

## KNX-GW2-RS485-2TE

The KNX-GW2-RS485-2TE is a gateway between the KNX bus and the serial interfaces RS485.

It joins elements from the field of building automation with a variety of service and configuration connections of devices from entertainment technology. The programming depends on the individual application. Own Applications can be programmed, updated or exchanged via the USB interface.

The KNX-to-serial gateway is bidirectional. It receives data telegrams on the KNX bus and makes them available to the internal interface program, which generates serial telegrams from them. A KNX telegram can also be generated when a serial telegram arrives.

Depending on the command length, approx. 1200 serial commands can be stored on the KNX-to-serial gateway. The group addresses used are defined together with the command chains to be sent in a project file and transferred via the USB interface. The physical address is set using the configurator.



KNX-GW2-RS485-2TE  
 Art.-No.: 40210182

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## 1. Commissioning

- Install the configuration software [KNX-SERIAL-GW-II-setup](#)
- Connect the gateway to the computer via USB. The device appears as a COM device in the device manager. A driver for Windows 7 can be obtained from Arcus on request.

### Communication Device Class ASF example (COM5)

- Start the configuration software, select the appropriate COM interface and click Connect.



- Start creating the send / receive commands or open an existing project.

## Serial settings

Serial settings:	1200	8N1	RS232
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Under Serial settings please set the baud rate and the needed data format:

Coding	Description
8N1	8 Bit, no Parity, 1 Stopbit
8N1,5	8 Bit, no Parity, 1,5 Stopbits
8N2	8 Bit, no Parity, 2 Stopbits
8E1	8 Bit, even Parity, 1 Stopbit
8E1,5	8 Bit, even Parity, 1,5 Stopbit
8E2	8 Bit, even Parity, 2 Stopbit
8O1	8 Bit, odd Parity, 1 Stopbit
8O1,5	8 Bit, odd Parity, 1,5 Stopbit
8O2	8 Bit, odd Parity, 2 Stopbit

For RS485 download the file [system.txt](#) and replace it under ..\Documents\Arcus EDS\SERIAL-GW-II\macros\system.txt.

**Creation of serial commands (KNX to RS485)**

Nr.	GA	Value	Remark	KNX->Serial
1	1/1/1	=0	Example instruction	Example1

- Under GA, specify for which incoming group address a command is to be written to the serial bus.
- Under Value, you can determine whether the transmission is sent only on KNX value equals 0, not equal to 0 or without evaluation, so in any case.
- Under Description you can add a comment for better documentation.
- The last column defines the RS485 character string:
  - o The characters a-z, A-Z, 0-9 and many readable characters are transmitted with their ASCII code.
  - o Spaces are used to separate commands and are not transmitted on the serial line. If one shall be sent it must be inserted with "#SP".
  - o Decimal values are inserted with "#" for example #49 for "1" (see ASCII code).
  - o Hexadecimal values are defined with "\$" for example #\$31 for "1" (see ASCII code).
  - o Some predefined characters also start with "#" for example a space "#SP" ( Space ).

Macro	Dec	Hex	Macro	Dec	Hex	Macro	Dec	Hex	Macro	Dec	Hex
#NUL	0	\$00	#TAB	9	\$09	#DC2	18	\$12	#ESC	27	\$1B
#SOH	1	\$01	#LF	10	\$0A	#DC3	19	\$13	#FS	28	\$1C
#STX	2	\$02	#VT	11	\$0B	#DC4	20	\$14	#GS	29	\$1D
#ETX	3	\$03	#FF	12	\$0C	#NACK	21	\$15	#RS	30	\$1E
#EOT	4	\$04	#CR	13	\$0D	#SYN	22	\$16	#US	31	\$1F
#ENQ	5	\$05	#SO	14	\$0E	#ETB	23	\$17	#SP	32	\$20
#ACK	6	\$06	#SI	15	\$0F	#CAN	24	\$18			
#BEL	7	\$07	#DLE	16	\$10	#EM	25	\$19			
#BS	8	\$08	#DC1	17	\$11	#SUB	26	\$1A			

- o Macronames are starting with a "#" and contain characters ( and numerals ) for example "#CS1".  
 Macros are functions, that insert characters at their position ( for example the object value or a checksum ).

Input	Setting		Output	Description
	value	KNX -> Serial	serial line   Hex	
1	<>0	ON	ON   4F 4E	simple string
0	=0	O F F	OFF   4F 46 46	simple string (spaces are ignored)
x	ign.	with #SP spaces	with space   77 69 74 68 20 73 70 61 63 65	string including a space
x	ign.	CR+LF #CR #LF	CR+LF\r\n   43 52 2B 4C 46 0D 0A	ending line with a CR & LF
x	ign.	#70 #\$46	FF   46 46	ASCII sign in Dec and Hex
70	ign.	Val: #objval	Val:F  56 61 6C 3A 46	inserts the value of the knx-telegram as 1byte ASCII char
70	ign.	Val: #hexval	Val:46  56 61 6C 3A 34 36	inserts the hexadecimal value of the KNX telegram
70	ign.	Val: #decval	Val:70  56 61 6C 3A 37 30	inserts the decimal value of the KNX telegram

If further characters or commands follow before or after a command, they must be separated from one another by a space.  
 E.g. #STX command #ETX #CR

### Creation of commands (RS485 to KNX)

In the same way as in the section KNX RS485, serial character strings can be defined. When matched, a KNX telegram is sent. The value of the KNX telegram can be static or it can be taken over from the serial command using a macro.

Examples with Setting: Line end with Carriage Return

Input	Setting			Output	Description
serial line	Seial -> KNX		value	KNX value	
ON	ON #CHECKCHARS 2	1-bit	1	-	no transmission without carriage return
ON\r	ON #CHECKCHARS 2	1-bit	1	1	matched string > send fixed value
OFF\r	OFF #CHECKCHARS 3	1-bit	0	0	matched string > send fixed value
STATE_7\r	STATE_ #checkchars 6 #intchars 1	1-byte	0 (will be ignored)	7	reads the first part and puts the value of the last character into the KNX object
test string\r	#strchars 14	14-byte	dummy (will be ignored)	test string	takes the defined n characters and puts the string into the KNX object
4 sp ac es ignored\r	#dropspaces 4 #strchars 14	14-byte	dummy (will be ignored)	ignored	ignores the following n spaces and everything in between
drop\r	#DROPCHARS 4	1-bit	1	1	The following 4 characters are discarded , "#DROPCHARS -1" discards all following characters
123Test\r	Test #DROPCHARS 3 #CHECKCHARS 4	1-bit	1	1	Each string of the form "****Test" meets the sending conditions.
123Testxyz\r	Test #DROPCHARS 3 #CHECKCHARS 4 #DROPCHARS -1	1-bit	1	1	Each string of the form "****Test...." meets the sending conditions.
xyzTest_12	Test_ #DROPCHARS 3 #CHECKCHARS 5 #INTCHARS 2	1-byte	0	12	Each string of the form "****Test_XY" meets the sending conditions, if X and Y are numerals. The number overwrites the set value and is sent as the object value.

### Adding/Removing lines with commands

By using the right mouse button you can insert additional command lines or delete unnecessary ones. In addition, the defined commands can be sent via the RS485 interface without an existing KNX installation. Any existing programming in the gateway remains unchanged.

Nr.	GA	Value	Remark	KNX->Serial
1	1/1/1	=0 ▾	Example instruction	Example 1

Send string

Insert new (after)

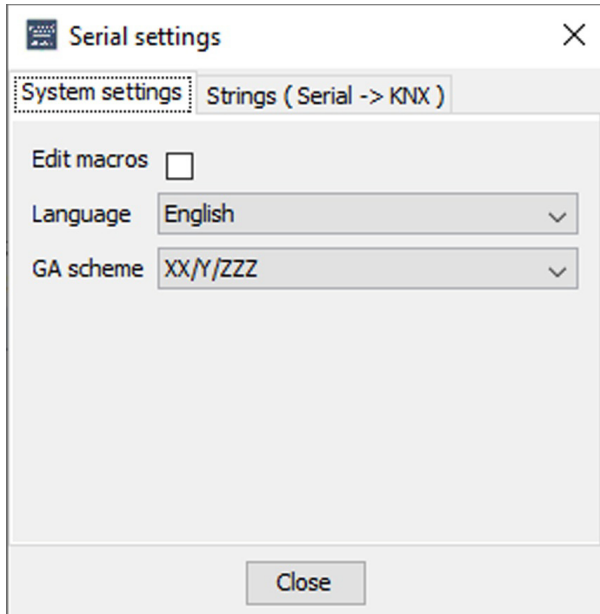
Remove

### Managing macros

The available macros for the definitions can be edited at the menu item "System->Macros". Macros can be edited, deleted or added if the macro editing is enabled in the system settings. For further macros contact service@arcus-eds.de.

### System settings

Go to System and then Settings:

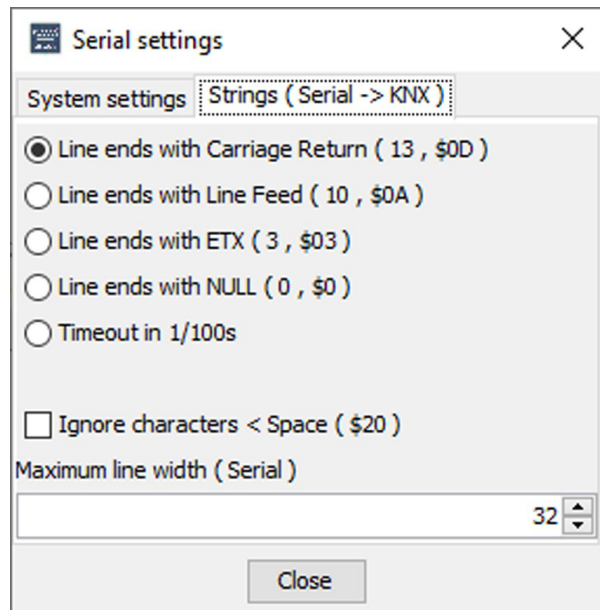


System settings:

Editing macros: You can write your own macros and edit existing ones.

Language: German, English and Dutch

GA scheme: The format of the group addresses can be switched between 2 and 3 levels.



Strings (serial->KNX):

In the Strings tab you will find the settings for incoming messages on the serial interface.

In the upper area you can define an end-of-line character or select a timeout if there is no defined end-of-line character in the communication protocol.

In the lower area, incoming spaces (\$20) can be ignored and a maximum line length can be specified.

## Transfer of the project to the gateway

With an existing connection, select "Transfer" and then "Save". Saving resets the connection and thereby disconnects the configuration software. Connect again for further configuration.

## Setting the physical Address

Please ensure the configurator software is connected to the gateway. To set the physical address go into System > Set physical Address.

## Troubleshooting

It is recommended to use a terminal program to test the communication with the device and to control and test the defined controlstrings. Very good experiences ( especially with non-readable characters ) have been made with HTerm in combination with USB-to-RS485 adapters.

Under some circumstances multiple error messages might occur:

Message	meaning
Multiple definition for GA - Line: 7	a group address is defined twice with either the same evaluation or ign., look out for the GA and change it
ONPB undef.	pushbutton undefined: indicates gateway is unprogrammed, no need to worry
USERSTART undef.	indicates gateway was unprogrammed, no need to worry
TX_REGISTER	most likely error in macro, further error message indicates macro/term name
...Stack undeflow	most likely error in macro, further error message indicates macro/term name
XYZ undefined	name of unknown term, probably a macro is missing or misspelled.
No Device found	1) Confirm the appropriate COM port is selected 2) Restart the device 3) Do a reset

## Perform a reset

Under some circumstances it is impossible to program the physical adress or multiple error messages come up: Disconnect the USB cable and ( if connected ) the power supply. Press the T1 button and hold it pushed while reconnecting the device ( hold it for 5 second ).

## Connection

Connections	Pin	Assignment	
Clamp RS485 / DMX	Ground D - D +	GND ( 0V ) Data - ( B ) Data + ( A )	Screw clamp included in delivery.
Clamp DC IN ( 9 .. 30V )	minus plus	0V DC 9 .. 30V DC	Screw clamp included in delivery.
Clamp KNX-Bus			Clamp block KNX are included.

The gateway can be operated either via USB or DC IN.

The RS485 bus is terminated with a 120 Ohm terminating resistor via jumper J1 (120R TERM) in the delivery state.

The KNX bus is galvanically separated from the serial connections!

The power supply (DC IN) is galvanically separated from the serial connections and from the KNX bus.

## 2. Technical data

Dimensions KNX-GW2-RS485-2TE	DIN Rail mounted housing ( 2 TE )
Protection class	IP20
Ambient temperature	-5 °C .. 45 °C
Controls	3x 16-step rotary switch 1x push button T1 1x push button PRG and LED
USB-connector KNX-GW2-RS485-2TE	USB Type B
KNX-connector	KNX connecting terminal
Power supply	20 .. 32VDC (approx. 150mW)
RS485-connector	3 x Screw terminal 0,8mm <sup>2</sup>
Terminating resistor RS485	120 Ohm (activated through a jumper)
Power supply	9 .. 30VDC, 100mA, galvanically isolated intern, polarizesafe or USB
RS485	250 kBaud, galvanically isolated

## Imprint

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