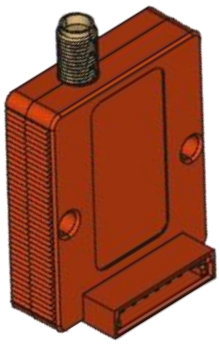
Dixell™ FRANCE



AirModBus

Radio transmitter & receiver for wireless Modbus communication

AirModBus is a wireless Modbus - LoRA communication gateway. It is available in 2 versions:

- Blue version, with RS485 connector and 8-28VDC power supply
- Orange and miniaturized version, with HotKey connector and self-powered by the controller.

These products offer robust, subscription-free communication, replacing the communication cable traditionally used between Dixell controllers and XWEB supervision.

With a 5dB antenna, the direct-line communication range is up to 5km. Even if this distance is reduced for in-building installation, the AirModBus will meet the most demanding refrigeration installation requirements.

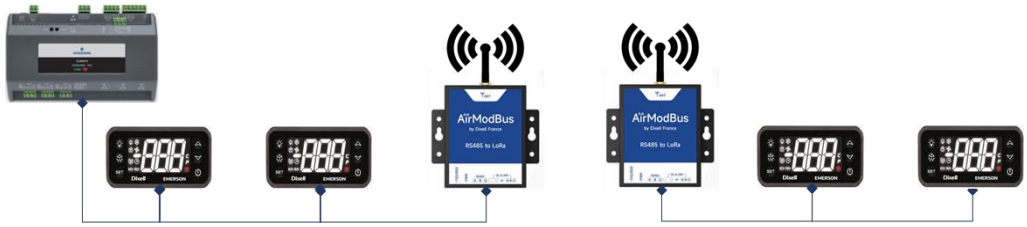
The modules use the latest generation of LoRA semiconductors dedicated to spectrum modulation to offer military-grade radio anti-interference capability thanks to its multiple detection operating mechanism.

AirModBus enables bidirectional communication adapted to the ModBus RTU protocol used by XWEB supervision. Signal propagation with AirModBus is transparent to the installation. This guarantees compatibility with all controllers already working with XWEB supervision, while introducing negligible latency.

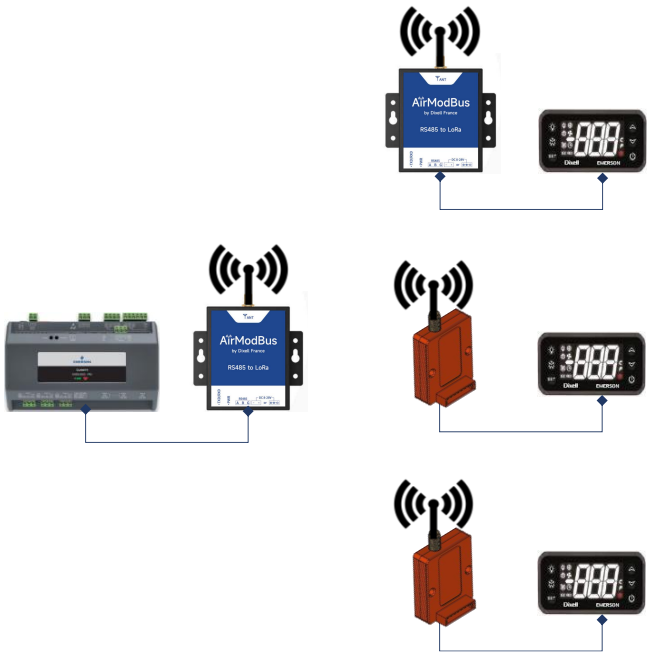
What if the controller has both an RS485 port and a HotKey port? In this case, you can use either the blue AirModBus on the RS485 port or the orange AirModBus on the HotKey port. Do not use both ports at the same time.

1. Use cases

Type 1 – Bridge installation

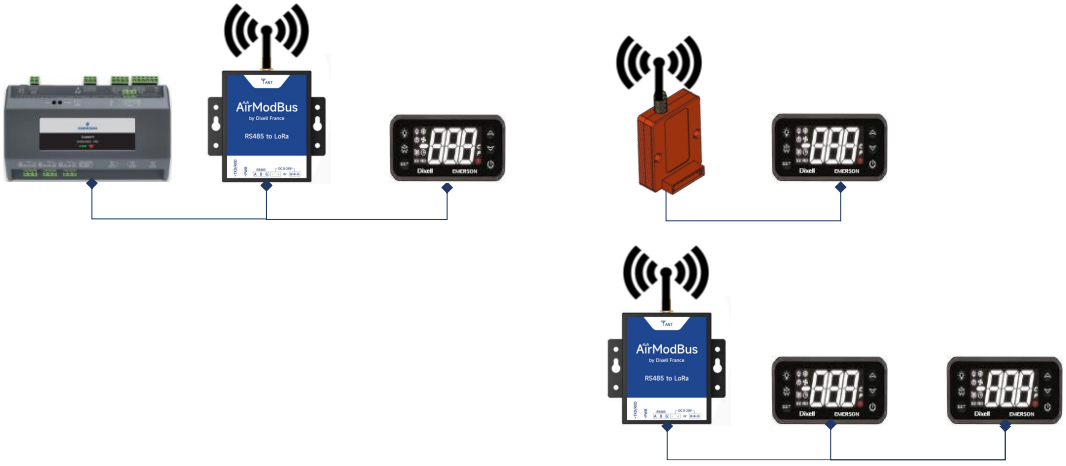


Type 2 – Full wireless supervision installation

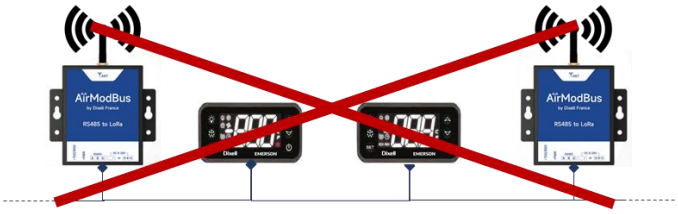


Type 3 – Hybrid installation

The XWEB has 2 to 4 bus lines available. To facilitate future interventions on such a hybrid installation, we recommend dedicating one of the bus lines to radio communication and using the other lines for wired communication.



Please note that two AirModBus should not be installed on the same physical line:

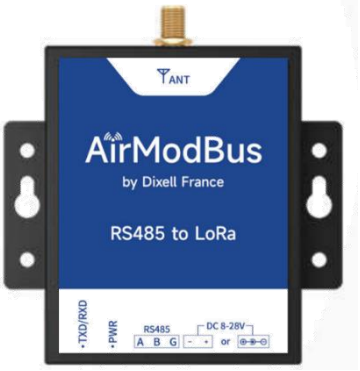


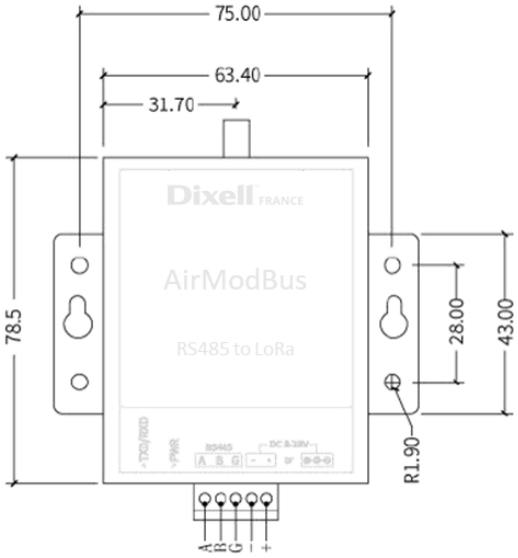
2. Technical data

Testing conditions: Tc = 25°C, VCC = 12VDC

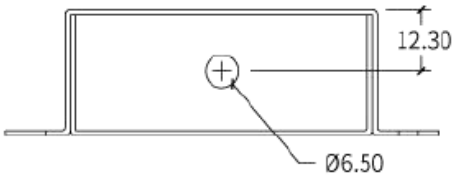
No.	Model	AirModBus RS485 (blue)	AirModBus TTL (orange)	
1	Operating frequency	433	433	MHz
2	Maximum absorbed power	158	158	mW
3	Maximum transpission power	22	22	dBm
4	Supply voltage	8 – 28 VDC	5VDC via TTL	VDC
5	Power interface option 1	Screw connector	HotKey port	
6	Power interface option 2	Jack 2,1x5,5	NA	mm
7	Modbus interface	RS485	TTL	
8	Size	95*84*25	40*33*17	mm
9	Max communication distance (5dB antenna)	5	5	km
10	Reception sensitivity	-129	-129	dBm
11	Working/storage temperature	-40 à +85	-40 à +85	°C
12	Working/storage humidity	10 à 90	10 à 90	%
13	Non waterproof case. Doesn't support spills and condensation			

Dimensions (in mm)

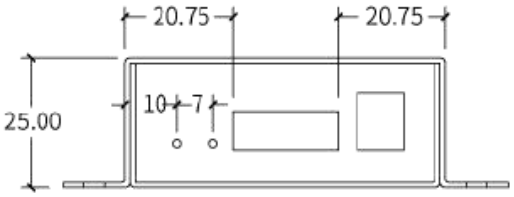


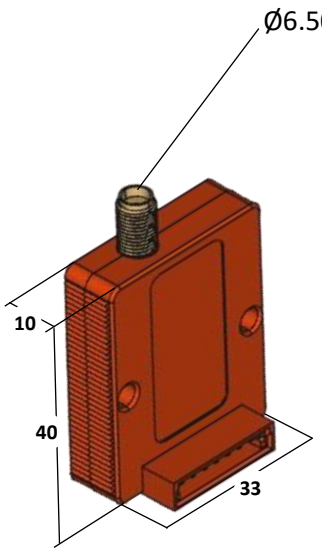


Top view



Bottom view





AirModBus TTL

d

Compact antenna A90

Rotatable, to be mounted directly on the AirModBus, fixed bend, 1.5dBi gain

The most versatile and economical option

Remote antenna 0.5m or 5.0m

Not rotatable, to be mounted by screwing through the bracket, with **0.5m** or **5m** cable, 3.5dBi gain

The most suitable option for installation through an enclosure (0.5m) or in a cabinet (5m)

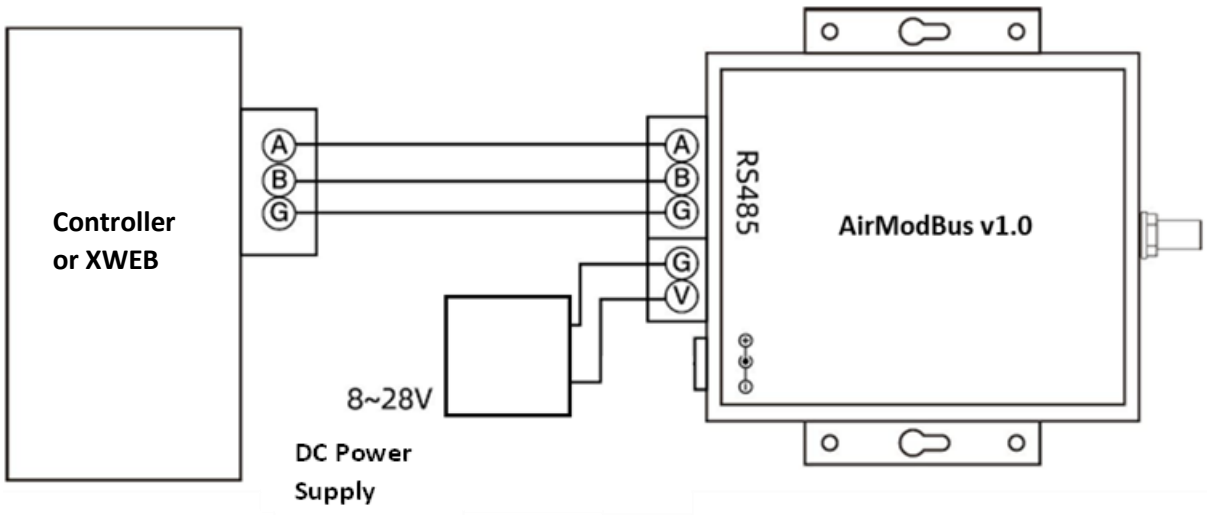
3. Commissioning

The AirModBus is pre-configured to be used in a Dixell installation and does not require any special settings.

As AirModBus is a radio device, it should **not be entirely enclosed in a metal box**, which would have a "Faraday cage" effect, preventing communication waves from escaping.

3.1. AirModBus RS485 connections

Mark	Description
A (RS485)	+
B (RS485)	-
G (RS485)	Ground
G (Transfo)	-
V (Transfo)	+



3.2. AirModBus TTL connections

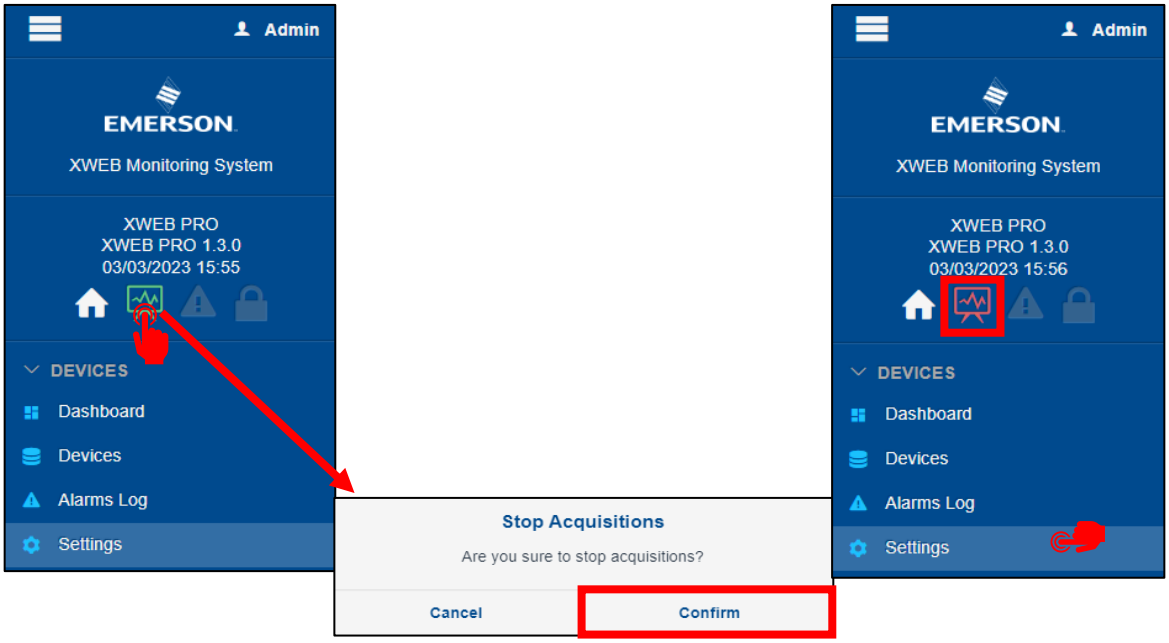
The AirModBus TTL (orange) is supplied with a 30 cm long cable for connection to the HotKey port on controllers.

No separate power supply is required.

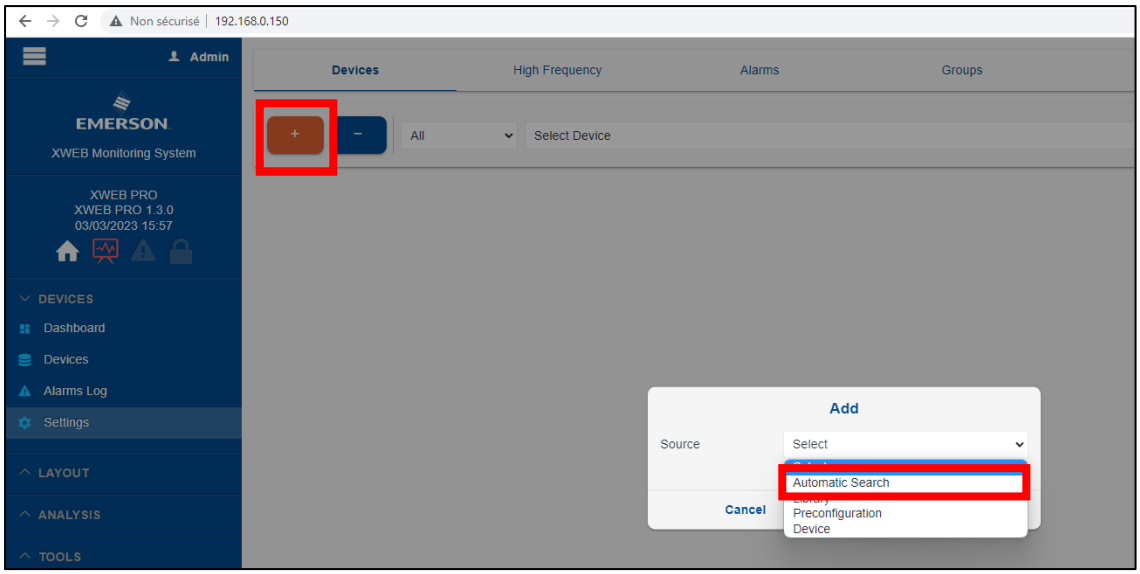
The two holes can be used to secure the installation, for example with a nylon cable tie.

3.3. Setup with Dixell supervision

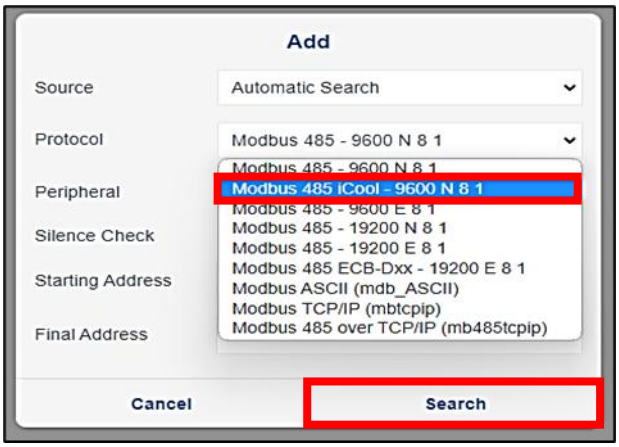
Log on to XWEB, stop playback by clicking on the acquisitions icon, which should appear in red as shown in the photo below. Then go to “Settings”.



On the next page, select the « + » button and select « Automatic Search » as the source.

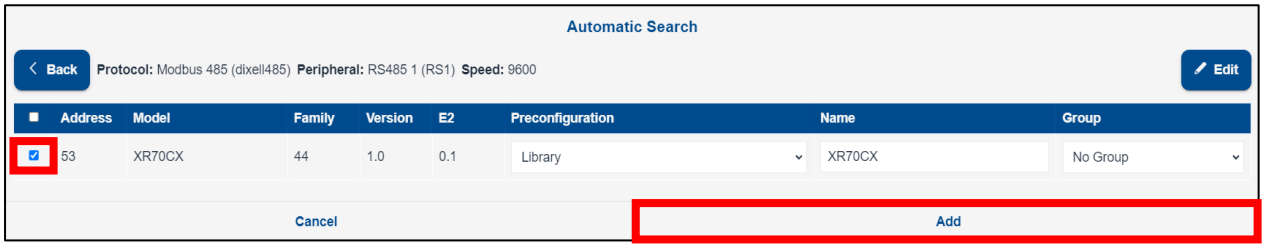


Select the following protocol: « Modbus 485 iCool – 9600 N 8 1 » and click on « Search ».

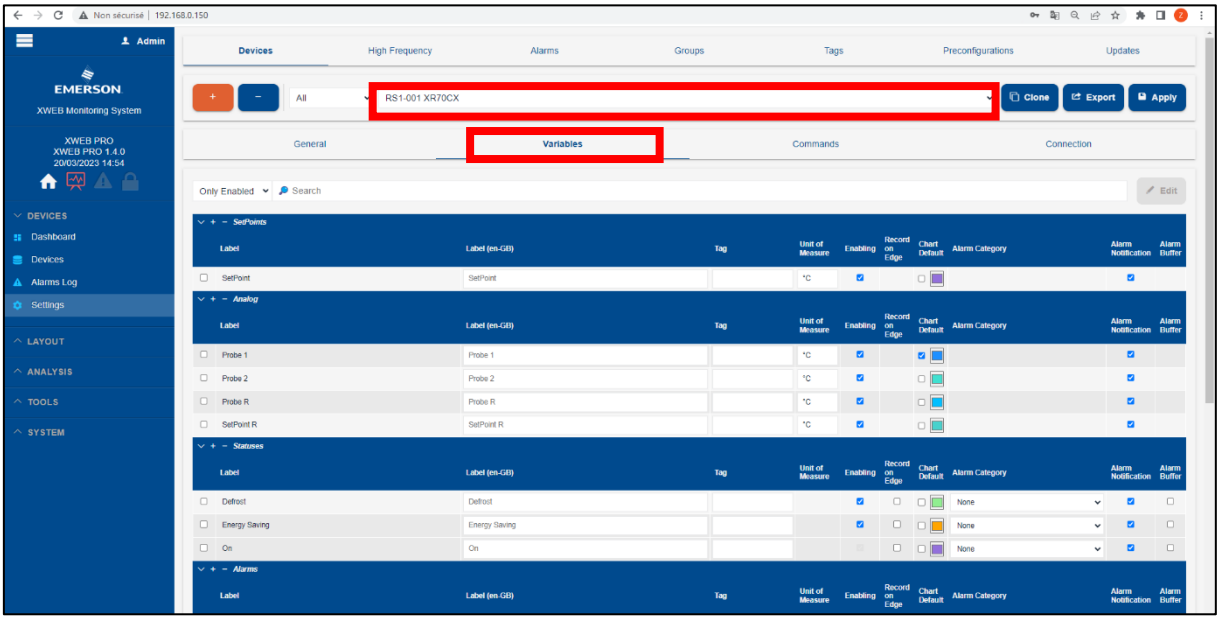


Once the automatic search is completed, the list of online controllers will be visible.

Select the devices you would like to be supervised and click on « Add ».

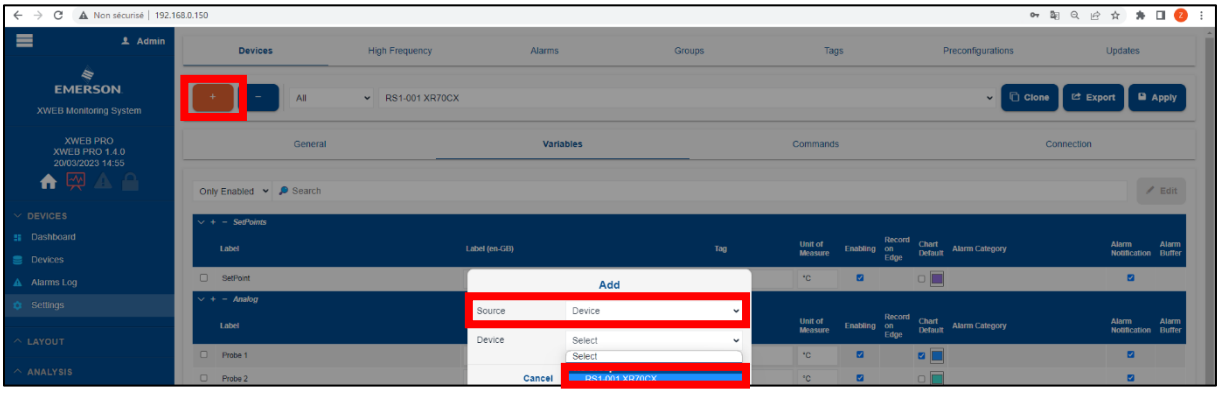


Once you have added the controller, you can select it to configure it by accessing the "Variables" tab.

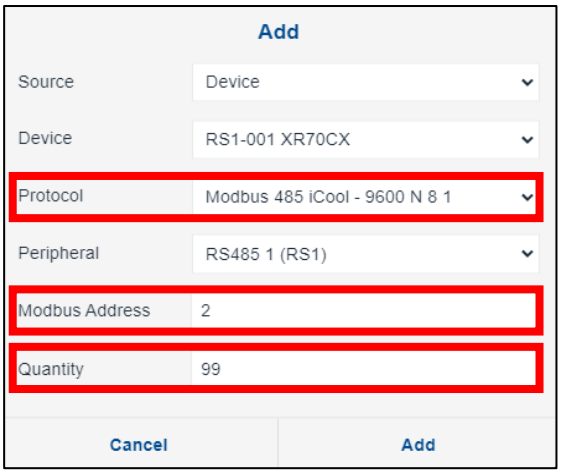


It is possible that the automatic search may not automatically detect 100% of the present controller. In this case, you can duplicate the controllers, after configuring them correctly, which will save you time and ensure a homogeneous configuration of all the controllers.

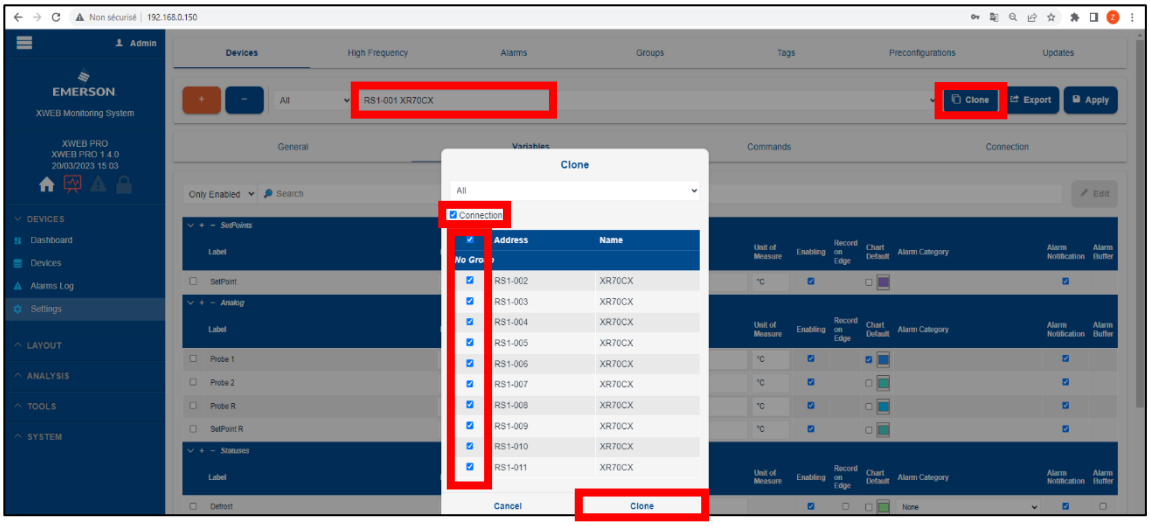
To duplicate a controller present in XWEB, go to the "Settings" section, press the orange "+" button, select "Controller" as the source, and select the controller to be duplicated.



Next, enter the "Modbus 485 iCool - 9600 N 8 1" protocol, followed by the Modbus address(es) of the controller(s) that will be created and the number of controllers to be added. In the example below, the XWEB will create 9 copies of the XR70CX on bus 1 address 1, with Modbus addresses 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11.



To duplicate the existing settings of the XR70CX on bus 1 address 1 to the newly created controllers, select the target controllers and click on the "Clone" button as shown below.



You will then be prompted to duplicate these settings on all controllers of the same model. Don't forget to press the “connect” button to apply the new settings to all controllers.

Note: The “connect” option forces the duplication of the connection method, in our case the “Modbus 485 iCool - 9600 N 8 1” protocol.

For any information, do not hesitate to contact us!
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