



roofSec
Leakage Detection and Monitoring
System

CU018
Reference Manual

Table of content

1	Hardware Setup	3
1.1	System requirements	3
1.2	Unpack your system	3
1.3	TOP VIEW	3
1.4	Front view	4
1.5	Rear view	5
1.6	Sensor cable connection	5
1.7	Sensor cable strain relief	6
2	Initial Setup	7
2.1	Install the CU018	7
2.2	Connect to the system and Log In	8
3	Web management interface	10
3.1	Dashboard	10
3.2	NETWORK CONFIGURATION	12
3.2.1	Ethernet Connection	12
3.2.2	Wireless Connection	14
3.2.3	Test Connection	14
3.3	USER SETTINGS	15
3.3.1	Authentication process	16
3.3.2	Authentication validation	17
3.3.3	Activation key	17
4	Manage the system	18
4.1	Change the login password	18
4.2	Deactivate Hotspot	18
4.3	Restore the Factory Default Settings	18
5	Monitoring	19
5.1	View System Information	19
5.2	View/Update Wireless Stations	19
6	Troubleshooting and debugging	19
6.1	Troubleshooting with the LEDs	19
6.2	Cannot connect to the system to configure it	19
6.3	Cannot connect to the Cloud to complete the installation	20

1 HARDWARE SETUP

1.1 SYSTEM REQUIREMENTS

Before installing the CU018 communication unit, make sure that your system includes the following:

- The Cat5 Ethernet cable with RJ-45 connector
- A 100-240 V, 50-60Hz AC power source
- A web browser for configuration
- At least on computer with TCP/IP protocol installed
- for wired connection:
a 10/100/1000 Mbps local area network device such as a hub or switch
- for wireless connection:
802.11b/g-compliant device

1.2 UNPACK YOUR SYSTEM

Your system must include

- Leakage monitoring and detection system: **CU018 communication unit device**
- **Installation guide** with cabling and access point setup instruction
- Power supply: **PHOENIX CONTACTS, STEP-PS/1AC/24DC/2.5**

If any parts are incorrect, missing, or damaged, contact your **roofSec dealer** or **roofSec**.

1.3 TOP VIEW

The top view of the CU018 are shown in the following figure.

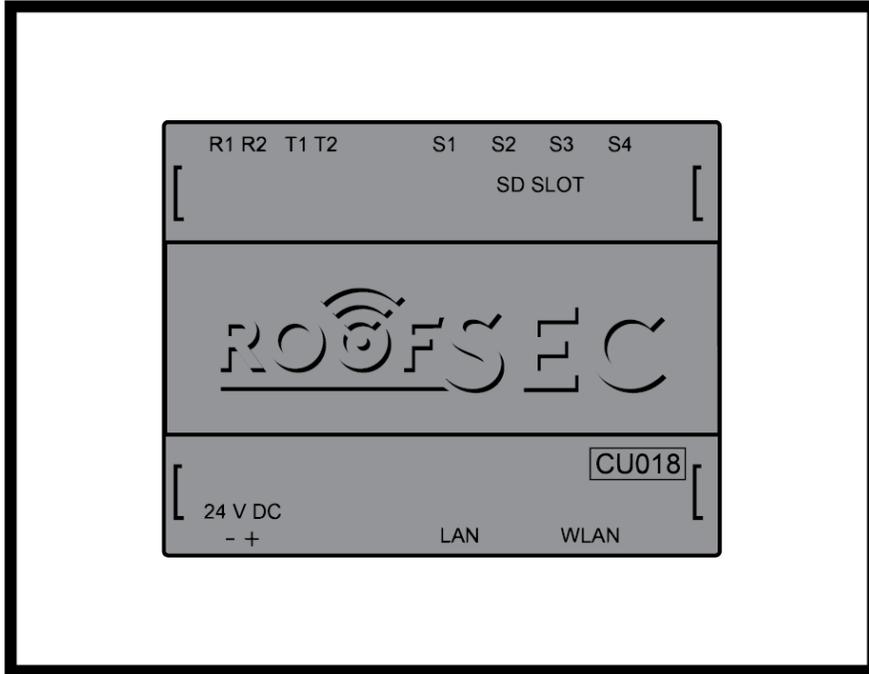
Power supply for 24VDC -/+

Network connectivity of LAN, WLAN

Sensor connectivity by S1, S2, S3, S4

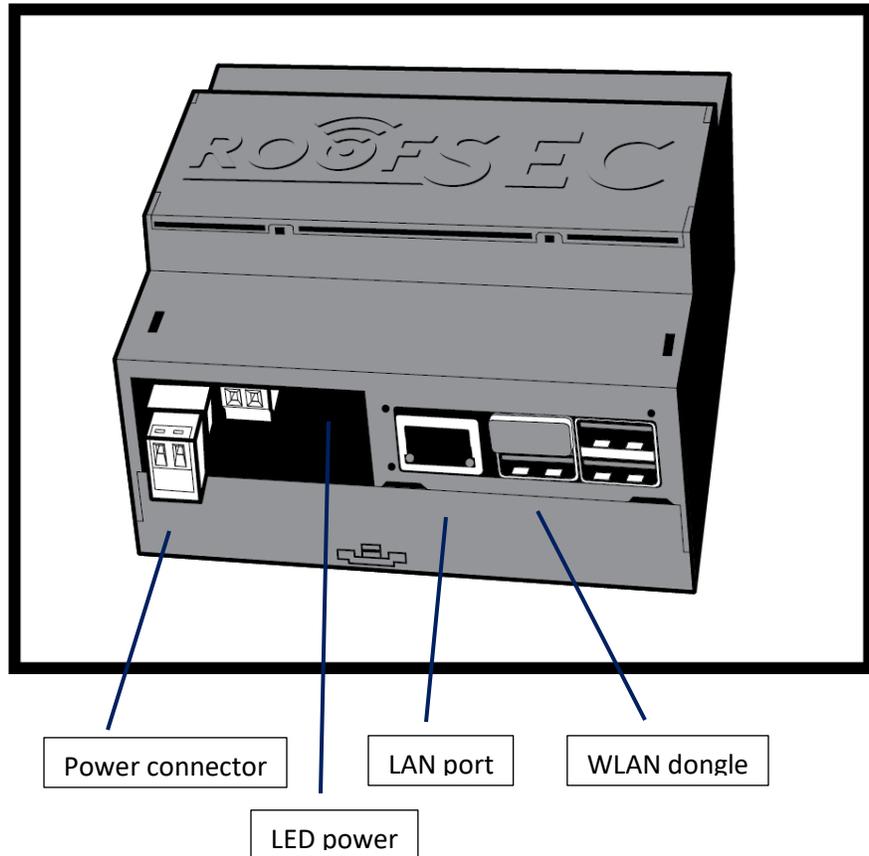
Reset button T1, T2

External extension R1, R2



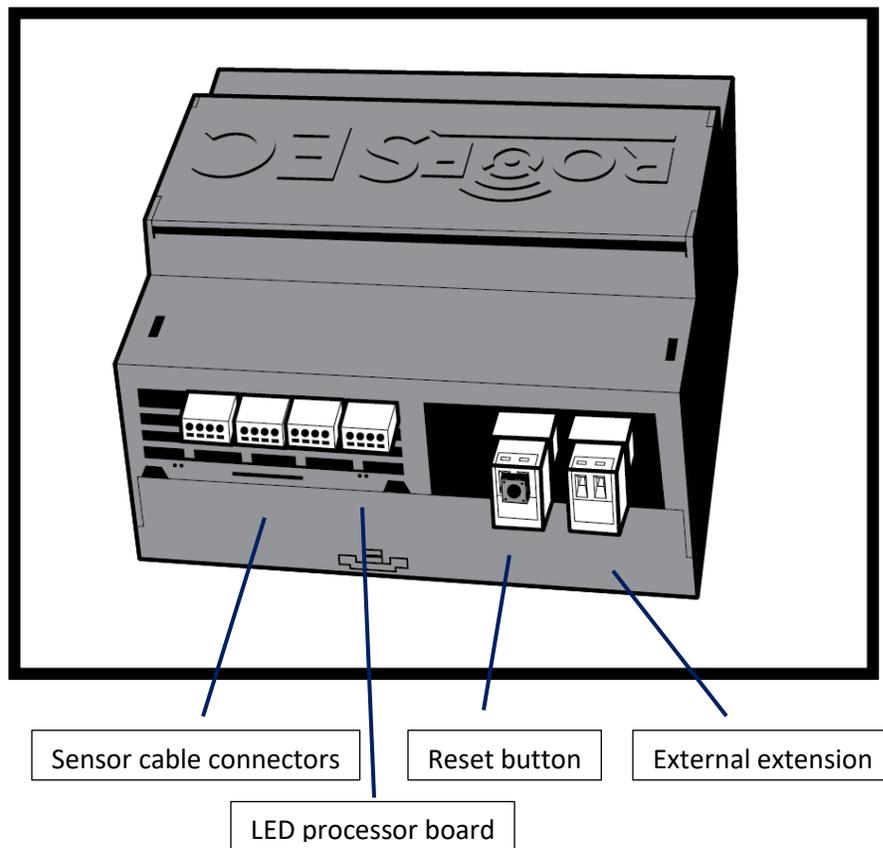
1.4 FRONT VIEW

The status LEDs and connectors on the front side of the panels are shown in the following figure.



1.5 REAR VIEW

The status LEDs and connectors on the rear side of the panels are shown in the following figure.



Pressing the Reset button for **at least 10 seconds** restores the factory settings for the network configuration and authentication configuration.

1.6 SENSOR CABLE CONNECTION

The sensor cable wiring is very important to be done based on the given color code of the single wires and is shown in the following figure.

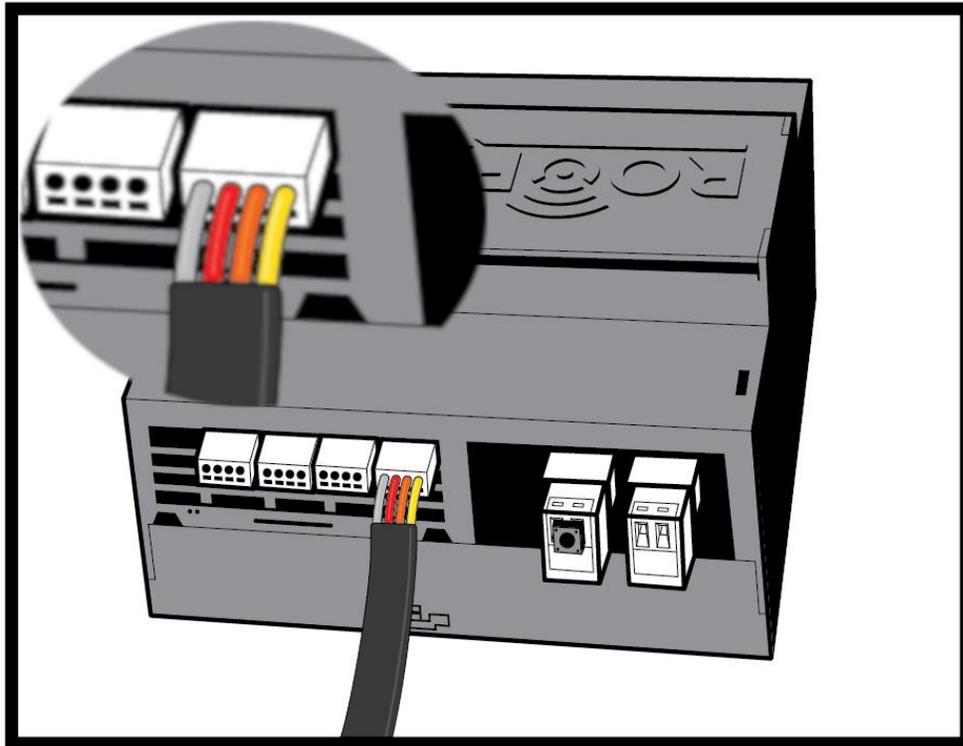
From left to right:

GR/GY... grey

RT/RD... red

OR/OG... orange

GE/YE... yellow



1.7 SENSOR CABLE STRAIN RELIEF

Make sure that you are using a **strain relief** that prevents the sensor cable from getting loose or unplugged when moved or bent as shown in the following example figure.



2 INITIAL SETUP

2.1 INSTALL THE CU018

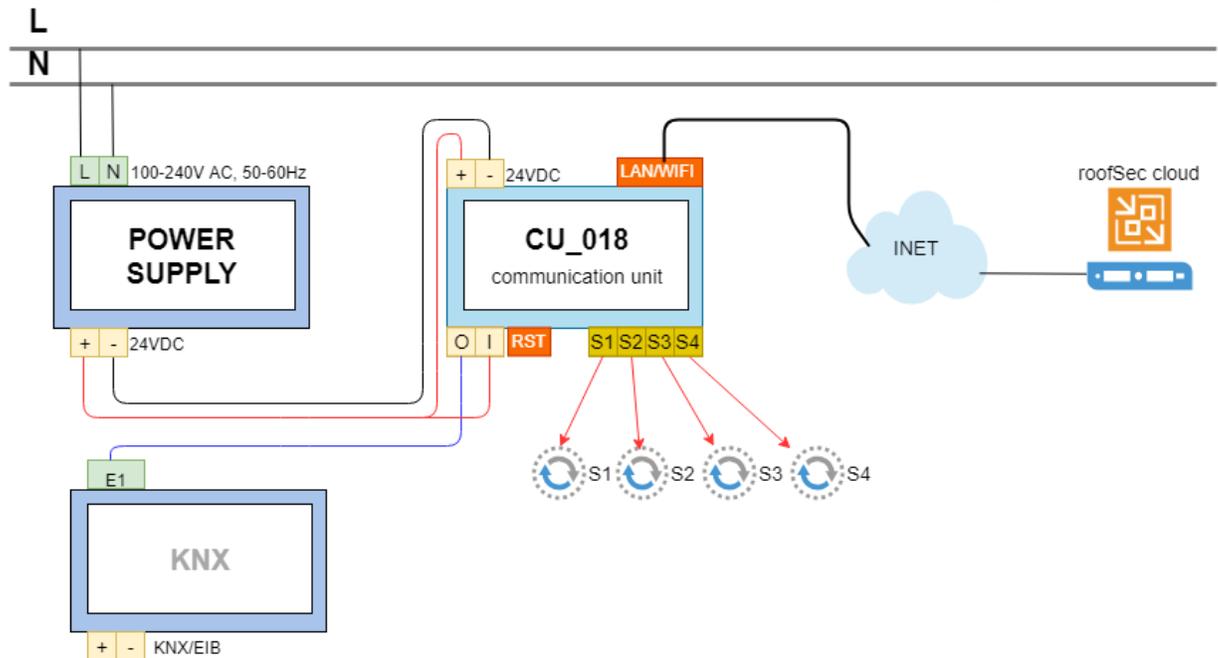
Make sure that your Internet service is active to complete the full installation process including the authentication process.

Make sure that the power supply is already properly installed and wired with the power plug of the CU018.

TO INSTALL CU018

- 1) Connect the Power Supply input to the line
- 2) Connect the Power Supply output with the power plug of the CU018.
This already powers up the CU018 system and you should see
 - a. The power LEDs lighting green.
 - b. The processor LED in red lighting up and the processor LED in green flashing occasionally.
- 3) Connect the sensor cable SC018_100 via the CC018_50 to the CU018.
- 4) The network configuration can either be done via static or dynamic IP address configuration.

An overview of the devices and the connection of these is shown in the following figure.



2.2 CONNECT TO THE SYSTEM AND LOG IN

You can connect to the CU018 web management interface to view or change its LAN, wireless access settings and to run the mandatory authentication process to the roofSec cloud service.

To connect to the system via LAN and DHCP

The CU018 is configured to have DHCP enabled by default.

If the connected switch or access point does not provide an IP address when the LAN network cable is connected.

- 1) Connect the Ethernet cable to the LAN port of the CU018.
- 2) Connect the other end of the Ethernet cable to switch or access point.
- 3) Open your switch or access point device's web interface to retrieve the IP address that has been assigned to the CU018.
- 4) On the computer that is connected to the same network, enter the IP address of the CU018 in the address field of a browser.

A login screen displays. For further configuration see section Web management interface.

To connect to the system via LAN and static IP configuration

The CU018 has a fallback LAN configuration in case of DHCP is provided and this method is well suited for wireless configuration.

- 1) Connect the Ethernet cable to the LAN port of the CU018.
- 2) Connect the other end of the Ethernet cable to the computer.
- 3) Configure the computer with a static IP address of <http://10.0.0.10/> and a subnet mask of 255.255.255.0.
For help configuration a static IP address on your computer, check the instructions or online help that came with that computer or operating system.
- 4) On the computer that is connected to the same network, enter the IP address of the CU018 in the address field of a browser.
A login screen displays. For further configuration see section Web management interface.

To connect to the system via WIFI access point

The CU018 has a dedicated WIFI that acts as access point and provides a dedicated configuration WIFI network called **roofSec.<magicNumber>**. This configuration allows full flexibility for the LAN/WIFI configuration and the authentication process.

- 1) Configure your computer to update all WIFI networks and search for **roofSec.<magicNumber>**
Each CU018 provide a **unique WIFI SSID name**.
For example: roofSec.b827eb1c48fe
- 2) Connect to the roofSec-Portal WIFI without any password needed
- 3) On the computer that is connected to the CU018 WIFI, enter <http://10.3.141.1> in the address field of a browser.
A login screen displays. For further configuration see section Web management interface.

3 WEB MANAGEMENT INTERFACE

The initial web management interface of the CU018 displays a login screen first.

Enter **ChangeMe** for the password and **click on Login**.

You will be redirected to the **DASHBOARD** after successfully entering the correct password.



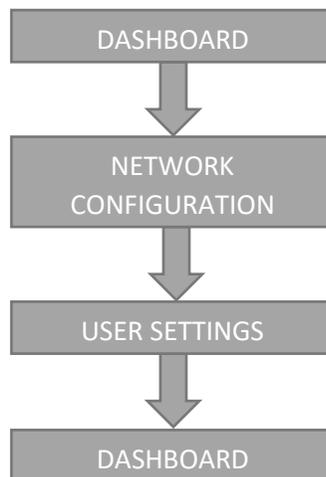
roofSec Portal Login

Please enter your password

If you encounter problems logging into the system please check your password accordingly.

If you still encounter problems please refer to the section on how to reset to **Factory default settings**.

The configuration and authentication process can be described as follows:



3.1 DASHBOARD

The Dashboard screen gives you detailed information of the

- Network settings via LAN Information and WIRELESS Information
- ROOFSEC cloud server configuration and connection status
- Account information with your activation key (also referred as code)

The Dashboard can be used to review these settings and change them accordingly based on updates with respect to the network or the sensor cables.

Step 1 - Dashboard

LAN Information

Interface Name	eth0
IP Address	10.0.0.10
Subnet Mask	255.255.255.0
Gateway	10.0.0.1
Mac Address	b8:27:eb:85:01:a7
Cable connected?	Ja

Wireless Information

IP Address	192.168.0.112
Subnet Mask	255.255.255.0
Gateway	192.168.0.1
Mac Address	b8:27:eb:d0:54:f2
WLAN aktiviert	Ja
WLAN Status	DH3
Frequency	2.462 GHz

Link Quality  64 %

Connection Status

roofSec Server: **Disconnected**

[Sensor Construction Test](#) [Sensor Confirmation Test](#)

Account Information

Email:
Activation Key:

[Refresh](#) [Continue >](#)

In order to start the initial configuration and authentication you have to click **Continue** to display the network configuration screen.

3.2 NETWORK CONFIGURATION

The network configuration screen allows you to configure your LAN and WIFI configuration in order to connect the CU018 to the **roofSec cloud service**.

The roofSec cloud service is mandatory for a full functionality of the leakage detection and monitoring system.

Step 2 - Network Configuration

Logout

Ethernet Connection

Adapter IP Address Settings

DHCP Static IP

Optional Failover Static IP Options

IP Address

0.0.0.0

Subnet Mask

255.255.255.0

Default Gateway

0.0.0.0

DNS Server

0.0.0.0

Wireless Connection

SSID	Passphrase		
DH3	testpassword	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
gallushouse	<input type="text" value="Passphrase"/>	<input type="button" value="Add"/>	
A1-672ee9	<input type="text" value="Passphrase"/>	<input type="button" value="Add"/>	
	<input type="text" value="Passphrase"/>	<input type="button" value="Add"/>	
3HuiGate_2.4GHz_CD	<input type="text" value="Passphrase"/>	<input type="button" value="Add"/>	
roofSec-Portal	---	<input type="button" value="Add"/>	

Note: WEP access points appear as 'Open'. roofSec does not currently support connecting to WEP.

3.2.1 Ethernet Connection

The Ethernet/LAN connection allows you to select between **DHCP** or **Static IP configuration**.

Ethernet Connection

Adapter IP Address Settings

DHCP Static IP

Optional Failover Static IP Options

IP Address

Subnet Mask

Default Gateway

DNS Server

DHCP/Static IP

By default, the Dynamic Host Configuration Protocol (DHCP) is enabled. If your LAN includes a DHCP server and you have enabled DHCP, the CU018 gets its IP address, subnet mask, and default gateway settings automatically from the DHCP server on your network when you connect the CU018 to your LAN.

- **IP Address.** The IP address of your access point. The default IP address is 10.0.0.10. To change it, enter an unused IP address from the address range used on your LAN, or enable DHCP.
- **IP Subnet Mask.** The access point calculates the subnet mask based on the IP address that you assign. Otherwise, you can use 255.255.255.0 (the default) as the subnet mask.
- **Default Gateway.** The IP address of the gateway for your LAN. For more complex networks, enter the address of the router for the network segment to which the access point is connected. The default is 0.0.0.0.
- **DNS Server.** The IP address for the primary Domain Name Server used by stations on your LAN. The default is 0.0.0.0.

Click **Save and Apply** to take over changes applied to the Ethernet connection configuration.

Hint: In case you have selected DHCP as your Ethernet Connection configuration, the static IP option is used as failover static configuration in case no DHCP server is present in the network.

Hint: In order to update network settings for your LAN configuration it may be required to connect and disconnect the Ethernet cable from the LAN port of the CU018.

3.2.2 Wireless Connection

The Wireless connection dialog allows you to connect the CU018 to wireless networks near you. We do not recommend this connection type and you should use it only if no LAN network is available.

The wireless connection dialog lists all the wireless networks within the range of the CU018.

Add WIFI network

In order to connect to a wireless network, you have to enter the password in the Passphrase field and click **Add**.

The successful connection to the wireless network is visualized with the checkmark on the left of the SSID.

Update WIFI network

In order to update your password, you can change the Passphrase and click **Update**.

Delete WIFI network

In order to disconnect from the wireless network, click **Delete**.

Wireless Connection ↻

	SSID	Passphrase		
☑	DH3	testpassword	Update	Delete
⊞	gallushouse	Passphrase	Add	
	A1-672ee9	Passphrase	Add	
		Passphrase	Add	
	3HuiGate_2.4GHZ_CD	Passphrase	Add	
	roofSec-Portal	---	Add	

Note: WEP access points appear as 'Open'. roofSec does not currently support connecting to WEP.

↻ Refresh Test Connection ← Back Continue →

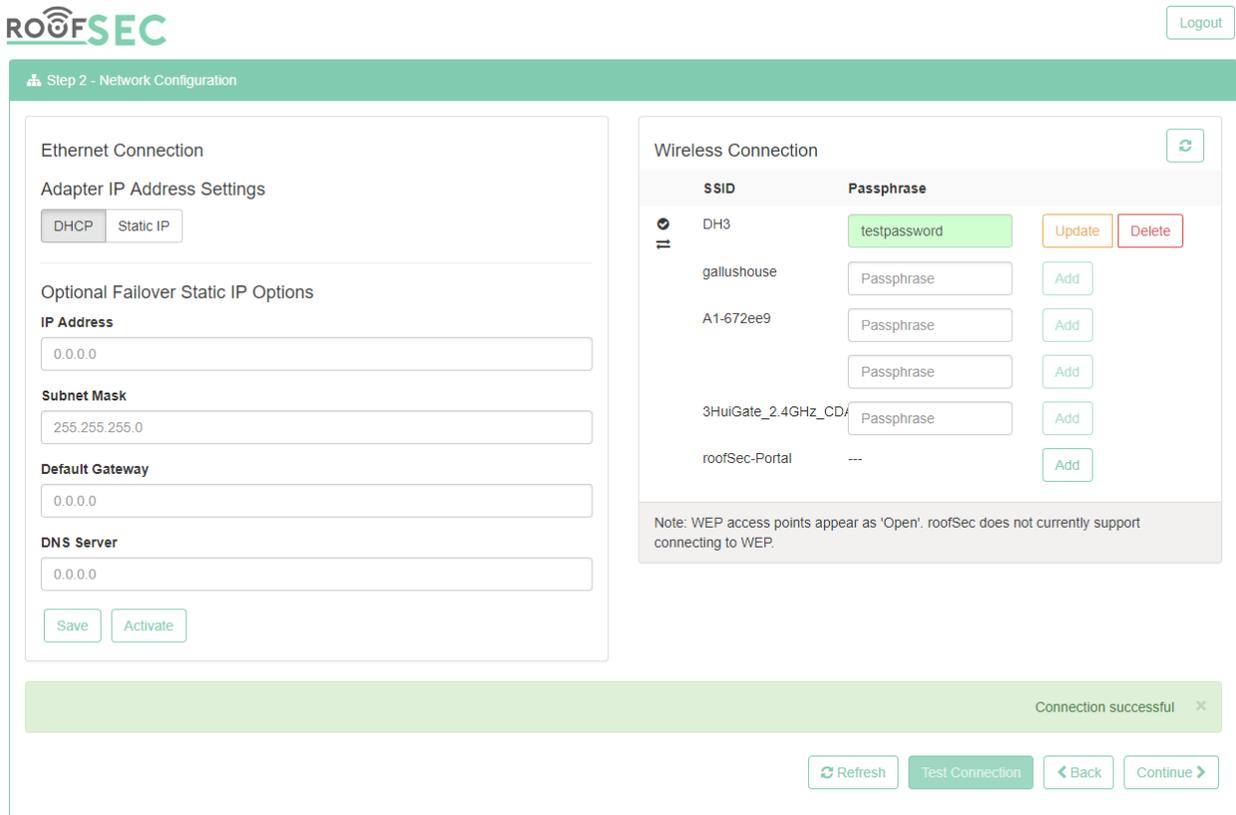
3.2.3 Test Connection

Once you have successfully configured your Ethernet connection or Wireless connection properly with a link to the Internet, you can test the configuration.

- Click **Test Connection**

The result of a successful connection to the roofSec cloud service will be displayed in a separate information dialog as shown in the following figure.

This does not imply that the authentication process is complete.



3.3 USER SETTINGS

The last step of the initialization process is the application of the **user settings** to **link the sensor data** of your building and/or roof to the corresponding building and/or roof in the roofSec cloud service database.

It is mandatory that you use the **correct activation key** (see Activation key) for your building and/or roof.

3.3.1 Authentication process

You can either use your registration account information or you can use the dialog to create a new account as shown in the following figure.

Step 3 - User Settings

Logout

Login as existing user

Email
office@roofsec.com

Password
.....

Activation Key
E4pNGaEwQ

Create a new account

Email

Password

Repeat password

Activation Key

Your account data can be changed anytime via the customer portal at <https://www.roofsec.com>

Back Finish configuration

- 1) Enter valid **Email**.
- 2) Enter the **Password**.
 - a. Reenter the password in case of creating a new account.
- 3) Enter the **Activation key**.
- 4) Click **Finish configuration**.

The configuration is validated and if **successful**, you will be **redirected to the Dashboard**.

You have now successfully finished the configuration and authentication process of the network and user settings.

The connection status dialog box informs you accordingly as **Connected** as shown in the following figure.

Step 1 - Dashboard

LAN Information

Interface Name: eth0
 IP Address
 Subnet Mask
 Gateway
 Mac Address: b8:27:eb:85:01:a7
 Cable connected?: Nein

Connection Status

roofSec Server: **Connected**

[Sensor Construction Test](#) [Sensor Confirmation Test](#)

Wireless Information

IP Address: 192.168.0.112
 Subnet Mask: 255.255.255.0
 Gateway: 192.168.0.1
 Mac Address: b8:27:eb:d0:54:f2
 WLAN aktiviert: Ja
 WLAN Status: DH3
 Frequency: 2.462 GHz

Link Quality: 60 %

[Deactivate Hotspot](#)

Account Information

Email: **office@roofsec.com**
 Activation Key: **E4pNGaEwQ**

Change Portal Password

Old password *

New password *

Repeat new password *

[Change password](#)

[Refresh](#) [Continue >](#)

3.3.2 Authentication validation

The email, password and activation key are determined to be a unique information that belongs together. When you click **Finish configuration**, this information is validated at the roofSec cloud server and the result will be displayed on the screen.

If the input parameters are invalid, a message is displayed that the **login was not successful** as shown in the following figure.

Step 3 - User Settings

Could not login - please verify that your email and/or password are correct

Login as existing user

Email

Create a new account

Email

3.3.3 Activation key

The activation key can be found in the planning report that you get from your supplier and should be available at the construction site.



Gebäude

Name: 

Adresse:  Austria

Dach

Name: Vordach und Garage

Beschreibung: Vordach und Garage im Hof

Kabel

Bezeichnung	Gerät	Anschluss	Code
Kabel 1	Haupt-Komm-Unit	2	PNS4KN2Ns



4 MANAGE THE SYSTEM

4.1 CHANGE THE LOGIN PASSWORD

After you have **successfully finished the configuration and authentication process**, we recommend that you change the default login password to a more **secure password**.

4.2 DEACTIVATE HOTSPOT

The CU018 has an internal WIFI acting as hotspot for configuration. After you have successfully finished the configuration and authentication process, we recommend that you disable the hotspot.

On the Dashboard page within the Wireless information dialog box, click **Deactivate Hotspot**.

The Hotspot is reactivated when you reset to Factory Default Settings, see Restore the Factory Default Settings.

4.3 RESTORE THE FACTORY DEFAULT SETTINGS

The CU018 configuration can be reset to factory default settings.

Pressing the Reset button for **at least 10 seconds** restores the factory settings for the network configuration and authentication configuration.

Please note that by pressing this button to reset to Factory Default Settings, the **system will be rebooted automatically** in order to make the changes affective.

5 MONITORING

5.1 VIEW SYSTEM INFORMATION

The dashboard is the main entry page.

You get all the information on the network status, the roofSec cloud service connection status.

5.2 VIEW/UPDATE WIRELESS STATIONS

If you want to change your wireless stations settings or you want to switch to a different wireless station, you can always update these settings in the **Network configuration page**.

In order to keep the link to the roofSec cloud service active, you need to validate the connection status anytime you change or update the network configuration settings.

Please refer to section **Network configuration**.

6 TROUBLESHOOTING AND DEBUGGING

6.1 TROUBLESHOOTING WITH THE LEDs

All LEDs are Off

You need to check the power connection of the power supply, the connection of the cables and wiring.

Processor board LEDs are Off

You need to check if the power supply is sufficient for 24V DC and 60W.

LAN LED is Off

You need to check the proper connection of the cables to the computer or switch/access point on the hand and the CU018 LAN port on the other hand.

6.2 CANNOT CONNECT TO THE SYSTEM TO CONFIGURE IT

You have multiple ways to connect to the system.

In the following section some typical issues are described:

- If you are using DHCP and the CU018 does not get an IP assigned by your DHCP server, please check if MAC Filtering is disabled.
- If you are using static IP addresses, please check the static IP address configuration locally on your computer. Please refer to your OS instruction on how to manage to do so.

- If you are using the roofSec-Portal as network connection no password is required. In order cross check a successful network link with the CU018 network, you can check the connection from your computer by pinging 10.3.141.1.

6.3 CANNOT CONNECT TO THE CLOUD TO COMPLETE THE INSTALLATION

Please **first check the Test connection** function in the Network configuration page to verify that you have an active link to the internet and the communication to the roofSec server is possible.

Please cross-check all your input parameters as this is most likely the reason that you can finish the authentication process (be careful to use case sensitivity).

6.3.1 Conflicting Ethernet Connection and Wireless Connection

If you have configured a static IP for the Ethernet connection, the CU018 uses this interface as the primary interface for the connection test.

In case you can't establish a connection to the cloud Server, please check your settings and try either the Ethernet connection settings via DHCP and/or Wireless connection settings having DHCP enabled.