Gateways

IRKNX

GW640000

Programming manual

ingenium

Bes*

www.besknx.com

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1 General description

The IRKNX (reference GW640000) is an infrared transmitter with code learning capability. It allows controlling devices with infrared receiver in a KNX installation from a touch screen, PC, internet or any other KNX device in order to substitute the manufacturer remote control.

This device is able to learn any type of infrared signal from audio and video devices, air conditioning systems, etc. allowing controlling them from any other device of the home automation system, memorizing up to 255 different codes. Its programming is easy and incorporates test functionalities like correct recording feedback or code sending for operational check.

It consists of 2 parts: The microprocessor control board with the KNX bus connection, the receiver led and a mini jack connector for the led transmitter extension cable. Mounting can be hidden, but the led terminal must be visible and focused on the controlled devices (IR receivers).

General characteristics:

- Extension with LED emitters and 3,5 mm mini jack connector
- Maximum distance: 8m
- Maximum number of stored codes: 256.
- Suitable for IR transmitters in the 40kHz band
- 8 bit and 1 byte programmable communication objects for code execution

2 Technical information

KNX Supply	29 Vdc from KNX BUS
KNX current consumption	15 mA from KNX BUS
Mounting	On universal distribution box
Size	75 x 30 x 12 mm
Connections	BUS connection terminal KNX (x2) 3,5 mm mini jack for IR emitter
IR bandwidth	40 kHz
IR recording	Adjustable sampling frequency
Maximum distance	8 m (approximately)
Storage capacity	Up to 255 IR codes
Environment temperature range	Operation: -10°C/55°C Storage: -30°C/60°C Transportation: -30°C/60°C
Regulation	According to the directives of electromagnetic compatibility and low voltage: EN 50090-2-2 / UNE-EN 61000-6-3:2007 / UNE-EN 61000-6-1:2007 / UNE-EN 61010-1.

3 Programming

This manual explains how to configure the IRKNX to control any IR device through the KNX system.

3.1 Application program information

Application program: Ingenium (manufacturer) / IRKNX (program name).

Maximum number of communication objects: 13.

Maximum number of assignments: 18.

3.2 Individual address assignment

The device has a programming button for the KNX individual address assignment which is located on the front of the device near the KNX bus connectors.

A red led near the programming button lights up when it is pressed manually or if the device is set remotely to programming mode state.

The led is automatically turned off if the ETS has assigned an individual address correctly or if the programming button is pressed again manually.

⚠️ *To carry out any IR recording with the IRKNX a previous individual address assignment and group objects association are required*

3.3 Communication objects table

Object	Name / Function	Length	DPT	Flags				
				C	R	W	T	U
0	Program / Start recording mode	1 byte	5.010	●		●		●
1	Execute / Send a memorized IR code	1 byte	5.010	●		●		●
2	End of capture / End of recording notification	1 bit	1.010	●			●	
3	Command 1 / Send configured IR code	1 bit	1.010	●		●		●
4	Command 2 / Send configured IR code	1 bit	1.010	●		●		●
5	Command 3 / Send configured IR code	1 bit	1.010	●		●		●
6	Command 4 / Send configured IR code	1 bit	1.010	●		●		●
7	Command 5 / Send configured IR code	1 bit	1.010	●		●		●
8	Command 6 / Send configured IR code	1 bit	1.010	●		●		●

9	Command 7 / Send configured IR code	1 bit	1.010	●	●	●
10	Command 8 / Send configured IR code	1 bit	1.010	●	●	●
11	Command 9 / Send configured IR code	1 bit	1.010	●	●	●
12	Command 10 / Send configured IR code	1 bit	1.010	●	●	●

3.4   Objects description

Name	Object 0: Program
Function	1 byte communication object to start the recording mode of the IRKNX.
Description	When a value is received through this object, the device starts to record the IR code in the memory position corresponding to the byte received. The IR remote control must be focused to the receiver of the IRKNX.

Name	Object 1: Execute
Function	1 byte communication object to send an IR code memorized in the IRKNX.
Description	When a value is received through this object, the IRKNX sends the IR code in the memory position corresponding to the byte received. The IR emitter must be focused to the device controlled in order to check that the recording has been correct.

Name	Object 2: End of capture
Function	1bit communication object for feedback signalling of the end of recording mode.
Description	The device remains in recording mode until the programmer sends an IR code with the remote control. After recording it, the IRKNX sends a "1" through this object to indicate that the recording was successful.

Name	Objects 3 - 12: Command 1 - 10
Function	1bit communication object to send an IR code memorized in the IRKNX.
Description	When the device receives a "1" through these objects it sends the IR code recorded in the memory position configured in the parameters. There are up to 10 bit objects available for this function.

3.5   Parameters

The parameters of the device are configured in an easy way from the parameters menu in the ETS.

The programmer work in the ETS is only the assignment of the communication objects to KNX group addresses and from the parameters menu, selecting which memory positions (IR codes) will be executed in each case by the bit communication objects of the device.

Device: 1.1.1 IRKNX

General		
Sampling Frequency	50	
Command 1	1	
Command 2	2	
Command 3	3	
Command 4	4	
Command 5	5	
Command 6	6	
Command 7	7	
Command 8	8	
Command 9	9	
Command 10	10	

Group Objects / Parameters / Commissioning /
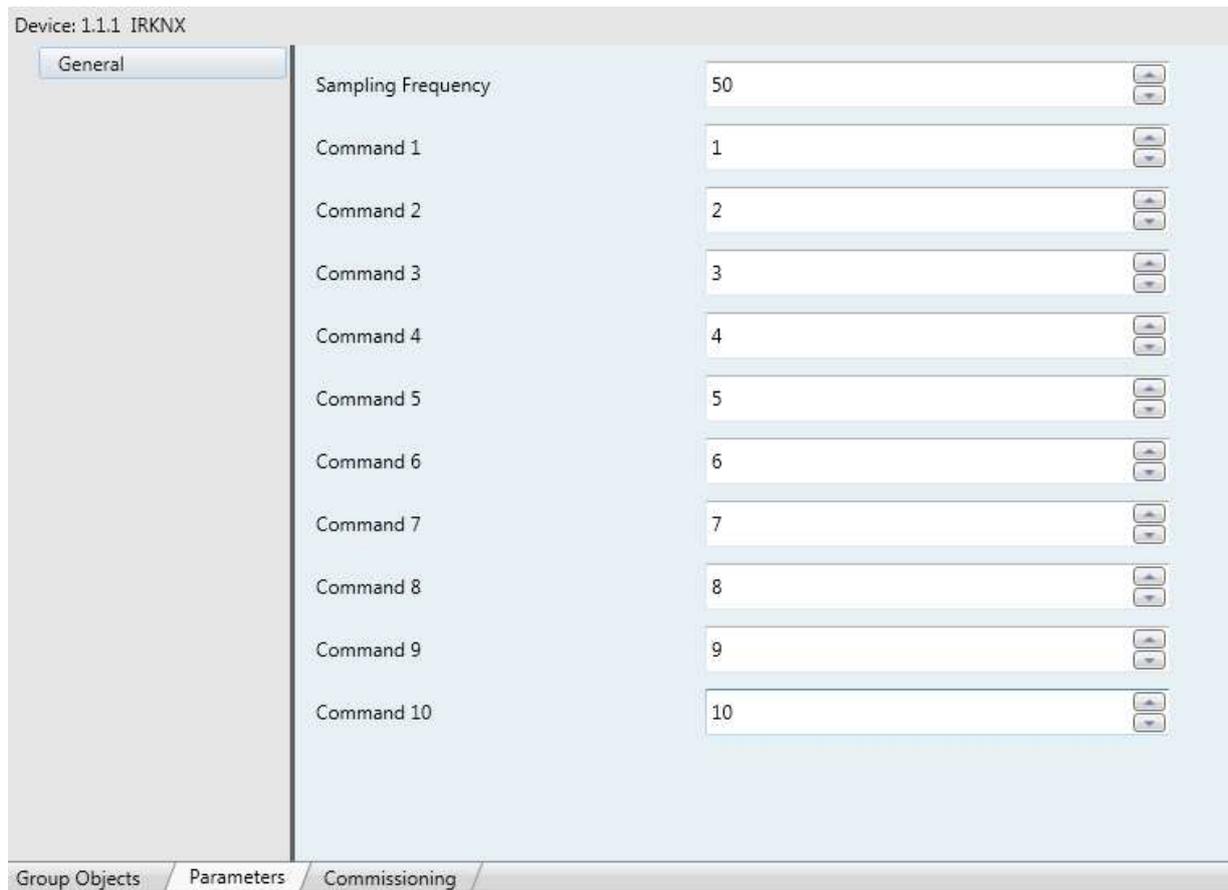
3.5.1   Sampling frequency

The sampling frequency allows the programmer to adapt the IRKNX to any type of infrared signal. By changing this parameter, the code send from a remote control is memorized by the IRKNX with more or less resolution.

An IR code signal is a "1" and "0" series in a defined time similar to the following picture. Every manufacturer has its own protocol codification and some IR codes are longer than others.
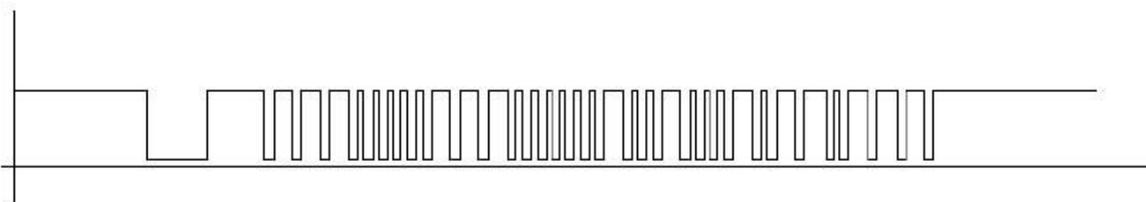
The IRKNX has a time base that it is able to record the longest time signal for every device of any manufacturer and the resolution or fidelity of the signal may change by defining the sampling frequency.

A higher sampling frequency means a shorter period of time for the infrared code memorization and a lower sampling frequency means a longer period of time. The default value of 50 it is the best for most applications. Changing this parameter without knowledge may cause the IRKNX does not work properly.

⚠ Do not change the default sampling frequency value unless you experiment recording problems with a specific remote control. Contact with the Ingenium *technical department if it is neccesary.*

3.5.2   Bit commands

In the commands parameters from 1 to 10 we can set the memory position where the infrared code was recorded and associate it to one of the 10 bit communication objects available.

It can be selected a number from 0 to 255 because the IRKNX has the capacity to store up to 256 IR codes in his memory.

By sending a "1" to any of these communication objects, the IRKNX will send through its emitter the infrared code stored in the memory position indicated here.

3.6   How to record a new IR code

To save a new infrared code in the IRKNX memory follow these steps:

1- Start the recording mode of the IRKNX by sending a value from 0 to 255 to the communication object number 0 "Program" with the ETS group monitor. The value sent is the position of the internal memory where the IR code will be saved.
2- Focus the remote control to the IRKNX receptor and press the button to be memorized.
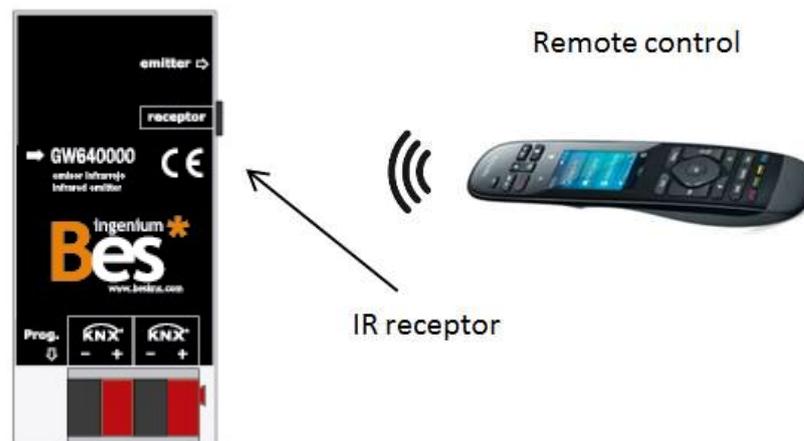
It is highly recommended to do this operation near the receptor and trying to prevent it of direct exposure of any other type of lights that may cause disturbances, specially fluorescent.

3- The IRKNX sends a "1" through the communication object number 2 to indicate that the recording was successful.

3.7   How to check a recorded IR code

To check the functionality of an infrared code in the IRKNX memory follow these steps:

1- Connect the IR emitter included with the mini-jack connector of the IRKNX.

2- Focus the emitter on the IR receiver of the controlled device (audio/video appliance, AC unit, etc.)

3- Run the IR code to be checked with the group monitor from the ETS by sending the corresponding memory position to the execute object (number 1) or with the bit communication object (if parameters are configured).
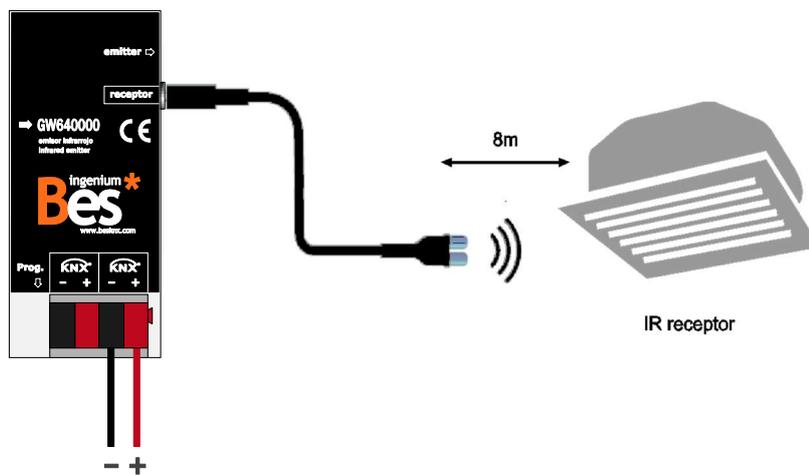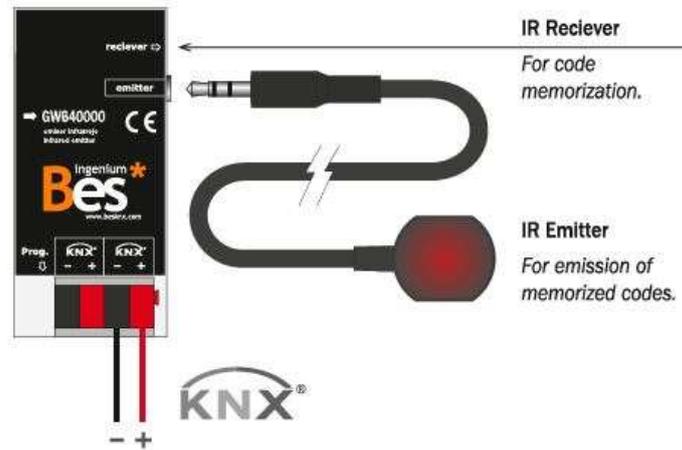
3.8   Restore factory settings

The IRKNX allows restoring factory settings just using the KNX programming button.

This button, for the KNX individual address assignment, is located on the front of the device near to the KNX bus connector and a red led near it lights up when it is pressed manually or if the device is set remotely to programming mode state.

To restore the IRKNX to factory settings, it is necessary to remove the KNX BUS connector from the device, press the programming button and connect the KNX BUS again while holding the programming button for 5 seconds approximately. When the KNX red LED turns on, it indicates that the IRKNX has been successfully restored, and it turns off instantly when release the programming button.

4 Installation

IR Reciever
For code memorization.

IR Emitter
For emission of memorized codes.

8m

IR receptor

⚠️

Feed low voltage lines (BUS and inputs) in ducts separate from the main power supply (230V) and outputs to ensure there is enough insulation and to avoid interference.

Do not connect mains voltage (230V) or any other external voltage at any point on the bus or inputs.
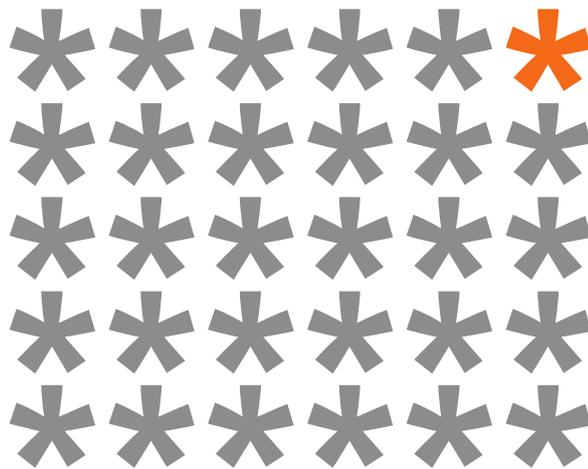
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