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Product startup: G-30 + DIGIWARE C31 - U30 - 3xI35

Date: **26/09/2014**	From: **ADY**	Verified by:
To: **All**		
Copy to :		

The purpose of this document is to explain the setup steps in "point to point" mode or via a Diris Digiware system gateway:


- 1 DIGIWARE C-31 control interface
- 1 DIGIWARE U-30 voltage module (same steps as for U-10 and U-20)
- 3 DIGIWARE I-35 current modules (same steps as for I-30, I-31 and I-33)

All linked to a G-30 communication gateway (same steps as for G-50)

Prerequisite hardware for using this guide:
- You must have the latest version of Easy Config, the setup software for these products
- You must have a PC equipped with USB ports and a micro USB cable
- You must be able to guarantee the implementation, connection and the power of the system to be configured as shown in the first section.
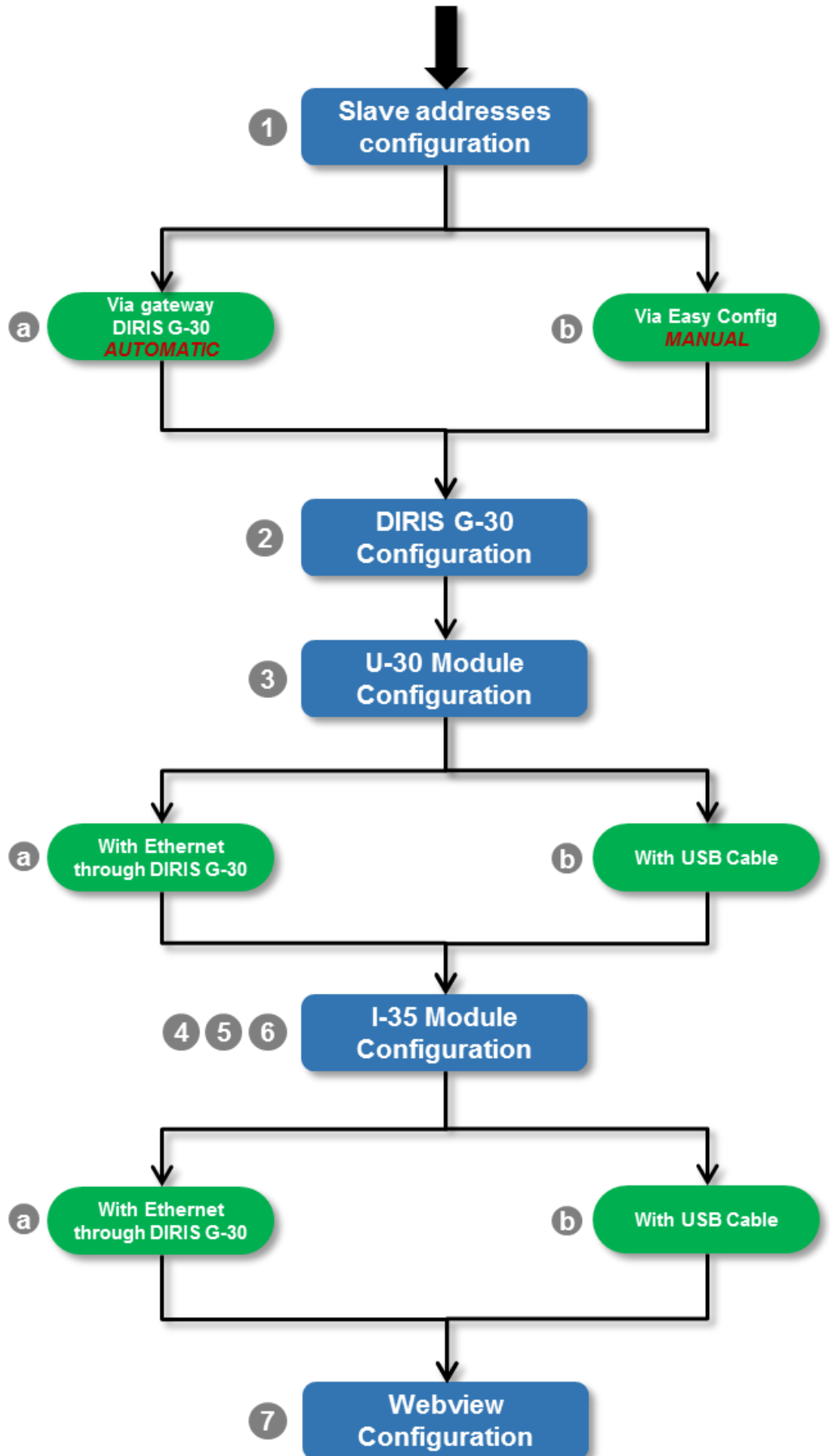
Architecture to configure:
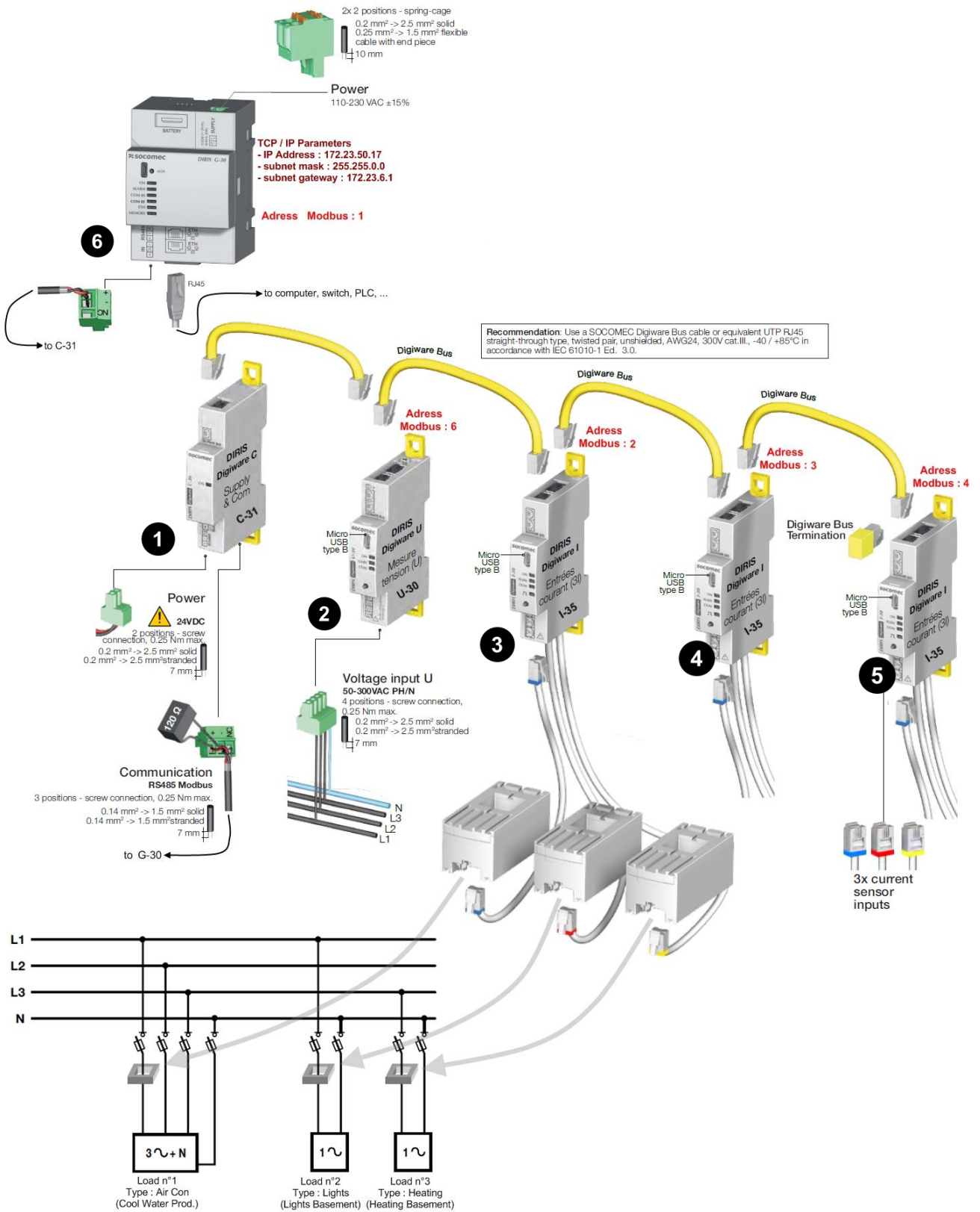
Synthesis of the electrical and communication parameters:

N°		Product Type	Modbus Address	TCP/IP Parameters	Electrical Network Type	Loads				
						Name	Type	Usage	nominal current	Phase(s)
1	DIGIWARE	C-31	/	/	3P+N Network (4 wires) 400 Volts	/	/	/	/	/
2		U-30	6	/		/	/	/	/	/
3		I-35 n°1	2	/		Cool Water Prod.	3-phases balanced 400V	Air Con	60 A	V1-V2-V3
						Lights Basement	1-phase 230V	Lighting	20 A	V1
						Heating Basement	1-phase 230V	Heating	35 A	V3
4		I-35 n°2	3	/		Other loads …	…	…	…	…
5		I-35 n°3	4	/		Other loads …	…	…	…	…
6	GATEWAY	G-30	1	IP : 172.23.50.17 mask : 255.255.255.0 gateway : 172.23.6.1	/	/	/	/	/	/

Setup progress overview:

```
                                    ↓
                            ┌──────────────────┐
                        (1) │ Slave addresses  │
                            │  configuration   │
                            └──────────────────┘

    ┌─────────────────────────┴─────────────────────────┐
    ↓                                                    ↓
(a) ╭──────────────╮                            (b) ╭──────────────╮
    │ Via gateway  │                                │ Via Easy     │
    │ DIRIS G-30   │                                │ Config       │
    │ AUTOMATIC    │                                │ MANUAL       │
    ╰──────────────╯                                ╰──────────────╯
    └─────────────────────────┬─────────────────────────┘
                              ↓
                            ┌──────────────────┐
                        (2) │ DIRIS G-30       │
                            │ Configuration    │
                            └──────────────────┘
                              ↓
                            ┌──────────────────┐
                        (3) │ U-30 Module      │
                            │ Configuration    │
                            └──────────────────┘
```

The overview opposite shows the steps you need to take to set up the system from A to Z.

All the steps in blue are mandatory.

When you get to a green step, follow just one of the 2 options shown (a or b)

Note: for each step, we recommend following option "a"

```
    ┌─────────────────────────┴─────────────────────────┐
    ↓                                                    ↓
(a) ╭──────────────╮                            (b) ╭──────────────╮
    │ With Ethernet│                                │ With USB     │
    │ through      │                                │ Cable        │
    │ DIRIS G-30   │                                │              │
    ╰──────────────╯                                ╰──────────────╯
    └─────────────────────────┬─────────────────────────┘
                              ↓
                            ┌──────────────────┐
                (4)(5)(6)    │ I-35 Module      │
                            │ Configuration    │
                            └──────────────────┘
    ┌─────────────────────────┴─────────────────────────┐
    ↓                                                    ↓
(a) ╭──────────────╮                            (b) ╭──────────────╮
    │ With Ethernet│                                │ With USB     │
    │ through      │                                │ Cable        │
    │ DIRIS G-30   │                                │              │
    ╰──────────────╯                                ╰──────────────╯
    └─────────────────────────┬─────────────────────────┘
                              ↓
                            ┌──────────────────┐
                        (7) │ Webview          │
                            │ Configuration    │
                            └──────────────────┘
```

1) Configuring slave addresses

Not only can the DIRIS G gateway automatically scan the communication bus to find connected slaves, it can also auto-address the slaves it finds by automatically assigning them a new address.

Each JBUS/MODBUS slave must have a unique address on the bus so it can be identified by the master (the DIRIS G gateway). This unique address is a number chosen at random between 1 and 247.

The default JBUS/MODBUS address of a product is as follows:
- Modules U-10, U-20, U-30: Address 006
- Modules I-30,I-31,I-33,I-35,I-45,I-60,I-61: Address 005

The system can auto-scan to find previous SOCOMEC measurement products (DIRIS A, COUNTIS E, COUNTIS Eci), but it is not possible to auto-address them. As such, if these older products are located downstream of a DIRIS G-30 gateway, you first need to manually assign them unique addresses.

You can auto-scan and auto-address on the communication bus in two different ways:
- Via the front panel button of the DIRIS G-30 gateway
- In Easy Config itself

This means, with a U-30 + 3x I-35 configuration, there will be 3 slaves with the same address. Resolve this address conflict by assigning new addresses to the 3 I-35 modules.

a. Auto-scanning and auto-addressing via the front panel of the DIRIS G-30

- **1** Press and hold down the button on the DIRIS G-30 for 3 seconds to start the auto-scanning sequence on the communication bus

- **2** The two COM LEDs flash for the duration of the scan (maximum 3 minutes):

- **3** Wait until the end of the scan, i.e. when the two COM LEDs on the DIRIS G-30 stop flashing:
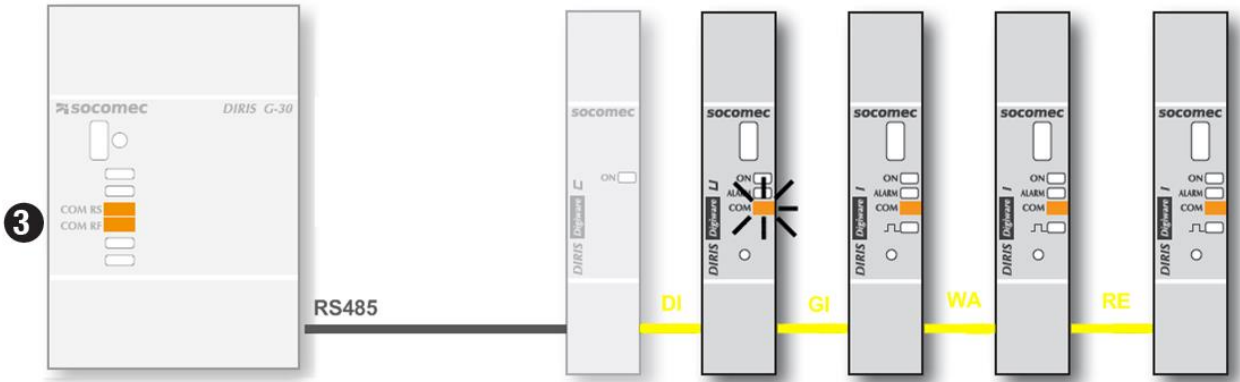
- **(4)** Automatically address all the slaves whose COM LEDs are not flashing, by pressing and holding down their button for 3 seconds (until their COM LED starts flashing). There is no need to press the button on a slave whose COM LED is flashing, because they already have a unique JBUS/MODBUS address on the bus:
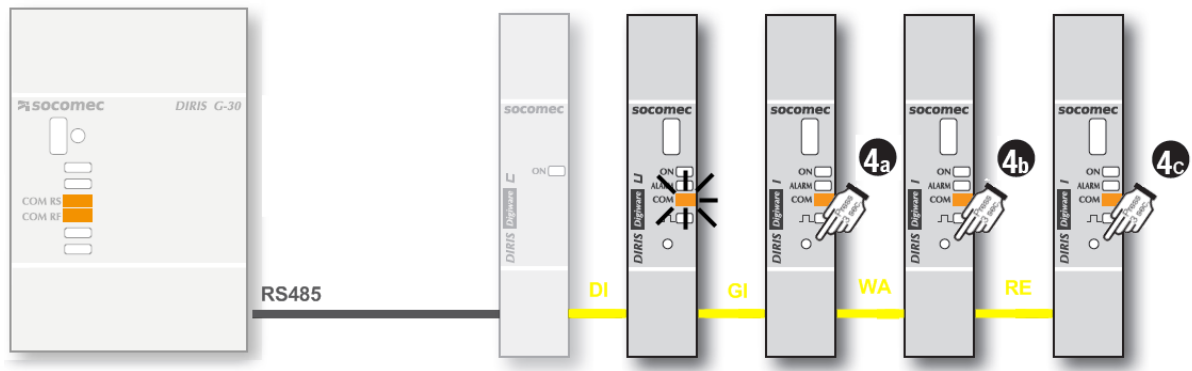
In our example, after the auto-scan, as the three I-35 modules are at default address 5, their COM LEDs should not be flashing, and the U-30 LED should be flashing.

Press the button on the slave for 3 seconds after an auto-scan to request a new free address on the bus to gateway DIRIS G-30.

- **(5)** Check that all slaves now have their COM LED flashing:
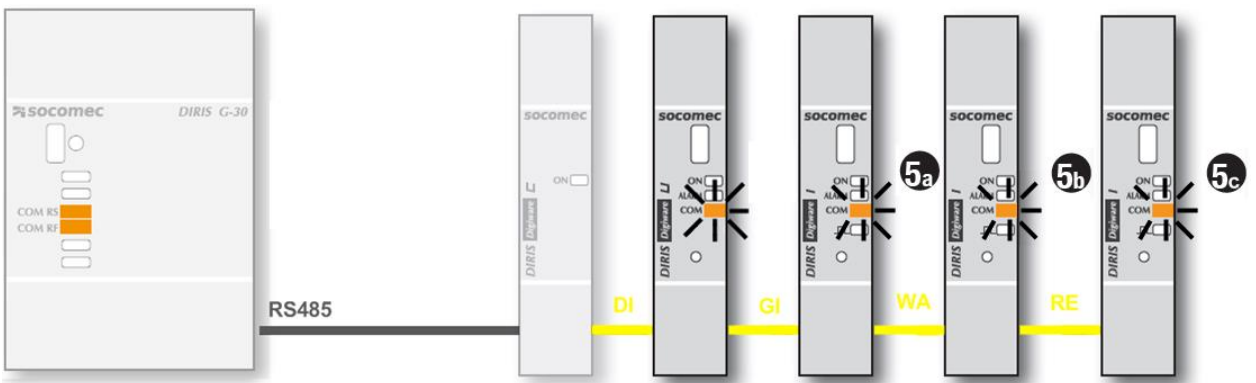
- (6) Complete the auto-scan/address by pressing the button on gateway DIRIS G-30 for 3 seconds, (7) the two COM LEDs on the gateway turn off (7) as well as the COM LEDs on the slaves:
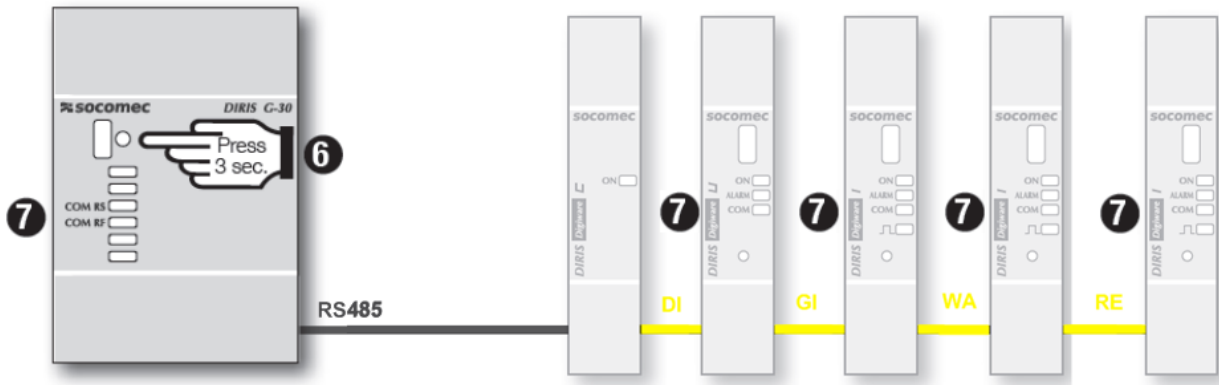
b. Auto-scanning and auto-addressing in Easy Config

- Connect the micro USB cable between the DIRIS G-30 and the PC

- Open Easy Config

- Switch profiles in Easy Config and go to the "Super User" profile (default password: sOcOmec)
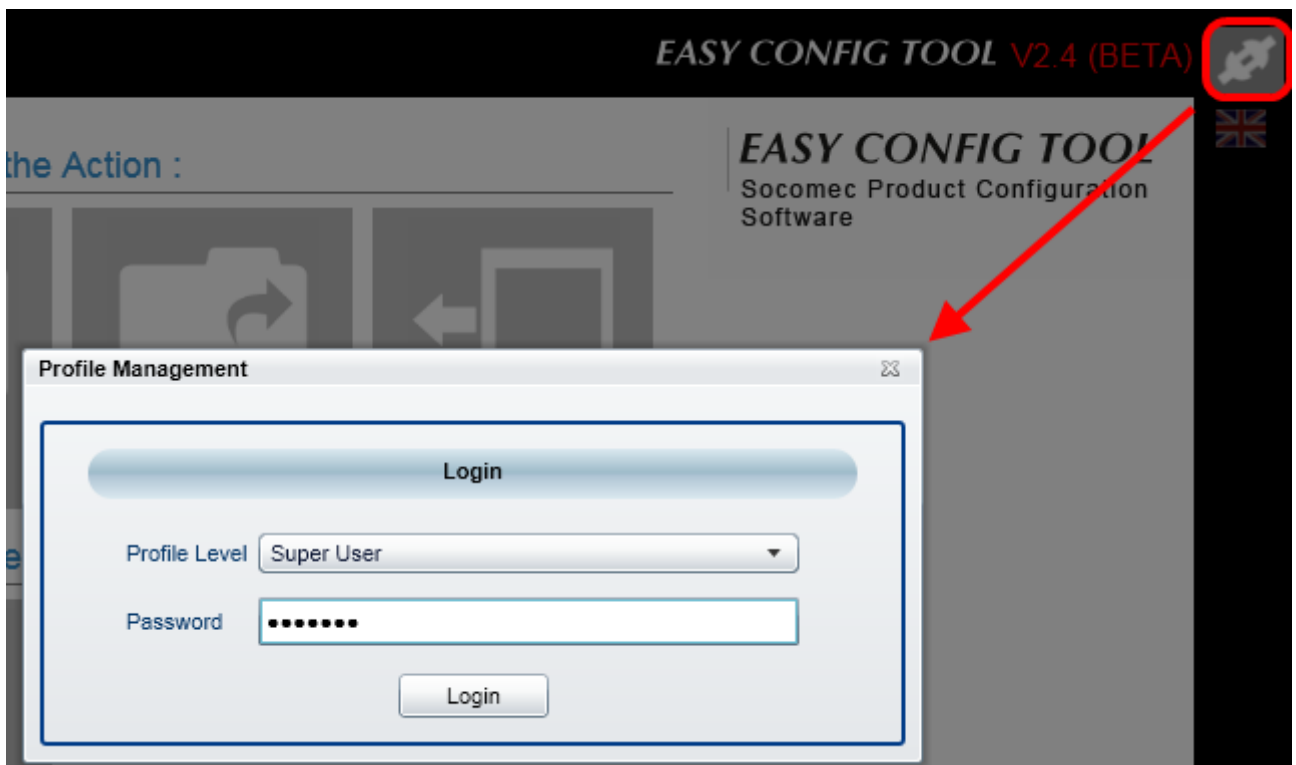

- Click "Get from device":

Get from Device

The DIRIS G-30 gateway module is automatically detected by Easy Config (if not, try disconnecting/reconnecting the cable and clicking "Refresh USB devices").

- Click "Connect to device":
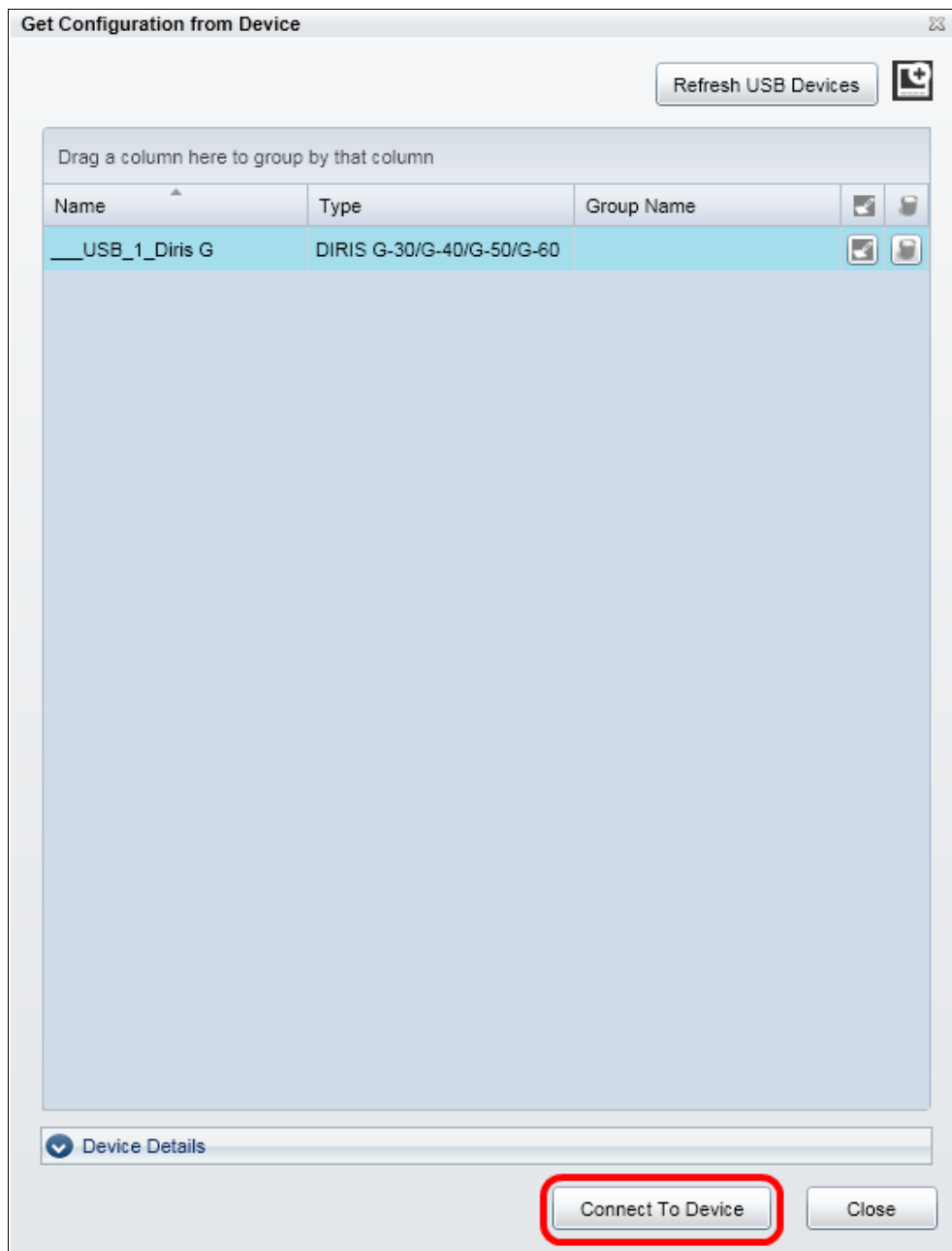
- Go to the "Device detection" tab and click "New discovery":

- Wait for the end of the process. The communication bus is being auto-scanned. This takes around 3 minutes:

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While the bus is being scanned, the DIRIS G-30 gateway scans all the communication bus addresses and finds all the connected slaves. Easy Config then shows all those with a unique address in the "Detected Running Devices" list, and all those with an address conflict in the "Detected Conflicted Devices" list.

- At the end of the scan, the list of slaves appears. You have to change the JBUS/MODBUS addresses of conflicting slaves:

| IP Address | Date / Time | E-mail | Alarms | RF | I/O | Device Detection | Final Action |

DIRIS G-30/G-40/ G-50/G-60

Devices Discovery

This process will detect devices plugged behind gateway. It will take 3 minutes.

New Discovery

Detected Running Devices

Name	Type	Address	Device ID	Identification
Product_6	DIRIS Digiware U-30	6	DABC73	Blink

Detected Conflicted Devices

Device ID	Address
E021BE	5
0175D2	5
EEBF71	5

Send New Addresses

- Select each conflicting slave and changed its address to a number between 2 and 247, then click "Send New Addresses":

You cannot assign address JBUS/MODBUS number 1 to a slave, because this address is reserved for the DIRIS G-30 gateway.

In our example, module U-30 is already at address 6, so you cannot assign address 6 to any of the three I-35 modules in conflict. As such, in our example we randomly choose 2,3 and 4.

The "Device ID" column shows us which product is selected. The "Device ID" is written on the front of every product.

- Wait until the change of addresses is successfully applied to all slaves. This takes 2 to 3 minutes. Then check that all the slaves are included in the "Detected Running Devices" list:

To identify slaves, make the product of your choice flash by clicking the "Blink" button.

2) Configuring the DIRIS G-30 gateway via the USB cable
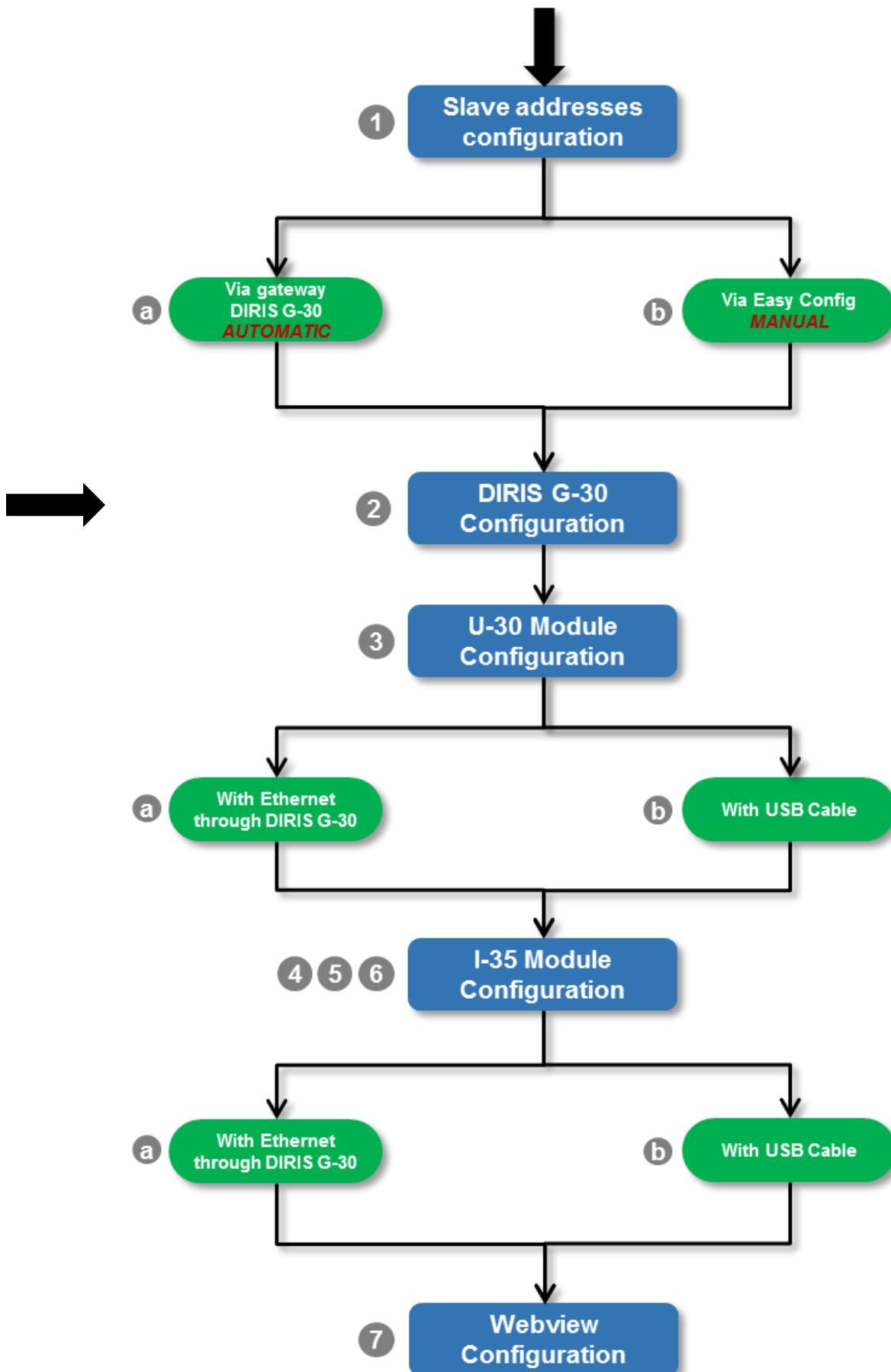
1 Slave addresses configuration

a Via gateway DIRIS G-30 *AUTOMATIC*

b Via Easy Config *MANUAL*

2 DIRIS G-30 Configuration

3 U-30 Module Configuration

a With Ethernet through DIRIS G-30

b With USB Cable

4 5 6 I-35 Module Configuration

a With Ethernet through DIRIS G-30

b With USB Cable

7 Webview Configuration

- Connect the micro USB cable between the DIRIS G-30 and the PC

- Open Easy Config

- Switch profiles in Easy Config and go to the "Super User" profile (default password: sOcOmec)
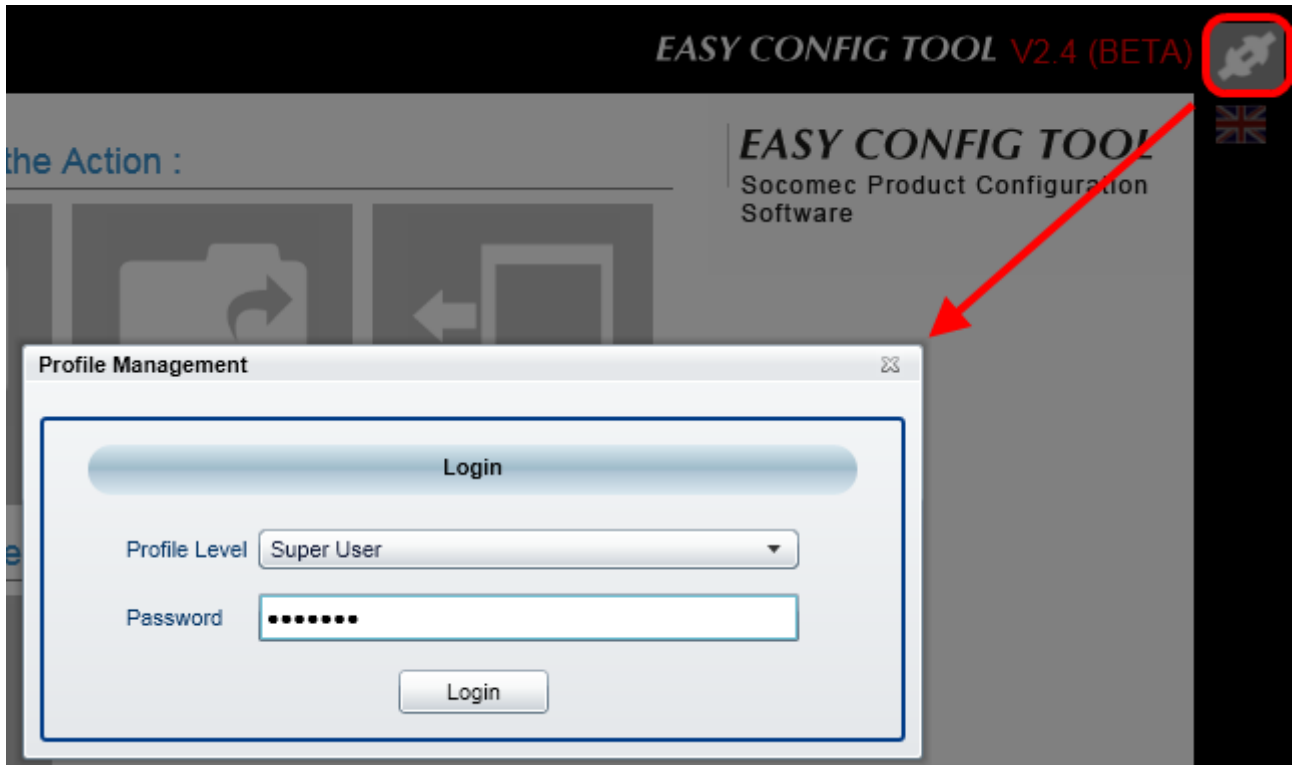
- Click "Get from device":

The DIRIS G-30 gateway module is automatically detected by Easy Config (if not, try disconnecting/reconnecting the cable and clicking "Refresh USB devices").

- Click "Connect to device":
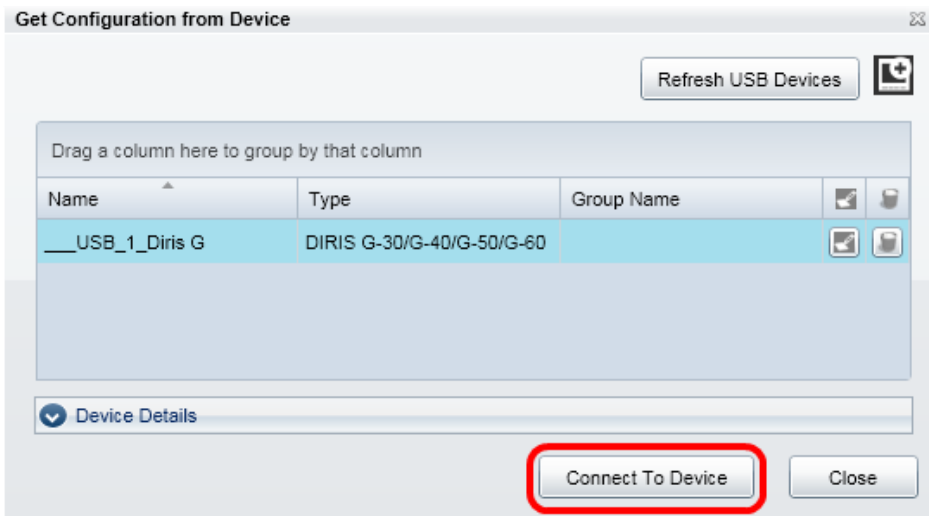
- On the "IP address" tab, change the TCP/IP settings (IP address, subnet mask and gateway), based on the properties of your local network.
  You can usually get this information from your IT department.

Example, using the following company network :
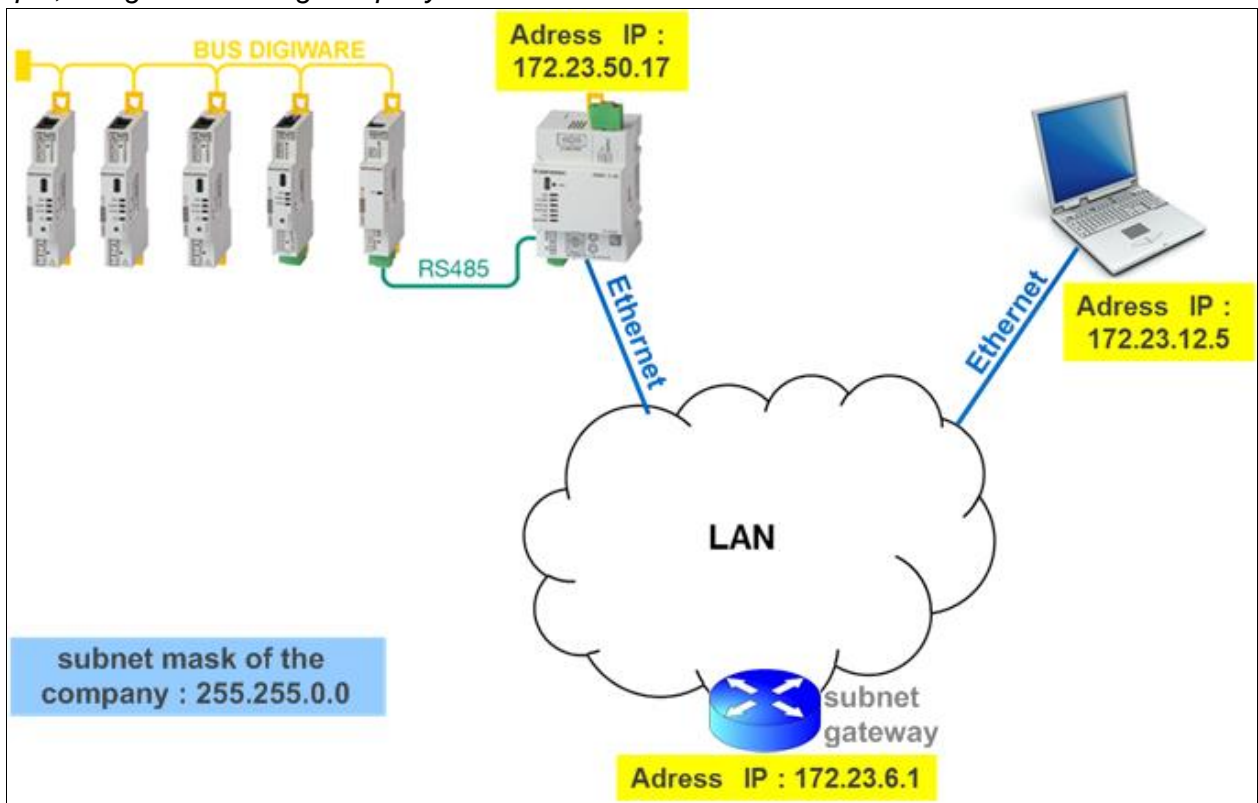
In this example, the company network has the subnet mask 255.255.0.0. So that computers can communicate with the DIRIS G-30 gateway, it must be in the same subnet with the same mask.

| | IP Address | Date / Time | E-mail | Alarms | RF | I/O | Device Detection | Final Action |

DIRIS G-30/G-40/ G-50/G-60

Product Identification

| Name | DIRIS G |
| Description | SOCOMEC |

Send to Device

Identification	00174AB8048A903
Type	G50-G60
Firmware Version	1.1

IP Configuration

DHCP	No
IP Address	172.23.50.17
Subnet Mask	255.255.0.0
Gateway	172.23.6.1
Address	1
Baud Rate	38400
Stop Bits	1
Parity	None
Time Out	250 ms

Setting "DHCP" to "Yes" automatically assigns an IP address to the gateway, instead of you having to enter it manually. This method only works if there is a DHCP server on the network. We recommend disabling this function and entering the TCP/IP parameters manually.

Despite having a MODBUS slave address, the G-30 gateway is the master on the RS485 bus. We recommend not changing its address from the default, which is "1".

- On the "Date/time", click on button "Synchronise with date/time of PC" so that the gateway is set to the correct date and time:
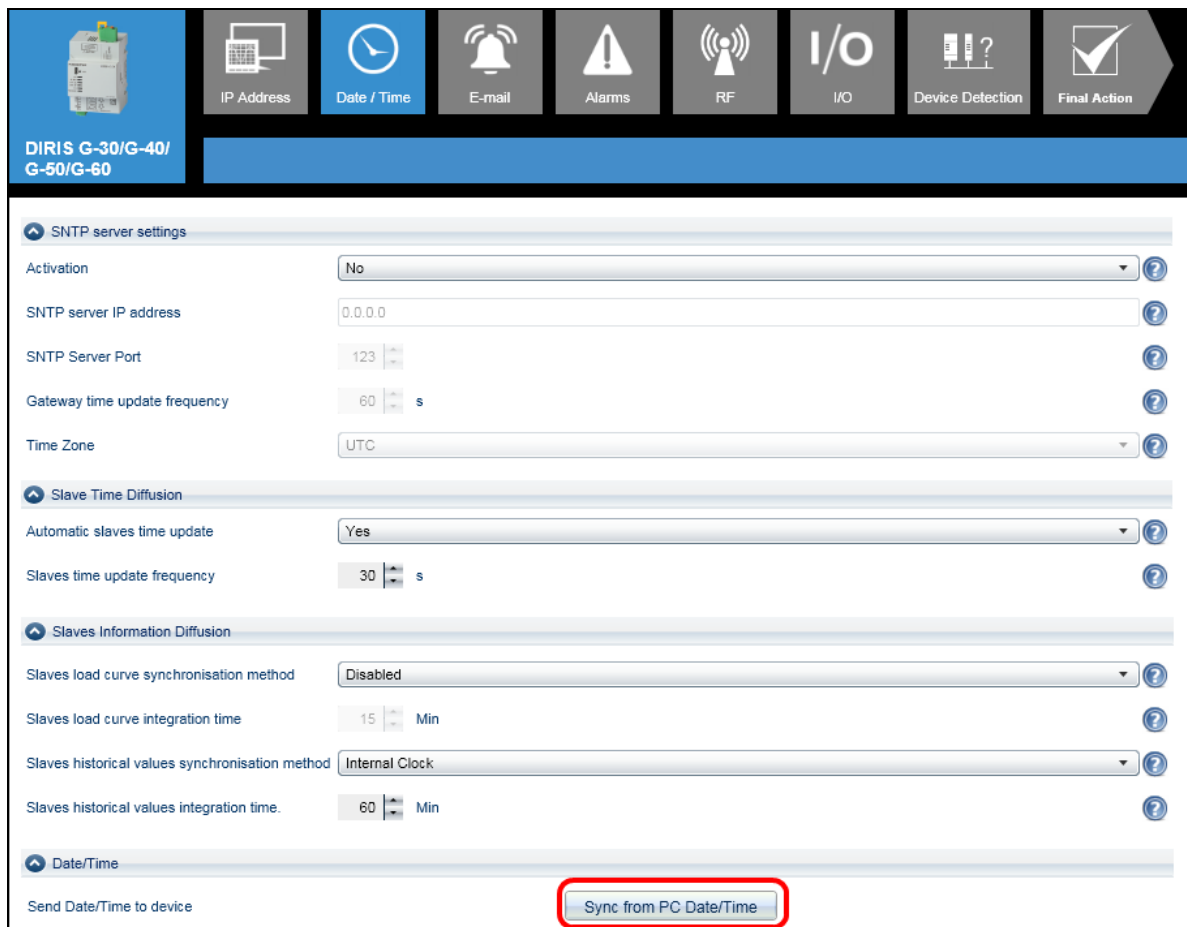
- Apply the setup changes to the product by clicking "Final action" then "Send to device":

- Make sure G-30 USB is selected in the list then click "Connect to device":
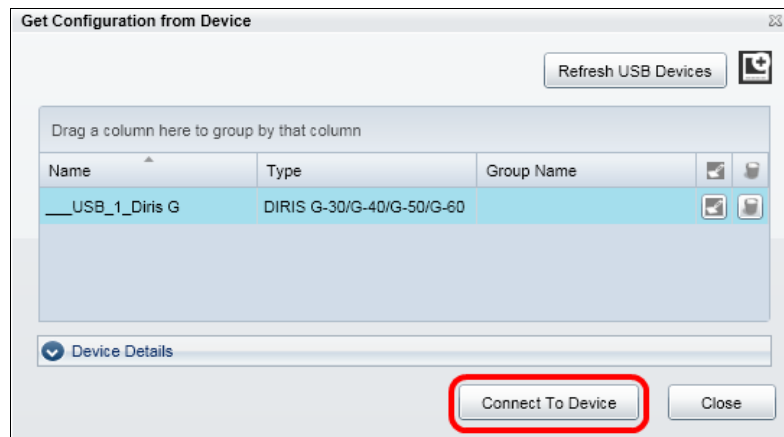
- By default, Easy Config only checks those settings that were changed. This avoids having to resend the entire configuration to the device:
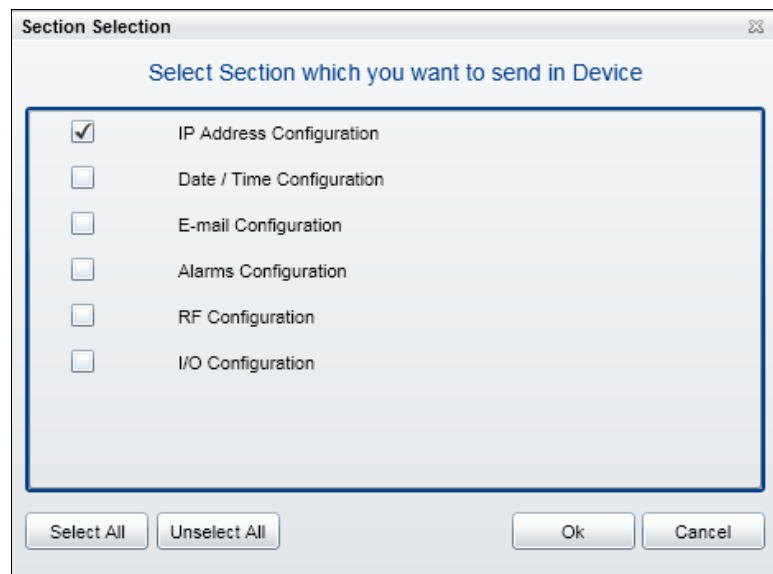
- A warning message appears, showing that the operation completed successfully:
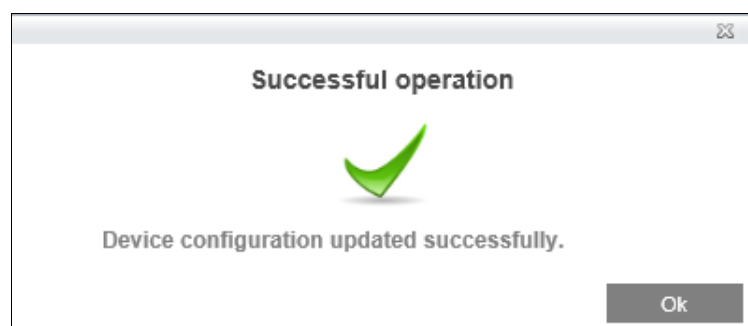
- Disconnect the micro USB cable.

- Connect an Ethernet cable from the DIRIS G-30 gateway to your company's local area network or directly to your PC (if the PC has its TCP/IP settings configured correctly).

3) Configuring the DIGIWARE U-30 module

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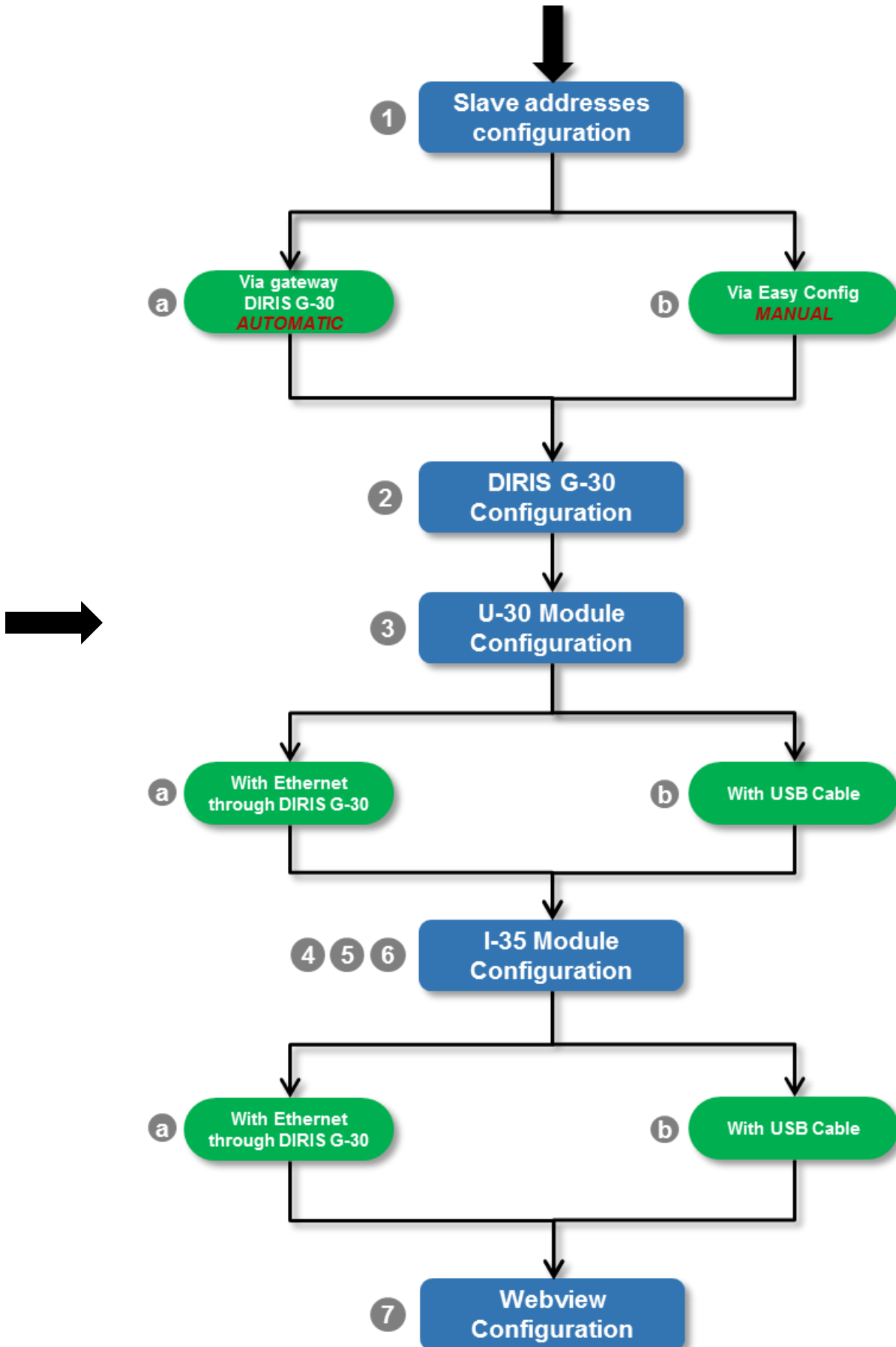
> *We recommend that you first configure the U voltage module before the I modules, as the module U setup is applied to every I module on the DIGIWARE bus.*

> *Module U-30 must be placed on the DIGIWARE bus first, i.e. just after C-31 and just before current modules I-xx*

- Go back to the Easy Config home screen (⊞) and check you are still logged in to the super user profile.

- Click "Get from device":

Get from Device

a. Via the Ethernet network:

The list of the slaves detected before by gateway G-30 on its serial communication bus was automatically added to the list of products in Easy Config.

- Choose DIRIS Digiware U-30 from the list and click "Connect to device":

Name	Type	Group Name		
Product_2(E021BE)	DIRIS Digiware I-35	Diris G(00174AB8048A903)		
Product_3(0175D2)	DIRIS Digiware I-35	Diris G(00174AB8048A903)		
Product_4(EEBF71)	DIRIS Digiware I-35	Diris G(00174AB8048A903)		
Product_6(DABC73)	DIRIS Digiware U-30	Diris G(00174AB8048A903)		

Corresponds to the Net ID, unique identification number shown on front face of each products
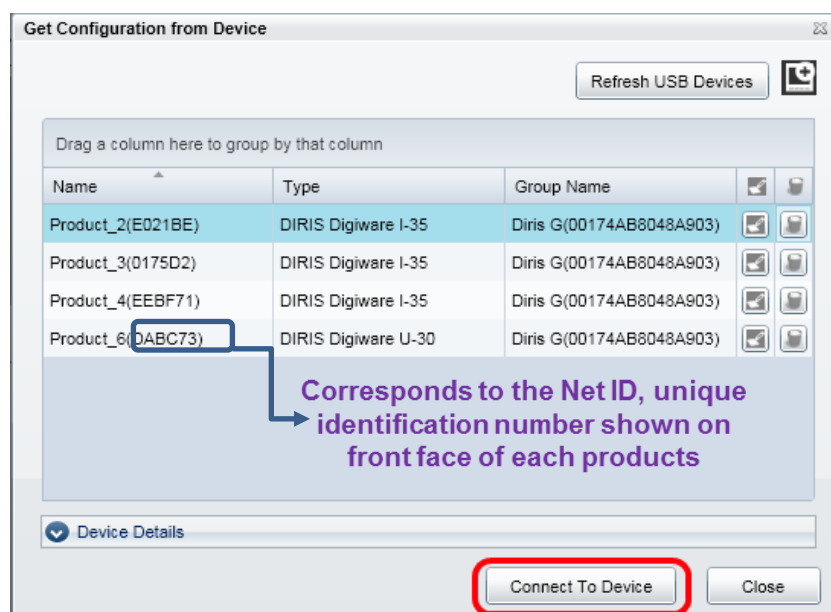
The series of characters in brackets in the Name column is the product's "Network ID". This is a unique ID written on the front of the module.

b. Via micro USB cable:

Module U-30 is automatically detected by Easy Config (if not, try disconnecting/reconnecting the cable and clicking "Refresh USB devices").

- Click "Connect to device":
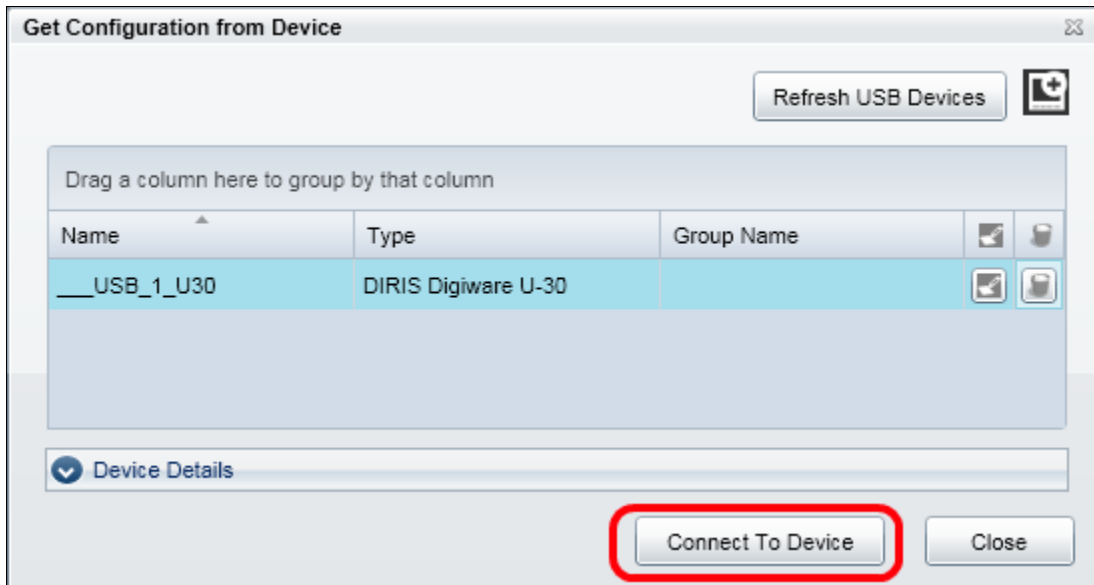
After configuring the DIGIWARE U-30 module for a) and b)

- On the "Network" tab, configure the network type at the point where the voltage is measured with voltage module U-30, as well as the nominal voltage of the measured network:

1P + N: Single-phase network
2P: Two-phase network
2P + N: Two-phase network + neutral conductor
3P: Three-phase network
3P + N: Three-phase network + neutral driver

The nominal voltage of the network is typically 400V for a three-phase or two-phase network and 230V for single-phase network

Example setup with one voltage measurement on a 4-wire network:
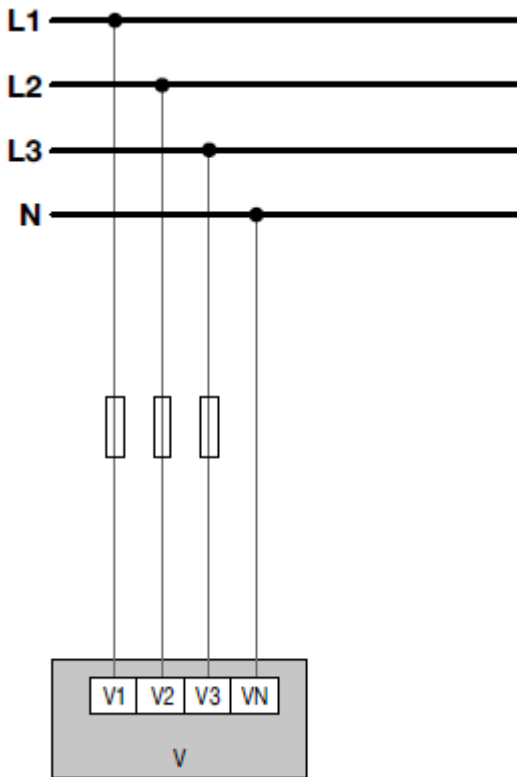
To view the network configuration automatically detected by the product, click "Refresh". Please remember that this automatic detection only works if there is voltage on the network and if the grounding plug is connected to module U-30.

- Apply the setup changes to the product by clicking "Final action" then "Send to device"
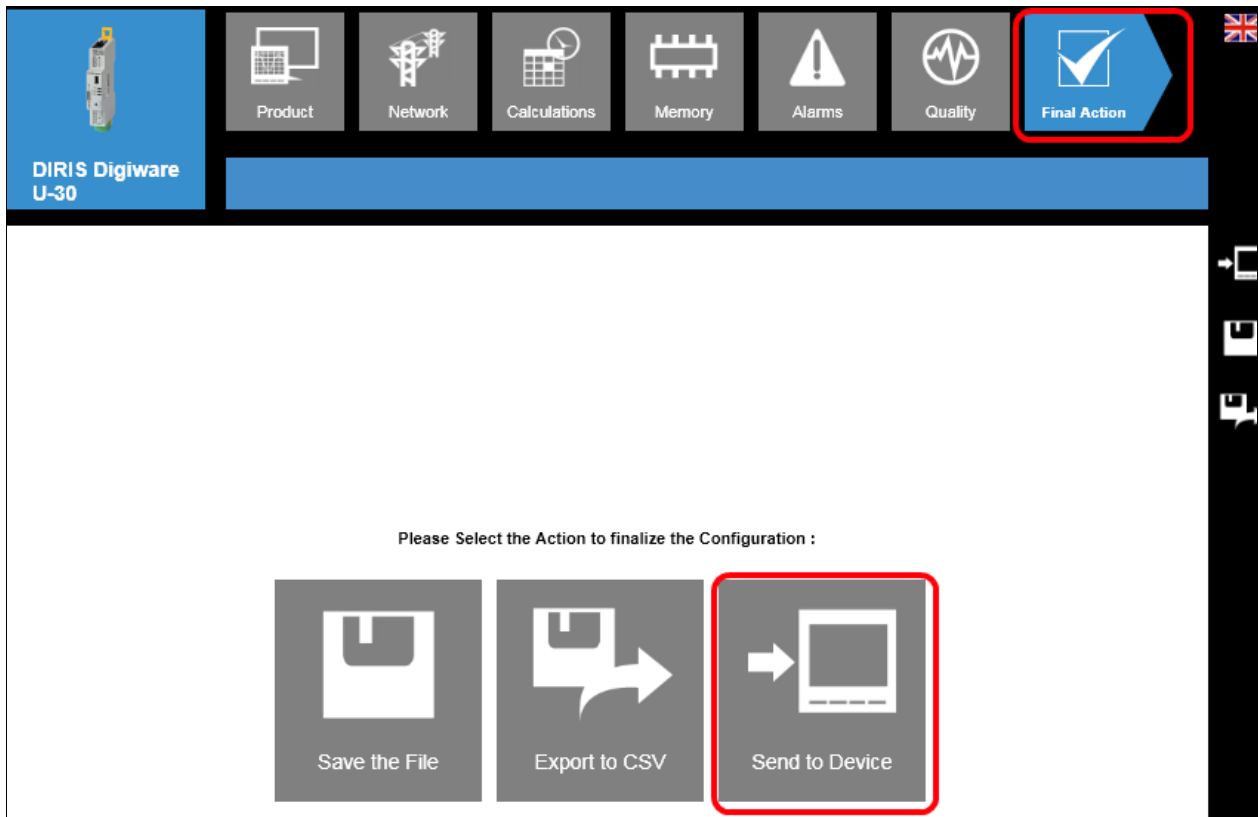
- Make sure U-30 is selected in the list then click "Connect to device":
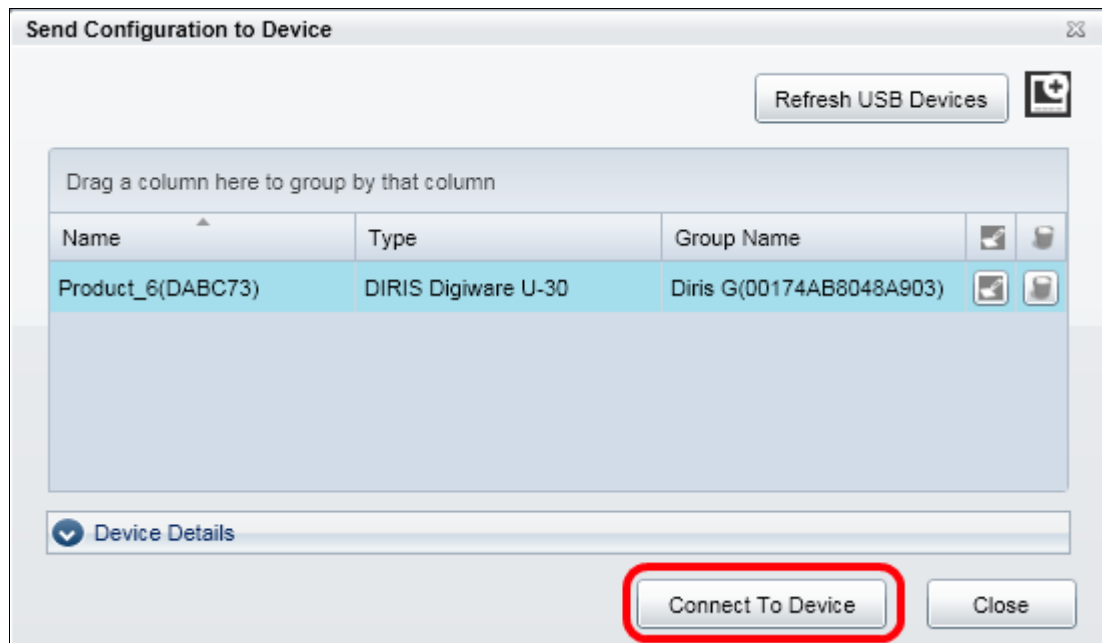
- By default, Easy Config only checks those settings that were changed. This avoids having to resend the entire configuration to the device (see also the coloured dashes above the squares):
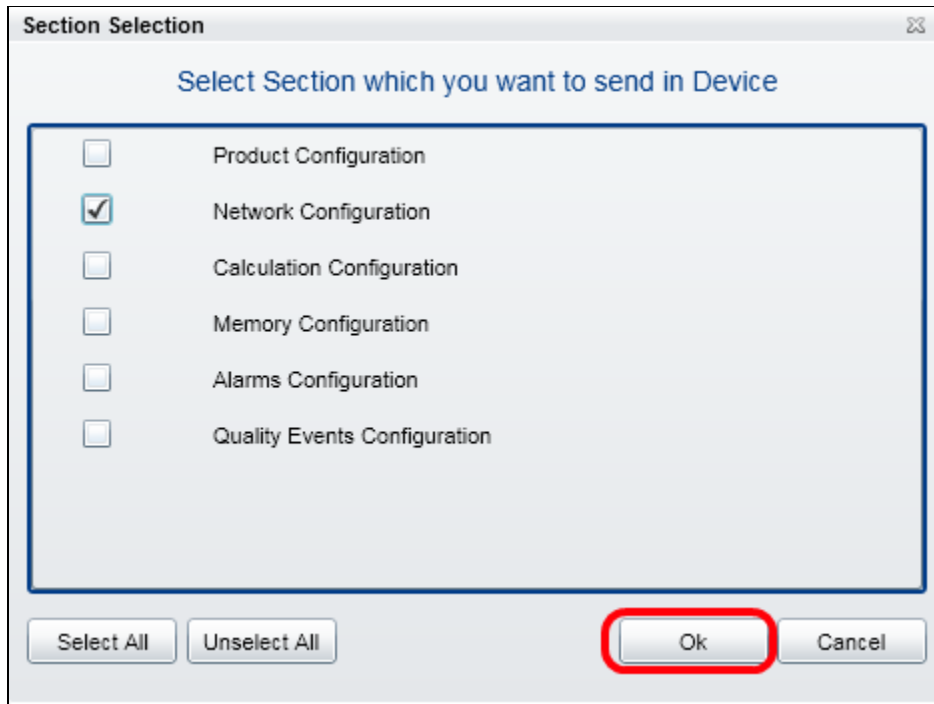
- The U-30 module setup is applied to all I-xx current modules connected at the back of the same DIGIWARE bus. With a unique voltage reading for all I-xx modules on the same DIGIWARE bus, this is how it should be:
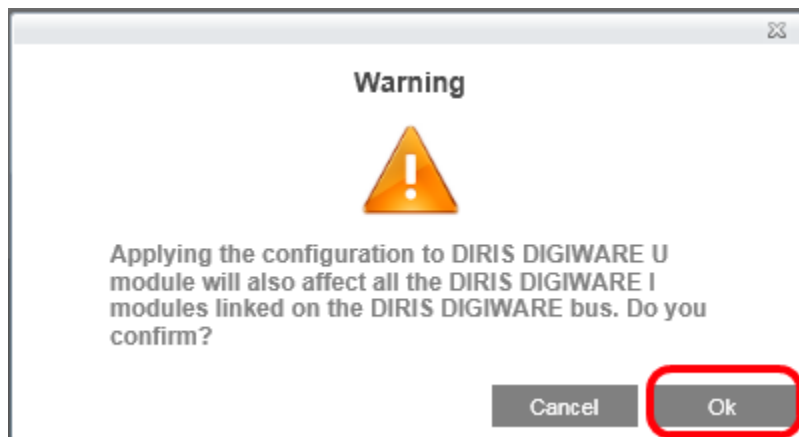
- A warning message appears, showing that the operation completed successfully:
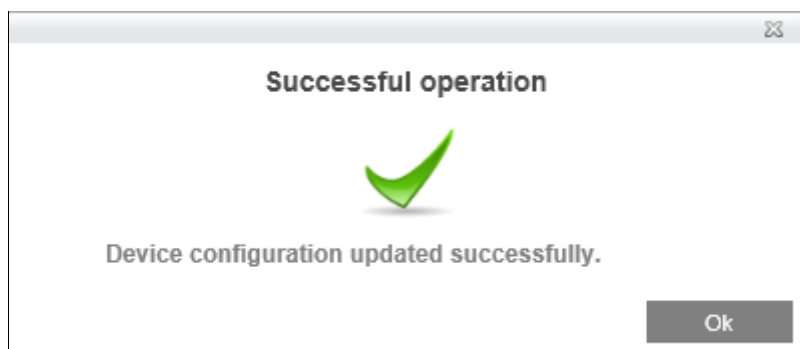
4) Configuring the first DIGIWARE I-35 module via the Ethernet network
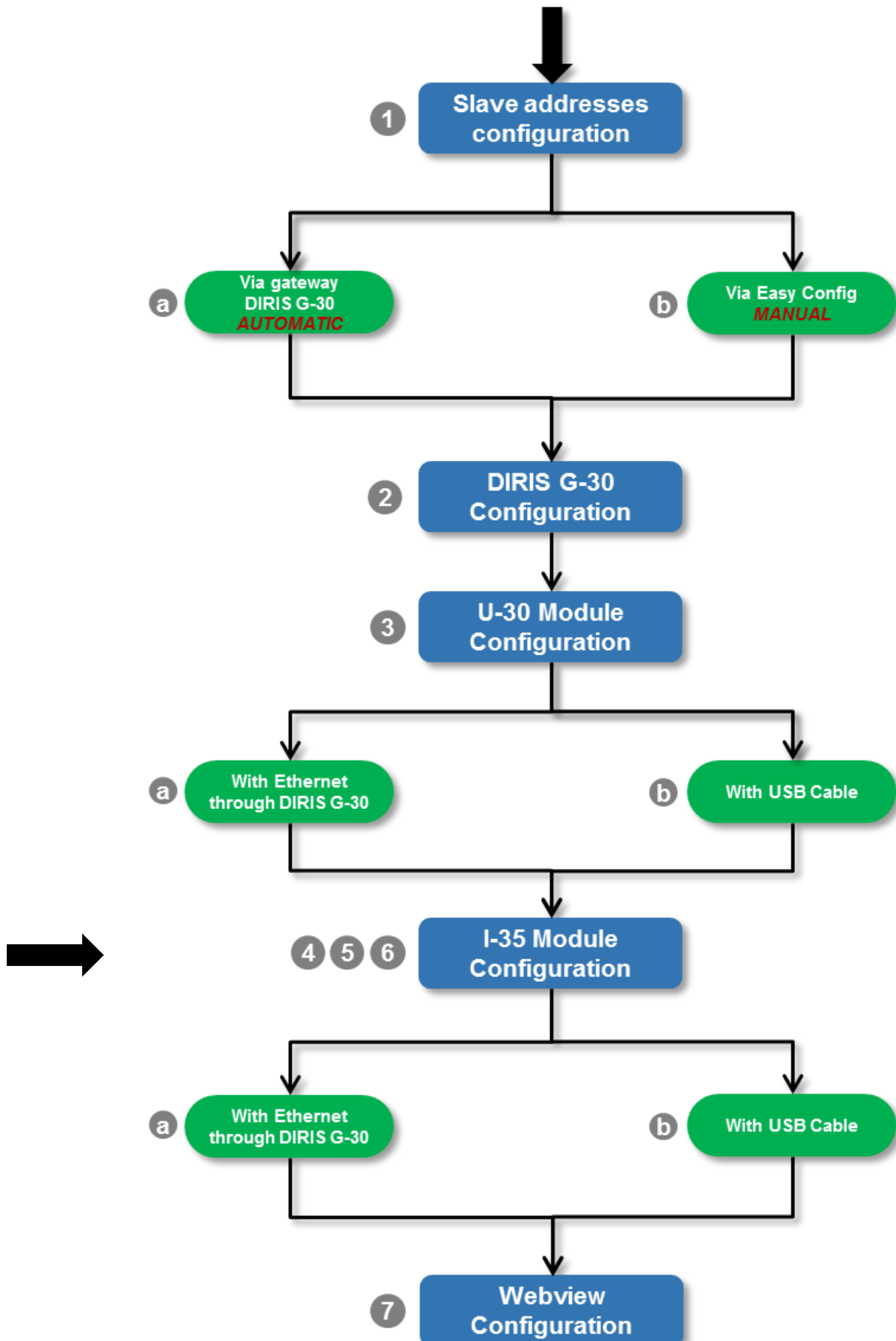
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                        ┌─────────────────────┐
                   ①    │  Slave addresses    │
                        │   configuration     │
                        └─────────────────────┘

        ┌──────────────────────┐         ┌──────────────────────┐
   ⓐ    │   Via gateway        │    ⓑ    │   Via Easy Config    │
        │   DIRIS G-30         │         │   MANUAL             │
        │   AUTOMATIC          │         └──────────────────────┘
        └──────────────────────┘

                        ┌─────────────────────┐
                   ②    │    DIRIS G-30       │
                        │   Configuration     │
                        └─────────────────────┘

                        ┌─────────────────────┐
                   ③    │   U-30 Module       │
                        │   Configuration     │
                        └─────────────────────┘

        ┌──────────────────────┐         ┌──────────────────────┐
   ⓐ    │  With Ethernet       │    ⓑ    │  With USB Cable      │
        │  through DIRIS G-30  │         └──────────────────────┘
        └──────────────────────┘

                        ┌─────────────────────┐
             ④ ⑤ ⑥     │   I-35 Module       │
                        │   Configuration     │
                        └─────────────────────┘

        ┌──────────────────────┐         ┌──────────────────────┐
   ⓐ    │  With Ethernet       │    ⓑ    │  With USB Cable      │
        │  through DIRIS G-30  │         └──────────────────────┘
        └──────────────────────┘

                        ┌─────────────────────┐
                   ⑦    │    Webview          │
                        │   Configuration     │
                        └─────────────────────┘
```

- Go back to the Easy Config home screen ( ) and check you are still logged in to the super user profile.

- Click "Get from device":

a. <mark>Via the Ethernet network:</mark>

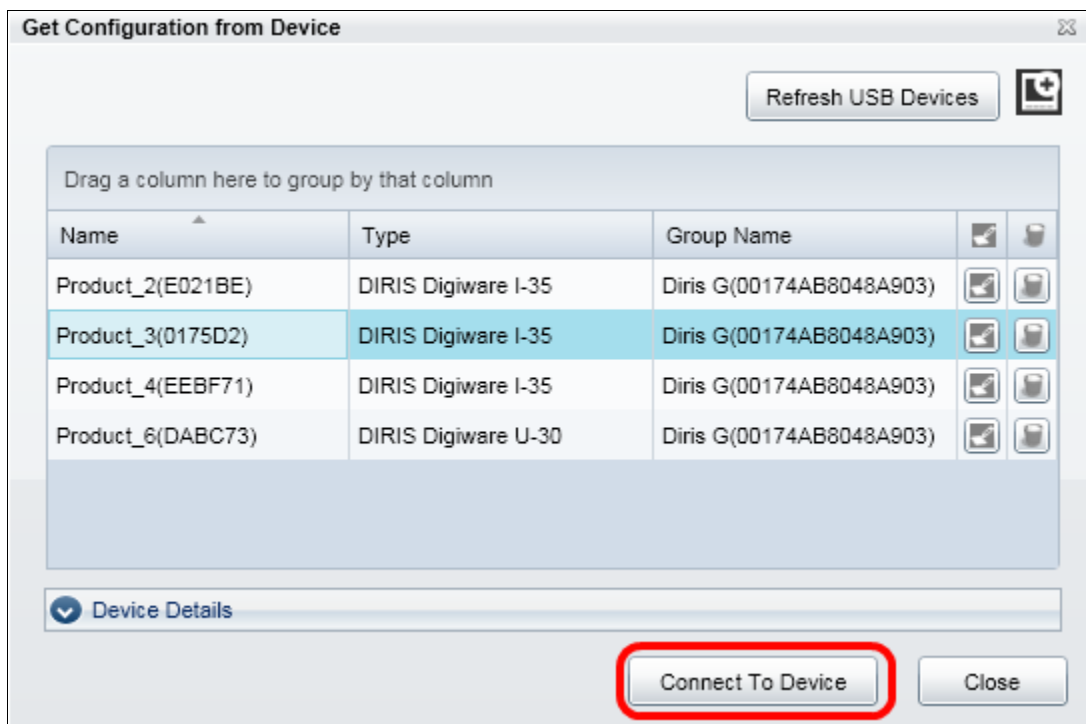The list of the slaves detected before by gateway G-30 on its serial communication bus was automatically added to the list of products in Easy Config.
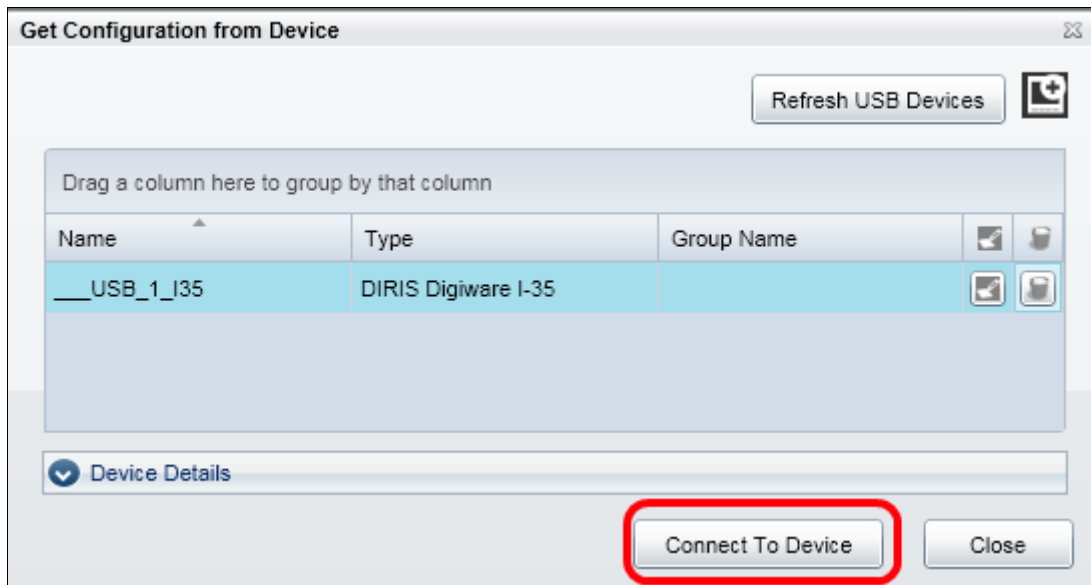
- Make sure the first I-35 is selected then click "Connect to device" (check the network ID of the module in question):

b. Via micro USB cable:

Module I-35 is automatically detected by Easy Config (if not, try disconnecting/reconnecting the cable and clicking "Refresh USB devices").

- Click "Connect to device":
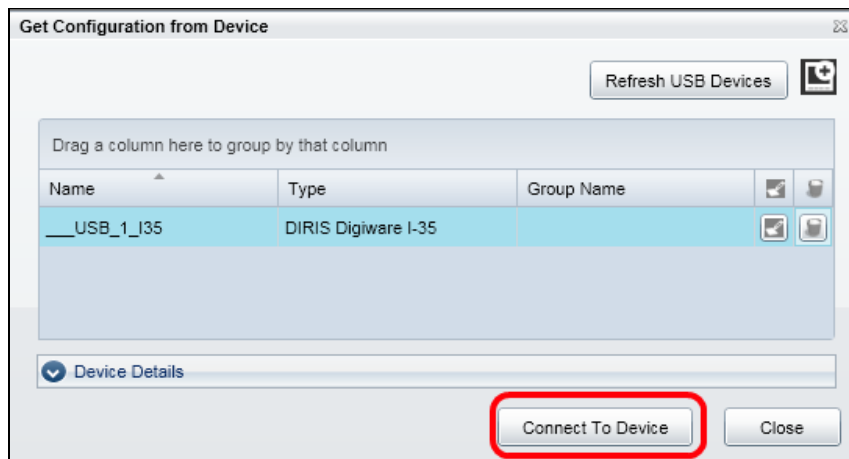
After configuring the DIGIWARE I-35 module for a) and b)

- On the "Network" tab, check that module I-35 received all the network setup information sent by voltage module U-30:
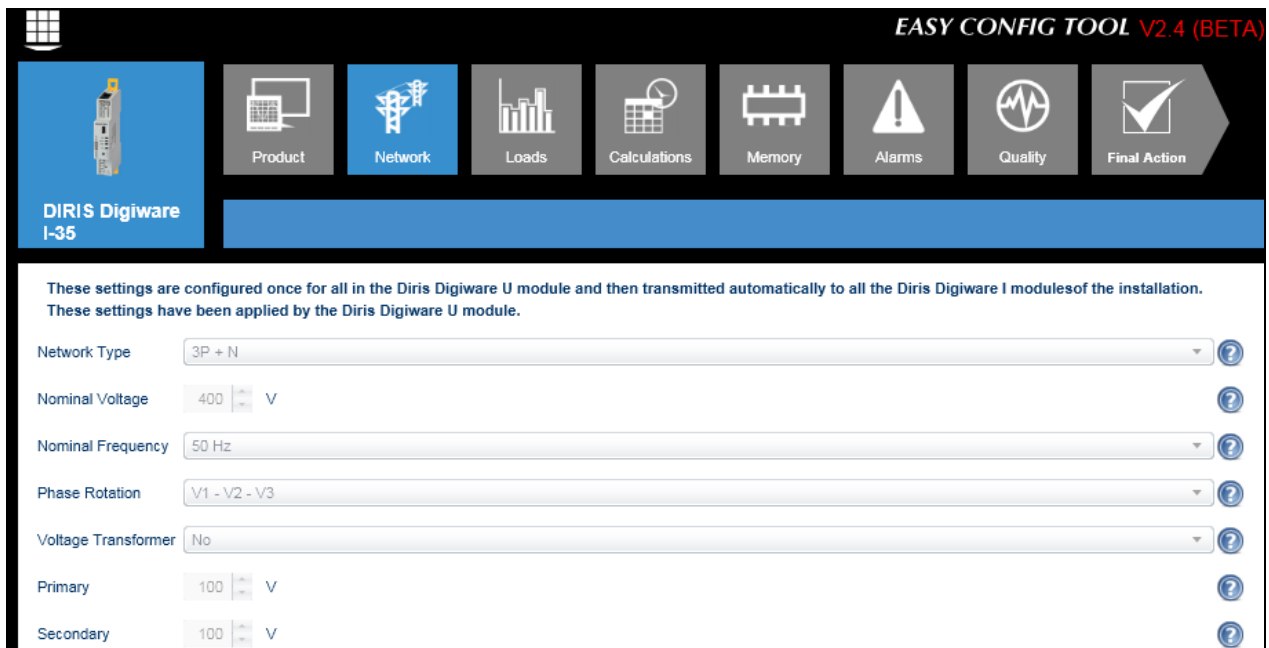
- On the "Loads" tab, make the following settings:
    - The number of loads measured by module I-35
    - For each load, the type of measured load
    - For each load, the phase(s) on which the sensor(s) are connected
    - For each sensor, you may need to adjust the direction of current in case of a wiring fault

> *The maximum number of loads for an I-3x current module is 3, because there are 3 sensor inputs on this module.*

> *The measured load type can be:*
> *- A single-phase load measured by 1 sensor (1P + N - 1CT)*
> *- A three-phase load without unbalanced neutral measured by 2 sensors (3P - 2CT), with the 3rd current derived from a vector sum*
> *- A three-phase load with or without unbalanced neutral measured by 3 sensors (3P - 3CT or 3P + N - 3CT)*
> *- A three-phase balanced load with or without neutral measured by 1 sensor (3P - 1CT or 3P + N - 1CT)*

> *For a balanced load measured by a single sensor you can connect this sensor to any phase*

> *The size of the sensor is always detected automatically and it is not possible to change it. The only instance in which you will have to manually apply this value is if you are using an adjusting sensor. In this case, you must send the rated current to the current transformer primary upstream of the adjusting sensor.*

- Example configuration with a DIGIWARE I-35 module used to measure:
    - An air conditioning three-phase balanced load, with a nominal current of 60A per phase
    - A lighting single-phase load, on phase 1, with a nominal current of 20A
    - A heating single-phase load, on phase 3, with a nominal current of 35A

- Result in Easy Config:

- Apply the setup changes to the product by clicking "Final action" then "Send to device"

- Make sure the first I-35 is selected then click "Connect to device" (check the network ID of the module in question):

- A warning message appears, showing that the operation completed successfully:
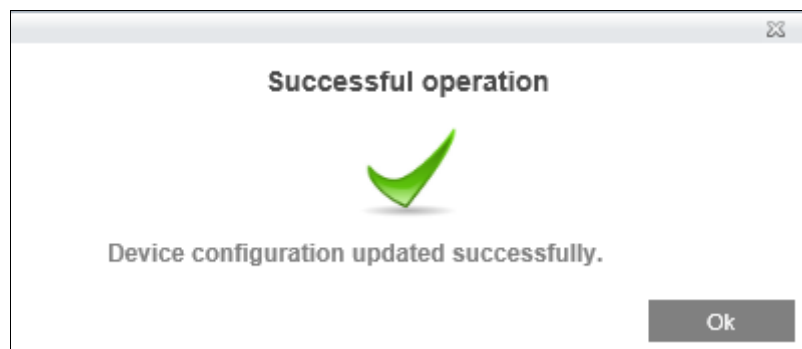
5) Configuring the second DIGIWARE I-35 module via the Ethernet network

- Go back to the Easy Config home screen () and check you are still logged in to the super user profile.

- Click "Get from device":

a. Via the Ethernet network:

The list of the slaves detected before by gateway G-30 on its serial communication bus was automatically added to the list of products in Easy Config.

- Make sure the second I-35 is selected then click "Connect to device" (check the network ID of the module in question):

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   b. Via micro USB cable:

Module I-35 is automatically detected by Easy Config (if not, try disconnecting/reconnecting the cable and clicking "Refresh USB devices").

- Click "Connect to device":

- To set up module I-35, please see section 4.

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6) Configuring the third DIGIWARE I-35 module via the Ethernet network

- Go back to the Easy Config home screen (⊞) and check you are still logged in to the super user/ profile.

- Click "Get from device":

Get from Device

a. Via the Ethernet network:

The list of the slaves detected before by gateway G-30 on its serial communication bus was automatically added to the list of products in Easy Config.

- Make sure the third I-35 is selected then click "Connect to device" (check the network ID of the module in question):

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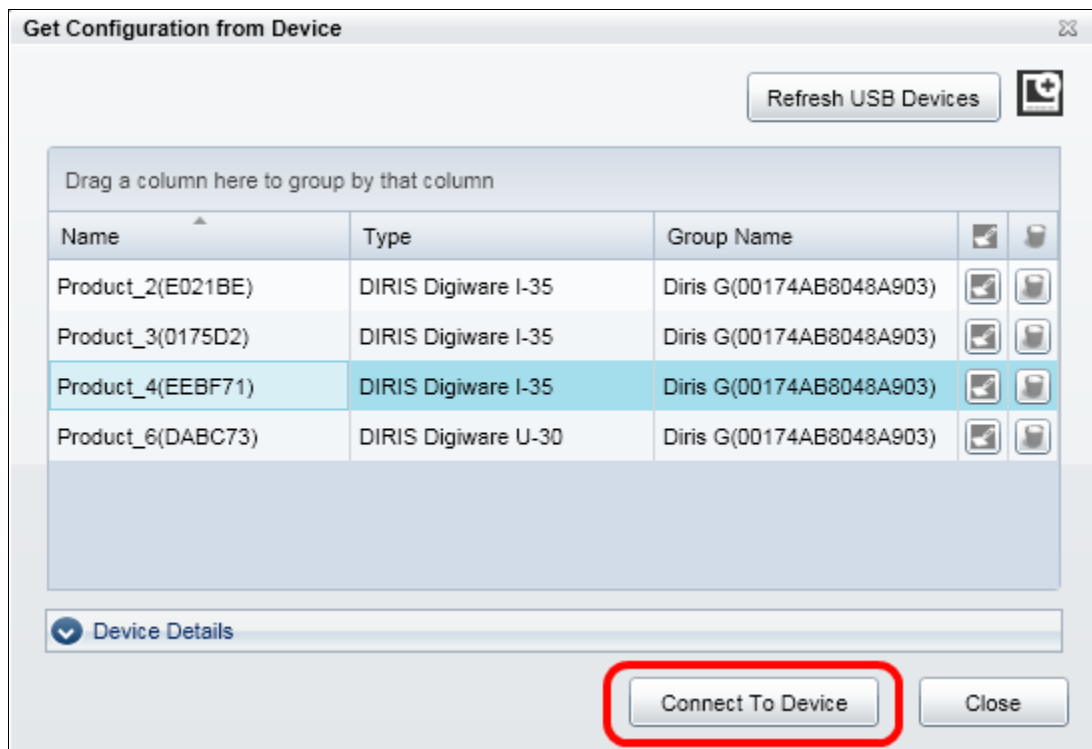
      b. <mark>**Via micro USB cable:**</mark>

Module I-35 is automatically detected by Easy Config (if not, try disconnecting/reconnecting the cable and clicking "Refresh USB devices").

- Click "Connect to device":
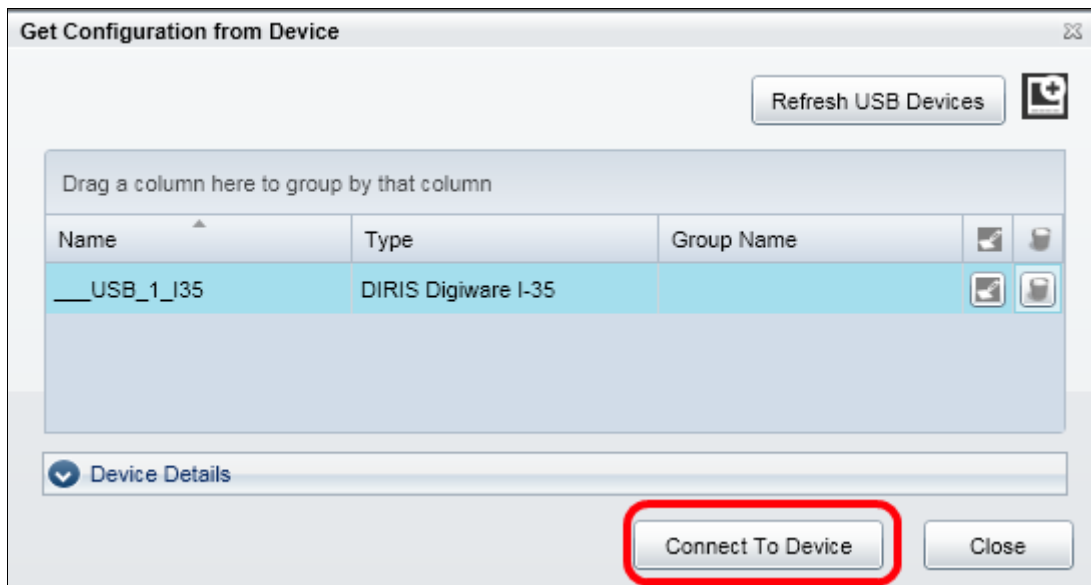
- To set up module I-35, please see section 4.

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7) Configuring Webview
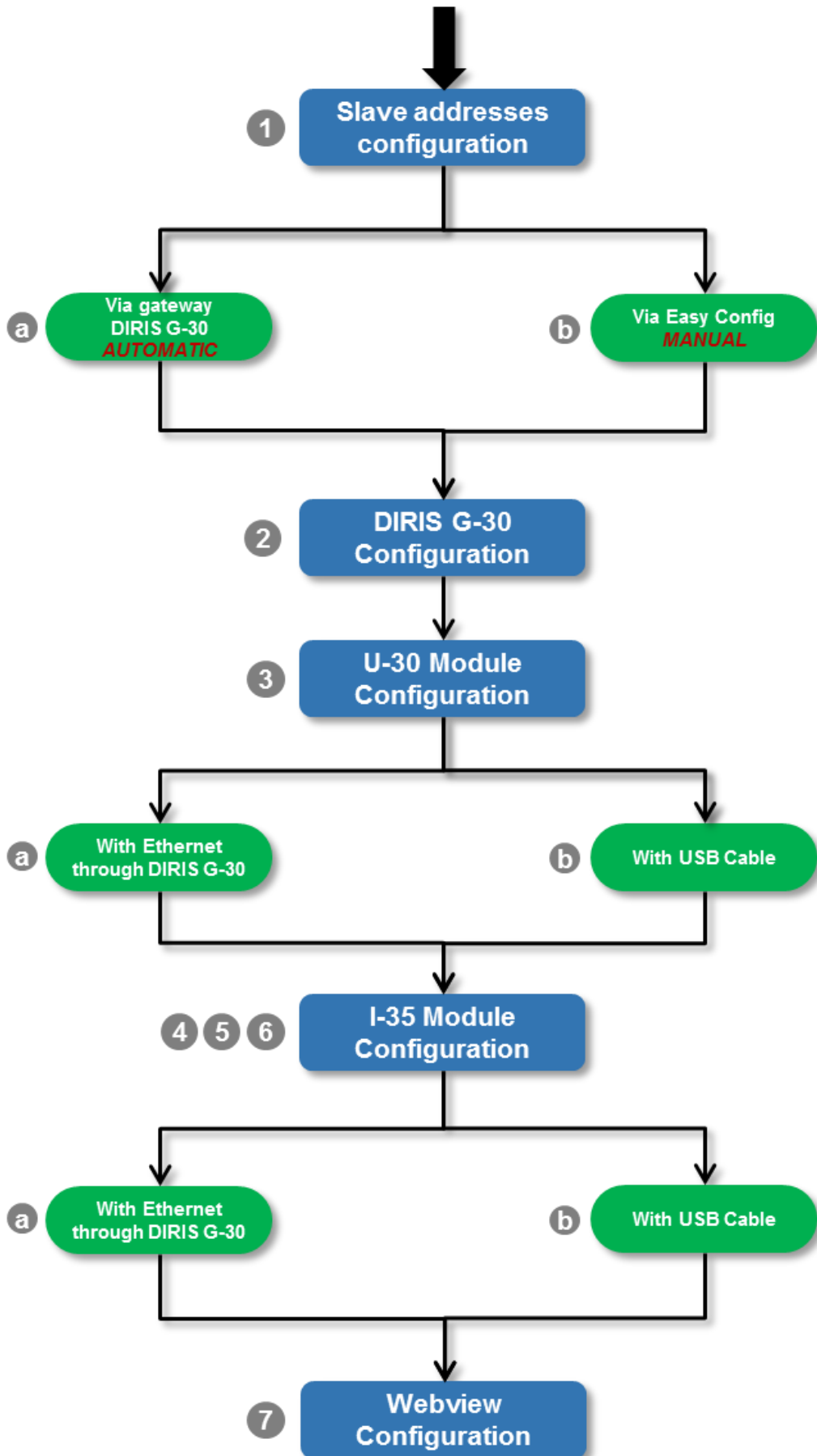
- Open your Internet browser and go to the IP address of the DIRIS G-30 gateway:

If the web page does not display correctly, check that your browser is a fairly recent version. It is best to use Internet Explorer, Firefox or Google Chrome.

- Log in to the "Admin" profile in Webview, the default password is "Admin":

- Go to "Equipment & hierarchies":

- Click "Read configuration" and click "Yes" to confirm read mode:
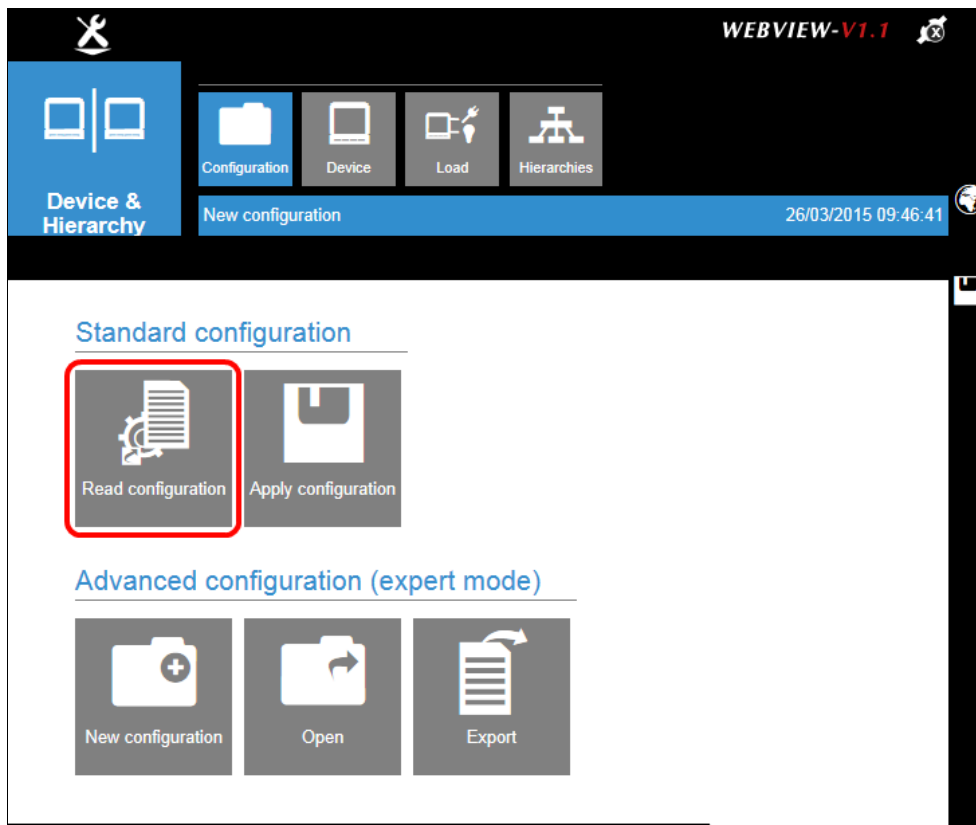
Opening the configuration to read will import into Webview the list of slaves previously found by the DIRIS G-30 gateway during the auto-scan/address process.

- Confirm the addition of new detected devices by clicking "Yes":
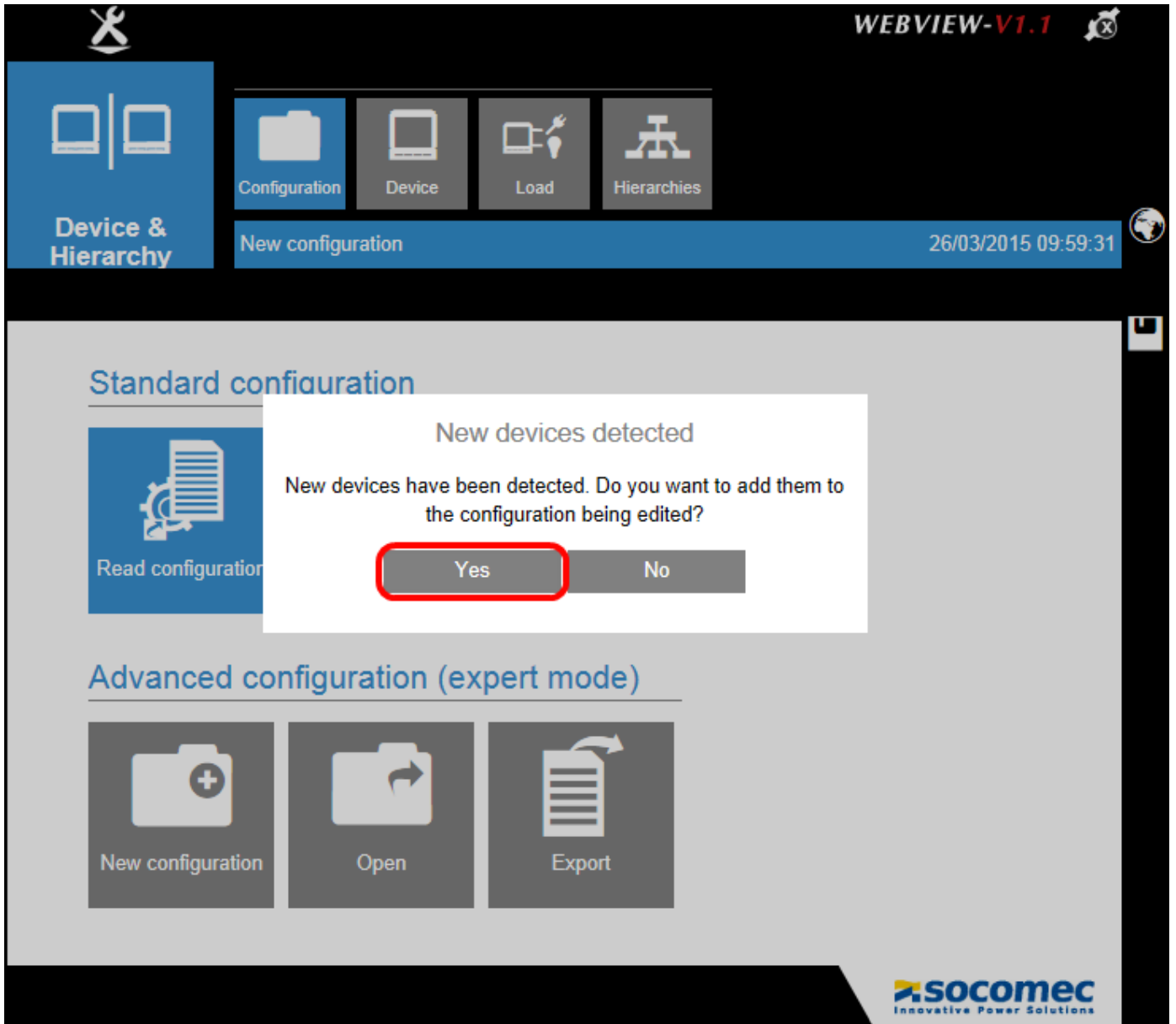
- Go to the "Equipment" tab, check that all the devices are on the list, then change the name of the products and add their location, if necessary.

Then confirm your changes:

- Go to the "Load" tab and check that all the loads configured in Easy Config are shown on this page.

  Check the name and use of each load and correct if necessary.
  Then confirm your changes:
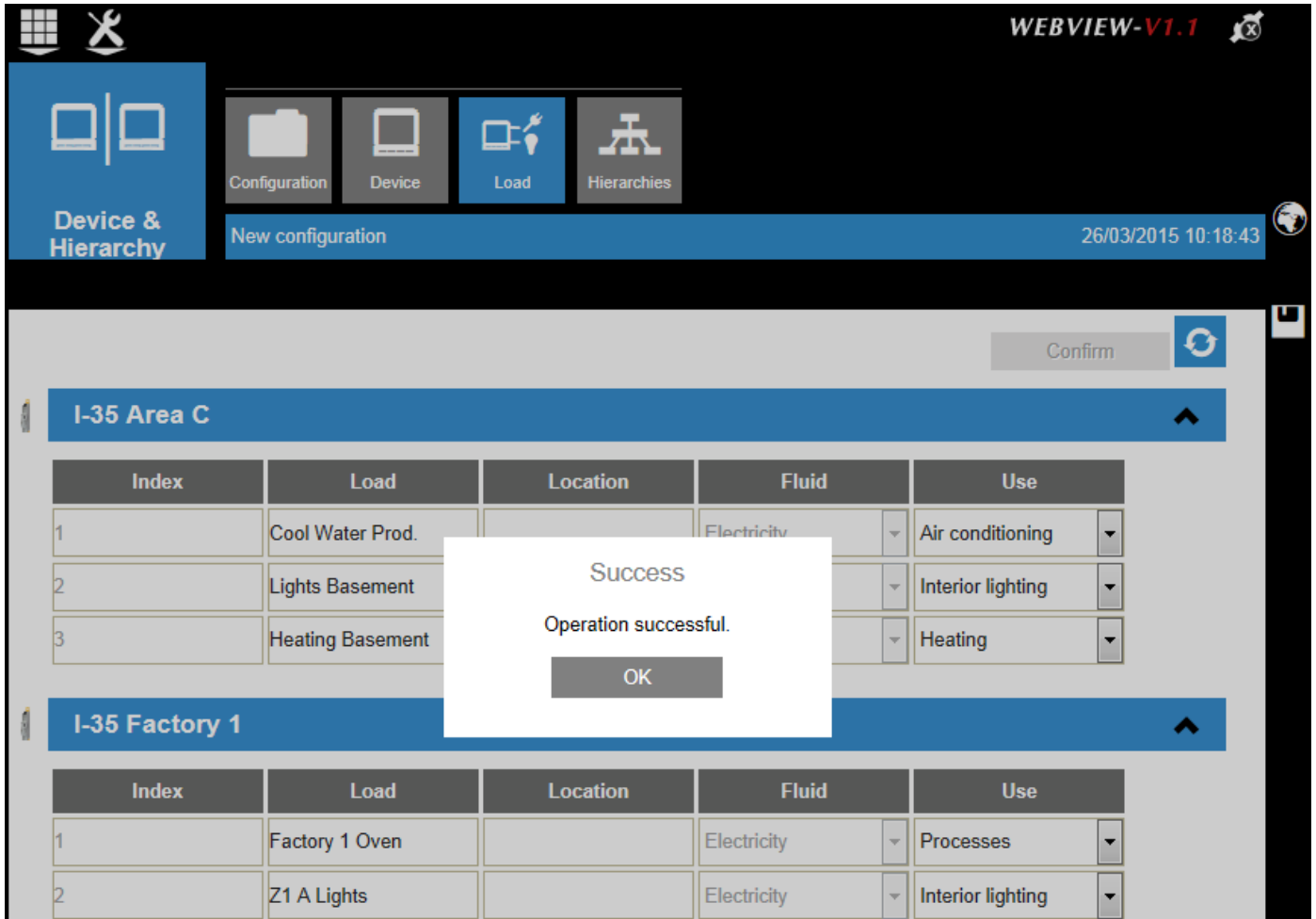
- Complete the Webview configuration using the save icon on the right of the page:

- Confirm by clicking "Yes". The following message should appear after a few seconds:

- Go back to the home screen (⊞) and go to "Devices". Scroll down the left-hand panel and check that all of your devices are there. Then check that all your loads are there:

You will not be able to see the U-30 module in the list of the devices because it is completely transparent. The U-30 module voltage information is automatically retrieved by all the I current modules current on the DIGIWARE bus.

- The setup is now complete.