2-CHANNEL KNX-RF

PUSHBUTTON INTERFACE

EM K5X 002

USER MANUAL

INTRODUCTION

- This Sensor is built on a Wireless KNX RF S-Mode Transmitter with 2 Push button Inputs.

- Perfect solution for conventional bus installations where it is very laborious, or impossible, to extend the wiring. In this way, the renovation of existing buildings becomes easier without chiseling

- Communication with the Bus must be done by using a KNX RF/TP S-Mode Media Coupler (CO K5X 002) which will connect all the RF Sensors/Actuators to the KNX Bus.

- Built-in Temperature Sensor.

- Incorporates 2 Inputs which can be individually parameterized through the ETS:

    ▪ Acting on 1 or 2 independent output channels.

    ▪ Function of each Input:
        • Switch.
        • Start/End Timed Switch.
        • Dimmer.
        • Multiple Switch.
        • Blind control.
        • Scenes.
        • Value sending.

- In addition, the Temperature Sensor function allows the following configuration:

    ▪ Measured value transmisión time.
    ▪ Over-Heating and Over-Cooling Alarms.
    ▪ Temperature Sensor calibration.

- The Battery Status object is available.

- Programming and commissioning must be carried out via ETS5 or later version.

- Bi-directional KNX-RF communication.

- Flush-mounting into universal mechanism box.

- Technical specifications:

Power Supply	2 batteries 3V CR2025 (included)
Useful Battery life (estimeed)	> 8 years
KNX Media	KNX RF 1.R
Radio-Frequency	868,3MHz
Transmission Power	< 10dB
Coverage	In free field: <100m Indoors: ~30m
Temperature measurement accuracy	+/- 0,3°C between -10°C & +70°C
Application Software	ETS5
Programming Mode	System Mode
Temperature probe material	Epoxy
Environmental Protection	IP20
Operation Temperature	-10°C ~ +45°C
Dimensions	45 x 45 x 12mm

CONFIGURATION

General Parameters

▪ There is a starting window where it is possible to enable the 2 inputs and the temperature sensor:

▪ If the 2 inputs are enabled it will be necessary to set if they act on the same output channel (1 object) or on different channels (2 objects):

General Communication Objects

Number	Name	Function	Description
56	Battery alarm	1 = battery alarm	It allows knowing the status of the batteries. If this object is "1", the battery will be exhausted soon

Inputs General Parameters

- Depending on whether the 2 Inputs will act on the same output channel, or on different channels, some objects will be duplicated per channel.

- First of all, it will be necessary to set the functionality of the Input:

Function	Not defined ▼
	Not defined ✔
	Switch
	Timed switch
	Dimmer
	Switch multiple
	Shutter
	Scene
	Fixed/Forced value

- It will also be necessary to set a Debounce Time. This parameter allows adjusting the bounce suppression time when there is a switch. Prevents multiple unwanted actions caused by the rebound when a contact is closed.

Debounce time	10 msec ▼
	10 msec ✔
	20 msec
	30 msec
	40 msec
	50 msec
	60 msec
	70 msec
	80 msec
	90 msec
	100 msec
	120 msec
	140 msec
	160 msec

Parameters of SWITCH Function

- This function allows connecting pushbuttons, switches or motion detectors, with voltage-free contact.

SWITCH

Distinction between short and long action	☐
Short action	On ▼

· **Distinction between short and long action**: allows to distinguish between a short and a long press. This way, two different actions can be made depending on the length of the press.

SWITCH

Distinction between short and long action	✔
Number of objects for short/long operation	◉ 1 ◯ 2
Short action	On ▼
Long action	On ▼
Long press time	0,3 sec ▼

· In the case of distinguishing between short and long action, it will be possible to assign different functions according to the length of the press. It will be also necessary to set the press time to consider it as long.

On ▼
On ✔
Off
Toggle
None

· In addition, it will be possible to have 1 object, "Switch Off/On", or 2 objects, "Switch Off/On" and Switch Off/On long action", depending on if different objects are necessary or not.

Communication Objects of SWITCH Function

	Number ▲	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
⇄	1	[PB1] Switch Off/On	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⇄	2	[PB1] Switch Off/On long action	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⇄	26	[PB2] Switch Off/On	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⇄	27	[PB2] Switch Off/On long action	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low

Number	Name	Function	Description
1	[PB1] Switch Off/On	0 = Off, 1 = On	1-bit output object On/Off. If a single object is used for both the short and long action, this will be the common object. If 2 objects are used, this will correspond to the short action
2	[PB1] Switch Off/On long action	0 = Off, 1 = On	1-bit output object On/Off for long press
26	[PB2] Switch Off/On	0 = Off, 1 = On	1-bit output object On/Off. If a single object is used for both the short and long action, this will be the common object. If 2 objects are used, this will correspond to the short action
27	[PB2] Switch Off/On long action	0 = Off, 1 = On	1-bit output object On/Off for long press

Parameters of TIMED SWITCH Function

- This function allows switching the linked actuator for a time (set in the Actuator):

TIMED SWITCH		
Distinction between short and long action	☐	
Short action	◯ Switch off and timer stop	◉ Start timed switch

· **Distinction between short and long action**: allows to distinguish between a short and a long press. This way, two different actions can be made depending on the length of the press.

TIMED SWITCH		
Distinction between short and long action	✔	
Short action	◯ Switch off and timer stop	◉ Start timed switch
Long action	◯ Switch off and timer stop	◉ Start timed switch
Long press time	0,3 sec	▼

· In the case of distinguishing between short and long action, it will be possible to assign different functions according to the length of the press: "Switch off and timer stop" or "Start timed switch". It will be also necessary to set the press time to consider it as long.

Communication Objects of TIMED SWITCH Function

	Number ▲	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
◼↹	3	[PB1] Timed Start/Stop	1 = timed start, 0 =switch off and stop timer	1 bit	C	-	-	T	-	start/stop	Low
◼↹	28	[PB2] Timed Start/Stop	1 = timed start, 0 =switch off and stop timer	1 bit	C	-	-	T	-	start/stop	Low

Number	Name	Function	Description
3	[PB1] Timed Start/Stop	1 = timed start, 0 = switch off and stop timer	1-Bit object for starting or stopping the timer through the Input 1
28	[PB2] Timed Start/Stop	1 = timed start, 0 = switch off and stop timer	1-Bit object for starting or stopping the timer through the Input 2

Parameters of DIMMER Function

- This function enables the switching and dimming of the linked actuator:

DIMMER	
Function	⦿ Dimming and switch ◯ Only dimming
Short action	On ▼
Long action	Dim brighter / darker ▼
Long press time	0,3 sec ▼

· **Function**: it is possible to choose between "Dimming and switch" or "Only dimming".

· **Short action**: sets the action which will be carried out after a short press.

Short action	On ▼
	On ✔
	Off
	Toggle
	None

· **Long action**: sets the action which will be carried out after a long press. The time to consider a long press will be defined by the parameter "Long press time".

Long action	Dim brighter / darker ▼
	Dim brighter / darker ✔
	Dim brighter
	Dim darker

Communication Objects of DIMMER Function

	Number ▲	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
⇄	1	[PB1] Switch Off/On	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⇄	5	[PB1] Dimming control	Dimming control telegram	4 bit	C	-	-	T	-	dimming control	Low
⇄	26	[PB2] Switch Off/On	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⇄	30	[PB2] Dimming control	Dimming control telegram	4 bit	C	-	-	T	-	dimming control	Low

Number	Name	Function	Description
1	[PB1] Switch Off/On	0 = Off, 1 = On	1-Bit object for switching On/Off through the Input 1
5	[PB1] Dimming control	Dimming control telegram	4-Bit output Dimming object controlled by a long press of Input 1
26	[PB2] Switch Off/On	0 = Off, 1 = On	1-Bit object for switching On/Off through the Input 2
30	[PB2] Dimming control	Dimming control telegram	4-Bit output Dimming object controlled by a long press of Input 2

Parameters of SWITCH MULTIPLE Function

- This function allows carrying out different actions depending on the number of press (up to 4):

· **Maximum time between two operations**: the maximum time between two consecutive press to understand that they belong to the same sequence.

· **Number of operations**: number of press which the sequence is made up.

· **Switch 1..4 operation**: sets the action which Will be carried out with each press.

Communication Objects of SWITCH MULTIPLE Function

	Number ▲	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
⬛⇄	8	[PB1] Switch Off/On ch1	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⬛⇄	9	[PB1] Switch Off/On ch2	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⬛⇄	10	[PB1] Switch Off/On ch3	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⬛⇄	11	[PB1] Switch Off/On ch4	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⬛⇄	33	[PB2] Switch Off/On ch1	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⬛⇄	34	[PB2] Switch Off/On ch2	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⬛⇄	35	[PB2] Switch Off/On ch3	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low
⬛⇄	36	[PB2] Switch Off/On ch4	0= Off, 1= On	1 bit	C	-	-	T	-	switch	Low

Number	Name	Function	Description
8	[PB1] Switch Off/On ch1	0 = Off, 1 = On	Action 1 of Input 1
9	[PB1] Switch Off/On ch2	0 = Off, 1 = On	Action 2 of Input 1
10	[PB1] Switch Off/On ch3	0 = Off, 1 = On	Action 3 of Input 1
11	[PB1] Switch Off/On ch4	0 = Off, 1 = On	Action 4 of Input 1
33	[PB2] Switch Off/On ch1	0 = Off, 1 = On	Action 1 of Input 2
34	[PB2] Switch Off/On ch2	0 = Off, 1 = On	Action 2 of Input 2
35	[PB2] Switch Off/On ch3	0 = Off, 1 = On	Action 3 of Input 2
36	[PB2] Switch Off/On ch4	0 = Off, 1 = On	Action 4 of Input 2

Parameters of **SHUTTER CONTROL** Function

- This function allows the control of a blind or roller shutter:

· **Functional construction**: sets the operation of the Input, as Pushbutton or Switch, single or double.

· "1 Push button": sends Move Up/Down or Step telegrams, depending on the duration of the press. This function is useful when a blind must be controlled from a single button.

· "2 Push buttons": sends Move Up/Down or Step telegrams, depending on the duration of the press. This function is useful when a blind must be controlled by two different buttons, one for Move Up and another one for Move Down.

· "2 Push buttons STEP": sends Step Up/Down telegrams. This function is useful when a blind must be controlled by two different buttons, one for Step Up and another one for Step Down.

· "2 Push buttons MOVE": sends Move Up/Down telegrams. This function is useful when a blind must be controlled by two different buttons, one for Move Up and another one for Move Down.

Functional construction	2 Push buttons MOVE
Action after long operation	◉ Move Up ◯ Move Down
Long press time	0,3 sec

· "1 Push button MOVE-STOP": the Input can Move Up and Move Down and Stop the shutter.

Functional construction	1 Push button MOVE-STOP

· "2 Push buttons MOVE-STOP": the Input can Move Up or Move Down and Stop the shutter.

Functional construction	2 Push buttons MOVE-STOP
Action after long operation	◉ Move Up ◯ Move Down

Communication Objects of SHUTTER CONTROL Function

	Number ▲	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
■⇄	14	[PB1] Move control	0 = Up, 1= Down	1 bit	C	-	-	T	-	up/down	Low
■⇄	15	[PB1] Step control	0= decrease, 1= increase	1 bit	C	-	-	T	-	step	Low
■⇄	39	[PB2] Move control	0 = Up, 1= Down	1 bit	C	-	-	T	-	up/down	Low
■⇄	40	[PB2] Step control	0= decrease, 1= increase	1 bit	C	-	-	T	-	step	Low

Number	Name	Function	Description
14	[PB1] Move control	0 = Up, 1 = Down	1-Bit Move Up/Down objects of Input 1
15	[PB1] Step control	0 = decrease, 1 = increase	1-Bit Step Up/Down or Stop object of Input 1
39	[PB2] Move control	0 = Up, 1 = Down	1-Bit Move Up/Down objects of Input 2
40	[PB2] Step control	0 = decrease, 1 = increase	1-Bit Step Up/Down or Stop object of Input 2

Parameters of SCENE Function

- This function allows managing Scenes:

· **Type of scene control**: "Scene number" object length: 1 Bit or 8 Bits.

· **Scene number**: assigns a number of Scene to the input. It can be an 8-bit (1 to 64) or 1-bit (1 or 2) scene.

· **After short action operation**: assigns a specific function to a short press: recall a scene or ignore it. This parameter is only available when the Scene is 8-Bit long.

· **Store scene with long action**: allows saving a Scene, with a long press, and to recall it later.

Communication Objects of SCENE Function

	Number ▲	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
◼↕	18	[PB1] Scene number	Scene number 8 bits	1 byte	C	-	-	T	-	scene control	Low
◼↕	43	[PB2] Scene number	Scene number 1 bits	1 bit	C	-	-	T	-	scene	Low
◼↕	44	[PB2] Save scene	1- save scene	1 bit	C	-	-	T	-	state	Low

Number	Name	Function	Description
18	[PB1] Scene number	Scene number 8 bits	Output Scene object of Input 1. It can be a 1-Bit or 8-Bit object
43	[PB2] Scene number	Scene number 1 bit	Output Scene object of Input 2. It can be a 1-Bit or 8-Bit object
44	[PB2] Save scene	1 – save scene	1-Bit object for saving the Scene

Parameters of FIXED / FORCED VALUE Function

- This function allows enabling the Fixed or Forced Value function, which consists in sending a previously established value:

· **Distinction between short and long action**: allows to distinguish between a short and a long pressing. This way, if the differentiation is made, two different actions can be carried out depending on the length of the press. Two different objects will be available.

· **Value type on short operation**: sets the type of value that will be sent via the object "X Value telegram on operation":

  o 1 Bit: 0 or 1
  o 2 Bits: 00, 01, 10 or11
  o 1 Byte: 0 … 255
  o 2 Byte signed: -32768 … 32767
  o 2 Byte unsigned: 0 … 65535
  o 2 Bytes floating: -99,99 … 99,99
  o 4 Bytes unsigned: 0 … 4294967295

· **Value type on long operation**: sets the type of value that will be sent via the object "X Value telegram on long operation".

Tipo de valor tras acción corta	1 byte						▼
Valor 1 Byte	255						▲▼
Tipo de valor tras acción larga	1 Bit						▼
Valor Bit	⦿ 0 ◯ 1						
Tiempo pulsación larga	0,3 seg						▼

· **Long press time**: sets the minimum time that a press should last to consider it as a long action.

Communication Objects of FIXED / FORCED VALUE Function

	Number ▲	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
⇄	22	[PB1] Bit value Telegram on operation	Bit value	1 bit	C	-	-	T	-	state	Low
⇄	23	[PB1] Byte value Telegram on LONG operation	1 byte value	1 byte	C	-	-	T	-	counter pulses (0.....	Low
⇄	47	[PB2] 2 Bytes signed value Telegram on operation	2 byte signed value	2 bytes	C	-	-	T	-	pulses difference	Low
⇄	48	[PB2] 2 Bytes Floating value Telegram on LONG operation	2 bytes floating value	2 bytes	C	-	-	T	-	temperature (°C)	Low

Number	Name	Function	Description
22	[PB1] X value Telegram on operation	X value	Output object which is sent after a Short action on Input 1
23	[PB1] X value Telegram on LONG operation	X value	Output object which is sent after a Long action on Input 1
47	[PB2] X value Telegram on operation	X value	Output object which is sent after a Short action on Input 2
48	[PB2] X value Telegram on LONG operation	X value	Output object which is sent after a Long action on Input 2

Parameters of TEMPERATURE SENSOR

▪ This Sensor incorporates an internal Temperature Sensor which can be parameterized according to the requirements.

· **How often the output value is refreshed (in minutes) (0 = no refresh)**: how often the measured temperature value is sent through the "Temperature" object. If "0" this value is not periodically updated.

· **Send Temperature Value when it changes a value of… (0 = do not send)**: it allows sending the measured temperature through the "Temperature" object when it changes a certain set value. If "0" this value is not updated even if the temperature changes.

· **Enable High Temperature Alarm**: manages the alarm in case of Over-Heating.

· **Value of Temperature to turn Alarm on**: threshold to activate the Over-Heating alarm.

· **In High Temperature alarm state, send Alarm communication object**: enables the object "Alarm high temperature".

· **In High Temperature alarm state, send Temperature value communication object**: determines whether or not to send the temperature value when the alarm value has been exceeded.

· **In High Temperature alarm state, time (in minutes) to resend communication objects (0 = do not resend)**: establishes how often the Alarm and Temperature objects are sent.

· **Enable Low Temperature Alarm**: manages the alarm in case of Over-Cooling.

LOW TEMPERATURE

Enable Low Temperature Alarm	◯ Disable ⦿ Enable
Value of Temperature to turn alarm on	-10 ▼
In Low Temperature alarm state, send Alarm communication object	⦿ Disable ◯ Enable
In Low Temperature alarm state, send Temperature value communication object	⦿ Disable ◯ Enable
In Low Temperature alarm state, time (in minutes) to resend communication objects (0 = do not resend)	0

· **Value of Temperature to turn Alarm on**: threshold to activate the Over-Cooling alarm.

· **In Low Temperature alarm state, send Alarm communication object**: enables the object "Alarm low temperature".

· **In Low Temperature alarm state, send Temperature value communication object**: determines whether or not to send the temperature value when the alarm value has been exceeded.

· **In Low Temperature alarm state, time (in minutes) to resend communication objects (0 = do not resend)**: establishes how often the Alarm and Temperature objects are sent.

· **Temperature correction**: allows correcting the measured temperature if deviation from the real value.

CORRECTION

Temperature correction sign	⦿ Positive ◯ Negative
Temperature correction value	0 ▼

Communication Objects of TEMPERATURE SENSOR

	Number ▲	Name	Object Function	Length	C	R	W	T	U	Data Type	Priority
⇄	51	Temperature	Temperature value 2 bytes floating	2 bytes	C	-	-	T	-	temperature (°C)	Low
⇄	52	Alarm high temperature	1 = heat alarm	1 bit	C	-	-	T	-	alarm	Low
⇄	53	Alarm low temperature	1 = cold alarm	1 bit	C	-	-	T	-	alarm	Low

Number	Name	Function	Description
51	Temperature	Temperature value 2 bytes floating	Temperature value output object
52	Alarm high temperature	1 = heat alarm	Over-Heating Alarm output object
53	Alarm low temperature	1 = cold alarm	Over-Cooling Alarm output object

TEST MODE

- Permite visualizar las tramas de envío de temperatura con mayor periodicidad.

- Si no está habilitado, el tiempo mínimo de envío es de 1 minuto (Período de actualización valor de salida ≥ 1 minuto).

- Con el modo test habilitado, ese minuto se convierte en un segundo.

- Este modo solamente es para realizar labores de prueba. No se debe dejar habilitado este modo.