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# Introduction

## 1.1 Scope of the document

New generation of AC500 PLC’s (V3) support User Management for the Automation Builder Project and also for the PLC in different applications like OPC UA and Visualization.

## 1.2 Compatibility

The application example explained in this document have been used with the below engineering system versions. They should also work with other versions, nevertheless some small adaptations may be necessary, for future versions.

- AC500 V3 PLC
- Automation Builder 2.2.0 or newer
User Management

User Management gives the opportunity to have different rights for different user groups, e.g. a user group Operator is able to see all Values in a HMI system and give some commands to the process behind. Another user group Maintenance have the same rights but in addition the group has the Right to change Parameter which have influence to the function of the process or machine.

To avoid reading of user name and password from the Network it is recommended to use encrypted communication when inserting user name and password.

Working with AC500 V3 and Automation Builder V2 enables a couple of opportunities:

Automation Builder
- Encryption of a project
- Working with User Groups and Users within one Project

AC500 PLC
- General User management for one PLC (mostly Login)
- Encrypted Communication for Login
- OPCUA Server (different symbol sets for different User Groups, different rights on symbols for different Groups)
- Encrypted Communication between OPCUA Client and Server
- Web Visualization (different Rights for different Users)
- Encrypted Communication for Login
- FTP Server (Access to different Directories of the file system in the PLC)
- FTP or FTPS Security Mode
2.1 User Management with Automation Builder

2.1.1 Project Encryption

- In Automation Builder go to Menu Project
- Choose Project Settings
- Security

Be aware: If you forget the Password, you have no more access to the project.
2.1.2  **User Management for Automation Builder**

User Management at Automation Builder is valid for the actual Project.

2.1.2.1  **Adding User Groups and Users**

Menu Project/Project Settings

In tab Users and Groups new groups and Users can be inserted.

2.1.2.2  **Editing Permissions**

Menu Project/User Management/Permissions

Permissions can be granted to the User Groups

Be careful with changing Permissions!!!
2.2 User Management at AC500 V3 PLC’s

User management at PLC Side is available for

- PLC General
- OPC UA
- Visualization/Web Visualization
- FTP server

2.2.1 PLC General

2.2.1.1 Activate User Management

Configure your Gateway

Double Click to PLC Name in Device Tree

- Push the refresh Button
- You will be asked for a Username and Password
- Insert “Administrator” for Username and Password
- Then you will be asked for a new Password
- After doing this you get a Default user management System
- Be aware, that with a activated User Management always User Name and Password is needed to connect to PLC.
2.2.1.2 Create User Groups and User

Push “Add” in Groups Area

Push “Add..” in Users Area

Fill in User Name and Password
Be sure that the Refresh Button is activated, because all the User, User Groups and Access Rights will be transferred directly to PLC and will be saved only directly in PLC.

Actual PLC User can be seen in the Headline of the Dialog.

As long as no Power Cycle is made at PLC and Automation Builder was not closed and re-opened you can connect without inserting User Name and Password (same User).

To change User please use Menu Online

Next time you want Login, you will asked for User Name and Password

**2.2.1.3 Change Rights of User Groups**

Login as Administrator

Select Access Rights
Select an Object and Select the Rights for the Different User Groups. Rights can only be given to Groups and not to User.

2.2.1.4 Working with encrypted Communication for Login

To work with encrypted communication for Login the first step is to create a certificate.

Double Click to this Security Screen Button
Login as Administrator

If the Information Windows are empty push Refresh Button

Go to Devices

Select PLC_AC500_V3

Go to the Right Window and select “Encrypted Communication (not available)” and push the upper Button (Create a new certificate on this device)

Choose 4096 as Key Length and push OK

Creation lasts about 2-3 Minutes

Certificate which is also valid for Web Server is visible

Logout
Now encrypted communication can be selected

Colored Line show the Encryption

First time after creating the Certificate, select Encrypted Communication and Login a window appears with a Question of Trusting the Certificate

Push OK and Login continuous
2.2.2 Working with OPC UA

Prerequisite to use User Management at AC500 V3 PLC’s together with OPC UA is to have an encrypted communication.

2.2.2.1 Create Certificate for OPC UA Server at AC500

In order to encrypt data and exchange it with the client safely, the server needs a certificate that the client must classify as trusted when a connection is established for the first time.

Requirement: The active path to the controller is set.

Click “View Security-Screen”.

- Select the “Devices” tab.
- Select the controller in the left view. All services of the controller that require a certificate are displayed in the right view.
- Select the service “CmpOPCUAServer”.
- Create a new certificate for the device. Click the icon.
  
  The “Certificate Settings” dialog opens.
  
  - Define the certificate parameters and click “OK” to close the dialog.
  
  - The certificate is created on the controller.

- Upload the Certificate to your PC
- Restart the runtime system.

2.2.2.2 Configure an Encryption at OPC UA Client

Start the “UaExpert” program.
1. Click “Add Server”.

   The “Add server” dialog opens.

   ![Add Server Dialog]

   ![Enter URL Dialog]

   OK
Switch to Tab Advanced
UAexpert Setting

Manage Certificates

Create a Certificate in UAexpert
Copy this Certificate to your PC
Upload to AC500
Connect

Accept and Continue
(This is only an intermediate handling, certificate will come)
Push Ignore
Check in UAexpert
Settings
Manage Certificates
2.2.2.3 Create Project with VARs

Add Symbol Configuration to Application

Push „Build“ Button

Enable Symbol Sets

Select symbols for Symbol Set “User_1”
Add 2. Symbol Set “User_1” by pushing “+” Button and fill in Name

Select Symbols for Symbol Set “User_1”

2.2.2.4 Match Symbol Sets with User

Select Symbol Rights

Push Refresh Button
Give Access Rights for the different Symbol Sets to the User Groups

2.2.2.5 Connect OPC UA Client

OPC UA Client can now connect with different Users

A window appears

Push Ignore
2.2.3 **User Management Visualization/Web Visualization**

Double Click to VisualizationManager

Click to User Management

![Image of User Management](image)

Click to “Create User management with default groups and users”

![Image of User Management Settings](image)

Check if Groups and Users are OK for the Application

![Image of User Management Table](image)

Insert your passwords for the different Users

Click to Settings

Adjust Settings for User Management
Working with the User management within the Visualization need a Login.

E.g. Use a Button to Login at Start Page

Configure "Inputconfiguration"
Now each Element in the Visualization can be assigned to a dedicated User Group

Now only Admins can see the Button and execute the Action.
2.2.4 User Management for FTP Server

Adding a FTP Server to one of the Ethernet interfaces gives a FTP Client the opportunity to have access to different Directories of the AC500 V3 with different Passwords.
## REFERENCES

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