Gateway

BUSing-CRAC-I

ingenium

Index

1   GENERAL DESCRIPTION

The BUSing-CRAC-I gateway allows direct communication from a BUSing® protocol installation with compatible Carrier® climate units through TCB-IFMB641TLE interface, which is connected to the outdoor units. This makes it easy to control the machine from BUSing screens, web servers or the Ingenium app available for mobile devices (iOS and Android) with a fully graphical and visual interface.

Apart from reading ambient temperature, set point temperature may be consulted and modified, as well as indicating to the machine its mode of operation and fan speed.

Each gateway is connected to TCB-IFMB641TLE interface from outdoor unit through 3 wires with polarity (A, B and ref), being optional reference connection. Besides, each outdoor unit can control up to 32 indoor units. The initial configuration that the interface must have for a correct working is 9600 bps speed, and be addressed on address 1.

2 TECHNICAL DESCRIPTION

- Gateway for integration of Carrier air conditioning system and BUSing® protocol.
- Allows control of up to 32 indoor Carrier units.
- Direct communication through 3 wires with polarity, to A, B and ref terminals to TCB-IFMB641TLE interface from outdoor unit.
- Control and monitoring of the status and operating modes of the Carrier climate machine.
  - o On/Off machine
  - o Ambient temperature
  - o Consignment temperature
  - o Modes of operation
  - o Machine speed
- Mounting next to the climate unit or integrated into the ceiling.
- It allows control from BUSing® screens, web servers or the free Ingenium App.

3   PROGRAMMING OF THE DEVICE

From the Development System (SIDE) BUSing-AC node must be inserted in the integrations tab, in the address wanted the gateway to have.
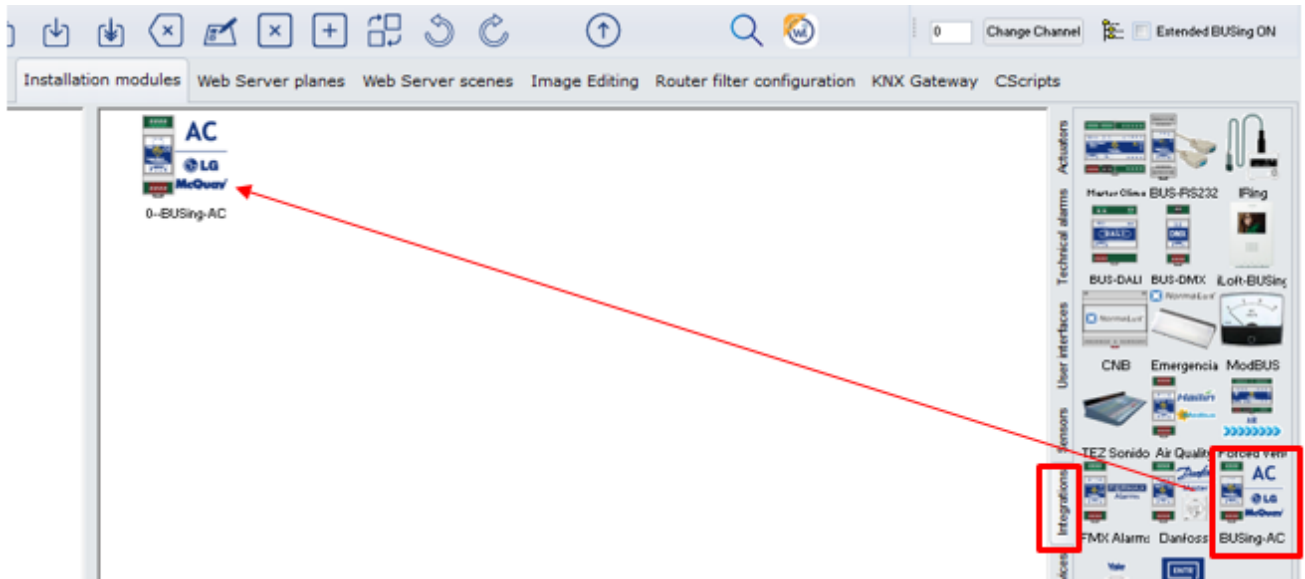

By double-clicking or right-clicking on the icon, and accessing its properties, a window will open like the following:
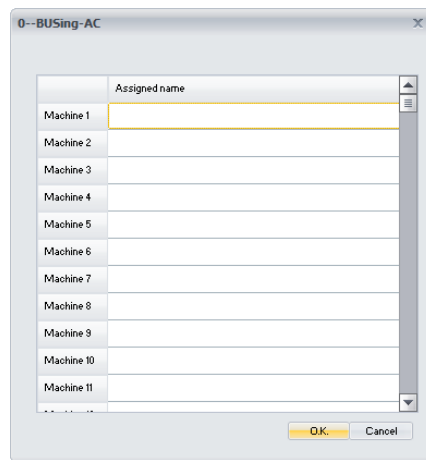
The only thing that needs to be programmed in this part, is to name the machines in use (up to 32), which will be the ones appearing, when linking it, on the graphical interfaces. The rest of the machines will not be used, as this gateway can only control one climate unit.

Once entered in the BUSing project and having only connected to the BUS this computer, the device should be addressed, right click on it and select *Program this node by appearing the* property screen on which you must click on programming. You can also right-click: *Direct and program node.*
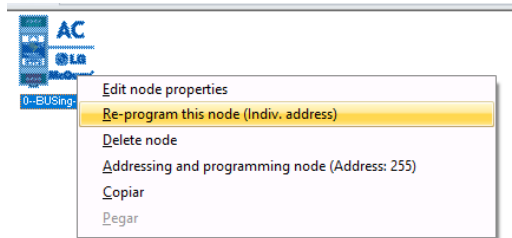
3.1 POINT TO POINT CONTROL IN PPL

To be able to control the machine it will be necessary to include a thermostat icon on one of the graphical interfaces or web server of BUSing®, and make a point-to-point link. The following example is about Ethbus3 or PPL.
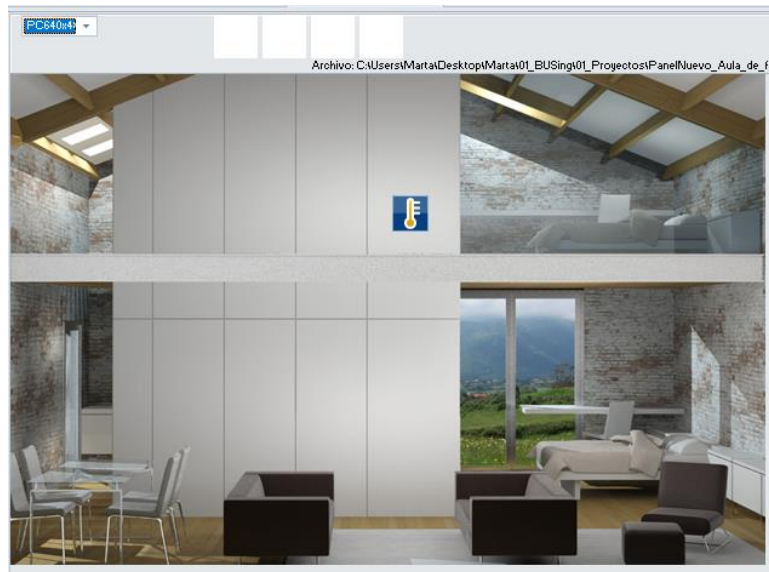
In the *Web Server Planes tab, with* a previously added plane, through the red icon, located on the right side:
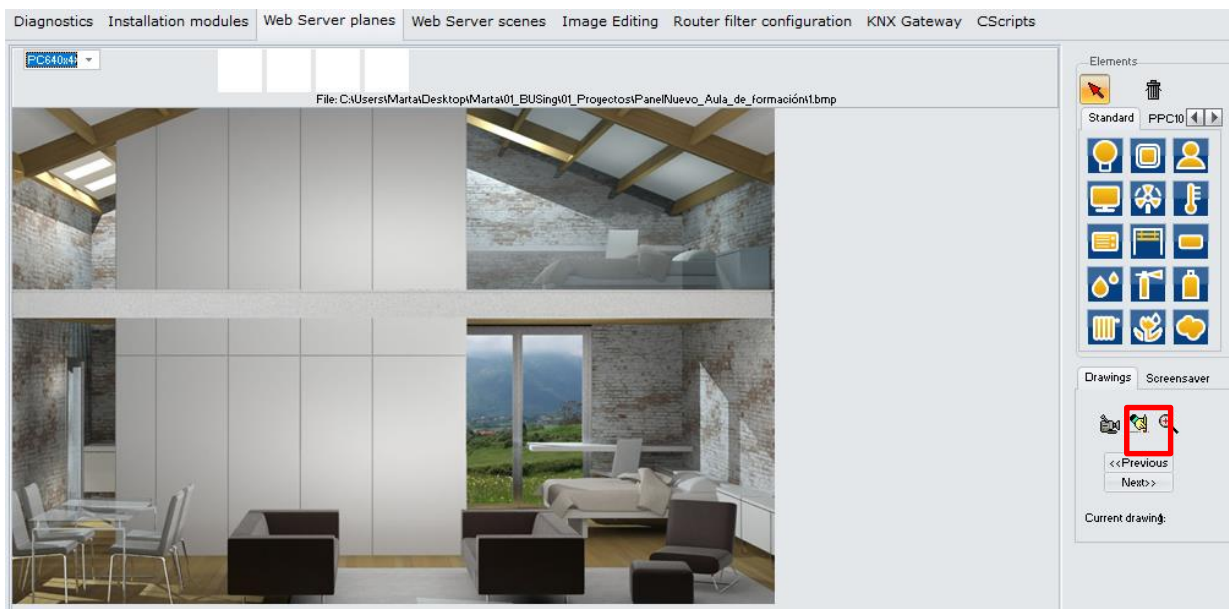

Click on a thermometer icon, available in the icon battery on the right. Next, with the mouse you click on the part of the plane you want to incorporate this icon:
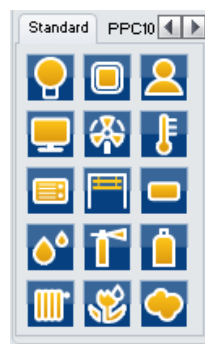

And the map would look like:

The next step will be to make a point-to-point link of the thermostat icon with the AC gateway. To do this, you must right click on the icon and select the option *Link control point-to-point.*
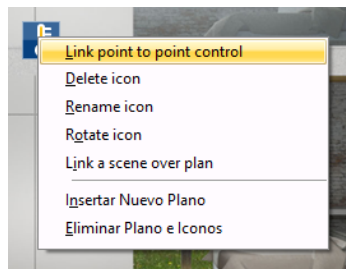
When clicking on this option, a window will appear like the next one, with all the nodes added to our *project (in Installation Modules).* Select the corresponding node for AC gateway, in the case of the example, node 4 and press Ok.
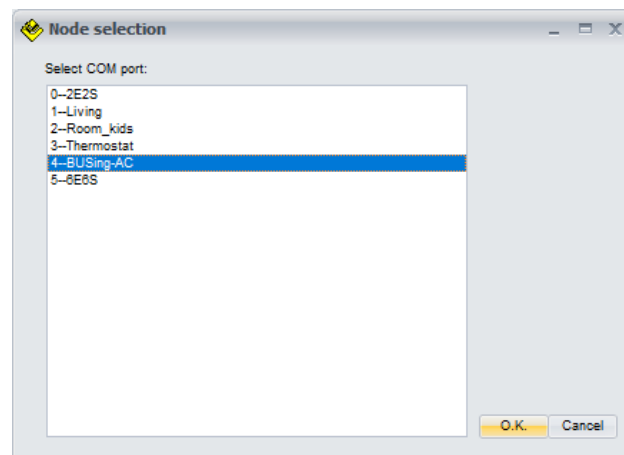
Again, a window will appear to select the Carrier machine to add. It is reminded that this gateway only controls up to 32 indoor climate units, so only the ones in use must be selected, though 0 to 63 machines are available. This is because that BUSing-AC icon added in *Installation Modules serves to program* other BUSing AC gateways that can control more than one AC unit.
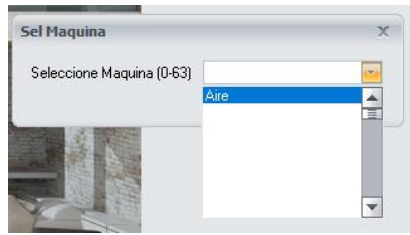
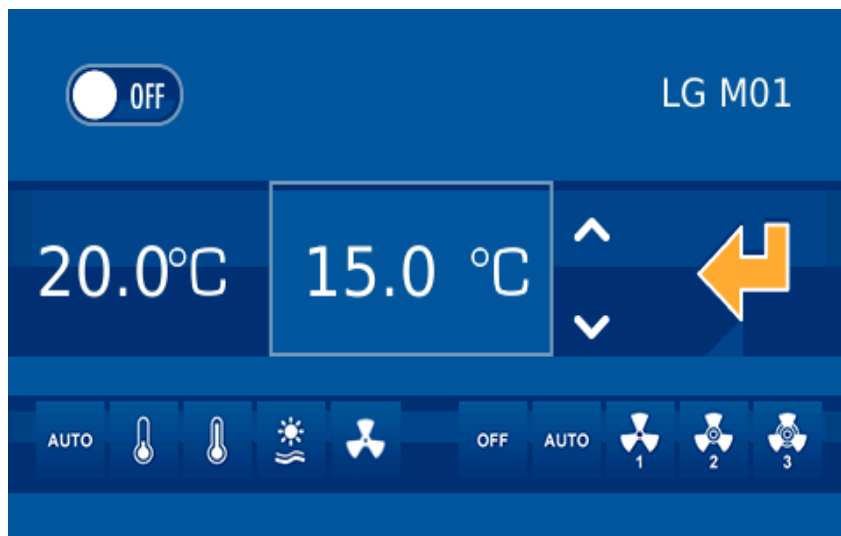Once pressed Ok, the point-to-point control of the gateway would already be linked with its corresponding icon on the PPL. For further information regarding programming a PPL, check its programming manual.

Once downloaded the programming to the screen or webserver, the graphic interface for this device would look like the following:

On the left side, the ambient temperature can be read, the next value in the rectangle is the setpoint temperature. Finally, at the left bottom are the available modes of the AC unit, and on the right side the speed.

4 RECORDS THAT SUPPORTS

4.1 RAM

Command	Data 1	Data 2	Description
Read/ Write	0	0-3	0 = Deactivate control of the machine. 3 = On machine. 2 = Off machine.
Read/ Write	1	0-68	Ventilation speed and operating mode. Data 2 = 0-4: Fan off. Data 2 = 16: Low ventilation (Low)/Cold mode (Cool). Data 2 = 17: Low ventilation (Low)/Dry mode. Data 2 = 18: Low ventilation (Low)/Ventilation-only mode (Fan). Data 2 = 19: Low ventilation (Low)/Auto mode. Data 2 = 20: Low ventilation (Low)/Heat mode. Data 2 = 32: Medium ventilation (Medium)/Cold mode (Cool). Data 2 = 33: Medium ventilation (Medium)/Dry mode. Data 2 = 34: Medium ventilation (Medium)/Ventilation-only mode (Fan). Data 2 = 35: Medium ventilation/automatic mode (Auto). Data 2 = 36: Medium ventilation (Medium)/Heat mode. Data 2 = 48: High ventilation (High)/Cold mode (Cool). Data 2 = 49: High ventilation (High)/Dry mode. Data 2 = 50: High ventilation (High)/Ventilation-only mode (Fan). Data 2 = 51: High ventilation (High)/Auto mode. Data 2 = 52: High ventilation (High)/Heat mode. Data 2 = 64: Automatic ventilation (Auto)/Cold mode (Cool). Data 2 = 65: Automatic ventilation (Auto)/Dry mode. Data 2 = 66: Automatic ventilation (Auto)/Ventilation-only mode (Fan). Data 2 = 67: Automatic ventilation (Auto)/Auto mode (Auto). Data 2 = 68: Automatic ventilation (Auto)/Heat mode.
Read/ Write	2	1-16	Consignment temperature in ºC = Data 2 + 15
Read	3	102-132	Temperature measured ºC = (164 – data 2)/2

4.2 EEPROM

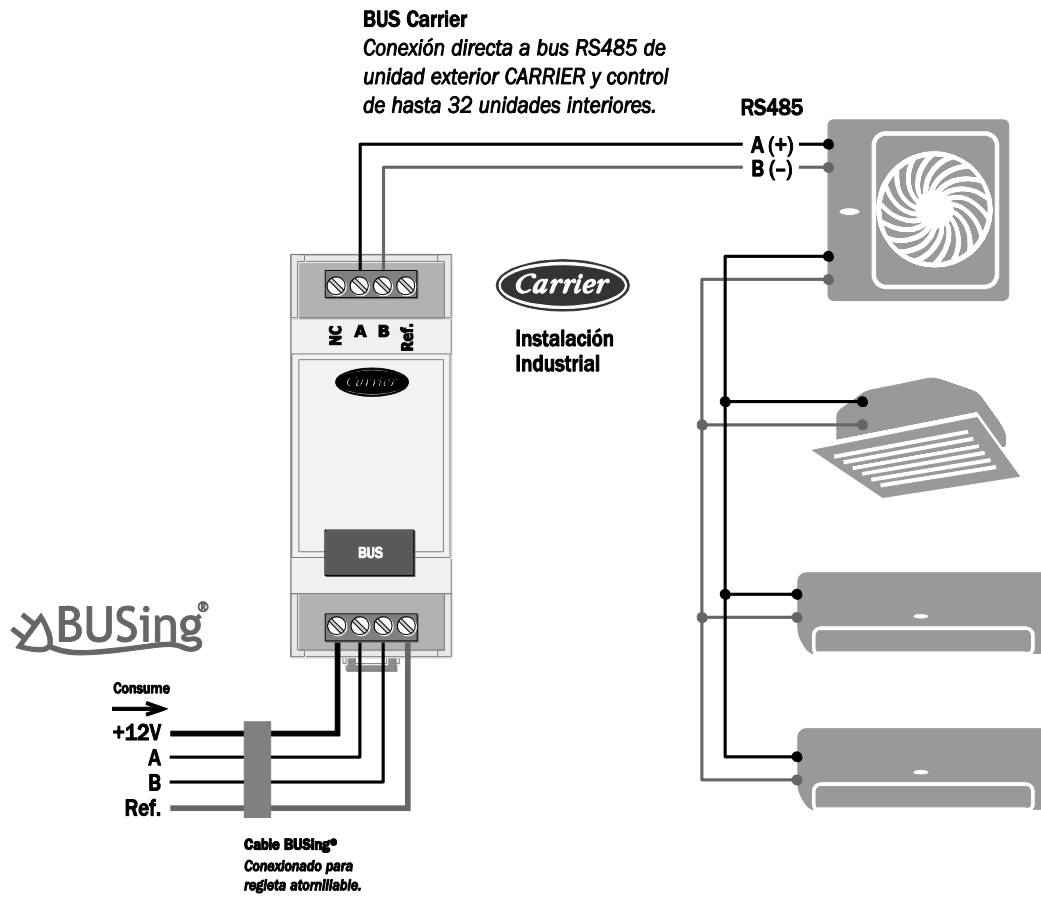| Command	Data 1	Data 2	Description
ReadEeprom	0	0 - 255	Device BUSING® address.

5   DATA DOWNLOADING

Previously we have to have the BUSing-CRAC-I gateway properly connected as follows:
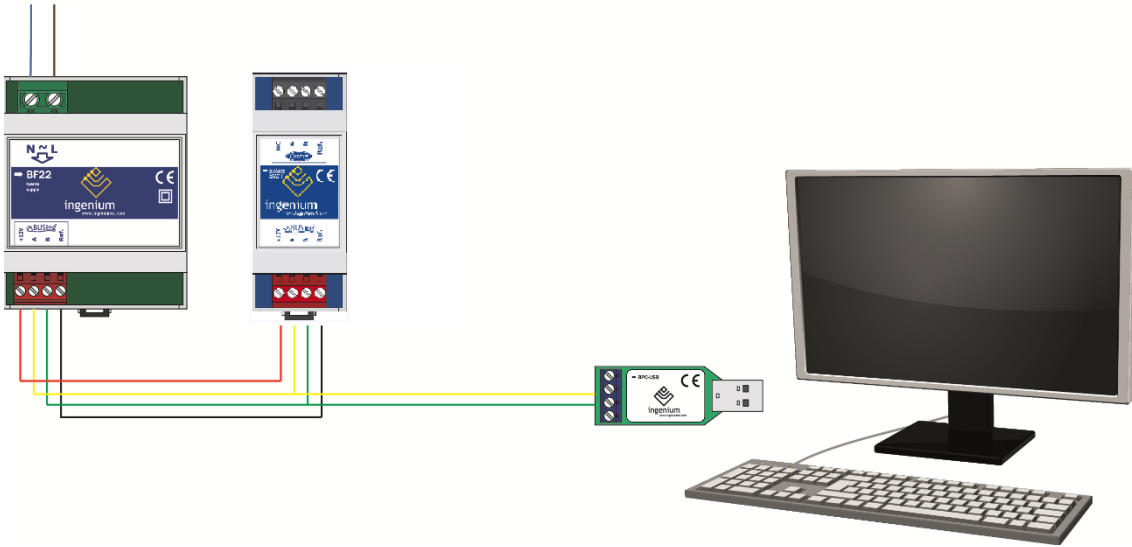
NOTE: IT IS NOT NECESSARY TO PLACE THE POWER SUPPLY IF THERE IS SUFFICIENT VOLTAGE IN THE INSTALLATION TO POWER IT. IT COULD BE THAT THE POWER COMES FROM OTHER EQUIPMENT LIKE 6E6S, 4E4S...ETC.

The only information to be turned to the gateway is the BUSing address. If you click on the icon *to reprogramme this node, no* window will appear to confirm the programming, since the name assigned to machine 1 in the gateway properties is necessary for point-to-point control linking on a screen/web server.

6 WIRING

BUS Carrier
Conexión directa a bus RS485 de unidad exterior CARRIER y control de hasta 32 unidades interiores.

RS485
A (+)
B (–)

NC   A   B   Ref.

Carrier

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Consume
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Ref.

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