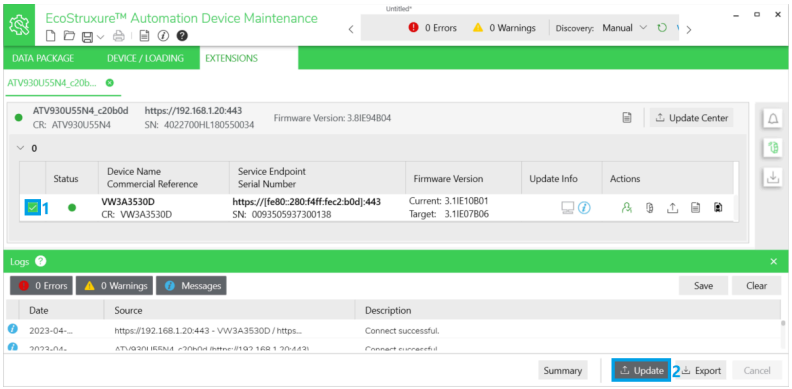
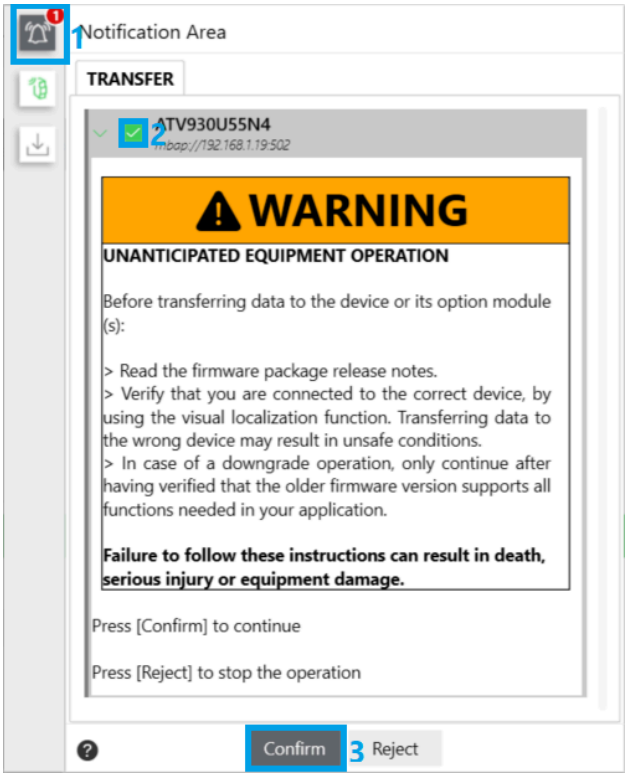
Method 1: From **DEVICE / LOADING** tab:

Step	Action
1	Click **Update Center** icon .
2	Click **Firmware**.
3	Select the check boxes of the devices that you want to update.
4	Select the appropriate firmware package.
5	Click **Save**. 

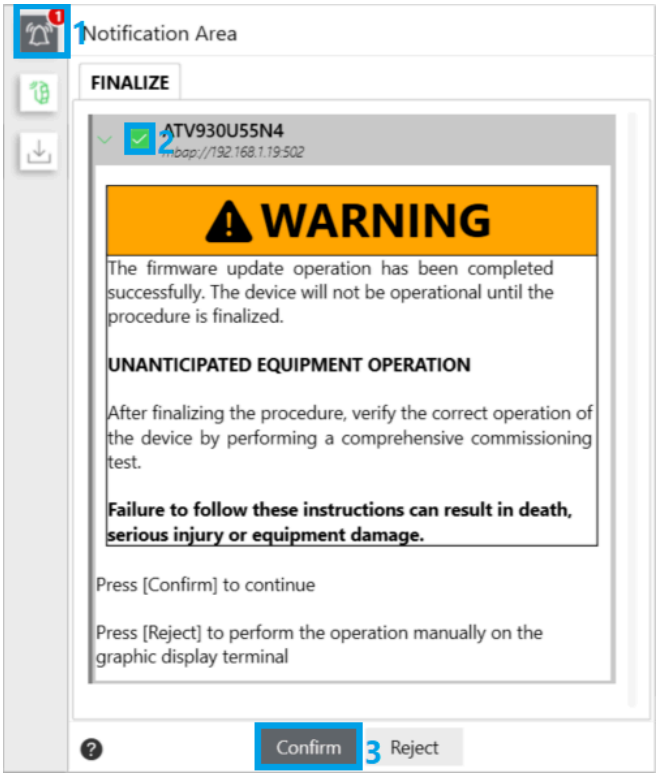
Method 2: From **EXTENSIONS** tab:

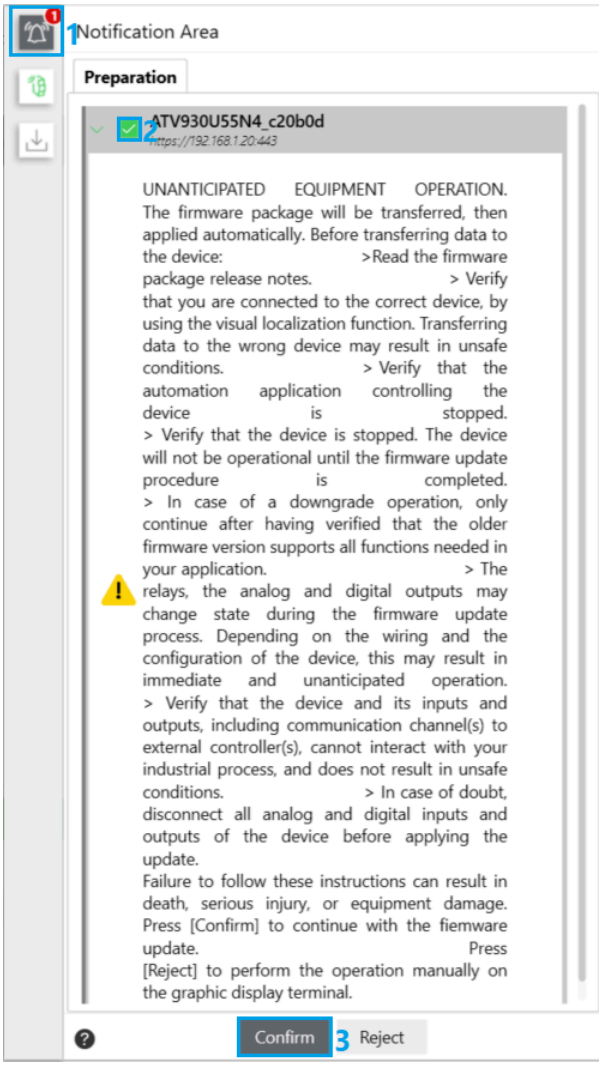
NOTE: This method can only be used if you are using **DPWS** scanner (https-IPv6).

Step	Action
	<table><tr><th>Step</th><th>Action</th></tr><tr><td>1</td><td>Click on Extensions from DEVICE / LOADING tab to open EXTENSIONS tab.  </td></tr><tr><td>2</td><td>Click on chevron (angle bracket) symbol  to open the device. Result:  </td></tr><tr><td>3</td><td>Login to the ATV Distributed PAC 1. Click Set credentials icon  2. Type the credentials Case 1: The security is not Configured (New user credentials). • For Device User Name, type <code>installer</code>. • For Device password, type <code>Inst@ller1</code>.  Case 2: The security is configured: use EcoStruxure Automation Expert User Management credentials. NOTE: If the security is configured but you don’t know EcoStruxure Automation Expert User Management credentials, the User Management credentials can be reset, refer to the chapter Local reset of the ATV Distributed PAC security for more information. NOTE: For firmware version 21.1 (3.1IE04_B03) or earlier, use EcoStruxure Automation Device Maintenance webserver credentials, available in the Graphic Display Terminal (VW3A1111) if the security is enabled, or Anonymous login if the security is disabled 3. Click Save and Connect.</td></tr><tr><td>4</td><td>Click Update Center icon  .</td></tr><tr><td>5</td><td>Click Firmware.</td></tr><tr><td>6</td><td>Select the check boxes of the devices that you want to update.</td></tr><tr><td>7</td><td>Select the appropriate firmware package.</td></tr><tr><td>8</td><td>Click Save.</td></tr></table>
06	Start the firmware update NOTE: Whether you selected the firmware package from DEVICE / LOADING tab or EXTENSIONS tab, follow these instructions: 1. Select the device you want to update by checking the box.

Step	Action
	2. Select update.  3. Click **Next** > **Next** > **Next** > **Confirm**.
07	1. Transfer the firmware When the firmware update is started, you will receive a notification in the **Notification Area**. a. Click icon to open the **Notification Area**. b. Select the message by activating the check box. c. Click **Confirm**. 

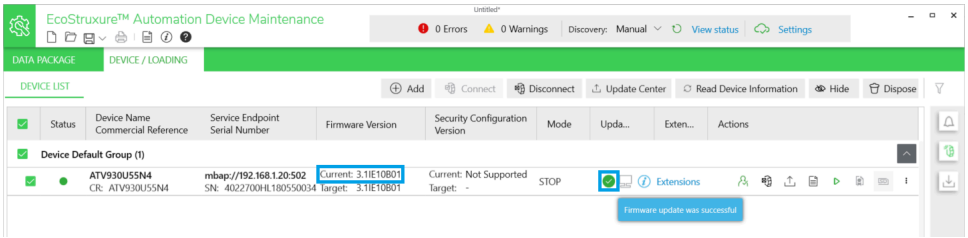
Step	Action
	2. Apply the firmware When the firmware is transferred, you will receive a notification in the **Notification Area**. a. Click icon to open the **Notification Area**. b. Select the message by activating the check box. c. Click **Confirm**.  3. When the firmware is applied, you will receive a notification in the **Notification Area**. a. Click icon to open the **Notification Area**. b. Select the message by activating the check box. c. Click **Confirm**.

Step	Action
	 **NOTE:** If you update the firmware over **DPWS** scanner (https-IPv6), using sdep file you will receive only 1 notification (preparation) in the **Notification Area** instead of 3 notifications (Transfer, apply and finalize) if you updating over **Modbus TCP** scanner (mbap-IPv4) using mbap file. follow these instructions if you are updating over **DPWS** scanner:

Step	Action
	1. Click icon to open the **Notification Area**. 2. Select the message by activating the check box. 3. Click **Confirm**. 
08	When the firmware is finalized 1. Press **OK** on the Graphic Display Terminal (VW3A1111). 2. Restart the drive.

Result:

When the firmware update is complete, the current firmware version is updated and the update info shows the icon ✔ indicating that the firmware update was successful.



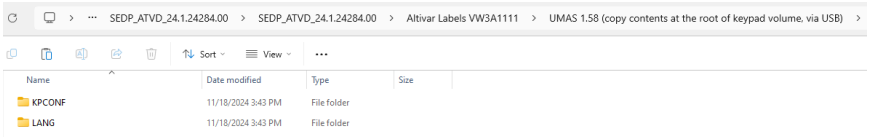
ATV Graphic Display Terminal labels update

The Graphic Display Terminal (VW3A1111) labels and languages can be updated.

NOTE: Labels and languages :

- Can be found using the **EcoStruxure Automation Expert software installer archive** It exists on the following location: **EcoStruxure Automation Expert software installer archive > Firmware > Prod > SEDP_ATVD_*.zip > SEDP_ATVD_* > Altivar Labels VW3A1111 > UMAS 1.58**

  NOTE: The version of UMAS you have may vary based on the version of the software installer archive folder.



- The latest version can be found here: Languages_for_VW3A1111_Advanced_graphic_display_terminal

The following table describe the procedure to update the labels and languages of the Graphic Display Terminal (VW3A1111) :

Step	Action
1	Download the latest version of the labels and languages of the Graphic Display Terminal (VW3A1111).
2	Save the downloaded file on your computer.
3	Unzip the file and follow the Readme file instructions.

NOTE: To transfer the labels and languages of the Graphic Display Terminal (VW3A1111), you need to connect the Graphic Display Terminal (VW3A1111) to your laptop using the following cables:

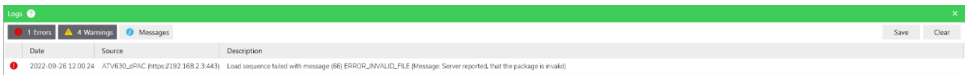
- Any USB plug-type A connector to USB plug-type mini B connector.
- BMXXCAUSBH018 cable.

Troubleshooting during the ATV Distributed PAC Firmware Update

Abstract

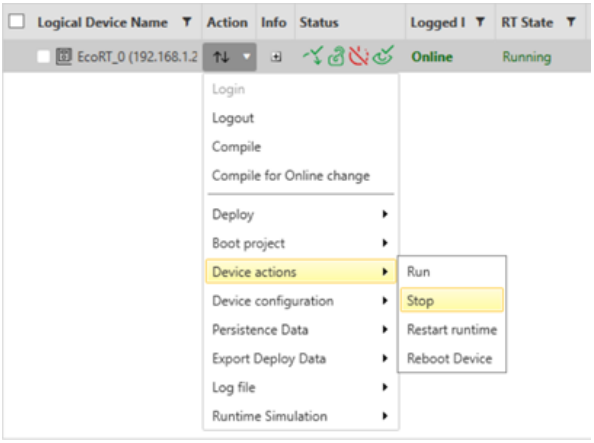
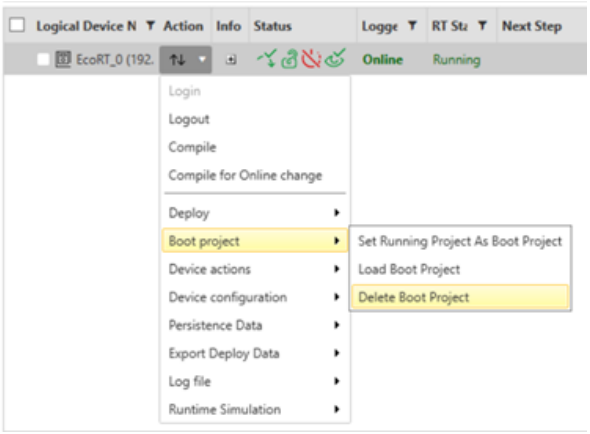
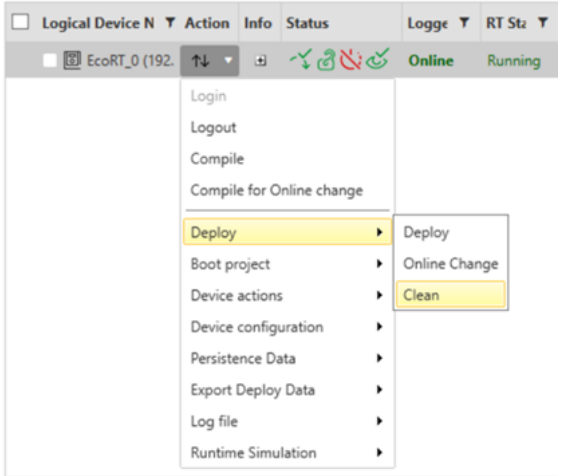
To allow a reliable firmware update procedure, stopping or cleaning the EcoRT application could be needed in the ATV Distributed PAC, to free-up enough memory.

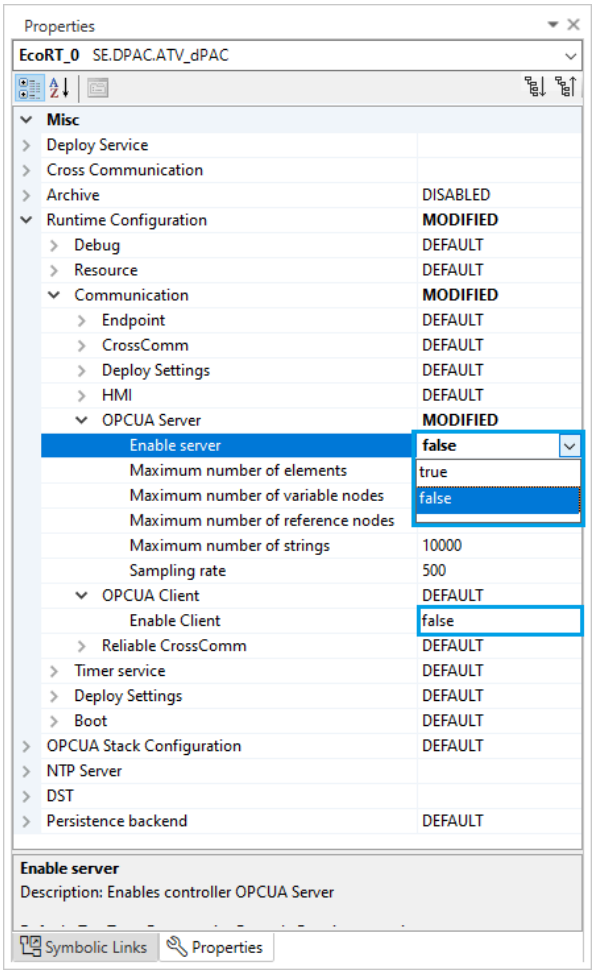
The image below illustrates the displayed error, when the firmware update can’t be achieved due to a lack of memory:

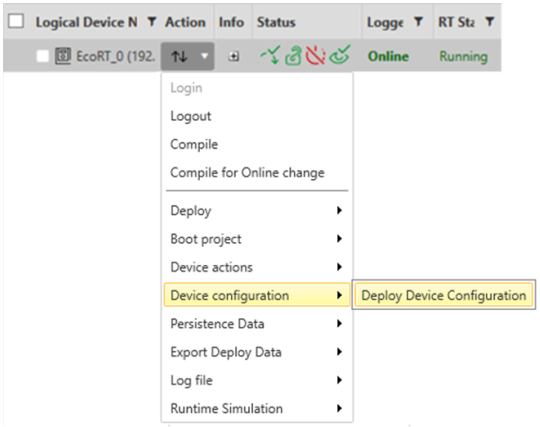
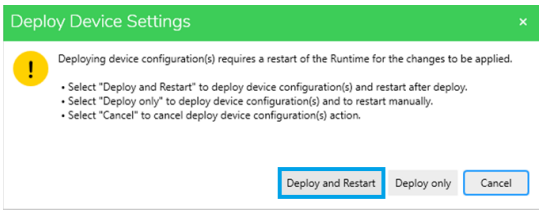


Description

The following table describes the steps to solve the lack of memory error when updating the firmware of the ATV Distributed PAC:

Step	Description	Action
1	Stop the application **NOTE:** The device should not operate until the firmware update is completed.	Open the Deploy and Diagnostic Editor in EcoStruxure Automation Expert → click on Action → select Device actions → select Stop 
2	Delete the Boot Project	Open the Deploy and Diagnostic Editor in EcoStruxure Automation Expert → click on Action → select Boot project→ select Delete Boot Project 
3	Clean the state of the ATV Distributed PAC	Open the Deploy and Diagnostic Editor in EcoStruxure Automation Expert → click on Action → select Deploy → select Clean 
4	Verify that: • the device • its inputs • its outputs • the communication channels to external controllers	**NOTE:** In case of doubt, disconnect all analog and digital inputs and outputs from the device before applying the firmware update.

Step	Description	Action
	cannot interfere with your industrial process, and does not result in unsafe conditions.	
5	Disable the OPC UA Server and Client, if the are already enbaled.:	Open the system tab in EcoStruxure Automation Expert → click on Logical Devices→ select the device to display its properties → display the Runtime Configuration options → Disable OPC UA server and Client if the are already enbaled, as mentioned in the following image: 

Step	Description	Action
6	Deploy the Device configuration and Restart	Open the Deploy and Diagnostic Editor → click on Action → select Device actions → select Stop 1. Open the Deploy and Diagnostic Editor → click on Action → select Device configuration→ select Deploy Device Configuration  2. Select Deploy and Restart 

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