

JRKNX Gateway

HIGH Dom s.l.

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1.- Introduction.

This device performs the interconnection of alarm center JR PRO-4G (V.525 or later versions) with KNX system, communication between both devices is done via the communication bus RS485 integrated into the alarm center. This integration extends the security capabilities of our home using home automation infrastructure.

2.- Connections .

- *Connecting with 485 bus:* through the connector marked how “BUS 485” we connect JRKNX with the bus that uses the central JR PRO-4G to communicate with the sensors.
- *Connecting with KNX bus:* connection will make through the KNX standard connector.
- *Connecting with the power supply:* JRKNX must be powered to operate, feeding accepted for this device is between 8V and 20V.



3.- Communication Objects .

The JR PRO-4G central communicates with KNX through of “Communication Objects”, which will be linked with other KNX components for its good working.

The communication objects are:

- Alarm status information
 - 1 Status alarm object
- Using the central alarm as a time server for the KNX bus
 - 1 Central time of the object
 - 1 Central date of the object
- Night arm of the central
 - 1 Object to activate the night mode of the central
- Arming/disarming of the fourth zones.
 - 4 Objects for the Activation/Deactivation of the zones.
 - 4 Objects of zones status.
- KNX events use as detection system in areas of alarm, with a total of 32 areas. Information about the status of all zones.
 - 32 Objects to force the detection of zones.
 - 32 Objects of alarm state in zones.
 - 32 Objects of detection state in zones.
 - 32 Objects of zones state omission
- Sending SMS
 - 6 Objects to the KNX events sending via SMS
- SMS reception
 - 6 Objects for the reception command via SMS
- Activation/deactivation of 4 outputs
 - 4 Objects of output activation/deactivation
 - 4 Objects of output status
- CID event handling
 - 8 Objects of alarm events
 - 1 Object of CID type code
 - 1 Object of CID index code
 - 1 Object of CID notice event
 - 1 Object of area number/user/output

This JRKNX device is configured through the software ETS, to make easier parameterization parameters are grouped into the following sections:

- General
- Areas
- Zones

4.- General .

1.- Time/Date server

It's important that all the KNX devices that makes date and hour control, have the same source from which synchronize. JR 4G central has a long battery life that keeps the parameters of the central for several hour. This feature can be very useful to keep a reference for synchronization of the date and time on the bus.

- Configuration of the parameters and objects

To activate the time/date server, must change the parameter of “time/date server to “yes” value, activating this option we are indicating that you see the date and time to the central time to time and that the objects stored in the communication date and time.

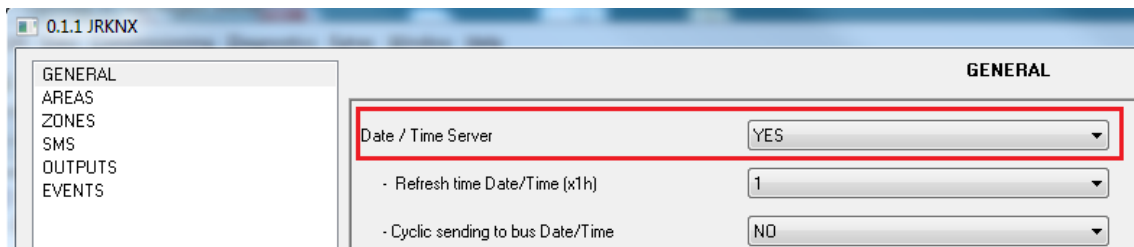


Fig.01 Activation parameter Server of Date/Time

Related objects are:

Number	Name	Object Function	Length	C	R	W	T	U	Data Type
2	Date of the Alarm Center	Date of the Alarm Center	3 Byte	C	R	-	T	-	Date DPT_Date
1	Time of the Alarm Center	Time of the Alarm Center	3 Byte	C	R	-	T	-	Time DPT_TimeOfDay

Fig.02 Server Objects of Date/Time

By default JRKNX will make consultation with the central JR PRO-4G every hour, we can specify the refresh rate.

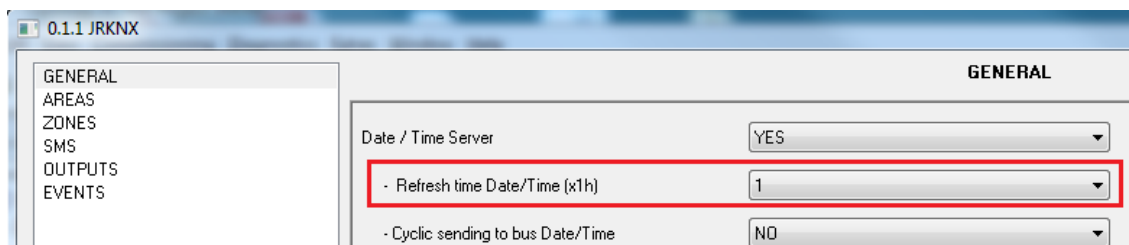


Fig.03 Data/Time of server refresh time parameter

If we want that when time/hour values updates also are sent to the bus, we must activate the “Cyclic sending bus parameter date/time”:

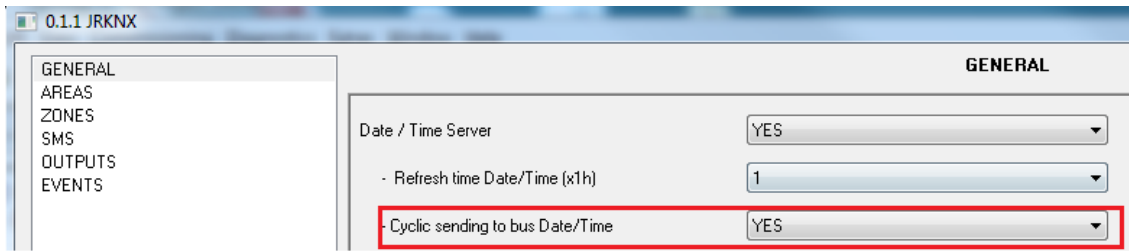


Fig.04 Date/Time cyclic sending parameter

2.-Night arming

This kind of arming must be set previously in the 4G central through of JR eLight software where will define which zones have the characteristic of night arming.

Once defined in the central can configure the parameter in the ETS software:

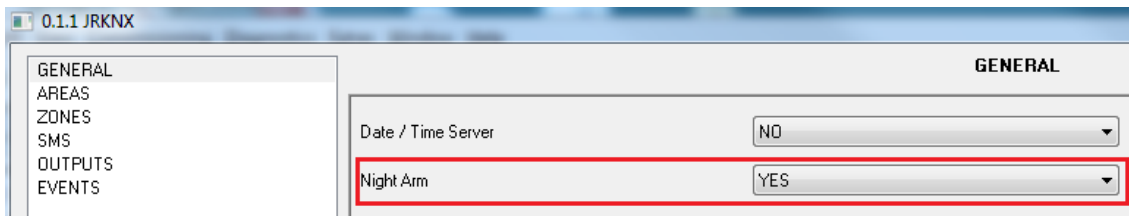


Fig.05 Arming night parameter

Which will enable the object night arming :

Number	Name	Object Function	Length	C	R	W	T	U
214	Night Arm	1 = Activate Night Arm	1 bit	C	-	W	-	-

Fig.06 Arming night object

Night arming makes one central arming with the 63 user.

3.-State of the alarm

It's an object that will report us about if any alarm in the central, the Communication Object always is available y doesn't requires configuration through the parameters.

Number	Name	Object Function	Length	C	R	W	T	U
0	Alarm Status	0 = Inactive, 1=Active	1 bit	C	R	-	T	-

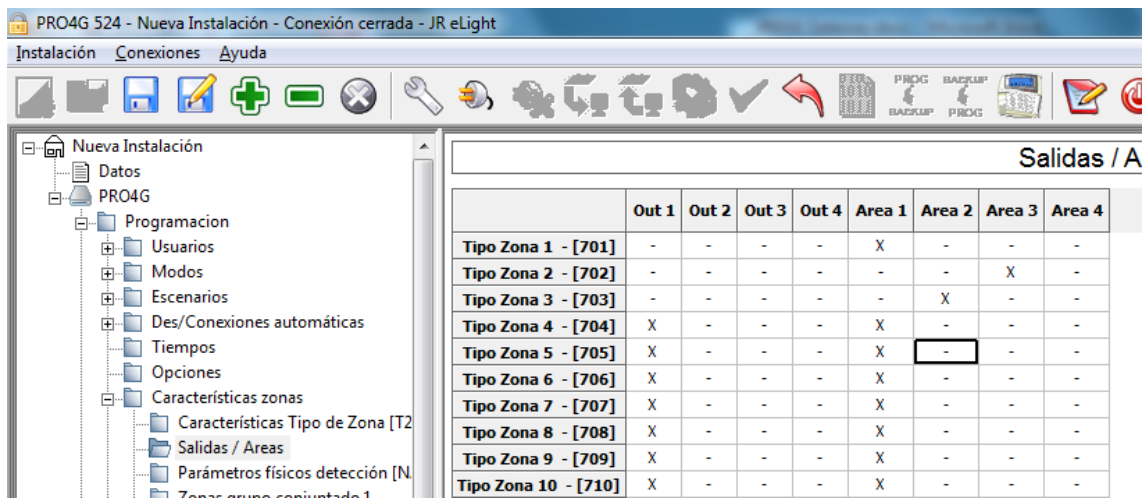
Fig.07 State of alarm object.

5.-Areas

An area is a group of zones, associated by having the same characteristics in a installation, this allows the creation of groups of zones that, by security reasons, should be assembled. For example one area could be a set of zones in the down floor, like the kitchen zones, living room, corridor, etcetera .

The area can have to status; Armed or Disarmed, that correspond to the action to enable or disable security. When an area is disarmed if a detection is produced, in one of the areas it will cause an alarm.

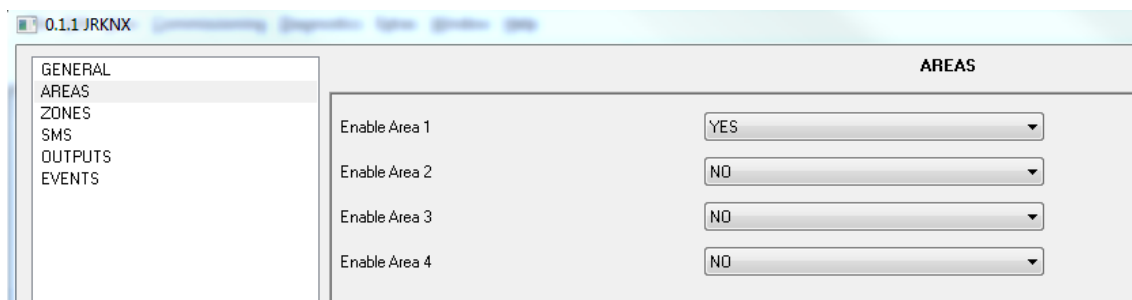
The association between areas and zones are defined in the JRRelight software:



	Out 1	Out 2	Out 3	Out 4	Area 1	Area 2	Area 3	Area 4
Tipo Zona 1 - [701]	-	-	-	-	X	-	-	-
Tipo Zona 2 - [702]	-	-	-	-	-	-	X	-
Tipo Zona 3 - [703]	-	-	-	-	-	X	-	-
Tipo Zona 4 - [704]	X	-	-	-	X	-	-	-
Tipo Zona 5 - [705]	X	-	-	-	X	-	-	-
Tipo Zona 6 - [706]	X	-	-	-	X	-	-	-
Tipo Zona 7 - [707]	X	-	-	-	X	-	-	-
Tipo Zona 8 - [708]	X	-	-	-	X	-	-	-
Tipo Zona 9 - [709]	X	-	-	-	X	-	-	-
Tipo Zona 10 - [710]	X	-	-	-	X	-	-	-

Fig.08 Zones settings in the Central JR PRO-4G

Through the configuration parameters of the ETS software we can implement Communication Objects that control the areas:



AREAS	
Enable Area 1	YES
Enable Area 2	NO
Enable Area 3	NO
Enable Area 4	NO

Fig.09 Enable areas parameter.

For each Area are activated objects, one that allows arming/disarming of the Area and other one of status of the same:

Number	Name	Object Function	Length	C	R	W	T	U
26	Area 1 Status	0=Unarmed / 1=Armed	1 bit	C	R	-	T	-
22	To Arm Area 1	0=Disarm Area1/1=Arm Area 1	1 bit	C	-	W	-	-

Fig.10 Areas objects.

6.- Zones

One zone is formed by one or several sensors in a specific location. For example on room may be a zone and be composed of a motion detector and a glass break.

In the JRKNX Gateway you can set 32 zones, sensors can be used in conjunction with specific sensors of the control panel (alarm central).

To use the zones in KNX, previously we should activate them through the parameters:

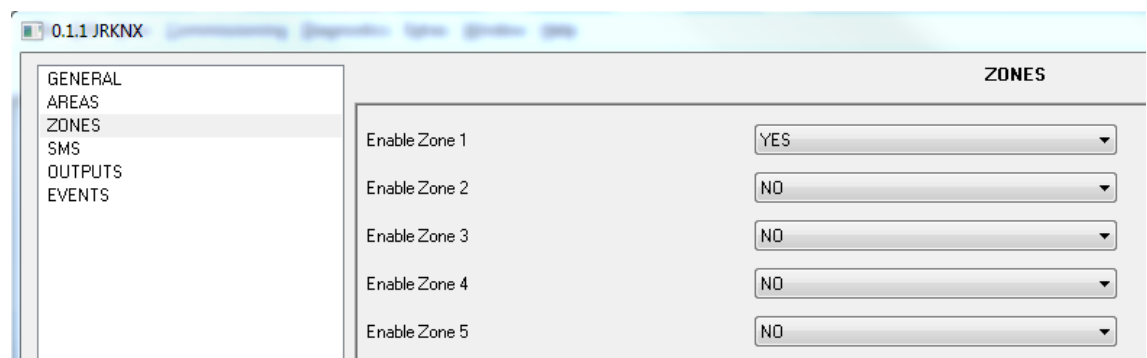


Fig.11 Zone parameters.

For each activated zone we will have of 4 objects of communication:

Number	Name	Object Function	Length	C	R	W	T	U
89	Status of Omission Zone 1	0=Enabled / 1=Omitted	1 bit	C	R	-	T	-
88	Status of Detection Zone 1	0=No detection/ 1=Detection	1 bit	C	R	-	T	-
87	Status of Alarm Zone 1	0 = No alarm / 1= Alarm	1 bit	C	R	-	T	-
86	Force Detection Zone 1	1 = Detection	1 bit	C	-	W	-	-

Fig.12 Communication zones objects

To force zone detection:

Through this object it's possible to be forced to send a detection zone to which it belongs, with the same effect that, if the same alarm central, received one detection trough one of it sensors .This forced detection is always parallel to itself detection sensors connected to the central.

This object is the one that will be used to convert a KNX sensor element of the alarm center.

Status of the alarm center:

When the alarm is armed and is produced a detection in one of its zones, it's produced one alarm as well, this object reports that it has produced an alarm in the set zone.

Status of the detection zone:

When it's produced a detection in one alarm sensor which belongs to the zone set or forced to perform a detection communication through the area, one detection event will sent to the KNX bus and also to the alarm central.

Omission status of the zone:

Zones may be omitted to not produce Alarm in the Central, when an omission zone is produced, an event will be sent to KNX bus that will indicate the zone of omission.

7.-SMS

This functionality allows the control of our KNX system through the reception of SMS and in addition may send data of the events that produces in the KNX bus.

For example, the system can activate one light or report us about the temperature that is in the living room through a SMS

Sending and receiving operations of SMS for the KNX system control are produced through the GPRS module of the central. For the control we can set 6 sending SMS and 6 receiving SMS.

1.- SMS sending

To activate the SMS sending through the parameters:

The screenshot shows the 'SMS' configuration window in the JRKNX software. On the left is a navigation menu with options: GENERAL, AREAS, ZONES, SMS (selected), OUTPUTS, and EVENTS. The main area is titled 'SMS' and is divided into 'SMS RECEPTION' and 'SMS SENDING' sections. The 'SMS SENDING' section is highlighted with a red rectangular box. Within this section, the following parameters are visible:

- Enable Sending SMS1: YES (dropdown menu)
- Type SMS1: On/Off (dropdown menu)
- Text SMS1 send: Light Hall (text input field)
- Telephone Alarm Index: 1 (dropdown menu)

Below the highlighted section, the following parameters are also visible:

- Enable Sending SMS2: NO (dropdown menu)
- Enable Sending SMS3: NO (dropdown menu)

Fig.13 Reception parameter settings of SMS.

For each SMS sending we must set the following parameters:

Type SMS: depending of the chosen class will create an object of a given length, the options are:

- On/Off: For a 1 Bit object: it will send a SMS with an ON, in the case one “1” and one OFF in the case of one “0”.
- Scene: for one Object of 1 Byte os scene class. It will send a number of scene.
- Percentage: for one Object of 1 Byte of percentage class. It will send the percentage.

- Temperature: for one Object of 2 Byte of temperature class. It will send the temperature.

Sending text: Is the text that will be sent together with the predefined data type previously with the SMS class. The maximum extension is 12 characters and it's not allowed accentuated characters.

Index of the pone in alarm: the sending of SMS it's realized to a number which is predefined in the software JR Elight set.

The message will contain the cell phone SMS text set to the ETS and the KNX value that is sent to the communication object.

In the configuration example above, the message would reach us on or off the hall light would be:



Fig.14 On Living Room light.



Fig.15 Off Living Room light.

2.- SMS reception

To activate the SMS reception through the parameters:

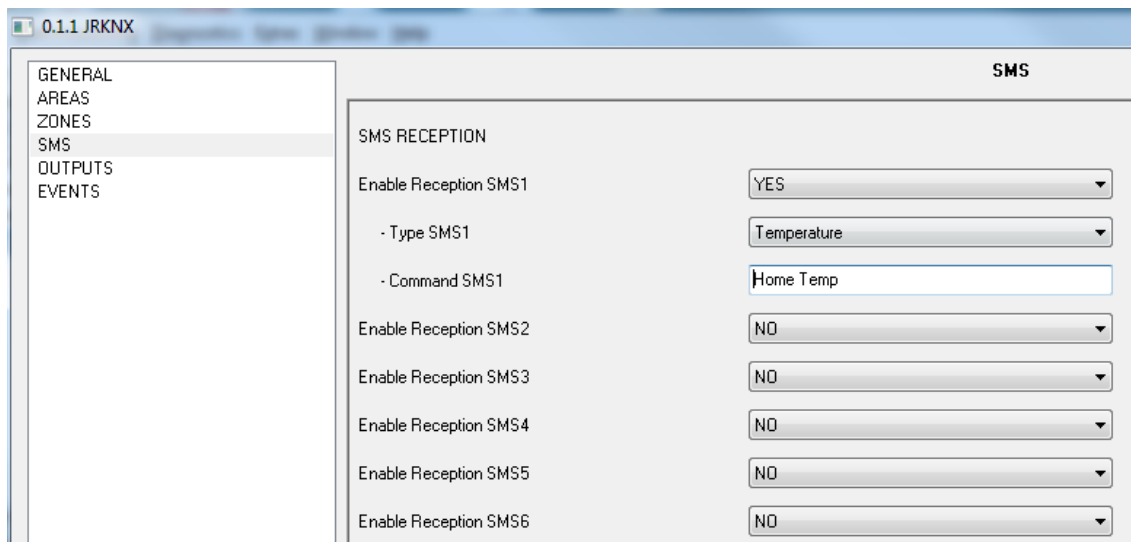


Fig.16 Reception parameter settings of SMS.

For each send of SMS we must set the following parameters:

Type SMS: depending of the class it will create an object of a given length, the options are:

- On/Off: for a 1 Bit object. It allows activate and deactivate functions with 1 bit object. “1” for the ON and “o” for the OFF.
- Scene: for 1 Byte object of scene class. It allows launch a specific scene. Admitted values are around 1 to 100.
- Percentage: for 1 Byte object of percentage class. It will establish one percentage for example for one blind. Admitted values between 0 and 100.
- Temperature: for 2 Bytes object of temperature class. It will use to change the temperature in one determined room. The temperature values must be in degrees Celsius. Admitted values between 10 and 80, just entire values (11,23,27, etcetera)

Command SMS: is the command the must use to send via SMS to make one determined action.

The text we must write in the SMS will have the following format:

[CommandSMS]=[Value]#

Example 1

If we want that, through a SMS, activates de living room lights:

Firstly we will set the Type SMS:

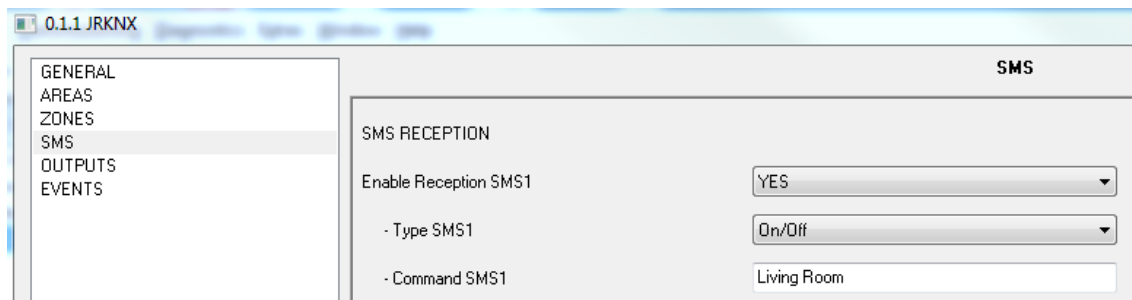


Fig.17 Configuration parameters SMS reception to control lights

To establish the type SMS to On/Off a 1 Bit object appear:

Number	Name	Object Function	Length	C	R	W	T	U	Data Type
38	Received 1 Bit SMS1	On/Off	1 bit	C	-	-	T	-	1 bit DPT_Switch

Fig.18 Reception SMS1 object.

This object is concatenated with the direction of the group on the room light.

To switch on or switch off the light we must send a SMS with the following text:



Fig.19 Living off the light.

Fig.20 Living on the light.

Example2:

We want control the living room temperature.

Just set the SMS class:

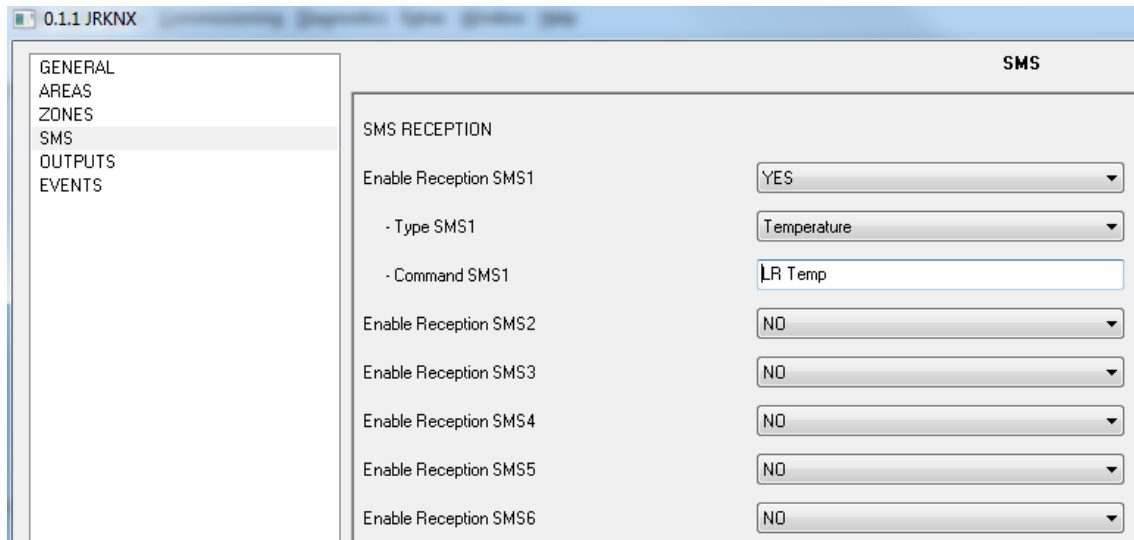


Fig.21 Reception settings parameters of SMS1, for the temperature control.

It shows us an object of 2 Bytes for the temperature:

Number	Name	Object Function	Length	C	R	W	T	U	Data Type
40	Received 2 Byte SMS1	Temperature	2 Byte	C	-	-	T	-	2 byte float value DPT_Value_Temp

Fig.22 Reception SMS1 object

Now we must concatenate it with the object of temperature which controls our air conditioning and once it's done we can send the SMS with the desired temperature:



Fig.23 Living room temperature to 22°C.



Fig.24 Living room temperature to 18°C.

Outputs

The designed outputs from 1 to 4 in the alarm center will be able to be controlled from KNX and we can always know the status of these selves.

Outputs must activate through the ETS parameter configuration:

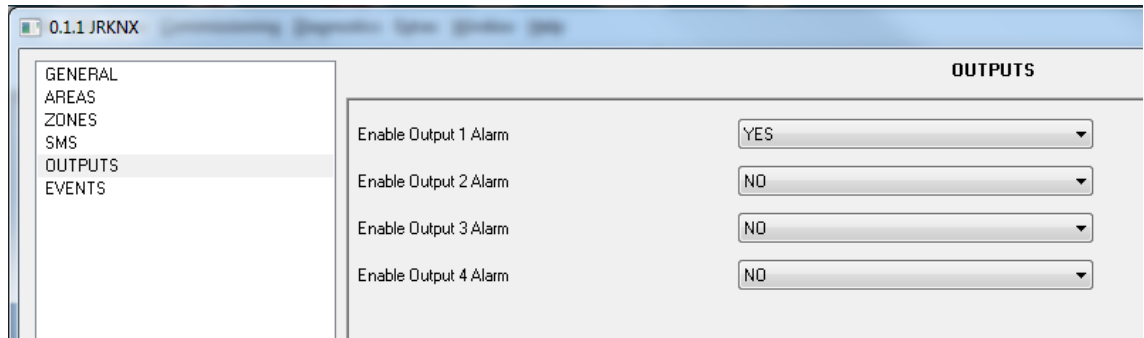


Fig.25 Communication outputs parameters

Each output generates two objects, one for the activation/deactivation and other one for the status:

Number	Name	Object Function	Length	C	R	W	T	U
34	Status Output 1 of the Alarm	0=Open / 1=Close	1 bit	C	R	-	T	-

Fig.26 Communication outputs object

Status is sent to the bus with each change of value.

Events

The events created in the central can be registered by the KNX system, CID events belong to a specific normative.

The device JRKNX Gateway has an advanced resource management that enables the recording of all incidents in the alarm system.

When the Events System activates, values are stored in several objects and the possibility of sending an indication that an event has occurred. Values in the Objects is overwritten on each new event. This information may be used for a device that allows create a record of the events to be analyzed later.

Registration also can report events to the bus by associating them with a kind of CID code, for example that inform us when there is a remote activation of the central, medical emergency, silent robbery etcetera.

To activate the event management we will modify the next parameters:

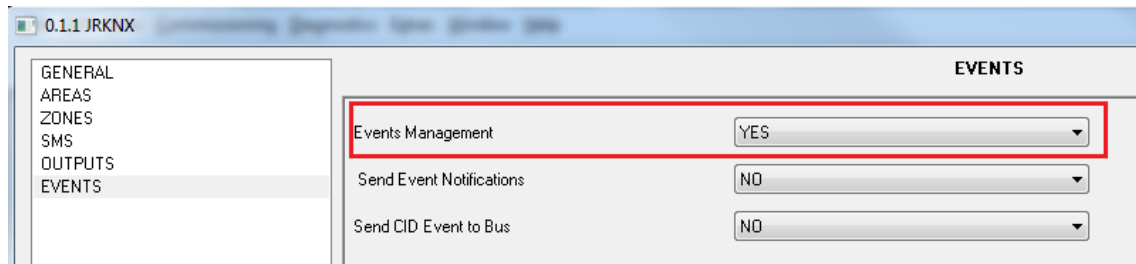


Fig.27 Event Management parameters

Esta acción generará los siguientes objetos:

Number	Name	Object Function	Length	C	R	W	T	U	Data Type
20	Time of the Event	Event Time	3 Byte	C	R	-	T	-	Time DPT_TimeOfDay
19	Date of the CID Event	Date of the Event	3 Byte	C	R	-	T	-	Date DPT_Date
18	Num. Zone/User/CID Output	Num. Zone/User/Output	1 Byte	C	R	-	T	-	
17	Event CID Index	Event Index	1 Byte	C	R	-	T	-	
6	Type of CID Event	1=New / 0=Restore	1 bit	C	R	-	T	-	

Fig.28 Objects for the event management registration

CID event type: when a CID event is created can be New or Restoration.

CID event index: the index will use to see which is the CID code, we can see the equivalence in the A table Annexed.

Zone number/user/CID output: depending of the CID code this object will indicate us where it has produced an event, showing us the number of zone, the user or the output number.

CID event date: indicates the date when an event has occurred.

CID event time: indicates the time when an event has occurred.

We can also make that device inform us about when any new event is produced.

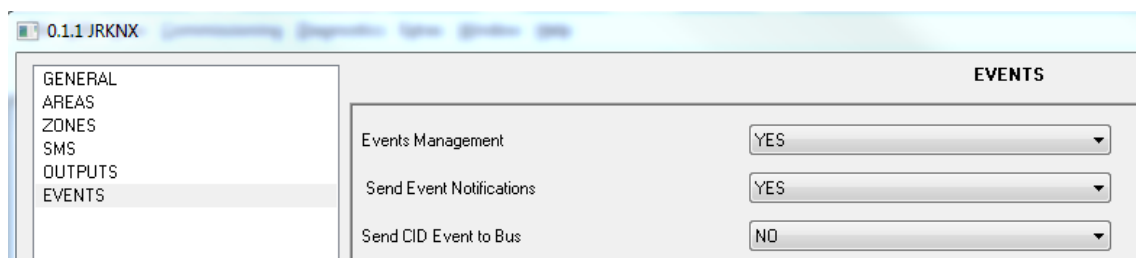


Fig.29 Event notification parameter.

This will enable an object which will inform us that an event has produced:

Number	Name	Object Function	Length	C	R	W	T	U
21	CID Event Trigger	0 = No Event, 1= Event	1 bit	C	R	-	T	-

Fig.30 New event notifier object

We also can indicate that inform us just with certain objects, for that we will activate the next parameter:

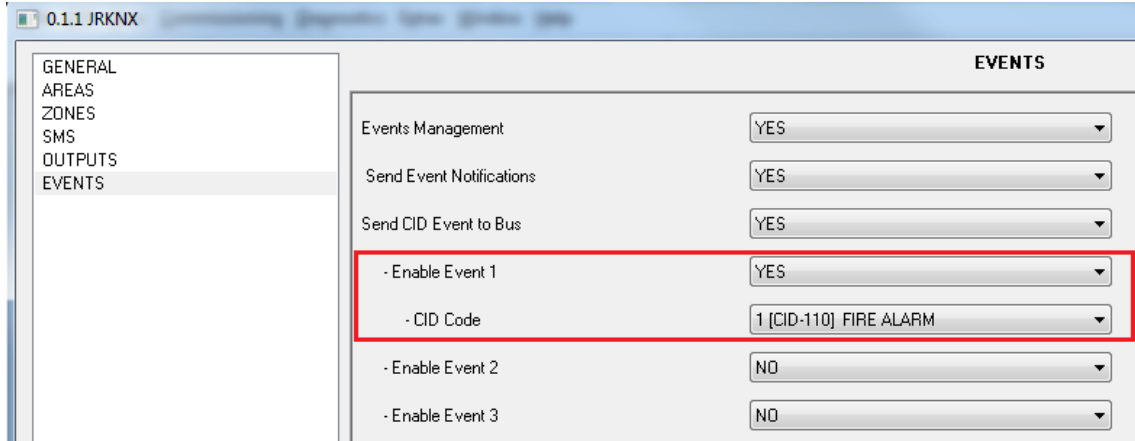


Fig.31 Event notification parameter CID.

We will have to specify the CID code that has associated to inform us when is produced, the object will make this function, in chase of enable the event is the following:

Number	Name	Object Function	Length	C	R	W	T	U
17	Reports the Event 1	1 = An event has occurred	1 bit	C	-	-	T	-

Fig.32 Object event-1 report CID

It isn't necessary to set the parameter "Send Event Notification" for individual events are sent to the bus.

ANEXO A

Index list of CID codes:

INDEX	U= User A = Area Z = Zone S = Output R = Rele B = Bus SN = Without Number.	CID Code	Description
0	Z	100	MEDICAL EMERGENCY
1	Z	110	FIRE ALARM
2	Z	111	SMOKE ALARM
3	Z	112	COMBUSTION ALARM
4	Z	113	FLOOD ALARM
5	Z	114	ALARM TEMPERATURE- HEAT SENSOR
6	Z	115	FIRE ALARM BUTTON
7	Z	118	PRE-ALARM FIRE
8	Z	120	ROBBERY
9	U	121	ROBBERY – COERCION CODE
10	Z	122	SILENT ROBBERY
11	Z	130	THEFT
12	Z	131	PERIMETER THEFT
13	Z	132	INTERNAL THEFT
14	Z	133	SABOTAGE 24h
15	Z	134	INPUT / OUTPUT THEFT
16	Z	135	DAY THEFT
17	Z	136	EXTERNAL THEFT
18	Z	137	TAMPER
19	Z	138	PRE-ALARM OF THEFT
20	Z	140	THEFT – GENERIC
21	Z	141	OPEN LOOP FAULT
22	Z	142	SHORTED LOOP FAULT
23	B	143	BREAKDOWN EXPANSION MODULE
24	B	145	TAMPER EXPANSION MODULE
25	Z	151	GAS DETECTOR ALARM
26	Z	152	REFRIGERATION ALARM
27	Z	1FA	FIRST ZONE IN ALARM
28	Z	154	WATER LEAKAGE
29	Z	155	BROKEN GLASS
30	Z	157	LOW GAS ALARM
31	Z	158	HIGH TEMPERATURE ALARM
32	Z	159	LOW TEMPERATURA ALARM
33	Z	161	VENTILATION ALARM
34	Z	201	LOW WATER PRESSURE ALARM
35	Z	202	LOW CO2 LEVEL ALARM

36	Z	203	ESCAPE VALVE ALARM
37	Z	204	LOW WATER LEVEL ALARM
38	Z	205	ACTIVATED BOMB ALARM
39	Z	206	PUMP FAILURE ALARM
40	SN	300	SYSTEM FAILURE
41	SN	301	AC FAILURE
42	SN	302	LOW BATTERY
43	SN	305	SYSTEM RESET
44	SN	306	CHANGE PANEL PROGRAMMING
45	SN	309	BATTERY TEST FAILURE
46	S	320	SYSTEM FAULT RELAY
47	S	321	SIREN 1 FAILURE
48	S	322	SIREN 2 FAILURE
49	B	333	EXPANSION MODULE FAILURE
50	B	334	REPEATER FAILURE
51	SN	335	PAPEL PRINTER FAIURE
52	SN	336	GENERAL FAILURE IN PRINTER
53	Z	340	PERIMETER SYSTEM FAILURE
54	Z	388	LOW SENSITIVITY FAULT DETECTOR (DEGREE 3)
55	SN	351	TELEPHONE LINE FAULT
56	Z	353	FAILURE OF TRANSMITTER VIA RADIO
57	Z	384	LOW BATT FAILURE VIA RADIO
58	Z	373	FIRE LOOP FAULT
59	Z	380	SENSOR FAULT
60	Z	383	TAMPER SENSOR
61	A	400	Connection(3400) /Disconnection (1400)
62	U	401	Connection /User Disconnection
63	U	403	Connection / Automatic Disconnection
64	U	406	Disconnection alarm with cancellation
65	U	407	Connection / Remote disconnection
66	U	408	Fast arming
67	U	409	Connection / Disconnection by key
68	U	420	Access Control
69	U	421	Access denied
70	U	422	Successful access
71	S	521	SIREN 1 DISABLED
72	S	522	SIREN 2 DISABLED
73	S	523	ALARM RELAY CANCELED
74	Z	530	PERIMETER SYSTEM CANCELED
75	SN	550	COMMUNICATION CANCELED
76	SN	551	TELEPHONE COMMUNICATOR CANCELED
77	SN	552	VIA RADIO TRANSMITTER CANCELED
78	Z	570	CANCELED ZONE
79	Z	571	FIRE ZONE CANCELED
80	Z	572	24 hours ZONE CANCELED
81	Z	573	ROBBERY ZONE CANCELED
82	SN	601	MANUAL TEST
83	SN	602	PERIODIC TEST
84	SN	603	VIA RADIO PERIODIC TEST
85	Z	604	FIRE TEST

86	SN	606	ACTIVATED LISTENIG
87	SN	607	WALKING TEST ACTIVATED
88	SN	625	START DATE AND TIME
89	SN	630	SCHEDULE CHANGE
90	S	700	OUTPUT ACTIVATE
91	SN	354	TELEPHONE COMMUNICATION FAILURE
92	Z	307	WATCHING ZONE FAILURE
93	SN	626	INVALIDATED DATE AND TIME
94	R	701	RELAY ACTIVATION
95	Z	344	RF JAMMING
96	SN	352	GSM LINE FAILURE (TELCO 2 FAILURE)
97	SN	610	TEST IP EVENT
98	SN	629	DATE AND TIME STAMP
99	SN	903	CALL OVERLOAD
100	Z	609	VIDEO EVENT
101	U	441	Stay Arming (15/03/11)
102	U	454	Failed to Close (15/03/11) Arm trying with open zone
103	U	4FC	FORCED CLOSE. (15/03/11)
104	B	359	COMMUNICATION BUS FAILURE RS485 (15/03/11)
105	SN	357	ROE antenna wireless system
106	SN	62A	Interface use no EN50131 (08/06/11)
107	SN	308	System reset (10/10/11)
108	SN	627	ENTRY INTO PROGRAMMING MODE (12/12/11)
109	SN	35E	Ethernet system failure. (14/02/12)

**Codes in blue still not implemented.*