PRODUCT MANUAL

IRSC

Air conditioning controller

ZN1CL-IRSC

Edition 2

Version 4.0

INDEX

1. INTRODUCTION

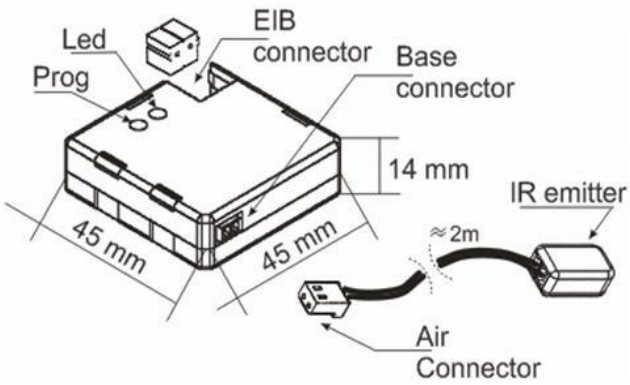
1.1.PRODUCT

The IRSC Plus is an air conditioning infrared controller. The IRSC is designed to control Air-Conditioning Systems (A/C) with infrared receivers, which include, splits, ducted units with infrared interface integrated, or with a separate interface unit adapted by the own brand manufacturer.

- Reduced size: 45 x 45 x 14 mm
- It can be placed into deep flush-mounting box (60x60mm)
- It controls main air conditioning machine functions (ON/OFF, temperature, mode, wind speed…) from many manufacturers (see correspond table).
- EIB/KNX Bus coupling unit integrated
- Complete data saving in case of Bus Power Failure.
- Compliant with CE directives

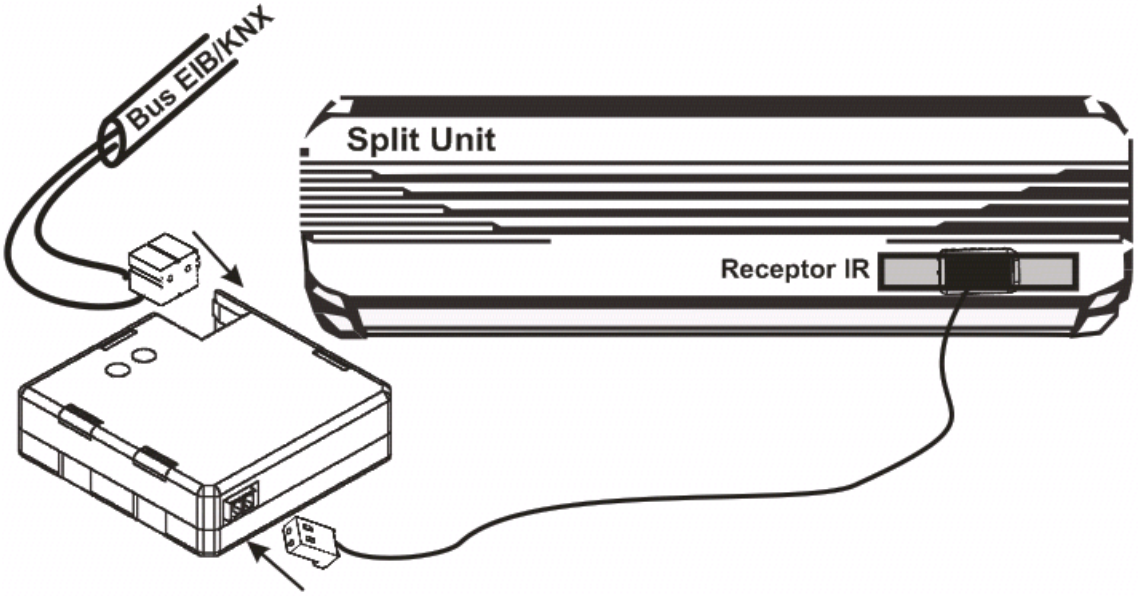
Component description:

- **Prog:** To set the device "**programming mode**". When initially pushed, after BUS Powering, "**Secure mode**" is set.
- **LED:** LED "**On**" indicates programming mode. LED blinking every 0.5s, the device is set in "**secure mode**".
- **IR emitter:** Infrared flasher diode to send commands to the split.



1.2. WIRING

The installation diagram of the IRSC Plus is presented in the following figure:



The **IRSC Plus** infrared emitter must be placed near **IR** air conditioning **receiver**.

Once it is connected to the EIB/KNX BUS, and after a correct parameterization of the system, the user can control the air conditioning unit from any touch panel of the installation.

Note I: *Each air conditioning unit (Split) or ducted unit must be controlled only by one* ***IRSC*** *device.*

Note II: *It's recommended to consult the* ***datasheet****, where there is detailed information about its technical characteristics.*

The ***datasheet*** *is included in the original product packaging, and it is available for downloading download on our webpage* ***www.zennio.com****.*

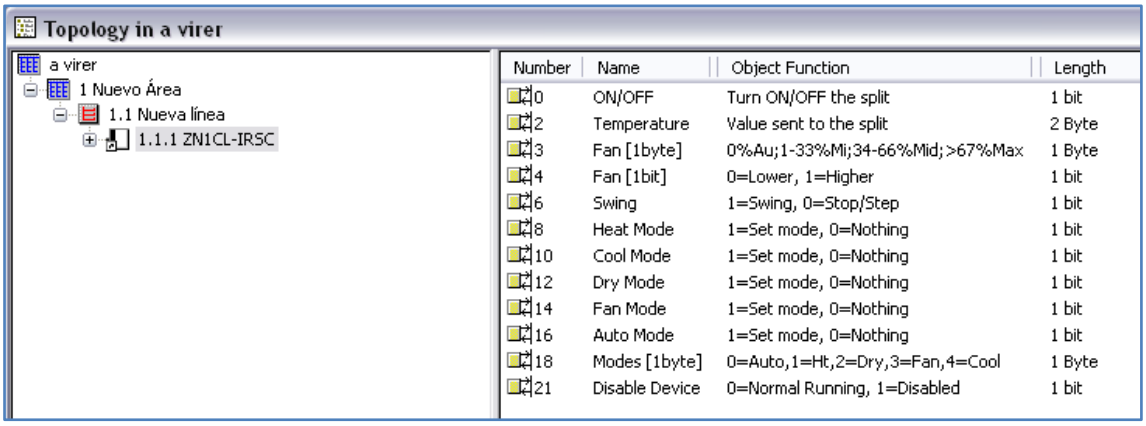
1.3.CONFIGURATION

The **IRSC Plus** has 28 Communication Objects That are used for transmitting and receiving the BUS data.

To start with the IRSC module configuration, it will be necessary to import in ETS (version 2 or 3), a project containing an **IRSC** Module, or a database .vd file of the product. (See www.zennio.com).

- **Default IRSC configuration (communication object)**

In figure 1, you can see the available default communication objects:



Number	Name	Object Function	Length
0	ON/OFF	Turn ON/OFF the split	1 bit
2	Temperature	Value sent to the split	2 Byte
3	Fan [1byte]	0%Au;1-33%Mi;34-66%Mid;>67%Max	1 Byte
4	Fan [1bit]	0=Lower, 1=Higher	1 bit
6	Swing	1=Swing, 0=Stop/Step	1 bit
8	Heat Mode	1=Set mode, 0=Nothing	1 bit
10	Cool Mode	1=Set mode, 0=Nothing	1 bit
12	Dry Mode	1=Set mode, 0=Nothing	1 bit
14	Fan Mode	1=Set mode, 0=Nothing	1 bit
16	Auto Mode	1=Set mode, 0=Nothing	1 bit
18	Modes [1byte]	0=Auto,1=Ht,2=Dry,3=Fan,4=Cool	1 Byte
21	Disable Device	0=Normal Running, 1=Disabled	1 bit

Figure 1: IRSC default communication Objects

Note: *It is possible to classify the communication objects by alphabetical order, ascending numerical,etc. For doing this, you have to click on the appropriate column. For example, in order to classifyby alphabetical order , click on "**Name**".*

- **Parameters will be shown as they initially appear**

In order to visualize and configure the parameters of an ETS device, click the right-mouse button on the BUS device you want to configure, then click left-mouse button on "Edit Parameters" (See Figure 2).

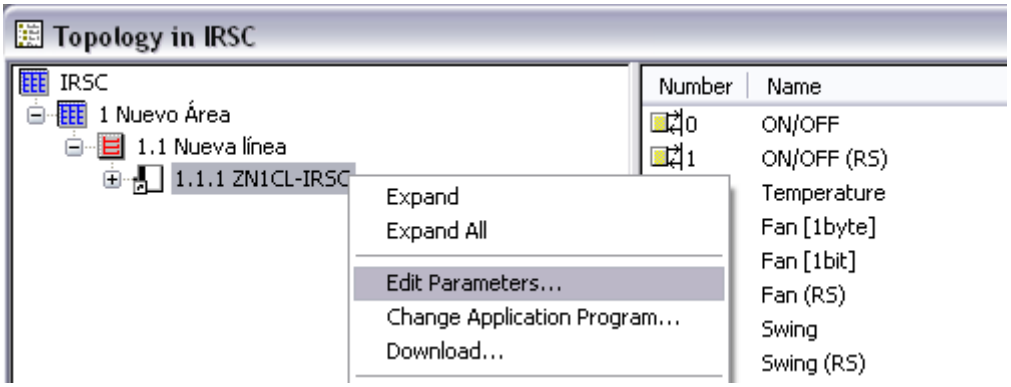


Figure 2 : Edit Parameters

- **Main Window appears**

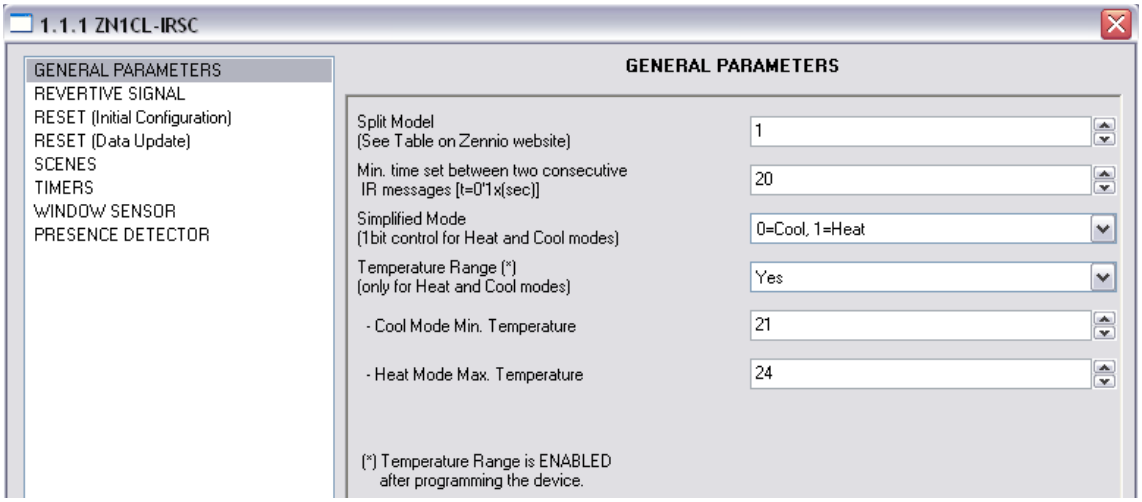


Figure 3 : General Parameters

2. PARAMETERIZATION

In ETS, the main page for configuring the device has eight options:

- **GENERAL PARAMETERS**
- **REVERTIVE SIGNAL**
- **RESET (Initial Configuration)**
- **RESET (Data Update)**
- **SCENES**
- **TIMERS**
- **WINDOWS SENSOR**
- **PRESENCE DETECTOR**

The following sections describe the functionality of each option and the individual parameters included in each of them.

2.1. GENERAL PARAMETERS:

This section of the setup page allows the user to choose the type of air conditioning machine as well as the configuration of various general parameters relating to operation mode.

- **Selecting the Split Model:** In the Split Model Field we must choose the appropriate number for the A/C unit to be controlled by the IRSC. This number can be looked up in the Correspondence Table available in Zennio's website: www.zennio.com

Note I: *To control an air conditioning system with IRSC Plus, it needs to havean Infrared receiver included, or, the possibility of adapting one designed by the air conditioning manufacturer.*

Note II: *If a Z38 display is used with* ***IRSC Test*** *application program for verifing the proper IRSC functioning, then, choose number 201 in Split Model.*

- **Min. time set between two consecutive IR messages (t=0´1x (sec)):**. The IRSC is able to send IR commands at a great speed; in such a waythat, the A/C unit receiver could not be able to to receive and execute the orders.

  With this parameter, the sending time is limited establishing a minimum time for sending consecutive messages to the A/C unit.

  Ii is highly recommended to establish a value equal to20 (tenths of a second)

  Reducing the recommended value does not involve any performance improvement.

- **Simplified Mode :** This field should be only used in very simple installations, where there is not a touch panel to set the A/C working mode (heat, cool, dry, ventilation, auto) and only a 1-bit order can be executed.

- **Temperature Range :** This parameter is used to limit the summer and winter temperature:

  - Cool Mode Min Temperature: [16°C…30°C]
  - Heat Mode Max temperature: [16°C…30°C]

  Recommended in hotel rooms or for parental control.

Note: *These temperature limits are available* ***only*** *with summer and winter mode.*

2.2.REVERTIVE SIGNAL:

This option allows the user to know if the IRSC has correctly executed the orders sent to it through the BUS. This can also be considered as a STATUS feedback allowance.

- **Revertive signal:** Answering "Yes" allows the four control options to appear. It is recommended to parameterize "yes" for all revertive signals, specially when visualizations are involved.
    - ON/OFF
    - Mode: Auto, Cool, Heat, Fan, Dry
    - Fan: Auto, Min, Med, Max.
    - Swing: Move, stop

Note: *As the orders confirmation are configured; the corresponding communication object will appear in the topology of ETS.([RS]Revertive signal) They should be correctly configured in a group address.*

See annex I: Communication objects

2.3.RESET (INITIAL CONFIGURATION)

This option allows defining how the **IRSC Plus** must start after a power failure on the BUS.

- **Initial Configuration :** The default configuration is the one that appears below "Last saved status"; this configuration implies that after a reset, the IRSC Plus keeps on the **BUS** devices the same information than before the reset signal.

  Advanced operators could modify the "**Default**" value to "**Custom**"; whatever the customized configuration is, it will be present after a Reset signal.

- **Send Reset Configuration to the Split:** Answering "**Yes**" the rest of bus devices will be informed about **IRSC Plus** status after a bus power failure.

2.4.RESET (DATA UPDATE)

In the previous section we explained what would happen with the **IRSC** and the Split unit if a BUS power failure happens. In the section Reset is configured how to inform the rest of **BUS** devices about the the **IRSC Plus** status after a reset.

It is possible to choose which parameters will be sent to the **BUS**:

- **ON/OFF:** "ON/OFF (RS)" object is sent.
- **Temperature:** "Temperature" object is sent.
- **Mode:** "Mode (RS)" object is sent.
- **Fan:** "Fan (RS)" object is sent.
- **Swing:** "Swing (RS)" object is sent.

Note I: *Many BUS devices lose relevant information after a reset signal; this issue can be easily solved by sending their status signals when the power is back.*

Note II: *Checking the sending option in every parameter, we will prompt the IRSC to send its "initial status" to the rest of BUS devices to get them correctly updated.*

2.5.SCENES

Giving a single order, it is possible to send several IR commands to the Air-Conditioning unit, so that a climate scene is generated.

The following pull down menu appears, where it is possible to select "Yes" for generating up to **4 different possible scenes**:

- **Scene x:**
    - Scene number
    - ON/OFF: No change/ ON/ OFF
    - Temperature: No change/ Between 16°C and 30°C
    - Mode: No change/ Auto/ Heat/ Dry/ Fan/ Cool
    - Fan: No change/ Auto/ Min/ Med/ Max
    - Swing: No change/ Move or Stop

Note I: *There is only one Communication Object*

Note II: *If a Reset occurs, scenes will remain; but not after reprogramming devices with the ETS.*

2.6.TIMERS

Through these functions the split unit could be automatically turned ON/OFF after a certain period of time.

Both for the **Automatic ON** and the **Automatic OFF**, it is possible to select two other parameters:

- **Automatic OFF/ON value:** Time to elapse since the object is activated (sending "1"), until the Auto OFF / Auto ON takes place.

- **Automatic OFF/ON time units:** Choose between hours and minutes.

2.7.WINDOW SENSOR

This function is associated to an external sensor. Activating this function,a communication object to be connected with a **binary input is enabled**; by means of this function the BUS is informed, when a user opens a window in an air conditioned zone.

After a waiting period (see image below), the **IRSC Plus** will send the OFF signal to the split unit.

When closing the window it will not be necessary to turn the split ON again, it will be automatically restarted.

- **Waiting period:** Time elapsed before the Split shutdown .

Note I: *If an OFF order is received by the A/C unit while the window is open, closing the window would not turn the A/C unit ON again.*

Note II: *While the "open window sensor" value is "0", the window is supposed to be closed, but when the value changes to"1", the countdown for turning off the split starts (0= open window, 1= closed window).*

2.8.PRESENCE DETECTOR

EIB presence sensors installed in a room, in addition to switching ON points of light, contributing with intruder detection, and even light dimming, can now be combined with the IRSC.

What we simulate by enabling this function is to turn off the A/C unit after a certain period of time when nobody is detected in the room.

Enabling this function, a communication object (1 bit) is activated to get the information from the external presence detector. While the "presence detector" value is "1", the room is supposed to be occupied, but when the value changes to"0", the countdown to turn off the split starts (0= absence, 1= presence).

- **Presence detector:** It allows enabling this function.
    - **Waiting period:** This parameter sets the time (in minutes) that must pass since the presence detector receives the value "0" (nobody in the room), until the IRSC shutdowns the Split.

Note I: *If an OFF order is received by the A/C unit while there is no presence in the room, the detection of a new presence in the room would not turn the A/C unit ON again.*

(**) Priority among sensors: The sensor with highest priority will be the one which shows that the necessary conditions for a correct climate control are not being carried out.

ANNEX I: COMMUNICATION OBJECTS

SECTION	NUMBER	SIZE	IN/OUT	FLAG	VALUE			NAME	DESCRIPTION
					RANGE	1st Time	RESET		
OBJECTS	0	1 bit	I	W	0/1	0	Any	ON/OFF	0 = OFF 1 = ON
	1	1 bit	O	R-T	0/1	0	Any	ON/OFF (RS)	0 = OFF 1 = ON
	2	2 bytes	I	R-W-T		Any	Any	Temperature	
	3	1 byte	I	W-T	0-3	Any	Any	Fan [1 byte]	0=Auto; 1=Min; 2=Med; 3=Max
	4	1 bit	O	W	0/1	Any	Any	Fan [1 bit]	0=Down; 1=Up
	5	1 byte	O	R-T	0-3	Any	Any	Fan (RS)	0=Auto; 1=Min; 2=Med; 3=Max
	6	1 bit	I	W-T	0/1	Any	Any	Swing	0=Stop/Step;1=Moving
	7	1 bit	O	R-T	0/1	Any	Any	Swing (RS)	0=Stop; 1=.Moving
	8	1 bit	I	W-T	1	Any	Any	Heat Mode	1=Set mode; 0=Nothing
	9	1 bit	O	R-T	0/1	Any	Any	Heat Mode (RS)	1=Mode Set; 0=Mode unset
	10	1 bit	I	W-T	1	Any	Any	Cool Mode	1= Set mode; 0=Nothing
	11	1 bit	O	R-T	0/1	Any	Any	Cool Mode (RS)	1= Mode Set; 0= Mode unset
	12	1 bit	I	W-T	1	Any	Any	Dry Mode	1= Set mode; 0=Nothing
	13	1 bit	O	R-T	0/1	Any	Any	Dry Mode (RS)	1= Mode Set; 0= Mode unset
	14	1 bit	I	W-T	1	Any	Any	Fan Mode	1= Set mode; 0=Nothing
	15	1 bit	O	R-T	0/1	Any	Any	Fan Mode (RS)	1= Mode Set; 0= Mode unset
	16	1 bit	I	W-T	1	Any	Any	Auto Mode	1= Set mode; 0=Nothing
	17	1 bit	O	R-T	0/1	Any	Any	Auto Mode (RS)	1= Mode Set; 0= Mode unset
	18	1 byte	I	W-T	0-4	Any	Any	Modes [1byte]	0=Aut; 1=Ht; 2=Dry; 3=Fan; 4=Cool
	19	1 byte	O	R-T	0-4	Any	Any	Modes [1byte] (RS)	Mode Set: 0=Aut. Mode; 1=Hot Mode; 2=Dry Mode; 3=Fan Mode; 4=Cool Mode
	20	1 byte	I	W	0-63	Any	Any	Scenes [1byte]	0=Scene 1;…..;63=Scene 64
	21	1 bit	I	R-W	0/1	0	Previous	Disable device	0=Device works; 1=Device is OFF.
	22	1 bit	I	R-W	0/1	0	Any	Fixed Auto-OFF [1 bit]	1=Set Auto-OFF Mode; 0=Nothing
	23	1 bit	I	R-W	0/1	0	Any	Fixed Auto-ON [1 bit]	1=Set Auto-ON; 0=Nothing
	24	1 bit	I	W	0/1	Any	Any	Presence Detection	0=Room empty; 1=Room not empty

	25	1 bit	I	W	0/1	Any	Any	**Windows Sensor**	1=Windows open; 0=Win. Close
	26	1 bit	I	W	0/1	0	Previous	**Simplified Mode**	0=Cool; 1=Ht
	27	1 bit	I	W	0/1	0	Previous	**Disable temperature limitation**	0=Mode Unset; 1=Mode Set

ZENNIO TECHNICAL DOCUMENTATION

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