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ELAUSYS
NX-KNX

KNX Interface for
GE Interlogix NetworX alarm system

User Manual

Document history			
Version	**Date**	**Author**	**Comment**
1.00	14-AUG-2017	NDE	First issue
2.00	01-MAR-2018	NDE	Update firmware to standard Elausys "Alarm System Gateway V2.00" ETS Application
2.01	24-MAY-2018	NDE	Updated NX584 programming data requirement
2.02	12-APR-2019	NDE	Added extra NX584 programming data requirement
2.03	02-MAY-2020	NDE	Added NX584 programming data requirement on location 2 – Segment 1 – data 5 for zone status messages

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1. INTRODUCTION

The KNX interface module NX-KNX is a KNX gateway for the GE Interlogix NetworX alarm systems. It enables bidirectional communication with the alarm system using the RS232 communication module (NX-584E) from GE.

It allows integrators to take advantage of a fully integrated alarm system including KNX scenarios, automatic lighting using the motion detectors, arming or monitoring the system using a KNX visualization.

Main features:

- KNX Interface for GE NetworX alarm systems
- Up to **96 zone status**
- Control up to **4 areas** (arm/partial/disarm)
- 9 status per area (alarm, entry, exit, fire,…)
- Recall of KNX **scenes** for each status
- Battery and AC Failure monitoring
- Galvanic insulation from the KNX bus

By default, zone status is configured for zone 1 to 96 of the alarm system. A general parameter allows to change for zone 97 to 192. Having then the possibility to use two gateways in the same installation to cover the 192 zones of the alarm system.

In the same way, areas are configured for areas 1 to 4 of the alarm system but a parameter allows to change the area number to cover the areas 5 to 8 if required.

2. OVERVIEW

2.1 USAGE & LIMITATION

This interface is intended to be used with a GE NetworX series alarm system. The system must be equipped with an RS232 serial interface (ex. NX-584E).
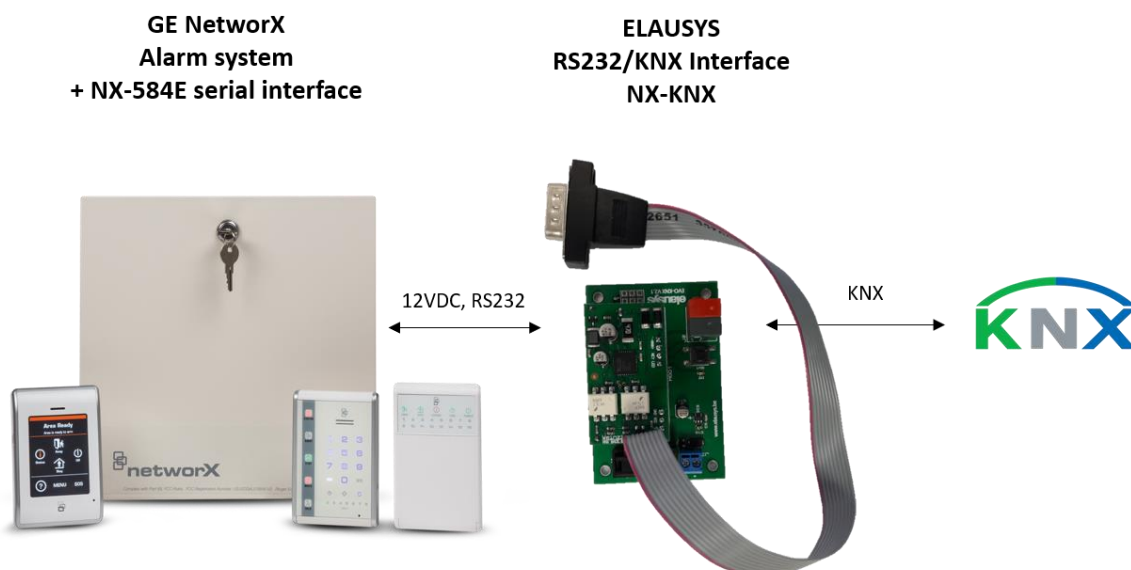
2.1 SOFTWARE

The KNX Interface is configured using the ETS tool, the free ETS Demo version can be downloaded from the website of KNX Association. The free version allows to configure up to 5 KNX modules in a project, the KNX gateway is only one module.

2.2 CONNECTION DIAGRAM

Elausys NX-KNX module requires an external 12VDC power supply which can be provided by the AUX power supply of the alarm system.

The RS232 connection between the NX-584E and the NX-KNX interface is made using the DB9 connector provided with this module. A gender changer adapter (female/female) is provided and must be used to interconnect the two boards. the No additional component or wiring is required.

GE NetworX
NX-584E Interface

ELAUSYS
KNX Interface
NX-KNX

RS232 (DB9)

12VDC + GND
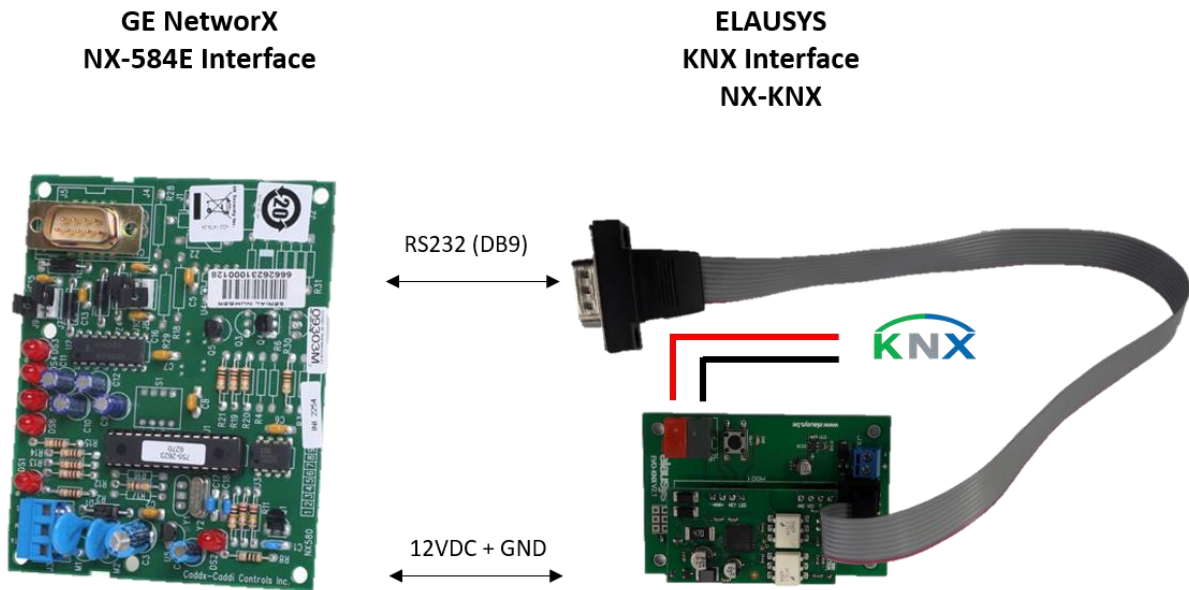
Jumpers J8 and J10 of the NX-584E must be reversed compared to default positions, see the illustration below.
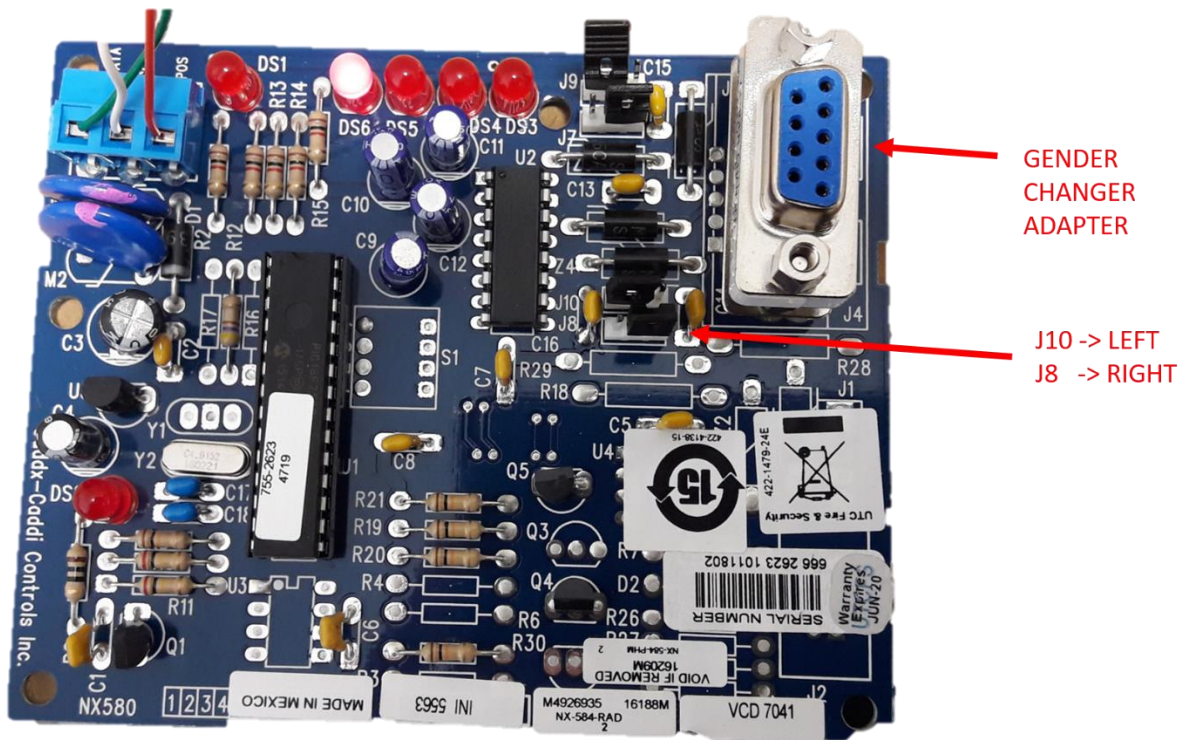
IMPORTANT NOTE for NX V2 series panels: remove jumper **J7** on the NX-584 board to allow proper communication between the panel and the system controller.

2.1   CONFIGURING THE NX-584E MODULE

On the NX control panel follow these steps to change the configuration.

2.1.1   USING THE LED KEYPAD

➢ **To enter the Program Mode:**
- Enter [*]-[**8**] (all of the function key LEDs will begin to flash).
- Enter the "Go To Program" code (default is [**9**]-[**7**]-[**1**]-[**3**]). If the code was valid, the Service LED will flash, and the function LEDs will illuminate steady, indicating the device to program should be entered.

➢ **Enter the address** of the NX-584, which is [7] [2] followed by [#]. At this point, the Armed LED will illuminate while it is waiting for a programming location to be entered.

➢ **Enter the desired programming** location followed by the [#] key**.**
- The Armed LED will begin to flash while a programming location is being entered. If this is a valid location, the Armed LED will extinguish, the Ready LED will illuminate, and the binary data for the first segment of this location will be shown on the zone LEDS.
- If the desired location is the next sequential location, press the [POLICE] key.

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- • If the previous location is desired press the [FIRE] key.
- • If the same location is desired press the [AUXILIARY] key.
- ➢ **To change the data**, enter the data followed by [r].
  - • The data will be entered, and the location will automatically increment to the next segment. The data for that segment will be displayed. This procedure is repeated until the last segment is reached.
- ➢ **To exit this location** without changing the data, press the [**#**] key.
- ➢ **To review the data**, repeat the above procedure, pressing the [r] key without entering data first.

Each time the [r] key is pressed, the next segment is displayed. After the last segment of a location is programmed, pressing the [r] key will exit that location, turn the "Ready" LED off and the "Armed" LED on. As before, you are now ready to enter another programming location. If an attempt is made to program an invalid entry for a particular segment, the keypad sounder will emit a triple error beep (beep, beep, beep) and remain in that segment awaiting a valid entry.

- ➢ **To exit the Program Mode**, press the [**Exit**] key to exit this programming level. Pressing the [**Exit**] key again will exit the Program Mode.

2.1.2 USING THE LCD KEYPAD

All steps required for programming are the same as the LED keypad. The LCD keypad display will prompt you for the data required. While in the programming mode, and not in a location, the number in parenthesis is the location you were previously changing. For example, if the display reads "Enter location, then # (2)", it is reminding you that location 2 was the last location you programmed. In feature selection data, the numbers of the enabled features will be displayed. The features **not** enabled will display a hyphen (-).

2.1.1 PROGRAMMING DATA

To enable all features of the KNX interface, configure the module parameters according to the yellow checked box below.

IMPORTANT!
GE Caddx panels cannot support PIN codes that ends in zero over RS-232.

Step	Instructions	Comments
1	Press [* 8] + [9713]+[72]+[#]	Enter programming mode for the NX-584, module 72, using the factory default password
2	Press [0 #]	Sets the location to 0. Change the value to **[- - - - - - - -]**, enabling the **Home Automation Protocol**
3	Press [*]	Stores the data into location 0
4	Press [1 #]	Sets the location to 1. Confirm the value is **4**, enabling the **Baud rate of 9600**
5	Press [*]	Stores the data into location 1
6	Press [2 #]	Sets the location to 2 segment 1. Confirm that the value is set to **[- 2 - - 5 - 7 -]**, enabling **Interface Configuration at Power Up, Zone Status Message and Partition Status Message**
7	Press [*]	Sets the location to 2 segment 2. Confirm that the value is set to **[1 2 - - - - - -]**, enabling **System Status Message and X10 Message Received**
8	Press [*]	Stores the data into location 2 segment 2
9	Press [3 #]	Sets the location to 3 segment 1. Confirm that the value is set to **[- 2 - 4 5 6 7 8]**, enabling Interface Configuration Request, Zone Name Request, Zone Status Request, Zones Snapshot Request, Partition Status Request, Partitions Snapshot Request
10	Press [*]	Sets the location to 3 segment 2. Change the value to **[1 2 3 4 5 - - -]**, enabling System Status Request, Send X-10 Message, Log Event Request, Send Keypad Text Message, Keypad Terminal Mode Request
11	Press [*]	Sets the location to 3 segment 3. Change the value to **[1 2 3 - 5 - 7 -]**, enabling Program Data Request, Program Data Command, User Information Request with PIN, Set User Code Command with PIN, Set User Authorization Command with Pin
12	Press [*]	Sets the location to 3 segment 4. Change the value to **[- - - 4 5 - 7 8]**, enabling Set Clock/Calender Command, Primary Keypad Function with Pin, Secondary Keypad Function, Zone Bypass Toggle
13	Press[*]	Stores the data into location 3 segment 4
14	Press [4 #]	Sets the location to 4 segment 1. Confirm the value is **192**, setting the **LCD Keypad Address to 192**
15	Press[*]	Stores the data into location 4
16	Press[Exit]	**Exits device setup**
17	Press[Exit]	**Exits device setup**

3. PARAMETERS

The KNX interface parameters are defined in the "parameters" tab of the device, in the ETS project.

3.1 GENERAL SETTINGS

The following parameters are defined in the General section of the device parameters:

PARAMETER	VALUES	DESCRIPTION
Use PG Control	▪ **Not used (default)** ▪ Used	This parameter must be set to "Not used" for the NX interface. **PG Control is not available on this device.**
Use PG Status	▪ **Not used (default)** ▪ Used	This parameter must be set to "Not used" for the NX interface. **PG Status is not available on this device.**
Number of PG	▪ **16 (default)** ▪ 32	**PG are not available on this device.**
Use Zone Status	▪ Not used ▪ **Used (default)**	When this parameter is set to "Used", the zone status group objects are made available.
Number of zones	▪ **16 (default)** ▪ 32 ▪ 48 ▪ 64 ▪ 72 ▪ 96	Number of zone status group objects to be used.
Zones offset	▪ **0 (default)** ▪ 96	An offset of 0 will use zones 1 to 96 from the alarm system whereas an offset of 96 will use zones 97 to 192

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Use Virtual inputs	▪ **Not used (default)** ▪ Used	This parameter must be set to "Not used" for the NX interface. **Virtual inputs are not available on this device.**
Number of areas	▪ **1 (default)** ▪ 2 ▪ 3 ▪ 4	Number of areas to control/monitor from the KNX interface
Send area status	▪ ON ▪ OFF ▪ **ON/OFF (default)**	Area status object can be configured to send only the changes to ON values, only the changes to OFF values or both ON and OFF values
User code	Text field (format 123456)	When using control commands from KNX, a valid user code of up to 6 digits is required. This applies to area control (arm, disarm,…)
User code lenght	4..6	Number of digits for the user code
Use Power supply status	▪ **Not used (default)** ▪ Used	When this parameter is set to "Used", the power supply stauts group objects aobjects are made available.
PG and Zone startup behavior	▪ **Switch OFF (default)** ▪ Switch ON ▪ Memory	Internal status of group object after restart. Memory will restore the state of group objects before power lost.
Device Options	Text string	**Device options are not available on this device.**

3.2 ZONE

Depending the general parameter "Number of zones", up to 96 zones are listed in the group objects.

The status of each zone from the GE NetworX alarm system can be monitored by a Group object.

The general parameter "Zones offset" allow to use zones 1 to 96 from the alarm system or zones 97 to 192.

3.3 AREA

Depending the general parameter "Number of areas", up to 4 areas are listed in the group objects.

Each area can be controlled by using the 3 group objects: Arm, partial arm or disarm. Several statuses are available and have a dedicated group object.

CONTROL OBJECT	VALUE ON	VALUE OFF
Arm (switch)	Arm	Disarm
Partial arm (switch)	Partial Arm	Disarm
Disarm (trigger)	Disarm	Disarm

For each area, a tab is made visible to configure the area parameters.

Areas are configured for areas 1 to 4 of the alarm system but by changing the parameter "Area mapping" it is also possible to cover the areas 5 to 8.

A scene can be assigned to each status. This scene number will be recalled each time the zone status is active (ON).

Leave the scene number to 0 to disable the scene control.

STATE	SCENE
Disarmed	0..64
Entry	0..64
Exit	0..64
Armed	0..64
Partial armed	0..64
Fire alarm	0..64
Siren ON (Audible alarm)	0..64
Panic alarm (Silent alarm)	0..64
Intrusion alarm	0..64

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4. COMMUNICATION OBJECTS

4.1 GENERAL

General communication objects of the device.

GO	NAME	DESCRIPTION
1	Module status	Sends 0 when the module is operating normally, sends an error code when applicable.
2	Firmware	Sends the firmware version of the device at startup
233	Call scene	The scene number configured for each area status are sent to KNX whenever the area status is activated

4.2 POWER SUPPLY

GO	NAME	DESCRIPTION
163	AC Failure	Active when the main power supply of the alarm system is down.
164	Battery Failure	Active when the battery is low

4.3 ZONE

Each ZONE has 1 Group Objects (GO) for the status to KNX.

GO	NAME	DESCRIPTION
67	Zone x Status	Zone status

This chapter details what GO are available for each ZONE. The same GO applies to all other ZONE (x = 1 to 96).

4.4 AREA

Each area has 12 Group Objects (GO), 3 for area control and 9 for the area status to KNX.

GO	NAME	DESCRIPTION
185	Area x - Arm	Arm the Area
186	Area x – Partial arm	Partial arm the Area
187	Area x – Disarm	Disarm the Area
188	Area x – State disarmed	Area x status
189	Area x – Entry delay	Area x status
190	Area x – Exit delay	Area x status
191	Area x – State armed	Area x status
192	Area x – State partial armed	Area x status
193	Area x – Fire alarm	Area x status
194	Area x – Siren ON	Area x status
195	Area x – Panic alarm	Area x status
196	Area x – Intrusion alarm	Area x status

This chapter details what GO are available for each AREA. The same GO applies to all other areas (x = 1 to 4).

4.5   GROUP OBJECT LIST

GO	Name	Function	Size	Flags	Type ID	Type Name	Range	Description
1	Module status	Status code	1 byte	C R - T -	20.011	DPT_ErrorClass_System		Device error code
2	Firmware	Text string	14 bytes	C R - T -	16.000	DPT_String_ASCII		Device firmware version
3	PG1	On/Off	1 bit	C - W - -	1.001	DPT_Switch	0..1	PG – On/Off (NOT USED)
4	PG1 Status	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	PG – On/Off status (NOT USED)
5	PG2	On/Off	1 bit	C - W - -	1.001	DPT_Switch	0..1	PG – On/Off (NOT USED)
6	PG2 Status	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	PG – On/Off status (NOT USED)
…	*Same for PG3 to PG31*							
64	PG32	On/Off	1 bit	C - W - -	1.001	DPT_Switch	0..1	PG – On/Off (NOT USED)
66	PG32 Status	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	PG – On/Off status (NOT USED)
67	Zone 1 Status	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Zone – On/Off status
68	Zone 2 Status	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Zone – On/Off status
…	*Same for Zone 3 to 95*							
162	Zone 96 Status	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Zone – On/Off status
163	AC Failure	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	On/Off status
164	Battery Failure	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	On/Off status
169	Virtual input 1	Open/Close	1 bit	C - W - -	1.001	DPT_Switch	0..1	Open/close input (NOT USED)
170	Virtual input 2	Open/Close	1 bit	C - W - -	1.001	DPT_Switch	0..1	Open/close input (NOT USED)
…	*Same for input 3 to 15*							

GO	Name	Function	Size	Flags	Type ID	Type Name	Range	Description
184	Virtual input 16	Open/Close	1 bit	C - W - -	1.001	DPT_Switch	0..1	Open/close input (NOT USED)
185	Area 1 - Arm	On/Off	1 bit	C - W - -	1.017	DPT_Switch	0..1	Arm Area
186	Area 1 – Partial arm	On/Off	1 bit	C - W - -	1.017	DPT_Switch	0..1	Partial arm Area
187	Area 1 – Disarm	On	1 bit	C - W - -	1.017	DPT_Trigger	0..1	Disarm Area
188	Area 1 – state disarmed	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Area state disarmed
189	Area 1 – entry delay	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Area entry delay status
190	Area 1 – exit delay	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Area exit delay status
191	Area 1 – state armed	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Area state armed status
192	Area 1 – state partial armed	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Area state partial armed status
193	Area 1 – Fire alarm	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Area fire alarm
194	Area 1 – Siren ON	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Area siren ON
195	Area 1 – Panic alarm	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Area panic alarm
196	Area 1 – Intrusion alarm	On/Off	1 bit	C R - T -	1.001	DPT_Switch	0..1	Area intrusion alarm
...	*Same for AREA 2 to 4*							
233	Call scene	-	1 Byte	C - - T -	18.001	DPT_SceneControl	1..64	Scene control

5. CONFIGURATION

5.1 PHYSICAL DEVICE

ELAUSYS devices are configured using the ETS tool. You should first download and install the free version of ETS tool before you continue.

The NX-KNX Interface must be assigned a physical address on the KNX network. Assign a free address to the module, in our example we choose 1.1.50.
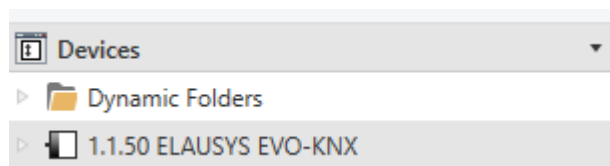
5.2 PARAMETERS

Once a KNX physical address is set, open the parameter tab to configure the interface.
The parameters are grouped into sections: A general section and a section for each area configured.

In the general section, enter a valid user code from the alarm system to enable area control.

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Enable the required group objects and select the number of zone and areas to be used.
For each Area selected, a tab is available in the left side menu to configure the scene control.

Open the first Area parameters by selecting the section "Area 1".

By default Area 1 is mapped to area 1 of the alarm system, by changing this value to 5 for example, Area 1 of the KNX interface would be linked to area 5 in the alarm system.

For each status of the Area, set the scene number to be called. Leaving the scene number to 0 will disable it.

Then repeat the same process for each Area in your project.

When GO and parameters are all configured, download the KNX Interface application to the device. The first download requires to press the programming button on the device to set the device in KNX programming mode then perform a full download.

5.3   GROUP OBJECTS

A group address (GA) must be assigned to each group object (GO) needed by the application.
Open the Group Objects tab of the device and assign a GA to the object scene, zones and areas as needed.

Example for Area 1:

	Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
	185	Area 1 - Arm	On/Off	Arm	2/1/1	1 bit	C	-	W	-	-	switch	Low
	186	Area 1 - Partial Arm	On/Off	Partial Arm	2/1/2	1 bit	C	-	W	-	-	switch	Low
	187	Area 1 - Disarm	On	Disarm	2/1/3	1 bit	C	-	W	-	-	trigger	Low
	188	Area 1 - Disarmed	On/Off	State disarmed	2/1/13	1 bit	C	R	-	T	-	switch	Low
	189	Area 1 - Entry delay	On/Off	Entry	2/1/9	1 bit	C	R	-	T	-	switch	Low
	190	Area 1 - Exit delay	On/Off	Exit	2/1/10	1 bit	C	R	-	T	-	switch	Low
	191	Area 1 - Armed	On/Off	State armed	2/1/12	1 bit	C	R	-	T	-	switch	Low
	192	Area 1 - Partial Armed	On/Off	State armed parti...	2/1/11	1 bit	C	R	-	T	-	switch	Low
	193	Area 1 - Fire Alarm	On/Off	Fire	2/1/5	1 bit	C	R	-	T	-	switch	Low
	194	Area 1 - Siren ON	On/Off	Audible alarm	2/1/14	1 bit	C	R	-	T	-	switch	Low
	195	Area 1 - Panic Alarm	On/Off	Panic Alarm	2/1/0	1 bit	C	R	-	T	-	switch	Low
	196	Area 1 - Intrusion Alarm	On/Off	Intrusion alarm	2/1/4	1 bit	C	R	-	T	-	switch	Low

Power supply status:

	Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
	163	AC Failure	On/Off	Power supply	0/0/3	1 bit	C	R	-	T	-	switch	Low
	164	Battery Failure	On/Off	Battery	0/0/2	1 bit	C	R	-	T	-	switch	Low

Zone status:

	Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
	67	Zone 1 Status	On/Off	Zone status	4/0/1	1 bit	C	R	-	T	-	switch	Low
	68	Zone 2 Status	On/Off	Zone status	4/0/2	1 bit	C	R	-	T	-	switch	Low
	69	Zone 3 Status	On/Off	Zone status	4/0/3	1 bit	C	R	-	T	-	switch	Low
	70	Zone 4 Status	On/Off	Zone status	4/0/4	1 bit	C	R	-	T	-	switch	Low
	71	Zone 5 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	72	Zone 6 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	73	Zone 7 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	74	Zone 8 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	75	Zone 9 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	76	Zone 10 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	77	Zone 11 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	78	Zone 12 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	79	Zone 13 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	80	Zone 14 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	81	Zone 15 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	82	Zone 16 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	83	Zone 17 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	84	Zone 18 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	85	Zone 19 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	86	Zone 20 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	87	Zone 21 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	88	Zone 22 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	89	Zone 23 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	90	Zone 24 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	91	Zone 25 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	92	Zone 26 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	93	Zone 27 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	94	Zone 28 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	95	Zone 29 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	96	Zone 30 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	97	Zone 31 Status	On/Off			1 bit	C	R	-	T	-	switch	Low
	98	Zone 32 Status	On/Off			1 bit	C	R	-	T	-	switch	Low

When GO and parameters are all configured, download the KNX Interface application to the device. The first download requires to press the programming button on the device to set the device in KNX programming mode then perform a full download.

6. FIRMWARE VERSION

This user manual and related ETS application is valid for firmware versions V2.00 and above.
A "Firmware" group object is available on the device to read the firmware version as a string. It is also automatically sent at power up.

	Number	Name	Object Function	Description	Group Addres	Length	C	R	W	T	U	Data Type	Priority
	1	Module status	Status code	ModuleStatus	0/0/1	1 byte	C	R	-	T	-	system error class	Low
	2	Firmware version	Text string	Firmware	0/0/4	14 bytes	C	R	-	T	-	Character String (AS...	Low

7. DATASHEET

TECHNICAL DATA	VALUE
Power supply	External 12VDC
Power consumption typ.	< 6 mA
Power consumption KNX bus typ.	< 4 mA @ 29VDC
Operating temperature	5 to + 45°C
Enclosure	None
Dimensions (W x D x H)	66 x 44 x 25mm
Mounting	4 screw holes for direct mounting in the Paradox control panel
KNX terminal	Pluggable micro terminal, Red/Black, 4 pole PUSH WIRE for solid conductor wire 0.6-0.8 mm²
12VDC input Terminal	Screw terminal 12VDC / GND
RS232 terminal	DB9 connector
Configurable output (PGM)	30
Configurable Virtual inputs	16
Configurable zone status	96
Configurable Areas	4
KNX bus voltage	29 VDC