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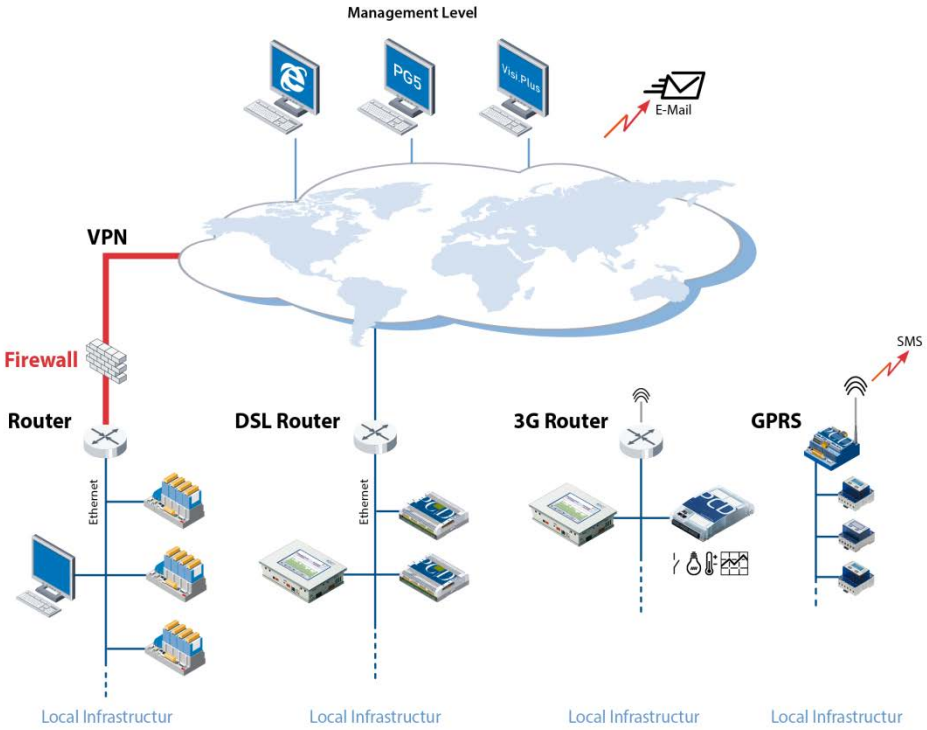
# Instructions for connecting Saia PCD controllers to the internet




Document History

| Version | Bearbeitung | Veröffentlichung | Bemerkungen |
|---|---|---|---|
| EN01 | 15.05.2013 | 15.05.2013 | |
| EN03 | 26.07.2013 | 26.07.2013 | Translation from Version DE03 |
| EN04 | 14.02.2014 | 14.02.2014 | New company Logo |

# Contents

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# 1. Introduction

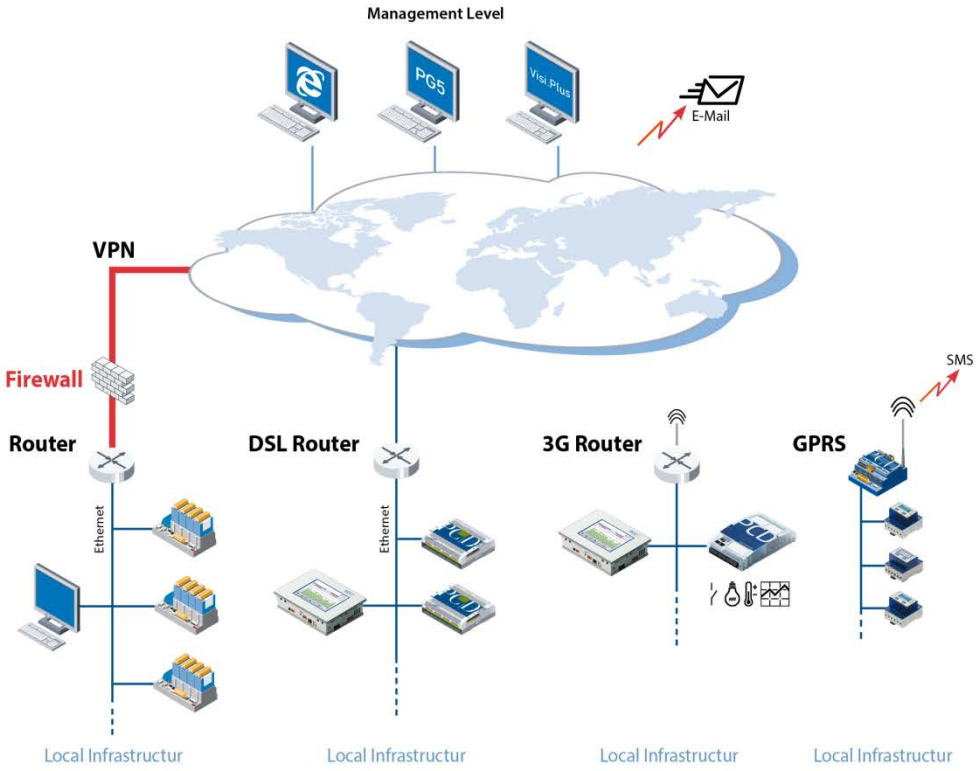
The present document contains important information regarding protective measures that must be observed when connecting Saia PCD controllers to the internet.
The most recent edition is available on our Support homepage:
http://www.sbc-support.com/en/product-category/communication-protocols/pcd-on-internet.html

The first edition of the document was released early May 2013. That edition described the measures with the protection functions available at that time in the PCD COSinus operating system and the PG5 software tool. We have now adjusted our software tools so that the protection functions in the PCD controllers are activated by default. In addition, we have improved the password mechanism in the WebEditor. The IP filter function, implemented in the PCD controllers, is also new.

**It must still be noted:**
**Safe operation of the PCD controllers on the internet can only be guaranteed with additional external IT components offering integrated protection functions such as VPN, firewall, proxy servers, etc.**

To that end, we have evaluated several VPN routers and tested them with our PCD controllers. This document lists the devices successfully tested and their suppliers. A detailed description for configuration and initial operation is available in document 30-004 'VPN-Router' on our support site.

Saia PCD controllers can be connected to the internet in a variety of ways. The diagram below shows some frequently used connection options.



For smaller installations, a Saia PCD controller is in most cases connected to the internet with a DSL or 3G router. A PCD3.WAC is connected directly with the integrated GPRS modem. Saia PCD controllers that operate in a protected local company network are normally only accessible from the outside via a secure firewall and a virtual private network (VPN). In such cases, access protection is ensured by these components.

If the PCD controllers are operated behind an unprotected DSL or 3G router, the IP services are usually forwarded by means of port forwarding on the local PCD controller. **In these cases they can easily be attacked.**

Following is a brief overview of possible protection functions:

- **Secure solution with Virtual Private Network (VPN)**
  A PCD controller should only be connected to the internet behind a router or a proxy server with firewall and a protected VPN. Chapter 2 includes devices that we have tested and recommended.

- **Web-Server password protection**
  Access to the PCD.Web-Server can be protected with a 4-level password mechanism. This involves simple unencrypted password protection. The passwords entered are verified in the controller. For the PG5 Device Configurator, the Web-Server is deactivated by default starting with Version 2.1.200. When it is activated, access can be protected with a password. A description of this is available in Chapter 3.

- **FTP-Server access protection**
  Access to the FTP server and thereby to the data in the PCD.Filesystem can likewise be protected with a separate unencrypted password. For the PG5 Device Configurator, the FTP-Server is deactivated by default starting with Version 2.1.200. When it is activated, the standard user “root” and “rootpasswd” are no longer used. The programmer must set up his/her own user name to gain access. More information is available in Chapter 4.

- **Ether-S-Bus access protection**
  The PG5 programming device uses the S-Bus protocol with extended services for programming and initial operation of PCD controllers.
  In the PG5 Device Configurator from Version 2.1.200 and PCD COSinus Version > 1.22.10, the Ether-S-Bus communication is deactivated by default. The Ethernet interface therefore does not support S-Bus protocol (data exchange and programming). When it is activated, access with the PG5 programming device can be additionally protected with a simple, unencrypted password. More information is available in Chapter 5.

- **IP access filter**
  Starting with COSinus Version 1.22.10, the PCD controllers feature an integrated IP access filter. Authorized and non-authorized IP addresses can be entered into a “white” or “black” list. More information is available in Chapter 6.

- **Password mechanism in WebEditor**
  The password mechanism included in the WebEditor and used by the Java applet and micro browser serves the user identification for role-based management in the HMI application. This mechanism was improved with the new COSinus version 1.22.10 and PG5 version 2.1.200. The password entered is now encrypted with a hash code. The password entered is verified in the controller. More information is available in Chapter 8.

**Changing the default settings in the Device Configurator**
The default setting can be modified and saved in a separate template. These default settings can thereby be transferred to a new CPU when it is created. More information is available in Chapter 7.

In order to use the protection functions outlined above in the way they are described, a PG5 Version 2.1.200 or higher is required. Some of the functions likewise require new PCD-COSinus Versions 1.22.10. Detailed information is available in the respective chapters.

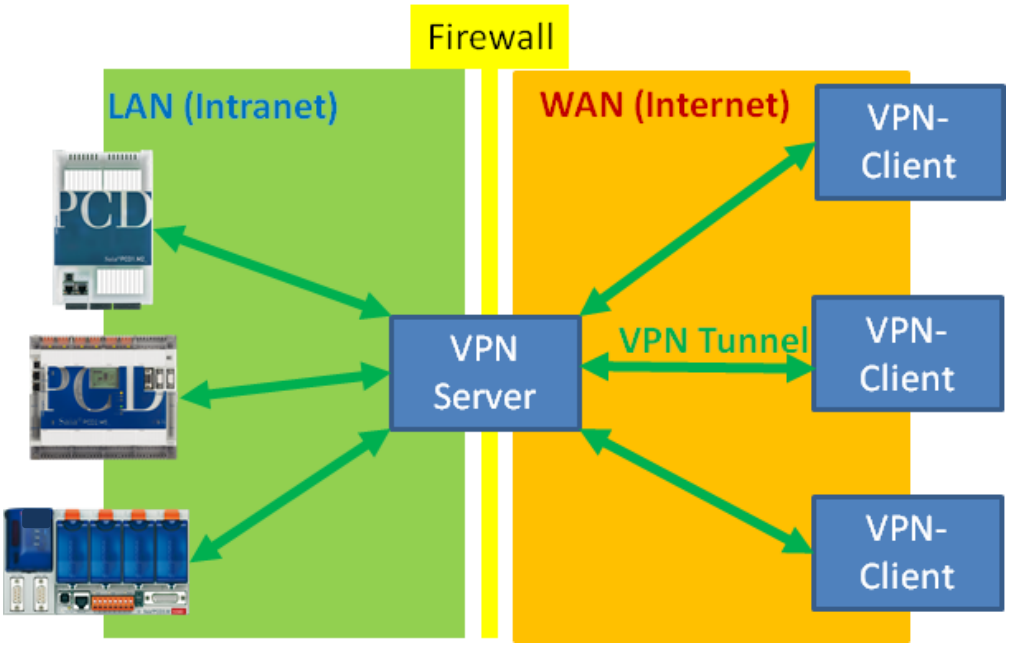
The present document and the new PG5 and COSinus versions are available on the support page under the following link: http://www.sbc-support.com/en/product-category/communication-protocols/pcd-on-internet.html

# 2. Building a virtual private network (VPN)

A VPN tunnel offers a safe way of accessing devices in a private network by internet (WAN).

Basically, this kind of structure comprises a VPN server and a VPN client. We recommend the use of a router with VPN server functionality. The VPN client is usually installed as software on the client device (PC, tablet, smart-phone, etc.).

The VPN client (or VPN client software) logs on to the VPN server by internet. If login is successful, the device on which the VPN client was started finds itself inside the VPN server's intranet, having entered via a secure tunnel. From this moment, it can access all devices in the assigned address range of the VPN server and use all services.



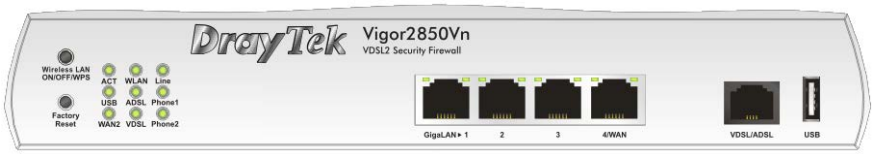

When choosing a router, various points should be considered, depending on the application.

The router used should have VPN server functionality. For establishing VPN connections, routers use different protocols. The communications protocol must be supported by both the router and the VPN client device (PC, tablet, smartphone). It is therefore necessary to ensure that the appropriate VPN client software is available for the client device. IPSec is probably the most widely used technology and is supported directly by many devices. However, IPsec is quite complex to configure and use.

OpenVPN, which is available in an open source version, is easier to configure. It too uses the SSL encryption protocol and is therefore less problematic with firewalls. OpenVPN client software is available for many devices and operating systems.

## 2.1 Tested VPN Router

### DrayTek Vigor 2850Vn Router




This router is intended for use in the home office segment and features a range of connection options (Ethernet, DSL, USB, WLAN, …) and powerful functions (firewall, VPN, …). It is well suited for establishing and managing VPN connections for smaller to medium-sized networks. Its functionality and user interface are easy to use. It supports standard VPN clients from Windows, I-OS and Android.

| | |
|---|---|
| Type: | Vigor 2850Vn |
| Suppliers: | Online suppliers, specialty retailers, distributors, … |
| Internet: | http://www.draytek.de/produkte/modem-router/vigor2850-serie.html |

### eurogard Service Router V2


The EuroGard Service Router V2 is an industrial router for top-hat rail assembly with a 24 VDC power supply. It also features a variety of connection options (Ethernet, 3G) and lets users establish secure connections using OpenVPN or SSL. Configuration and user guidance for creating the VPN connection are quick and easy to follow. It has an OpenVPN server and requires OpenVPN clients accordingly.

| | |
|---|---|
| Type: | eurogard Service Router V2 |
| Suppliers: | eurogard GmbH<br>Kaiserstrasse 100<br>D-52134 Herzogenrath |
| Internet: | http://www.eurogard.de |

## Vigor 2850Vn and EuroGard Service Router V2 technical data comparison

| | DrayTek Vigor 2850Vn | EuroGard Service Router V2 (WLan) | EuroGard Service Router V2 (UMTS) |
|---|---|---|---|
| Order data | 2850Vn | ER 1201-WLAN | ER 1201-UMTS |
| Additional information | http://www.draytek.de/produkte/modem-router/vigor2850-serie.html | http://www.eurogard.de/en/ | http://www.eurogard.de/en/ |
| Application/ Type | Business/Home | Industrial | Industrial |
| Top-hat rail installation | No | Yes | Yes |
| Electrical supply | 230 VAC | 24 VDC | 24 VDC |
| **VPN Features** | | | |
| Number of WAN interfaces | 3: LAN/Modem/USB | 1: LAN | 2: LAN/UMTS |
| Integrated ADSL/VDSL modem | Yes | No | No |
| VPN PPTP | Yes | No | No |
| VPN L2TP/IPSec | Yes | No | No |
| openVPN | No | Yes | Yes |
| No. VPN clients | 32 connections | 30 connections | 30 connections |
| Windows client | Yes (integrated in Windows) | Yes (EurogardSRConnect) | Yes (EurogardSRConnect) |
| IOS Client | Yes (IPSec/L2TP, integrated in IOS) | No* | No* |
| Android Client | Yes (IPSec/L2TP, integrated in Android) | No* | No* |
| **Extensions** | | | |
| 3G/4G modem | Yes, with USB stick | No | Yes, with integrated UMTS modem |

* IOS or Android systems can now be connected to the router via WLAN. This requires two routers. One VPN server and one VPN client. Support for VPN on mobile devices is in preparation.

Details on the configuration and use of the router for secure VPN connections with Saia PCD controllers are available in document 30-004.

# 3. Protecting the PCD.Web-Server

Access to the PCD.Web-Server can be protected with a password mechanism.

### Function of password mechanism

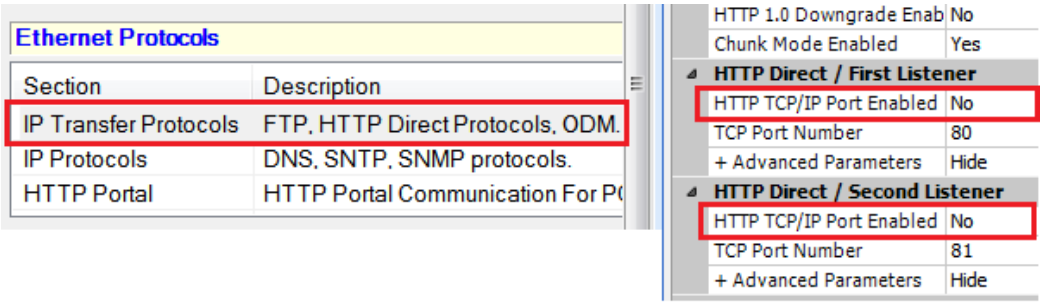
With this password mechanism, general access to files and all PCD media (registers, flags, DBs/text, etc.) can be blocked. If the PCD web server is accessed via a browser device (PC browser, micro-browser panel, iPad, ....), the server checks whether the password stored in the PCD controller has been entered correctly. If no password has been entered, or if a directly transmitted password is invalid, a dialog box will be displayed on the browser device requesting password entry. Password comparison takes place in the web server of the PCD controller. This ensures that when a connection is established, defined passwords are not transferred during the check. The passwords entered are transmitted without encryption.

## 3.1 Settings in PG5 Device Configurator

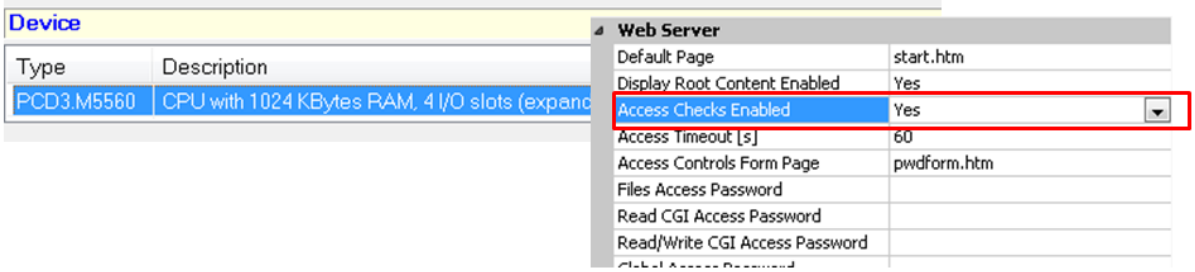
The configuration settings of the Saia PCD controller are carried out in the PG5 Device Configurator. The settings for the Web-Server are located in the menus “IP Transfer Protocols” and “Device Type”.

When creating a new CPU in the Device Configurator starting with PG5 2.1.200 , the Web-Server is now deactivated by default.

The Web-Server must be activated in the Device Configurator.




In addition, password protection is now activated with an activated Web-Server.



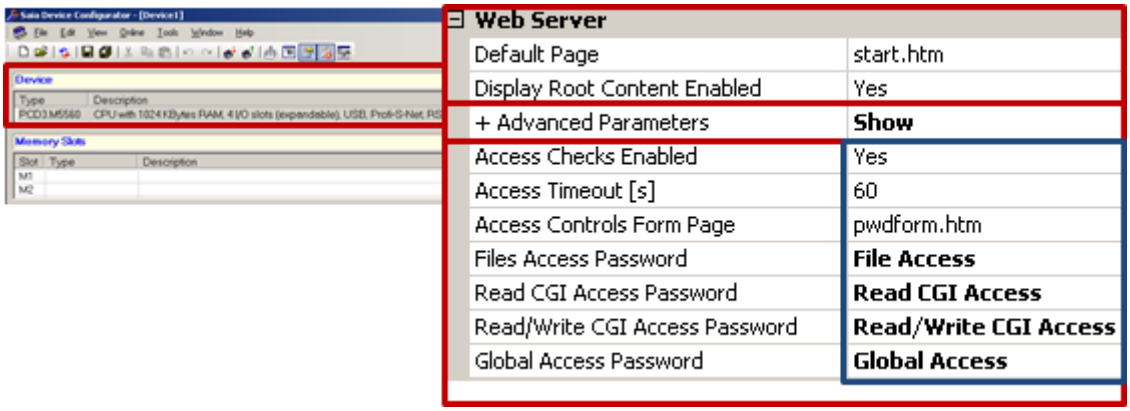

A password must be configured with this setting. Please find more information in the next section. In the event that a password is not to be configured, the parameter “Access Checks Enabled” must be deactivated.

**Access Check Enabled:**
Activates the password mechanism of the PCD.Web-Server

Default: "Yes"
Recommended setting: "**Yes"**

## Enabling the PCD.Web-Server password

The password will only be checked if the parameter "Access Checks Enabled" is set to "Yes".




**Access Timeout**
If communication with an S-Bus http connection is interrupted, querying of the password will be required again after a set time has elapsed. This parameter is only used with http via S-Bus.

Default: **"60s"**
Recommended setting: "Do not change default"

**Access Controls Form Page**
In the case of access without a valid password, this password entry page is called.

Default: "**pwdform.htm**"
Recommended setting: "Do not change default"

Note: this page is stored in the web server's system. If necessary, the programmer can also create his/her own login page.

**Setting passwords for access protection**
The PCD.Web-Server has 4 levels of access protection:
"File Access" → Level 1
"Read CGI Access" → Level 2
"Read/Write CGI Access" → Level 3
"Global Access" → Level 4

In most cases, general protection of access to the PCD.Web-Server is sufficient. For this purpose, a **level 1 password (file access)** must be defined. We recommend that this password should always be defined! For all other passwords, definition is not required. After a successful login, all levels 1-4 are automatically unlocked.

If despite this it should ever be necessary to use a password login to differentiate between read and write permissions, the following rules apply:

- If no password has been defined at any level, there is no active protection and the user has full access to all functions without entering a password.
- A defined password activates access protection from this level. Example: only one password has been defined for level 1. → In this case, the web server is protected for all access and password entry will be requested. After password entry, all higher levels (levels 2 to 4) will also be unlocked, as long as they are not themselves password protected.
- A defined password unlocks access to its own level and all higher ones, or as far as the next one up that has password protection. Example: password defined for level 1 and password defined for level 3. → In this case, entry of the level 1 password also unlocks level 2. Entry of the level 3 password unlocks levels 1 to 4.

**File Access Password:**
This password protects or unlocks read access to files and all levels above.

Default: “”
Recommended setting: “**define password**”
→ Always define. This provides the web server with full protection.
Caution: the password dialog box is only displayed generally (for all levels) if a password has been defined for that level.

**Read CGI Access Password:**
This password protects or unlocks read access to the CGI interface and all levels above it. The CGI interface is protected for reading PCD media (registers, DBs, flags, text, ...).

Default: “”
Recommended setting: “”

If a user is only required to have read access (e.g. to read log data or display system states), it is sufficient to define a password for level 1 (**File Access)** and level 3 **(Read/Write CGI Access)**.

**Read/Write CGI Access Password:**
This password protects write access to the CGI interface and all levels above it. The CGI interface is protected for writing PCD media (registers, DBs, flags, text, ...).

Default: “”
Recommended setting: “only define a write protection password if necessary”

If a user is required to have write access only after password entry, a password must be defined here.

**Global Access Password:**
This password remains available for historical reasons. Definition is not necessary.

Default: “”
Recommended setting: “not necessary”

**Rules for selecting a password:**
The password may be up to 31 characters long and must not include special characters, umlauts, or spaces. No distinction is made between uppercase and lowercase letters.

To obtain the best possible protection, we recommend choosing at least 10 characters (the longer the more secure) comprising both letters and numbers. Words that are easy to guess must not be used (e.g. the system name).

## 3.2 Entering the password in the web client

### 3.2.1 Micro-Browser panel

PCD.Web-Server password protection is supported by Micro-Browser panels from version **1.20.3x**.

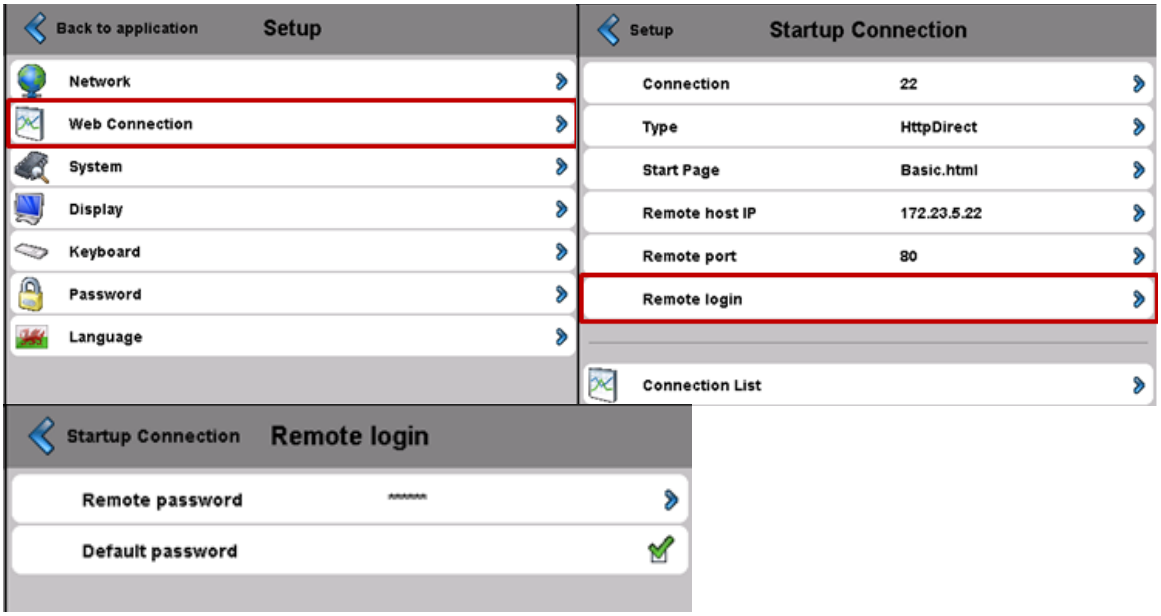
From this version, passwords can be stored in the setup menu of the Micro-Browser panel. See below for password configuration instructions.
If there is no stored password, the message: "**PCD Password required!**" will be displayed on the screen of the panel while a connection is being established. For a successful connection, the presence of a stored password in the Setup menu is mandatory.

Step 1) Open Setup menu

The Setup menu can be opened either during device start-up or by prolonged pressing (10 sec) on a blank area in the application.

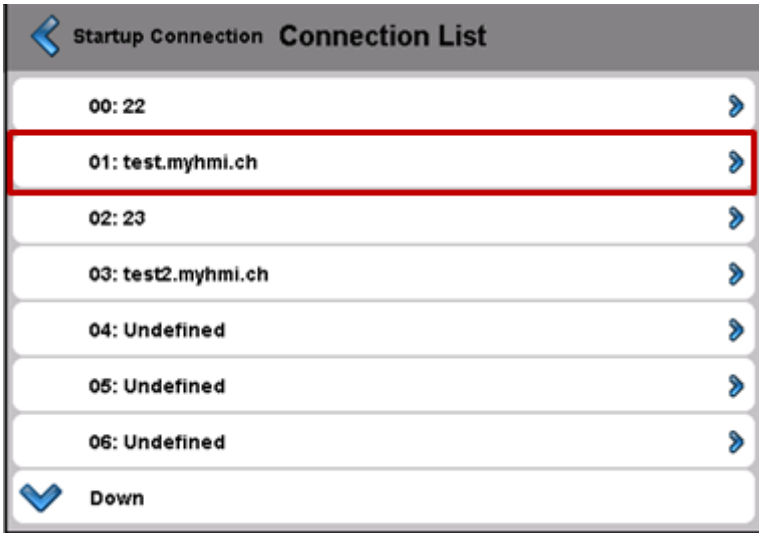
Step 2) Edit Start-up Web Connection

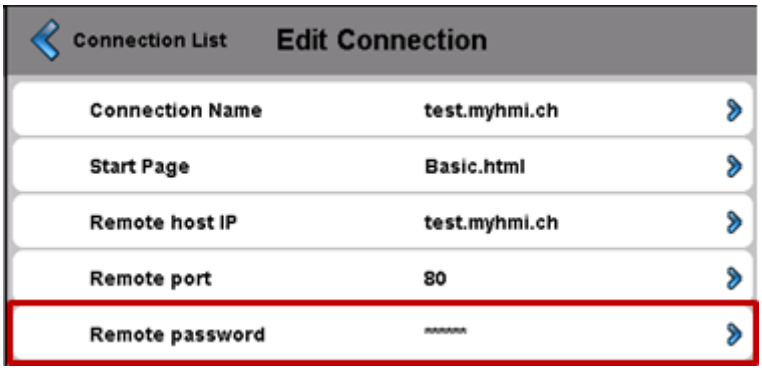
- ➔ Setup menu → Web Connection → Remote login
- ➔ Remote Password
  - o The password for access to the web server must be entered here.
  - o It is possible to set this password as a default password. In this case, this password will always be used if a password is requested from the web server during a connection. If a password is defined for a station on the Connection List, this will be used first. If it is not possible to establish a successful web server login with the password stored in the station, the default password defined for the start-up connection will be used for another login attempt.




Step 3) Edit Connection List

If a single Micro-Browser panel is to be used for accessing multiple controllers with different passwords, a connection must be created in the Connection List for each controller, with the appropriate password.

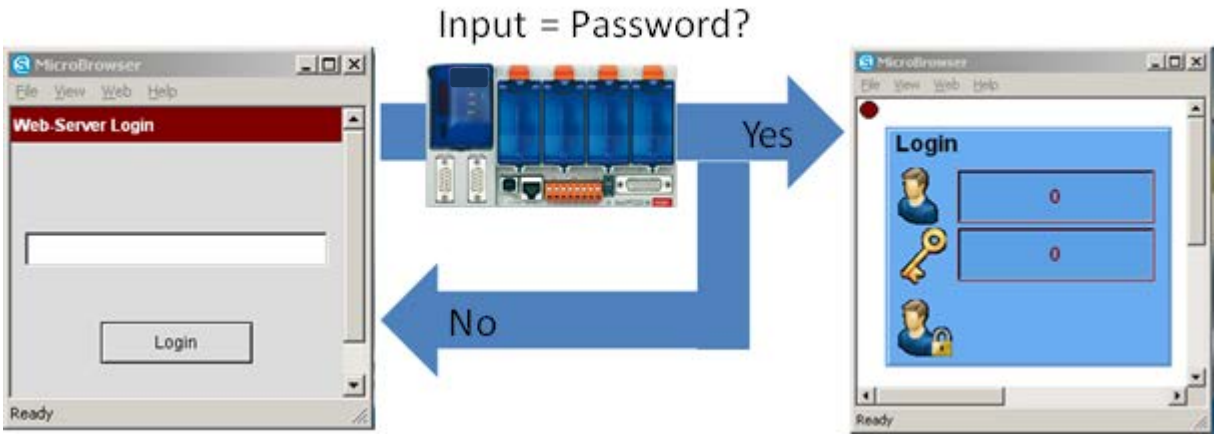



### 3.2.2 Micro Browser Windows CE and eXP

Micro-Browsers for Windows-based devices support the web server password login from version 1.5.15.131c.

In a PCD controller with an activated web server password, users must first log on for web server access and then, in the WebEditor application, identify themselves again for user prompting.

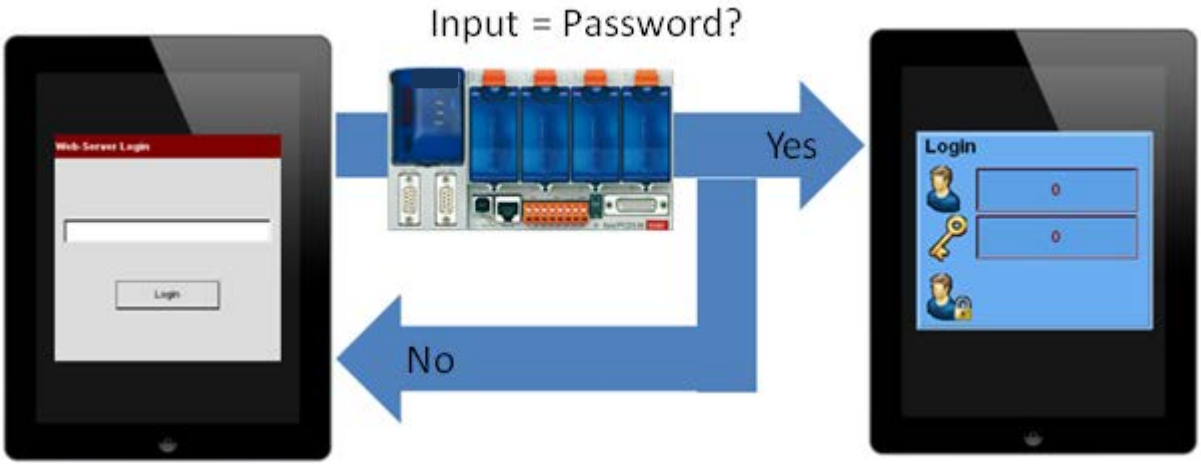



Web-Server login

WebEditor application login

### 3.2.3 iOS Micro-Browser app

The Micro-Browser app for Apple devices supports web server password login from version 1.5.15.130

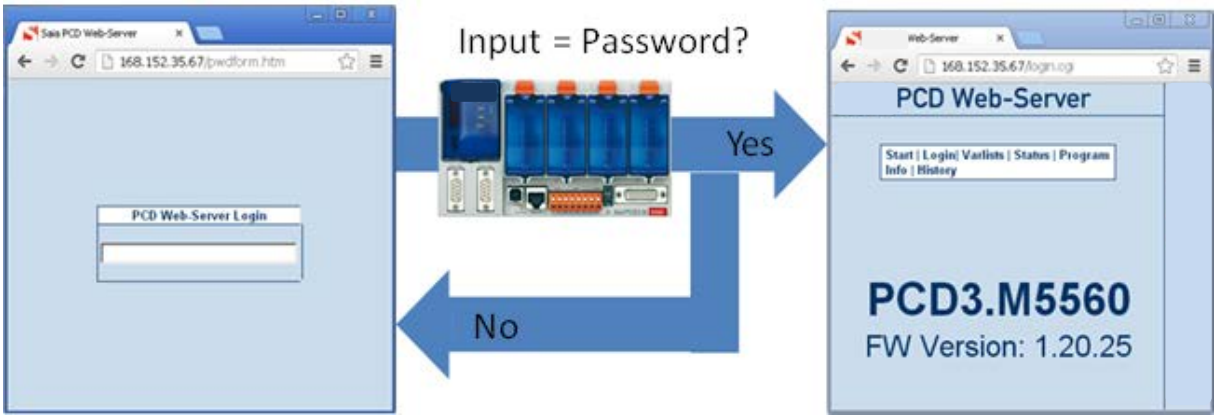



Web-Server login

WebEditor application login

### 3.2.4 PC browser with Java applet

PC browsers with a Java applet support the SBC Web-Server password mechanism. When accessing a password-protected SBC Web-Server, the file "pwdform.htm", which is defined in the Device Configurator, is loaded automatically. This lets you send the password entered to the SBC Web-Server. If entry is correct, the "start.htm" defined in the Device Configurator is loaded and starts visualization.
NOTE: If a web application is to be loaded directly, the HTML page of the WebEditor project must be entered in the Device Configurator.
Tip: The PCD Web-Server's status page can be displayed at any time in the PC browser by typing "status.htm".

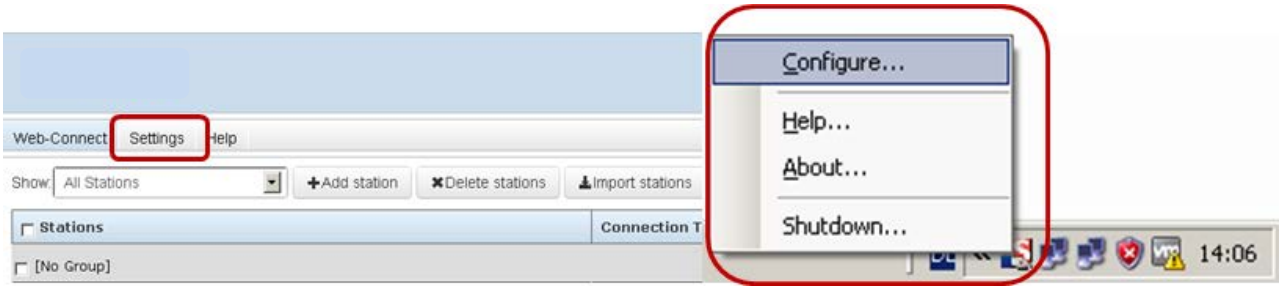



Web-Server login

Start page "start.htm"

### 3.2.5 SBC.Net Web Connect / WebFTP

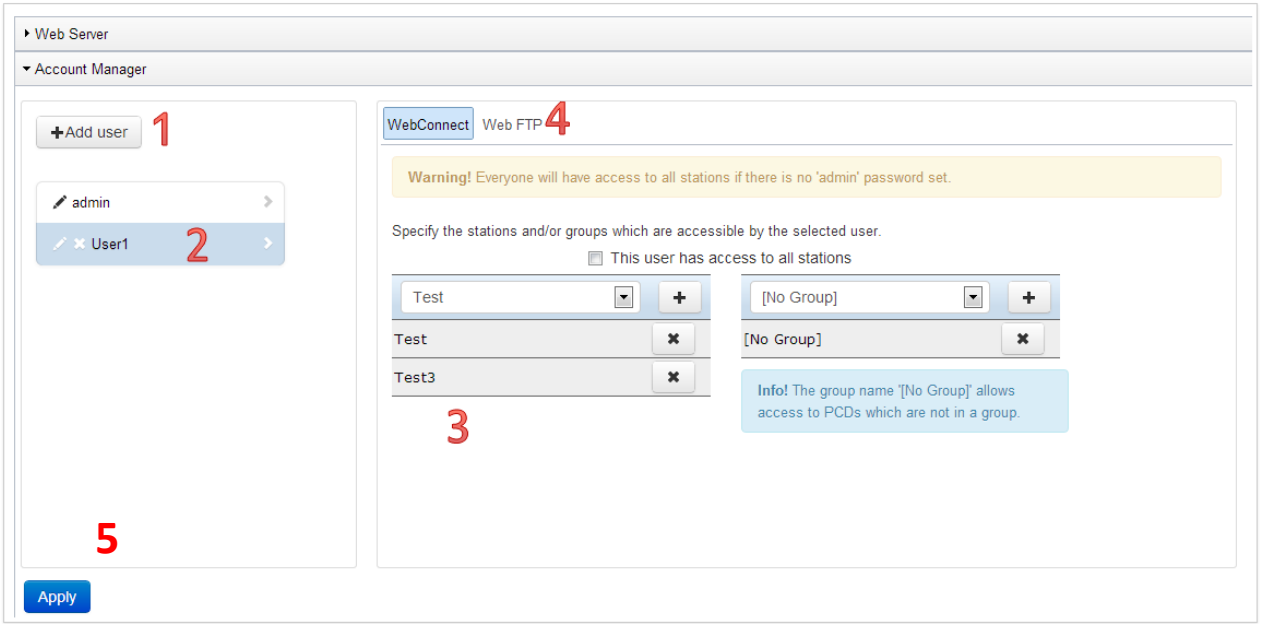
SBC.Net already has its own integrated account management, which is available via the web interface SBC.Net.




Account Management is located in the SBC.Net settings. Users and passwords can be defined here, together with the relevant rights for selected users.

A password must be defined for the “admin” user, otherwise all stations will be fully accessible.

1) Add a new user. Each user needs a user name and associated password.
2) List of users currently in existence. A user may be edited or deleted.
3) Rights of the currently selected user. Rights will change, depending on the functions enabled in SBC.Net
4) Select WebConnect or Web FTP functions
5) Apply changes to selected user.

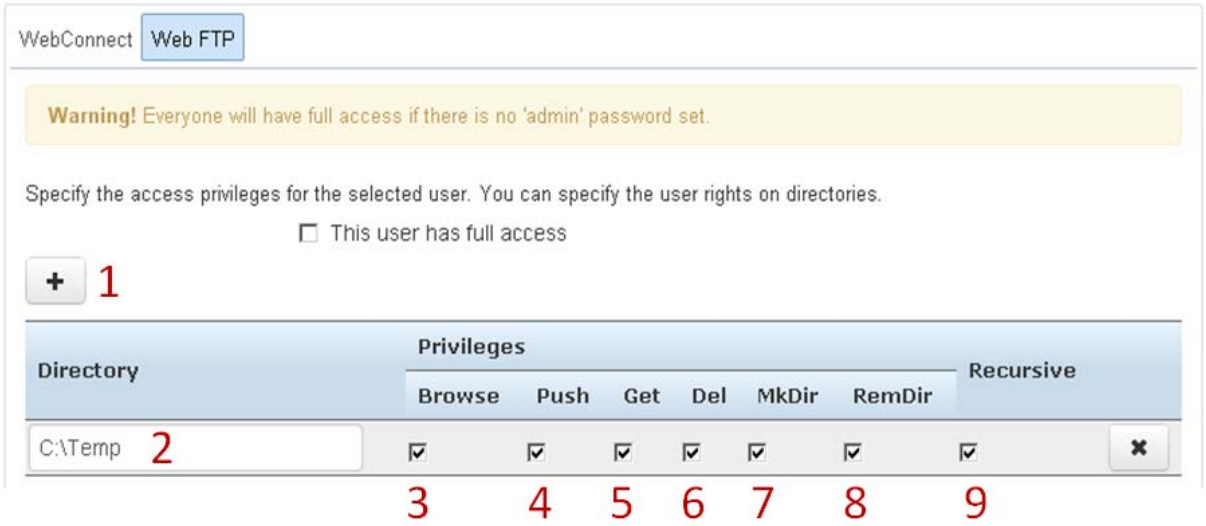



The Web FTP tab allows user rights to be defined for the local Web FTP server of SBC.Net

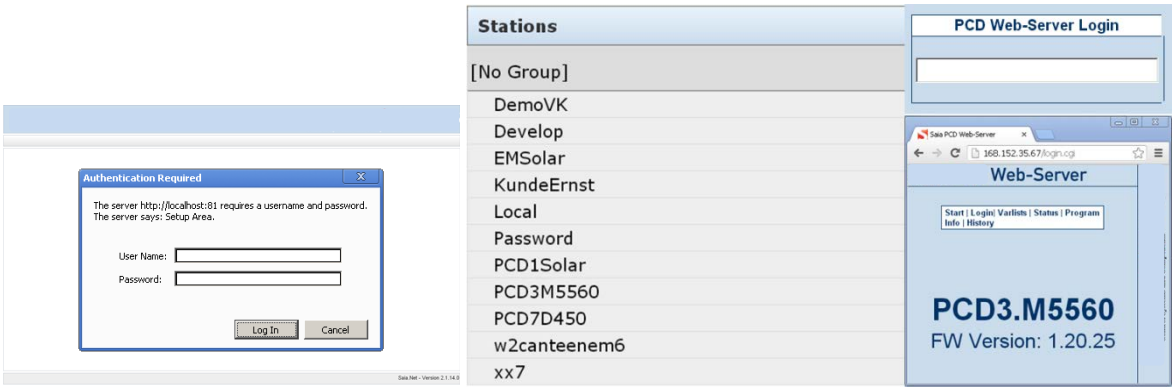
1) Add a new directory for the currently selected user
2) Location of local directory to be unlocked via Web FTP.

The user has the following rights:

3) Browse: View current contents of directory
4) Push: Write to files in the directory
5) Get: Read from files in the directory
6) Del: Delete files in the directory
7) MkDir: Make subdirectories
8) RemDir: Rename existing directories
9) Recursive: Include all subdirectories in the currently defined chain of rights.




On opening SBC.Net WebConnect, you are asked to enter a user name and password. After this login, you will have the rights of the logged in user. Clicking on any of the stations that are available to this user will allow access to the SBC Web-Server.



## 3.3 Compatibility PG5 and COSinus firmware versions

The protection functions described have been supported by Saia PCD controllers for quite some time. To use them correctly, the functions must also be supported by browser devices and the PG5 Device Configurator.

The following versions of Micro-Browser devices support the Web-Server password mechanism:

| Product | Product type | Firmware from version | Notes |
|---|---|---|---|
| VGA and SVGA Micro-Browser Web-Panel | PCD7.D4xxWTPF | 1.20.36 | |
| | PCD7.D457VTCF | 1.20.36 | |
| | PCD7.D410VTCF | 1.20.36 | |
| | PCD7.D412VTPF | 1.20.36 | |
| | PCD7.D4xxVT5F | 1.20.25 | |
| **Product** | **Product type** | **Firmware version** | **Notes** |
| QVGA Micro-Browser Panel | PCD7.D457BTCF | Not supported | |
| | PCD7.D457STCF | Not supported | |
| | PCD7.D457SMCF | Not supported | |
| **Product** | **Product type** | **Firmware from version** | **Notes** |
| eWinCE Micro-Browser | PCD7.D51xxTX010 | 1.5.15.131c | |
| | PCD7.D51xxTL010 | 1.5.15.131c | |
| | PCD7.D51xxTA010 | 1.5.15.131c | |
| eWinXP Micro-Browser | PCD7.D61xxTL010 | 1.5.15.131 | |
| | PCD7.D61xxTA010 | 1.5.15.131 | |
| **Product** | **Product type** | **Firmware version** | **Notes** |
| iOS MB App | | 1.5.15.130 | |
| iOS MB LITE App | | 1.5.15.130 | |
| Android MB App | | Not yet supported | New version will be available soon |

The following table shows interdependencies concerning the web server configuration in PG5 and COSinus firmware version of PCD controllers.

| | Web Server Project (.wsp) | Device Configurator |
|---|---|---|
| **FW < 1.14.nn** | Yes* | No |
| **FW ≥ 1.14.nn < 1.20.nn** | Yes* | Yes |
| **FW ≥ 1.20.nn** | No | Yes |

*With PG52.x Firmware Version < 1.14.nn must be set in the Device Configurator.

For activation of the web server password, **no** update of the PG5 programming tool is necessary.

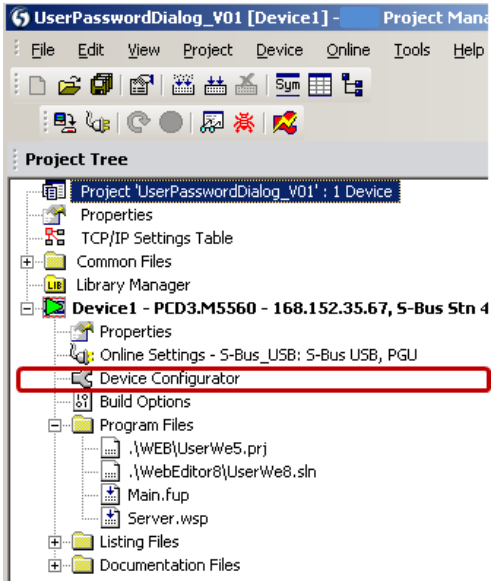
For firmware versions below 1.14.nn, the password and web server settings must be defined with the web server project (.wsp).

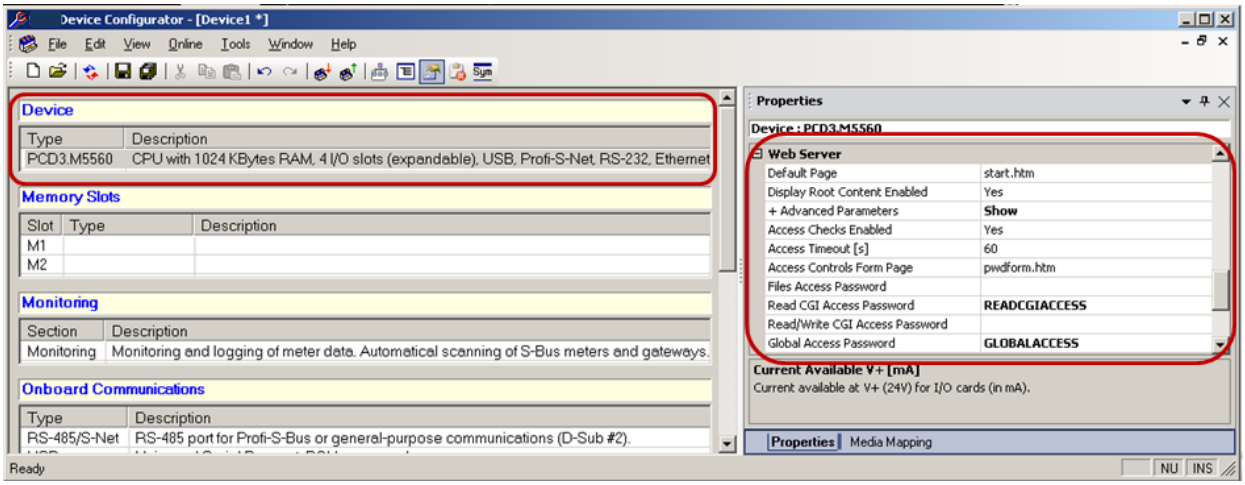
Firmware versions in the range 1.14.nn to 1.16.nn support configuration both via web server project and via the Device Configurator.

From firmware version 1.20.nn, web server settings can only be modified via the Device Configurator.

### 3.3.1 Activating the SBC Web-Server password with the Device Configurator

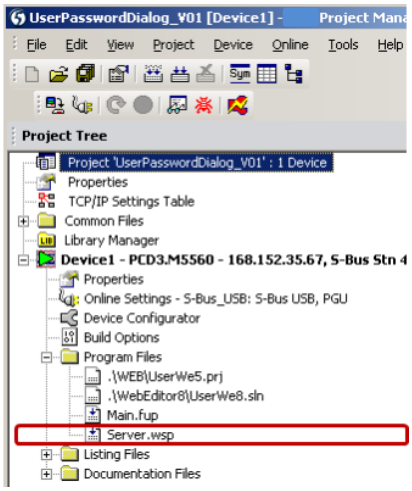
Web server configuration is defined in the Device Configurator. Settings are located on the CPU tab.



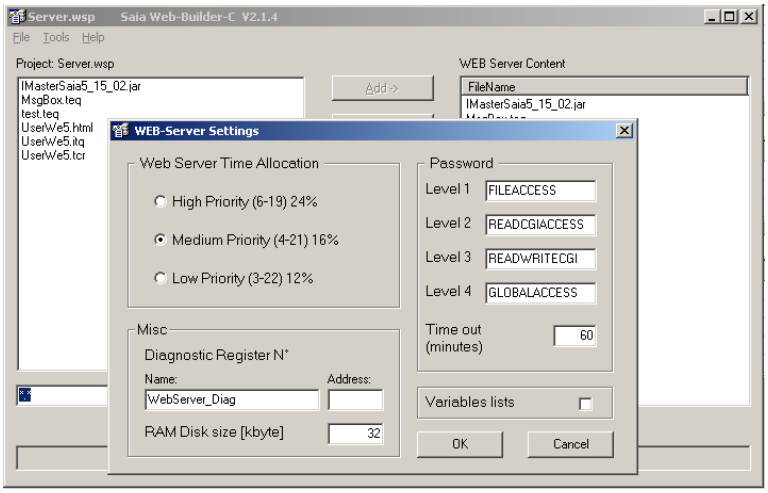

### 3.3.2 Activating the SBC Web-Server password with the Web Server project (.wsp)

Web server configuration is defined by the web server project. This is included among the program files and loaded into the controller with the program download.

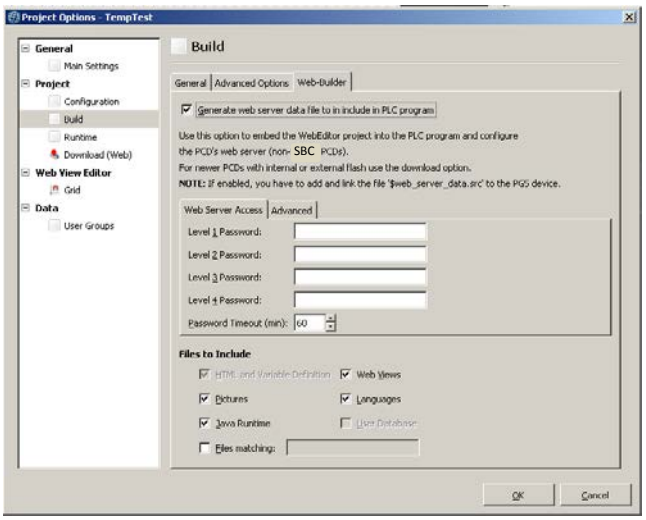



In the Web-Server project (.wsp), files may be loaded and passwords set for 4 levels.

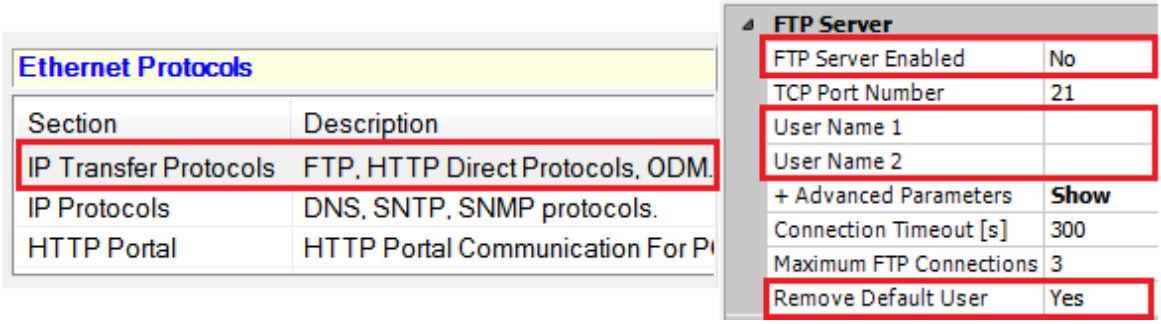
Level 1: File Access Password:
Level 2: Read CGI Access Password:
Level 3: Read/Write CGI Access Password:
Level 4: Global Access Password:




In WebEditor 8 the following settings in the project setting will be made

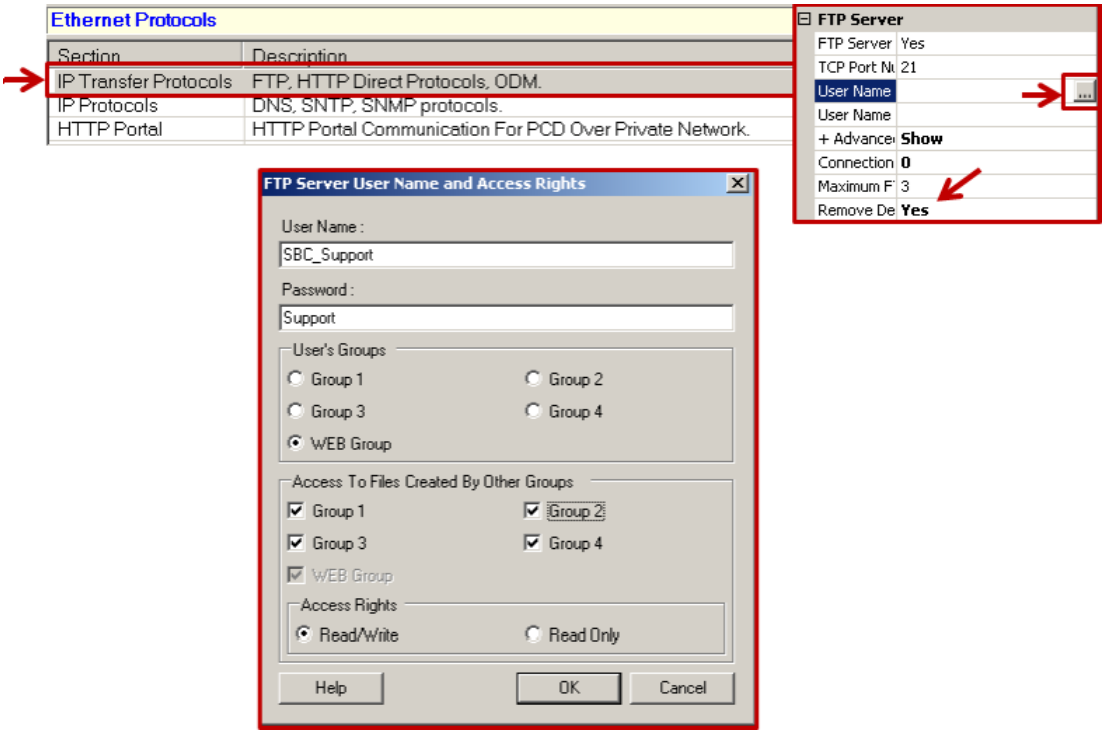


# 4. FTP server protection




When creating a new CPU in the Device Configurator starting with PG5 2.1.200, the FTP-Server is now deactivated by default. The default user “root”, “rootpasswd” is now likewise deactivated. For security reasons, the FTP-Server should be activated and a new user created when necessary. FTP Server parameters are stored under the Ethernet Protocols tab.

At the same time, the user’s individual password should also be defined with a length of up to 20 characters overall.




**Rules for selecting a password:**
To obtain the best possible protection, we recommend choosing at least 10 characters (the longer the more secure) comprising letters, numbers and special characters. Easy-to-guess words, such as the system name, should not be used.

**FTP Server (Yes/No)**
Activation or deactivation of the FTP server

Default: "No"
Recommended setting: "**No**" for critical systems

If the FTP-Server is needed, it must be activated and a new user with password created.

**Remove Default User**
The default user is now deactivated in order to block unauthorized access via known and publicly communicated passwords. At least 1 new user should be created in order to access the FTP-Server.

Default: "**Yes**"
Recommended setting: "**Yes**"

**User Name**
Allows the creation of up to 10 individual users with group membership and read or write access rights. Each user can be assigned to a group. In addition, it is possible to allow the user the access rights of other groups. An "administrator" or "root user" should be defined with an access authorization to all groups with "Read/Write" rights.

**TCP Port Number**
Port 21 is defined as the default port for FTP communication. The FTP server's port number can be changed with this parameter.

Default: "21"
Recommended setting: "only change if necessary"

**Connection Timeout (s)**
If a connection has been established to the FTP server but is not being used to exchange data with the server, after the specified timeout period the existing connection will be closed by the FTP server. To ensure that the FTP connection will be closed by the server, even if the client does not terminate it properly, a default value of 5 minutes (300 seconds) is recommended.

Default: "300"
Recommended setting: "300"

**Maximum FTP Connections**
Defines the maximum number of parallel connections to the FTP server

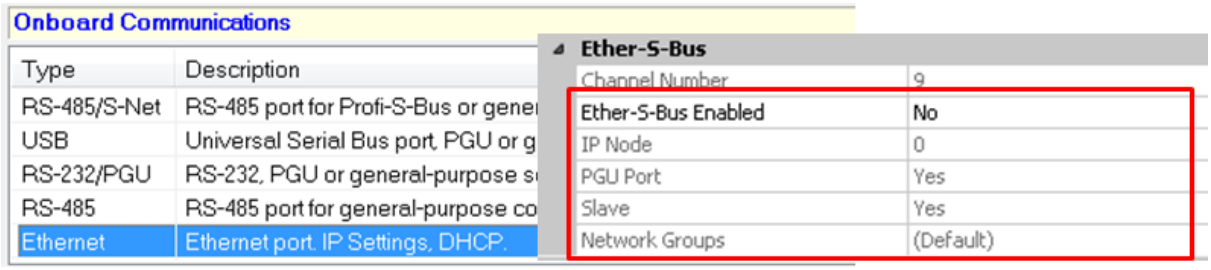
Default: "3"
Recommended setting: "only change if necessary"

# 5. Ethernet S-Bus protection

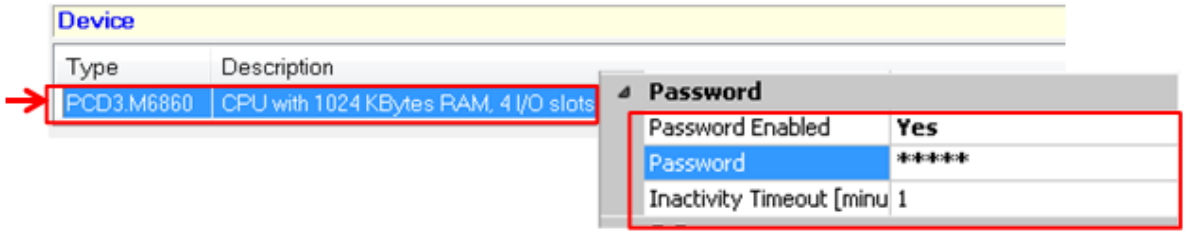
Ether-S-Bus supports all services and functions for data exchange, programming, commissioning and service of Saia PCD controllers. Access is with the PG5 programming tool, a Scada system or OPC server (only for data exchange).

Ether-S-Bus access rights can be defined in the PG5 Device Configurator.

One change is in the PG5 Device Configurator from Version 2.1.200 and a PCD COSinus Version > 1.22.10, where Ether-S-Bus communication is now deactivated by default. It should be noted, that the S-Bus communication can be used neither with the PG5 programming tool nor with any other system (Scada, OPC server).




When Ether-S-Bus is activated, access with the PG5 programming device can be additionally protected with a password.




The following rules apply:

If the password is disabled, all services on all PGU interfaces (Ethernet, USB, serial) are supported without restriction.

The password defined can have a total length of 25 characters and must consist of uppercase letters (A, B, C) or numbers (0-9).
For good protection, we recommend the selection of at least 10 characters (the longer the more secure), comprising letters and numbers. Easy-to-guess words, such as the system name, should not be used.

Caution: if the password is lost, the controller must be reset with the reset function.

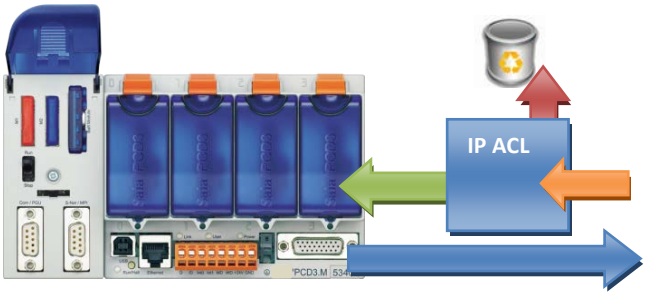
If a password has been defined, a password must be entered for all PGU interfaces (Ethernet, USB, serial) when establishing a connection with the PG5 programming tool. The following login dialog appears:


Note: Access (read and write) to the PCD media (R, F, I/O, T/C) is always enabled with Ether-S-Bus (even with a configured password).

# 6. IP access filter (IP Access List, ACL)

Starting with COSinus Version 1.22.10 and PG5 2.1.200, PCD controllers support the IP access filter. Authorized and non-authorized IP addresses are entered into a “white” or “black” list.

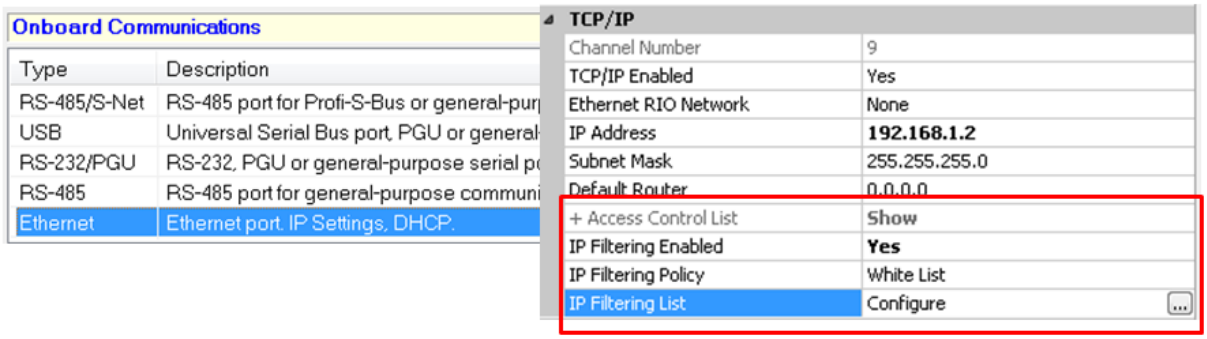
- Access and telegrams from IP addresses belonging to the White list are identified and handled by the COSinus operating system. Telegrams from other IP addresses are rejected.
- Access and telegrams from IP addresses belonging to the Black list are identified and rejected by the COSinus operating system. Telegrams from other IP addresses are handled.




In a local network, it can be practical and necessary to protect access to a controller with the IP access filter.

## 6.1 Device Configurator

The White list or Black list are defined in the PG5 Device Configurator in the “Onboard Communications” – “Onboard Ethernet” section.

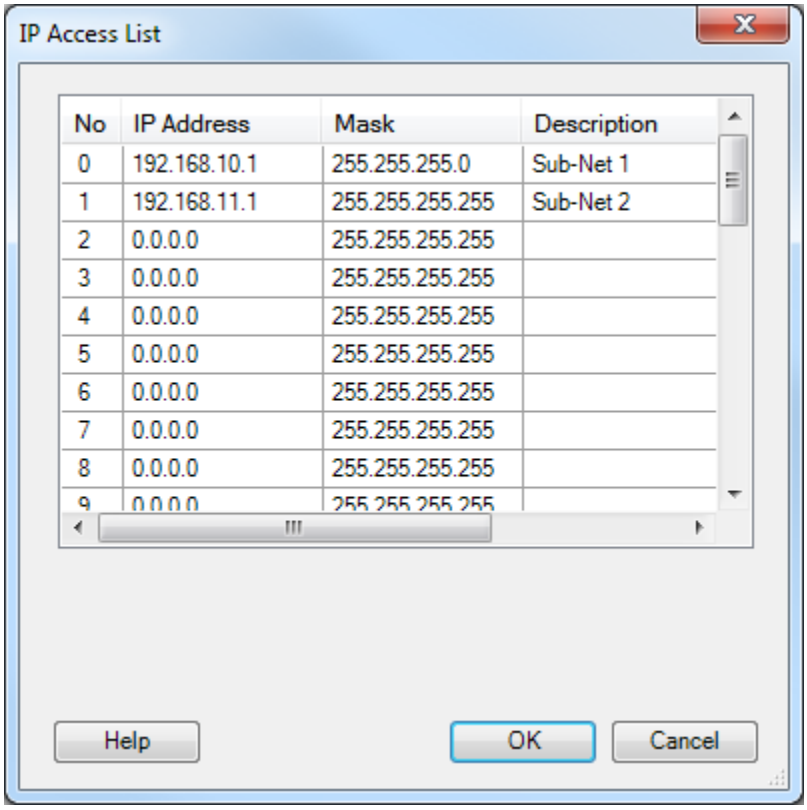



In order for the properties of the IP filter to be edited, the parameters in “+ Access Control List” must be set to “Show”.

1) “IP Filtering Enabled”
   Turn the IP access filter on or off

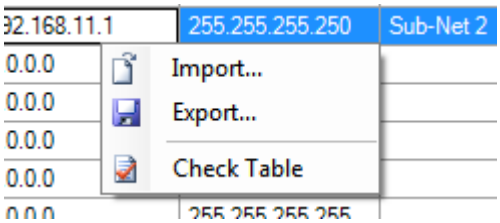
2) "IP Filter Policy"
Set the filter mode
White list = block everything → only allow those addresses on the list
Black list = block everything → only block those addresses on the list

3) "IP Filtering List"
List of IP address and associated "mask", which is either handled or rejected by the COSinus operating system depending on the mode selected.




The mask can also be used to define entire subnetworks for the filter. The IP address and mask define the network or subnetwork address.
For example,
The IP address 192.168.10.1 with a defined mask of 255.255.255.**0** allows or blocks communication of all devices in the network 192.168.10.0/24 (255 addresses)
The IP address 192.168.11.1 with a defined mask of 255.255.255.**255** allows or blocks communication exclusively from this IP address.

The list can be exported or imported as a .csv file.



## 6.2 Fupla FBoxen

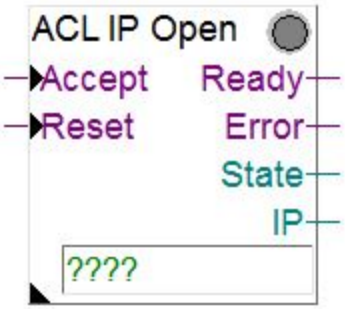
The IP access filter can be managed from the PCD user program by means of FBoxen.

1) ACL IP Filter FBox

   Allows the IP filter to be turned on and off


2) ACL IP Open FBox

   Allows an IP address to be opened for access to the device. This FBox can be used, for instance, to temporarily open an IP address for a mail server so the controller can send a mail. Up to 32 IP addresses (32 FBoxes) can thereby be added to the White list.

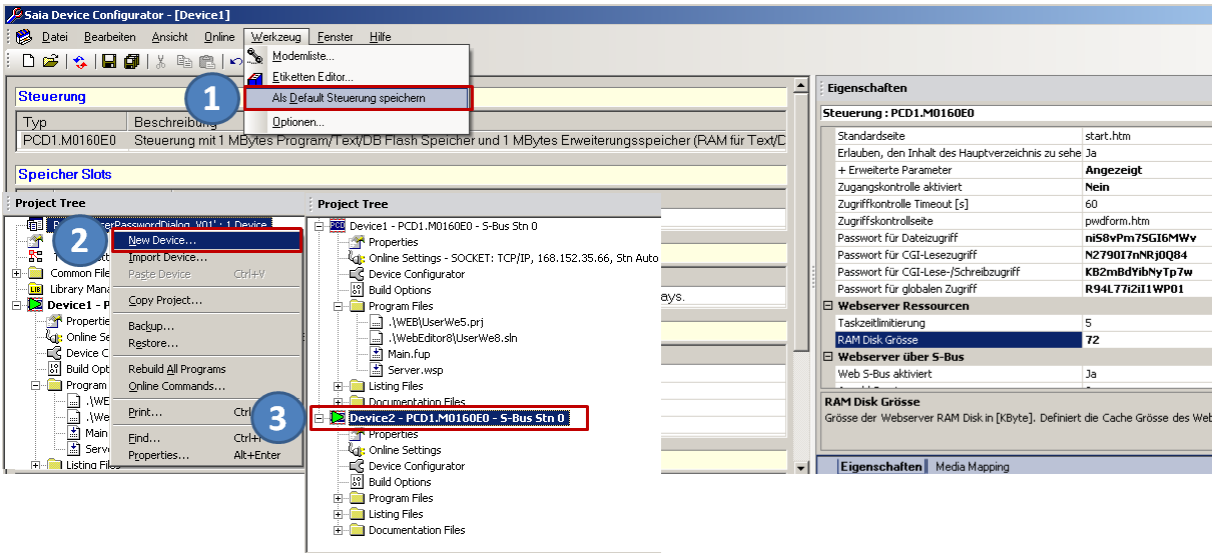



More information is available in the FBox online help.

# 7. Edit device templates in PG5 Device Configurator

In order for you to consistently configure a CPU with the same settings, it is possible to define a configured device template as a default for use with all of the same CPU types.

All settings that are defined in the Device Configurator template are thereby transferred to the new CPU when it is created.




1) Make the current settings in the CPU Device Configurator the default settings for this CPU type.
2) Add a new device
3) The new device is created with the device configuration defined in point 1.

Make a one-time definition of your active CPU components, such as the Web server and FTP server, as well as your security levels, ServiceKey or authorized users; save these settings for this CPU type.

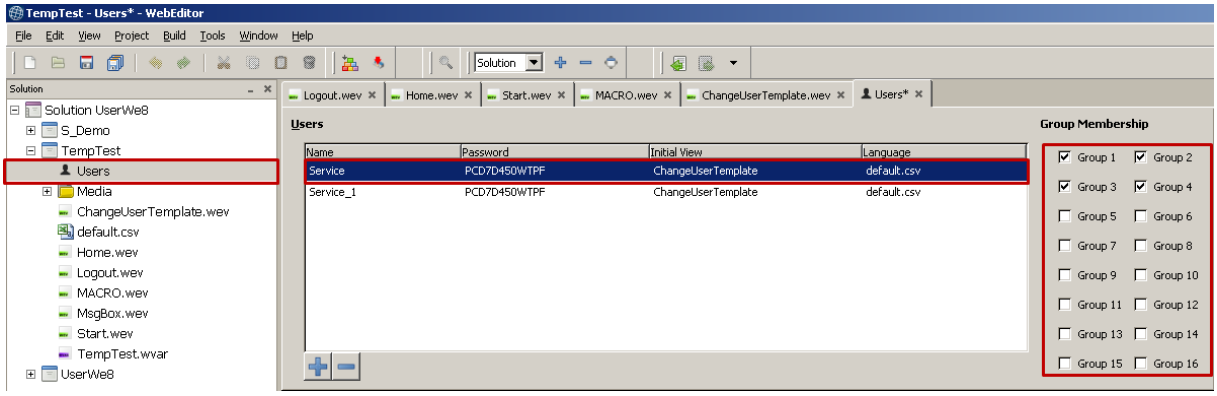
# 8. New user management with access control in WebEditor 8

Beginning with COSinus Version 1.22.10 and PG5 V2.1.200, there is a new user management and access control available in WebEditor 8. The templates for the new mechanism are listed in the WebEditor 8 template library in the section “Access Control”. The templates are only usable in connection with the user database generated by WebEditor 8. The new access control replaces the previous “User Identification” (old password mechanism) in which only 4 user levels could be defined.

The access control allows a user to be organized into 16 groups. These groups do not form levels. If a user is a member of a group, he/she can access or use the elements and functions of this group.

## 8.1 User database

WebEditor 8 was enhanced to include a user management system. Up to 100 users can be defined in the user database. A user consists of a user name, password, home page and language. In addition, every user is assigned to different user groups.

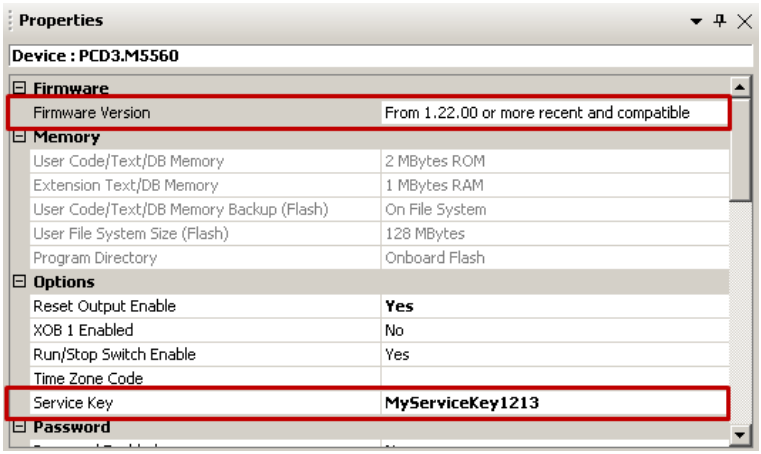



The user database is saved in a secure area of the controller.

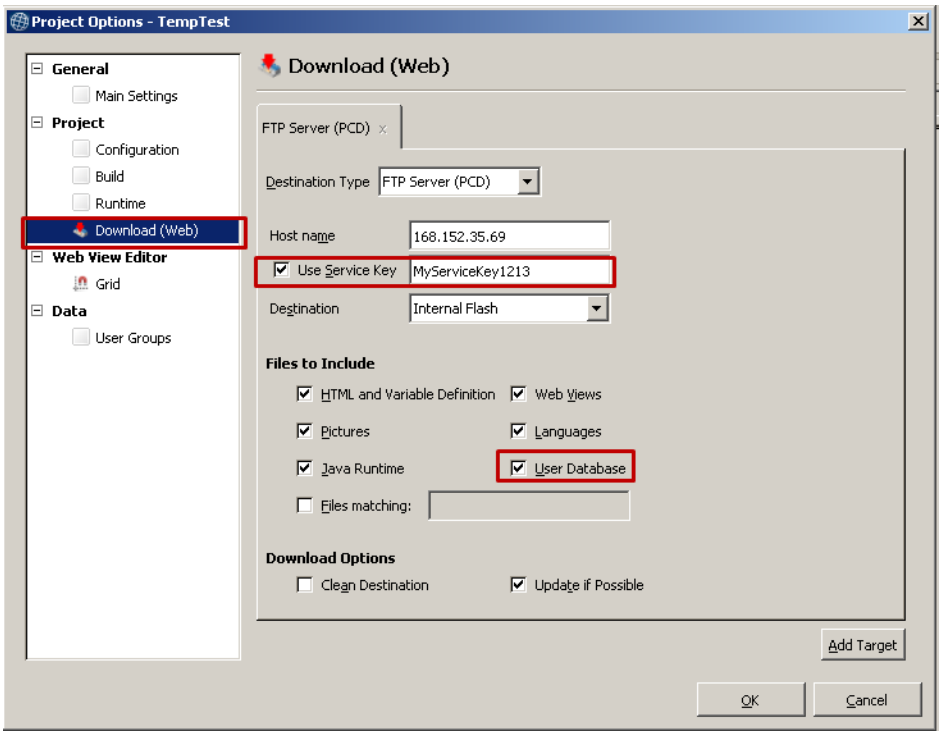
## 8.2 Download of user database and service key

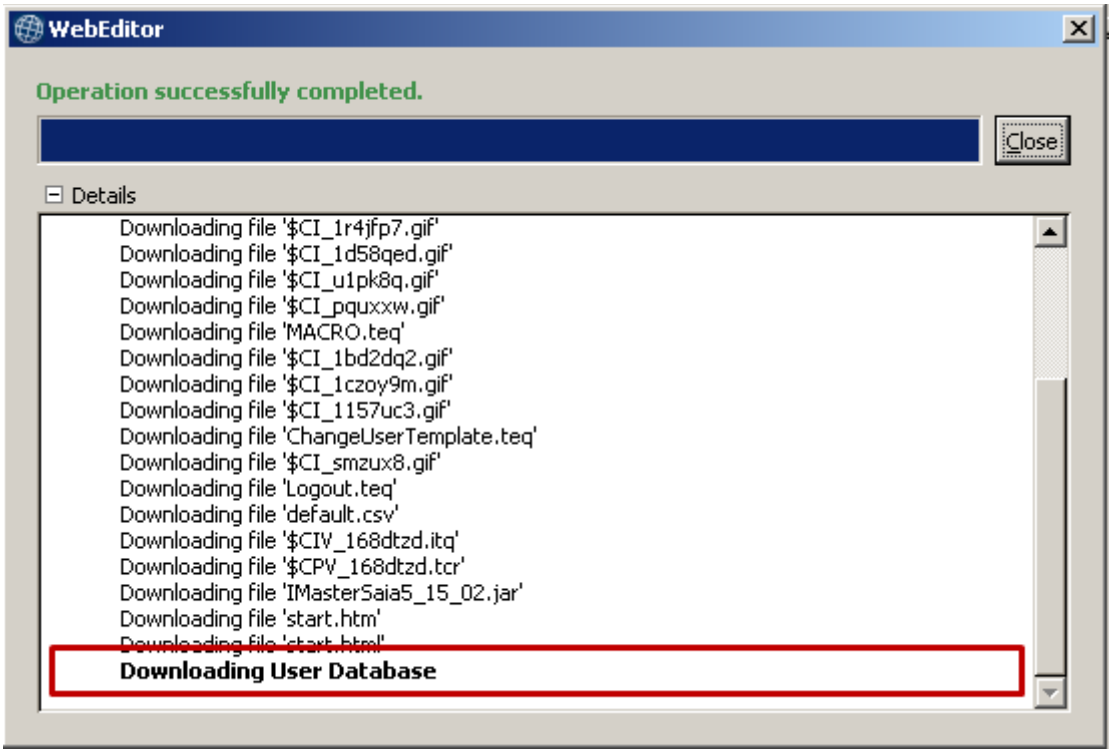
In order for WebEditor 8 to be able to load the user database in the protected area of the PCD controller, the service key must be defined in the Device Configurator.

The service key is used by the WebEditor 8 to identify itself to the controller (FTP-Server). The service key is entered in the Device area of the PG5 Device Configurator.



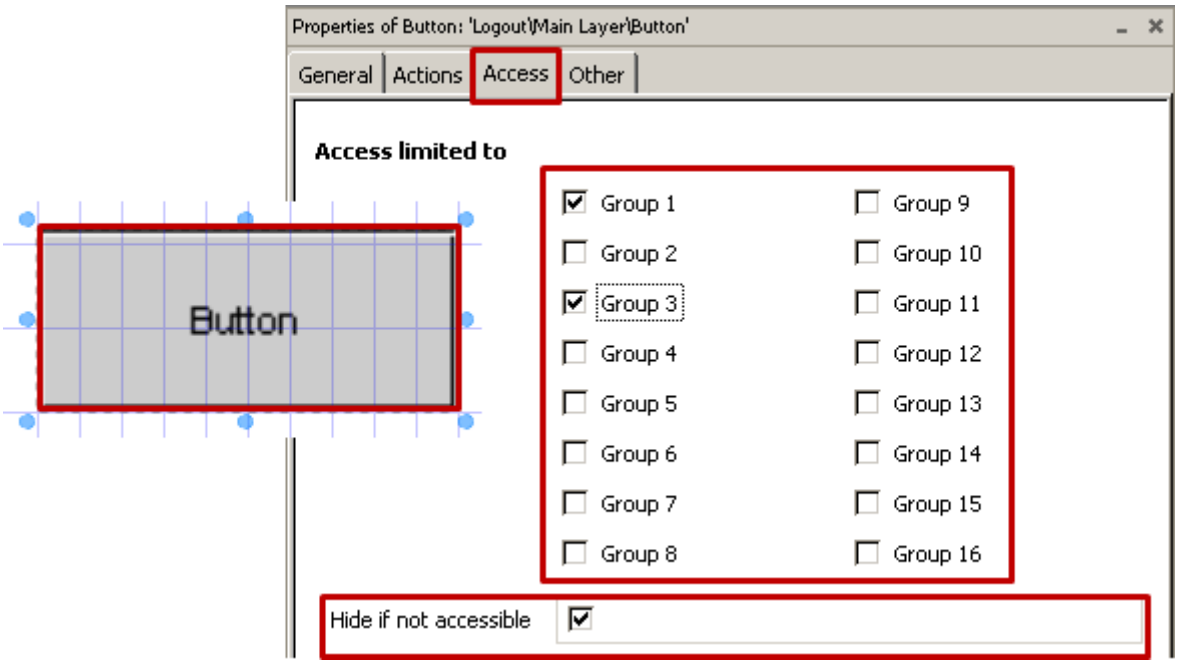

For downloading the user database in WebEditor 8, a download target “WebFTP”, “FTP Server (PCD)” or “PG5 CPU (S-Bus)” must be used with the service key. The service key entered here must be the same one entered for the PG5 Device Configurator.




WebEditor
Operation successfully completed.
Close
Details
Downloading file '$CI_1r4jfp7.gif'
Downloading file '$CI_1d58qed.gif'
Downloading file '$CI_u1pk8q.gif'
Downloading file '$CI_pquxxw.gif'
Downloading file 'MACRO.teq'
Downloading file '$CI_1bd2dq2.gif'
Downloading file '$CI_1czoy9m.gif'
Downloading file '$CI_1157uc3.gif'
Downloading file 'ChangeUserTemplate.teq'
Downloading file '$CI_smzux8.gif'
Downloading file 'Logout.teq'
Downloading file 'default.csv'
Downloading file '$CIV_168dtzd.itq'
Downloading file '$CPV_168dtzd.tcr'
Downloading file 'IMasterSaia5_15_02.jar'
Downloading file 'start.htm'
Downloading file 'start.html'
Downloading User Database

## 8.3 Assigning rights to functions or elements in WebEditor 8

Every element of WebEditor 8, including buttons, editing boxes, groups or layers, can be assigned to one or more user groups. User rights are entered in the application when a user logs on. The registered user can thereby use the functions and elements corresponding to his/her group assignment. If the box “Hide if not accessible” is activated, the element and its associated functions are deactivated and hidden for users who are not defined in the group.

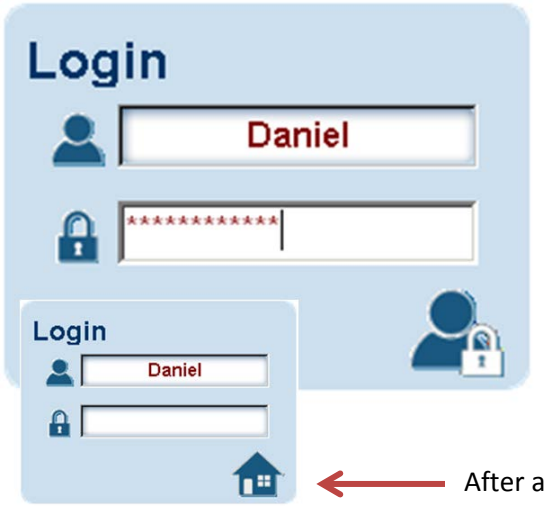


## 8.4 Templates for user control

The templates for user control can only be used in connection with the new user management.

### 8.4.1 Login template

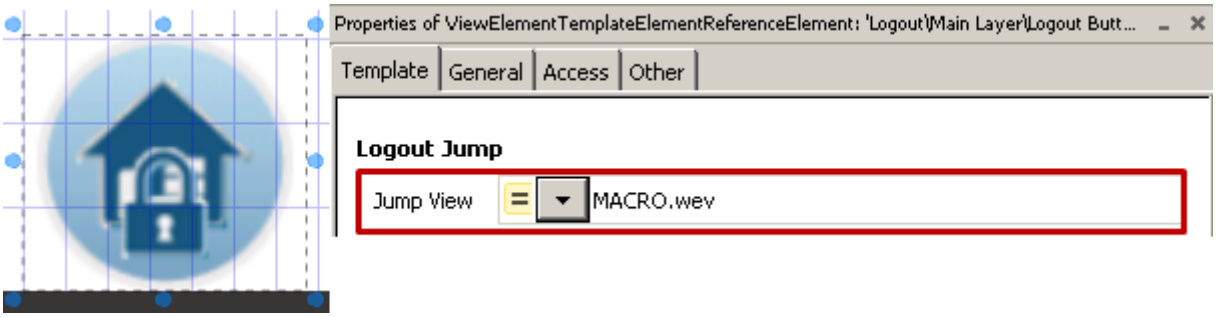
At login, the controller verifies the user name and password with the user database. The password is transmitted with hash code encryption. If the user name and password are correct, the user (or the HMI application) is given the relevant rights with a group assignment, language and home page.




After a successful login

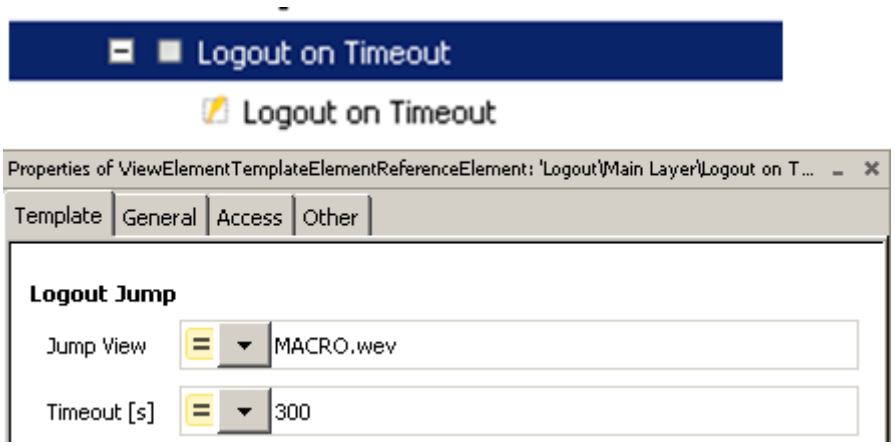
### 8.4.2 Logout template

If a user logged in via the login template, internal variables are set with the respective group, language and home page. The logout button resets these variables and changes the page to the logout view indicated in the template.



### 8.4.3 Automatic logout during inactivity

If a user logged in via the login template, internal variables are set with the respective group, language and home page. The “Logout on Timeout” template resets these variables after a specified period of time and changes the page to the logout view indicated in the template. The timeout value can be defined in seconds in the template.




### 8.4.4 Change password

The user can change his/her own password using the “Change Password Template”. In order to change the password, the current password must first be entered correctly. The new password must then be entered twice and then confirmed. The new password is then active. The old password immediately loses its validity!

## 8.5 Compatibility of new access control and old user identification

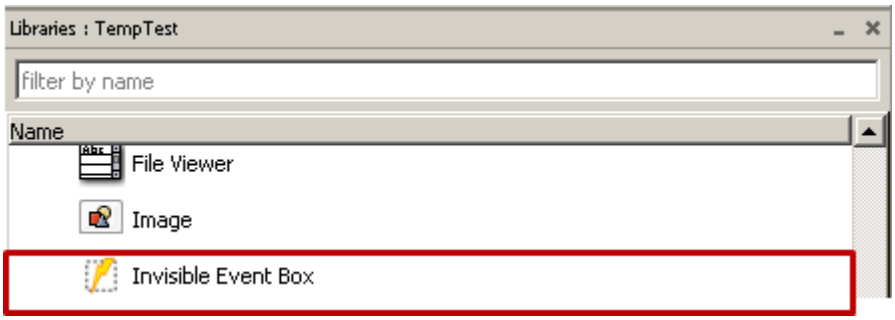
The access control templates are not compatible with the existing user identification solution. Unlike the 4 levels of the old user identification process, the new access control involves 16 groups. Rather than representing levels, they are individually configurable. An element is displayed or active if the registered user possesses the rights of the group(s).

A project created with WebEditor 5.15 or the old user identification system can be ported to the new user management system with little effort. This can be done in WebEditor 8 using new templates for access control; 4 users need to be defined and their rights displayed on the internal variable "userLevel". No other modifications to the project are needed.

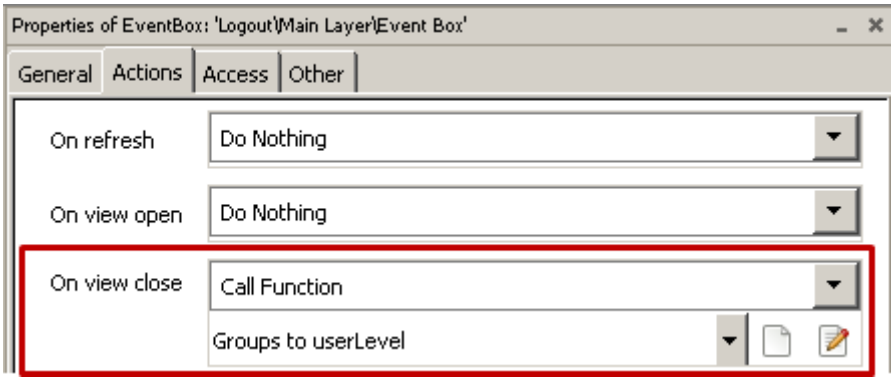
1) 4 users must be defined (1 to 4)
   After a successful login, the rights for the users are stored in the internal variables "?S_User_L0..3".

2) The rights for the users must now be displayed on the internal variable "userLevel". The internal variables "?S_User_L0..3" may contain "0" or "1".

3) An "Invisible Box Event" can be used for this purpose.

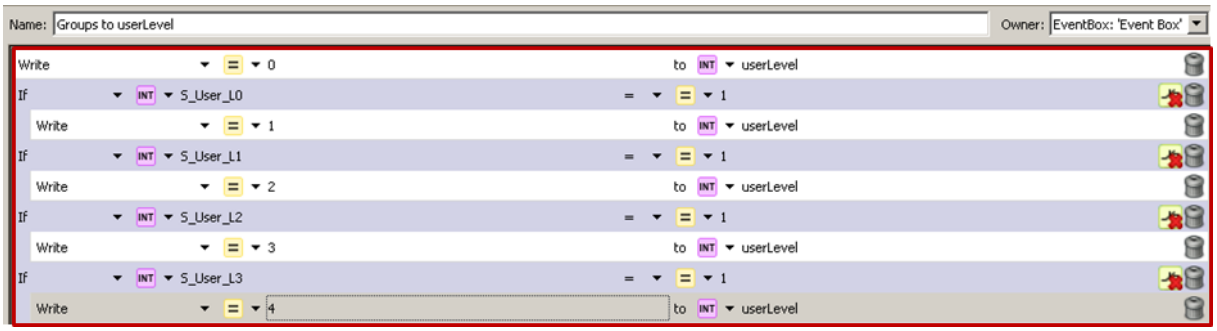



4) The "Invisible Box Event" is placed on the page with the login template and the user rights are transferred to the internal variable "userLevel" when the page is closed.



5) This function for transferring user rights to the “userLevel” can be implemented as follows:

➔ Reset the internal variable “userLevel”
➔ Set the internal variable “userLevel” on the basis of the user rights; when entering the levels, the highest user (4) then obtains the internal variable “userLevel”




?S_User_L0 → Level 1 → userLevel == <1>
?S_User_L1 → Level 2 → userLevel == <2>
?S_User_L2 → Level 3 → userLevel == <3>
?S_User_L3 → Level 4 → userLevel == <4>

6) Existing “Logout” macros must be replaced by the “User Indentification” template in WebEditor 8.