

APPLICATION NOTE

AC500 USER MANAGEMENT WITH V3 CONFIGURATION AND HANDLING



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1 Introduction

1.1 Scope of the document

AC500 V3 PLCs support User Management for the Automation Builder Project and for the PLC. The PLC user management can be used for different protocols like online login, OPC UA or visualization.

1.2 Compatibility

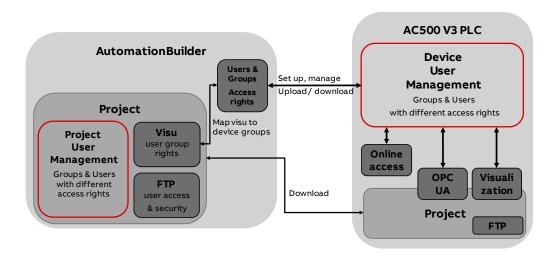
The application note explained in this document has been used with the below engineering system versions. They should also work with other versions, nevertheless some small adaptations may be necessary, for future versions.

- AC500 V3 PLC
- Automation Builder 2.6.0 or newer

2 User Management

The 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 has 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.

It is recommended to use encrypted communication especially when the system is connected to the internet.



Working with AC500 V3 and Automation Builder enables the possibility to work with users and groups.

Automation Builder

- Working with User Groups and Users within one project
- Different access rights for different user groups

AC500 PLC

- General User management inside the PLC used for
 - o Online Access
 - o OPCUA Server
 - \circ Web Visualization
- Different access rights for different user groups
- FTP Server (Access to different directories of the file system in the PLC)

3 User Management with Automation Builder

User Management in Automation Builder is valid for the actual project.

3.1 Adding User Groups and Users

Droject Cottings

- 1. Go to menu Project and choose Project Settings
- 2. Go to the tab User and Groups, a new user can be inserted

Project settings	^
Communication Settings Compile options Compiler warnings	Users and Groups Users Groups Settings
 Compact Hornings Fieldbus Scan Library development Monitoring Online Page Setup Security SFC Source Download 	Name Full Name Description ᠃ - ● Owner
§ Static Analysis Light Iters and Groups Users and Groups Visualization Visualization Profile	Export/Import Add Edit Remove
	OK Cancel

3.2 Editing Permissions

Go to the menu Project and choose User Management and Permissions

Permissions	
Actions:	Permissions:
🖲 🧰 ABB Safety	🕂 Grant 😑 Deny 💥 Clear
Commands Definition	Everyone
B - □ Object types B - □ Project objects	
🗑 💼 Users, groups and permissions	
	Key to the symbols: For this group, permission for the selected actions is
	📲explicitely granted
	 explicitely denied not specified, but granted by default
	not specified, but denied by default
Please note: Members of the group 'Owner' are granted all permissions.	
Export/Import	Close

<u>b</u>

Note: Permissions can be granted to the User Groups. Be careful with changing permissions!

4 Device user management in AC500 V3 PLC

User management inside the PLC is used for

- PLC login
- OPC UA
- Visualization/Web Visualization

4.1 Configure PLC user management

4.1.1 Activate user management

1. Configure your gateway

PLC_AC500_V3 X				
Communication Settings	Scan Network Gateway +	Device 👻		
PLC Settings				
Version information			•	
Statistics				•
Files		Gateway-1	Gateway	192.168.2.10:11740 (active)
Log		IP-Address: localhost		Device Name: HD_PLC
PLC Shell		Port:		Device Address:
Users and Groups		1217		0003.AD47.1000.2DDC.C0A8.020A Device IP Address:
Access Rights				192.168.2.10:11740
Symbol Rights				Target ID: 1020 0703

- 2. Double click to PLC name in Devices tree and choose User and Groups
- 3. Push the refresh Button

Devices 👻 🕈 🗙	PLC_AC500_V3 🗙	
UserManagement		🗘 🚔 🖳 Device user: Anonymous
🖻 🗐 PLC_AC500_V3 (РМ5630-2ЕТН - ТВ5620-2ЕТН	Communication Settings	
PLC Logic	PLC Settings	Offline mode is not supported by the device, switch to
Application	PLC Settings	Users
Diagnosis	Version information	
Library Manager		
PLC_PRG (PRG)	Statistics	
🖹 🌃 Task Configuration		
🖹 😏 🕸 Task	Files	
PLC_PRG		
IO_Bus	Log	
Interfaces	Di o di uli	
Extension_Bus	PLC Shell	
	Users and Groups]
		J
	Access Rights	

- 1. You will be asked for a username and password
- 2. Insert a username and a password for the administrator account



CAUTION!

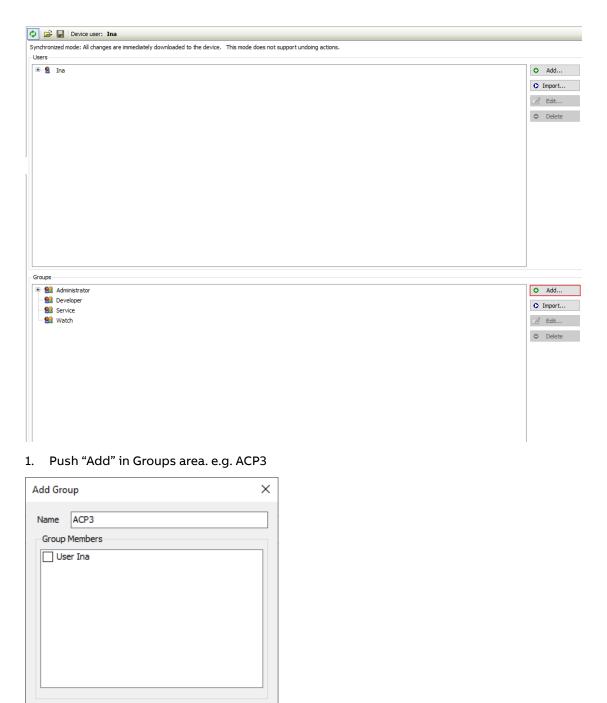
If you forget the password, you have no possibility to remove the user management or download a project.

- 3. Then you will be asked again for Username and Password to log in with the new account
- 4. After doing this you get a default user management system



Note: Be aware, that with a activated user management always user name and password is needed to connect to PLC.

4.1.2 Create User Groups and User



2. Push "Add.." in Users Area, you have to fill in Username and passwort together with desired group.

OK

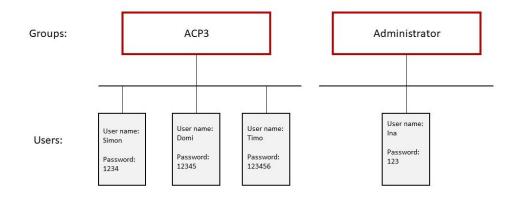
Cancel

Add User		×
Name	Simon	
Default group	ACP3	~
Password	••••	O
Confirm password	••••	
Password strength	Weak	
	Password can be changed by user	
	Password must be changed at first login	
		OK Cancel

3. Repeat to add others users in the same group based on the requirement of project.

Φ	2	H	Device user: Ina
Syn	hron	nized n	node: All changes are immediately downloaded to the device. This mode does not support undoing actions.
Us	ers –		
	<u>8</u> <u>8</u> <u>8</u>	Ina Simo Simo Timo	s member of group 'ACP3' s member of group 'Administrator' n s member of group 'ACP3'
Gri	oups		
	· ·	ACD	
	85	ACP:	as user member 'Domi'
		_	nas user member Domi
			has user member 'Timo'
			inistrator
			has user member 'Ina'
		Deve	
	-	Serv	
		Wat	

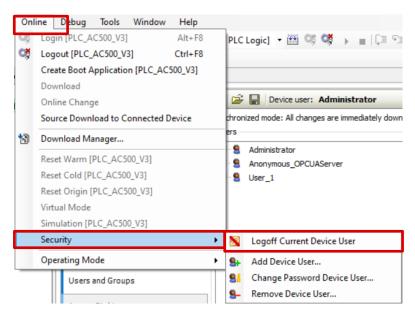
We are using below Users name and Password as example.



Note: 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.

4. To change user please use menu Online, go to Security and choose Logoff current device user



- 5. Next time you want login, you will be asked for username and password
- 6. To change the rights of a user group change to the tab Access rights and give or reject access to specified elements. This is shown for the OPC UA Server access in the chapter 4.2.2

hi)

4.1.3 Firmware update with activated user management

The PLC user management will remain also after a firmware update or downgrade.

Due to a structural change in the PLC user management in FW 3.5 there are some limitations when updating the PLC firmware from a version 3.4 or lower to 3.5 or higher with activated user management.



CAUTION!

If you update the PLC firmware from version 3.4 or lower to version 3.5 this must be done via Automation Builder. An update via memory card with activated user management will result in losing all access rights to the PLC!



CAUTION!

If you update the PLC firmware from version 3.4 or lower to version 3.6 or higher this must be done in two steps. First an update to 3.5 must be done via Automation Builder (see above). Afterwards the FW can be updated to any later firmware version – either via Automation Builder or via memory card.

4.2 Working with OPC UA

The OPC UA server supports the user management. You set the permissions on the server from the Access Rights tab in the PLC.

4.2.1 Create Project with VARs

GVL_OPC	CUA1	GVL_OPCUA2	x
1 2 3 4 5 6 7 8 9 10 11 12 13	VAR GLOBAL	<pre>1 //(attribute 'qualified_only') 2 VAR_GLOBAL 3 Testcounter_11:BYTE; 4 Testcounter_12:BYTE; 5 Testcounter_13:BYTE; 6 Testcounter_14:BYTE; 7 Testcounter_15:BYTE; 8 Testcounter_16:DWORD; 9 Testcounter_17:DWORD; 10 Testcounter_19:DWORD; 11 Testcounter_19:DWORD; 12 Testcounter_20:DWORD; 13 END_VAR</pre>	
	100	100	

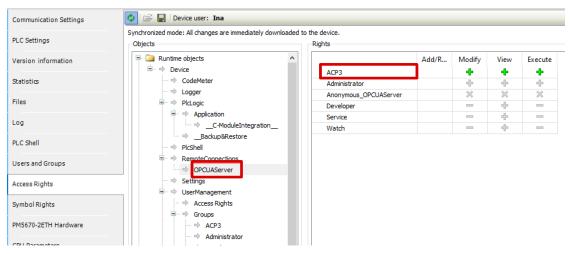
- 1. Add Communication Manager with protocol 'OPC UA Server' to Application.
- 2. Add IEC Symbol Publishing objects under the OPC UA Server tree.
- 3. Go to each IEC symbol edit, Push "Refresh" Button.
- 4. Drag the Symbol variables to the right windows and enable the option 'Use access rights defined in the user management' if needed. Specify the access rights.

evices	IP-Configuration TP-C_AC500_V3	OPC_UA_Server	_1 TEC_Symb	ool_Publishing1	🖉 🗄 IEC_Symb	ol_Publishing2 🗙	
🔄 User_Management 💌	Refresh Use access rights defined in the u	iser management 🗹					
C PLC_AC500_V3 (PM5670-2ETH - TB5620-2ETH)	IEC Symbols Editor Symbol Type Editor Symbol S	Set Result					
Application	Why does my variable not appear?	: 🖘 Sync	Filter by Symbol, Pa	th, IEC Type, Sym	bol Type (Exported Ty	vne Name), Comment	
Communication_Manager	· · · ·						
GOPC_UA_Server_1	Precompile Sets	Symbol	Path	IEC Type	Symbol Type (Ex	Access Rights	Comment
EC_Symbol_Publishing1	PLC_AC500_V3.Application	Testcount	GVL OPCUA2.Testcou	BYTE	BYTE	Nead/Write	~
IEC_Symbol_Publishing2	GVL_OPCUA1	Testcount	GVL OPCUA2.Testcou	BYTE	BYTE	Nead/Write	~
Diagnosis	Testcounter_1	Testcount	GVL OPCUA2.Testcou	BYTE	BYTE	Nead/Write	~
GVL_OPCUA1	Testcounter_2	Testcount	GVL OPCUA2.Testcou	BYTE	BYTE	Nead/Write	~
GVL_OPCUA2	Testcounter_3	Testcount	GVL OPCUA2.Testcou	BYTE	BYTE	Nead/Write	~
Library Manager	Testcounter_4	Testcount	GVL OPCUA2.Testcou	DWORD	DWORD	Nead/Write	~
PLC_PRG (PRG)	Testcounter_5	Testcount	GVL OPCUA2.Testcou	DWORD	DWORD	Nead/Write	~
🖹 🌃 Task Configuration	Testcounter_6	Testcount	GVL OPCUA2.Testcou	DWORD	DWORD	Nead/Write	~
🖻 👹 Task	Testcounter_7	Testcount	GVL OPCUA2.Testcou	DWORD	DWORD	Nead/Write	~
PLC_PRG	Testcounter_8	Testcount	GVL OPCUA2.Testcou	DWORD	DWORD	Nead/Write	~
IO_Bus	Testcounter 9						
😑 🧓 Interfaces	Testcounter 10						
COM (<empty>)</empty>	B GVL OPCUA2						
CAN (<empty>)</empty>	B-Libraries						
🖻 🚟 Ethernet	Pool						

4.2.2 Change Rights of User Groups

1. Login as Administrator

2. Select Access Rights from the Access Rights tab on the CPU. To do this, select the object Access Rights > RemoteConnections > OPCUAServer



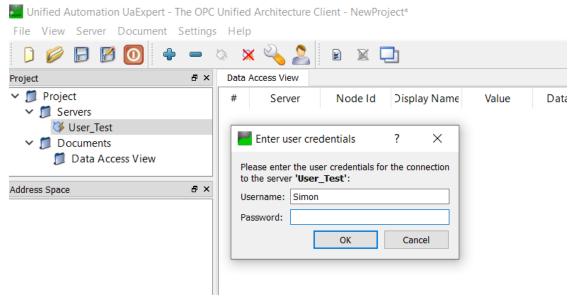
<u></u>

Note: If anonymous access to the OPC UA Server is permitted despite an active user management, then the access rights can also be configured for this access by granting corresponding permissions for the implicitly available group "Anonymous_OPCUAServer".

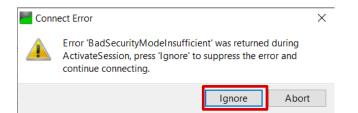
3. Select an object and select the rights for the different User Groups. Rights can only be given to Groups and not to User

4.2.3 Connect with OPC UaExpert Client

1. OPC UA Client can now connect with different Users from the group with granting corresponding permissions.



2. A window appear



3. Push Ignore

>
Testcounter_19 >
Testcounter_20 > 👶 NetworkSet

Unified Automation UaExpert - The OPC Unified Architecture Client - NewProject*

File View Server Document S	Settings	Help	þ							
) 💋 🗗 🖉 🧿 🜩	-	Q 🕽	x 🔌 🚨		<u></u>					
Project	ð×	Data	Access View							
✓		#	Server	Node Id	Display Name	Value	Datatype	urce Timestar	rver Timestan	Statuscode
✓ [™] Servers		1	User_Test	NS5 Opaqu	Testcounter_1	254	UInt16	3:04:01.057	3:04:01.057	Good
🔇 User_Test		2	User_Test		Testcounter		Float	3:03:56.802	3:03:56.802	
✓ ☐ Documents	_	3	User_Test		Testcounter_2		UInt16	3:03:56.802		Good
		4	User_Test		Testcounter_3		UInt16		3:03:56.802	
📁 Data Access View		5	User_Test		Testcounter_4		UInt16	3:03:56.802		Good
		6	User_Test		Testcounter_5		UInt16	3:03:56.802		
Address Space	đΧ	1	User_Test		Testcounter_6		Float	3:03:56.802		Good
		8	User_Test		Testcounter_7		Float	3:03:56.802		Good
😏 No Highlight	•	9 10	User_Test User Test		Testcounter_8 Testcounter 9		Float Float	3:03:56.802 3:03:56.802		Good Good
🗀 Root	~	11	User Test		Testcounter		Byte	3:04:08.990		Good
		12	User Test		Testcounter		Byte			Good
✓		13	User Test		Testcounter		Byte	3:04:08.990		Good
> 뤚 DeviceSet		14	User Test		Testcounter		Byte			Good
> 🚕 DeviceTopology		15	User Test		Testcounter		Byte			Good
> 🗀 IEC_Symbol_Publishing1		16	User_Test		Testcounter		UInt32	3:04:08.991	3:04:08.991	Good
		17	User_Test	NS6 Opaqu	Testcounter	0	UInt32	3:04:08.991	3:04:08.991	Good
IEC_Symbol_Publishing2		18	User_Test	NS6 Opaqu	Testcounter	0	UInt32	3:04:08.991	3:04:08.991	
Testcounter_11		19	User_Test		Testcounter		UInt32		3:04:08.991	
> Testcounter_12		20	User_Test	NS6 Opaqu	Testcounter	0	UInt32	3:04:08.991	3:04:08.991	Good
> 💷 Testcounter_13										
> Testcounter_14										
> 💷 Testcounter_15										
> 🔲 Testcounter_16										
> 💷 Testcounter_17										
> 🔲 Testcounter_18										

4.3 User Management Visualization/Web Visualization

- 1. Double click Visualization Manager
- 2. Open the tab User Management

Devices 👻 🕂 🗙	Symbol Configuration	PLC_AC500_V3 🛛 🗿 Visua	ization Manager 🗙		
🖃 📋 UserManagement 💽	🕘 Settings 🚇 Dialog Settings	🔲 Default Hotkeys 🕘 Visualizations	😫 User Management	Font Settings	Advanced Settings
PLC_AC500_V3 (PM5630-2ETH - TB5620-2ET)					
PLC Logic	Create Empty Runtime Based	Create Runtime Based User Management with Default			
Application	User Management	Hanagement war berdar			
🗷 🚞 Diagnosis					
Library Manager					
PLC_PRG (PRG)					
Symbol Configuration					
Task Configuration					
😑 🛃 Visualization Manager					
WebVisu					

3. Click "Create Runtime Based User Management with Default"

🗈 Settings 📲 Dialog	Settings 🔲 Default Hotke	ys 📳 Visualizations	😫 User Managen	nent 📲 Fo	ont Settings 🕘 Advanced Settings
Groups Settings					
Group Name	Automatic Logout	Logout Time	Description	Id	Mapping to runtime group
😫 Administrator	\checkmark	1 minute(s)		1	
😫 Service		1 minute(s)		2	
😫 Operator		1 minute(s)		3	
😫 None					
		1 minute(s)			

4. Go to Settings and choose "Allow decision on every download".

Settings	📳 Dialog Settings	Default Hotkeys	Visualizations	😫 User Management
Groups Set	tings			
Cattings	for Download of User N	lanagement		
Setungs i	or Download of User i	hanagement		
O Dow	nload on every login			
O Neve	er download on login			
	-			
Allov	v decision on every do	wnload		
Access Ri	ghts for Elements			
_				
Use	group hierarchy			
Use	group hierarchy			
Logout Be				
Logout Be	ehaviour	no when locout not rel	evant for Webvisu	
Logout Be	ehaviour	on when logout, not rel	evant for Webvisu	

5. Go to Groups and choose "Upload device groups names". To do this you must be connected to the PLC

ups Settings						
oup Name	Automatic Logout	Logout Time	Description	Id	Mapping to runtime group	
😫 Administrator	\checkmark	1 minute(s)		1		
Service		1 minute(s)		2		
Search Operator		1 minute(s)		3		
Sea None						
		1 minute(s)				
Update Visualizations	/HoSeys	at Usage of Groups	Convert	o Legacy		Download to Device

6. Match the users under "Mapping to runtime group" to the Group Name

Groups Settings					
Group Name	Automatic Logout	Logout Time	Description	ld	Mapping to runtime group
😫 Administrator	\checkmark	1 minute(s)		1	🚰 Administrator
😫 Service		1 minute(s)		2	🚰 Service
😫 Operator		1 minute(s)		3	OPCUA_1
😫 None					
		1 minute(s)			

7. Choose "Download to Device"

Jonup Name Automatic Logout Logout Time Description Id Mapping to runtime group Service Iminute(s) 1 Iminute(s) 2 Iminute(s) Service Iminute(s) 3 Iminute(s) 3 Iminute(s) None Iminute(s) Iminute(s) Iminute(s) Iminute(s) Iminute(s)		Settings			B 1.1		
Service Iminute(s) 2 3 Service Service 1minute(s) 3 3 OPCUA_1 None 1 1minute(s) 1 1							
1 minute(s) 3 3 0PCUA_1 None			\leq				
See None						2	Service
				1 minute(s)		3	OPCUA_1
1 minute(\$)	83	None	_				
				1 minute(s)			
	Expor	t Groups for Global Visual	izations Delete C	Complete User Management	Upload device groups nam	ies	

8. Use the Visualization and for Login use a Button to Login at Start Page

📳 Visua	alization X
	Login
	Configuration

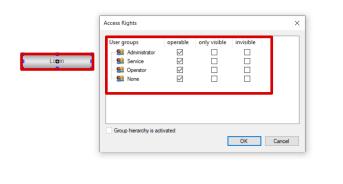
9. Configure "Inputconfiguration"

Properties	▼ ₽ 3					
🍸 Filter 🝷 🛛 🔧 Sort by 🝷 🤶 Sort order 🝷						
Advanced						
Property	Value					
Dynamic texts						
 Font variables 						
E Color variables						
🗄 Button state variable						
🗄 Bitmap ID variable						
Animation duration	0					
Bring to foreground						
Input configuration						
OnDialogClosed	Configure					
OnMouseClick	Configure					
OnMouseDown	Configure					
OnMouseEnter Configure						
OnMouseLeave	Configure					
OnMouseMove	Configure					
OnMouseUp	Configure					
OnValueChanged	Configure					
😑 Toggle						

10. Select "User Management" and choose the Action for example Login and then click OK

Input Configuration	×
OnMouseUp	
Close Dialog Open Dialog Change Language Change Shown Visualization Execute Command Switch Frame Visualization Write Variable Execute ST-Code	Dialogs and Actions
	OK Cancer

11. Now each Element in the Visualization can be assigned to a dedicated User Group



Animation duration	0
Bring to foreground	
Input configuration	
OnDialogClosed	Configure
OnMouseClick	Configure
OnMouseDown	Configure
OnMouseEnter	Configure
OnMouseLeave	Configure
OnMouseMove	Configure
 OnMouseUp 	Configure
User Mana	👂 Login
OnValueChanged	Configure
😑 Toggle	
Variable	
Toggle on	
= Tap	
Variable	
Tap FALSE	
Tap on ent	
 Hotkey 	
Access rights	Not set. Full rights.

 Now only groups, which have checked "operable" can execute the action. Groups with "only visible" can just see the button but not click it. Groups with "invisible" can not see the element at all.



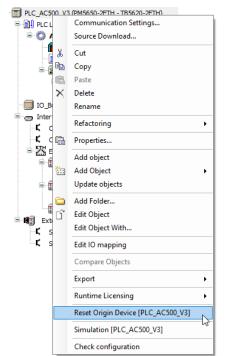
Note: To see the web-visualization it is mandatory to be logged in as authorized user. It's not possible to have an anonymous user whe is able to see the visualization. In case an anonymous login is required the legacy visualization user management has to be used as of today.

4.4 Delete Device user Management

In case the device user management should be deleted from the PLC a reset original device must be performed.

1. Connect to the device and login with administrator account





2. Right click the PLC node and select Reset Origin Device

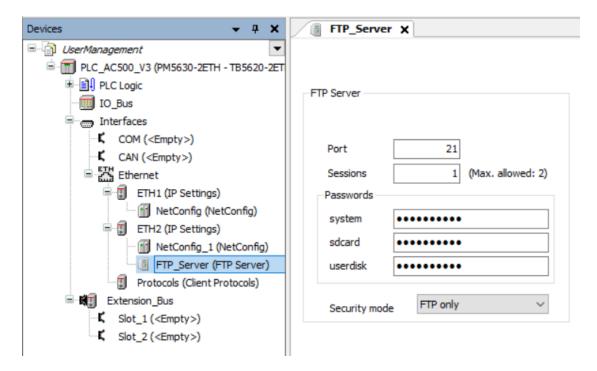
3. Make sure the User Management Checkbox is selected and confirm with Yes

Automa	tion Builde	er 2.6 - Premium		×
?	Resetting Deleting ju configurat	the device will delete all ust a subset of items may tion of the device, additio	evice to its original state? of the selected items below. y render other items inoperable. Depending on the onal items may also get deleted.	
		ltem User Management PLC Logic Certificates		
			Yes No	

4. The PLC will reboot automatically. Afterwards the device settings (e.g. IP address) are reset and the user management is removed. Also the boot application or certificates can be removed

5 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.



These passwords for the FTP Server access are part of the project itself and not of the PLC. When downloading a different project, the FTP access will be gone/ changed pending on the running program.

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