

Shading in Buildings

Exercise: Blind/Roller Shutter Actuator JRA/S

A Blind/Roller Shutter Actuator JRA/S controls the motor drives in an office room. Various functions are to be realized, e.g. direct operation, move to position, scene-control, safety monitoring or automatic function.



Open the ETS project “Shading in Buildings - Exercises JRA/S”, add the KNX devices, set the parameters and link the already created group addresses.

Group addresses:

- Main group 2 “Shutter Control”
 - Middle group 1 “Exercise - Shutter Actuator JRA/S”

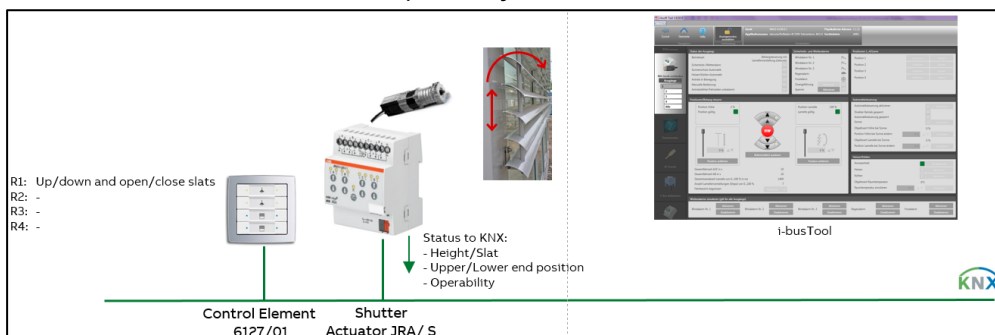
1. Direct operation

Program a Control Element 4-gang (e.g. “Solo”, 6127/01) to control a shutter motor connected to output A. Link the group addresses. Check the parameter settings and test the behavior of the Blind/Roller Shutter Actuator JRA/S by means of i-busTool and ETS group monitor.

- Rocker 1: Output A – up/down and open/close slats

The following settings must be enabled in the Blind/Roller Shutter Actuator JRA/S:

- Drive: Detect travel times “No”
UP and DOWN time: 10 sec.
- Status messages: Status Height/Slat
Status Upper/Lower end position
Status Operability



2. Move to position and scene control

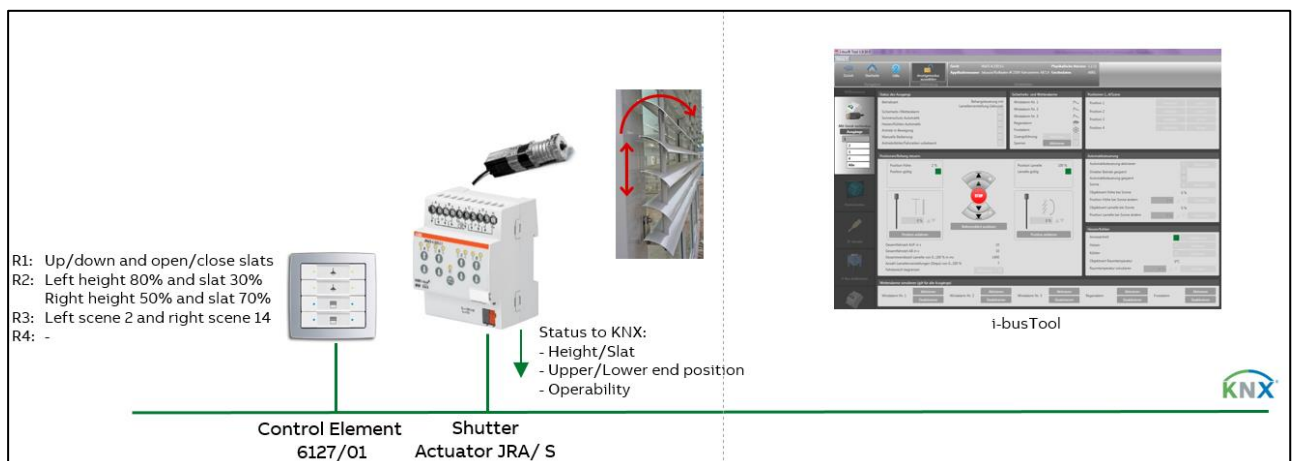
Program a Control Element 4-gang (e.g. "Solo", 6127/01) to drive a shutter motor to positions and call/store scenes. Check the parameter settings and test the behavior of the Blind/Roller Shutter Actuator JRA/S by means of i-busTool and ETS group monitor.

- Rocker 1: Output A – up/down and open/close slats
- Rocker 2 left: Position of height 80% (long) and slat 30% (short)
Rocker 2 right: Position of height 50%(long) and slat 70% (short)
- Rocker 3: left scene 2 and right scene 14

When calling up a scene, the following positions should be approached:

- Scene 2: Position of height 40% and slat 30%
- Scene 14: Position of height 75% and slat 60%

Enable the parameter "Overwrite scenes on download". With a long operation of the rocker (5 sec.) an end user should be able to store new scene values.



3. Safety functions (wind, rain, block, ...)

The Weather Unit WZ/S detects and processes weather data from the Weather Sensor WES/A. It sends an alarm to the Blind/Roller Shutter Actuator JRA/S in case of wind alarm and rain alarm. The function “threshold” is to be used for this. The wind speed and rain can be simulated via i-busTool.

If wind alarm is active, the blinds must drive up and drive down when rain alerts. A higher priority is the wind alarm.

Instead of the Weather Unit WZ/S, the wind alarm and rain alarm can be simulated with an Universal Interface US/U.

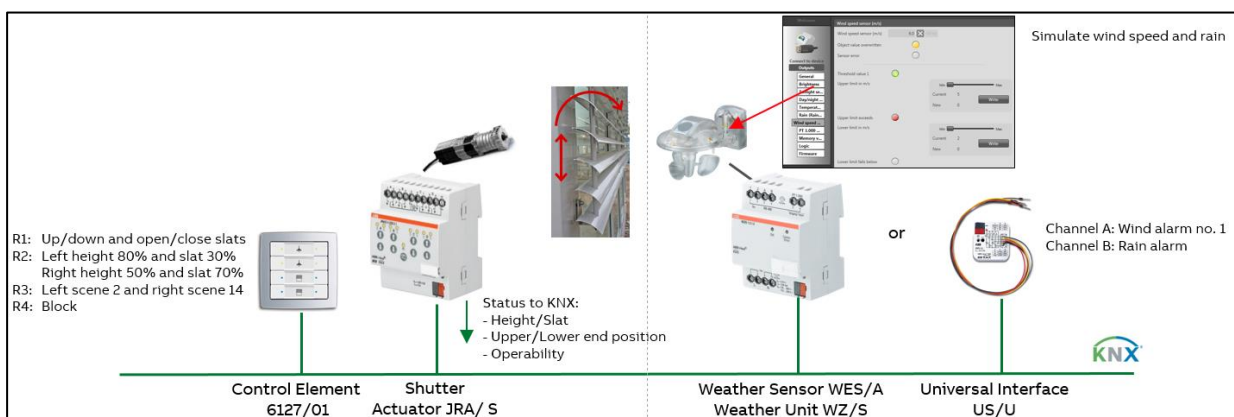
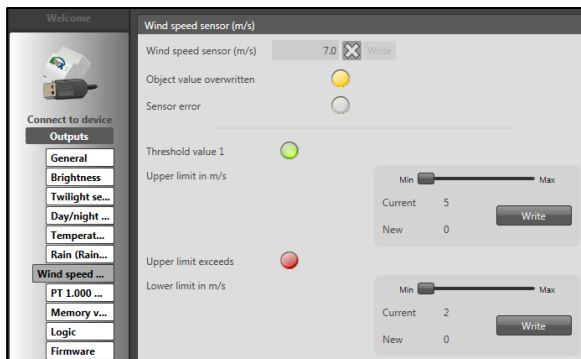
The LEDs of rocker 1 indicates operability. If a safety function is activated, the LEDs light up red. Thus, the end user recognizes that driving the blinds is not possible.

What happens if wind and rain alarm are not active anymore? Is it adjustable?

The communication from the Weather Unit WZ/S to the Blind/Roller Shutter Actuator JRA/S should be monitored cyclically. If the Blind/Roller Shutter Actuator JRA/S does not receive the wind information from the Weather Unit WZ/S cyclically every 30 seconds, the safety position must be approached.

To clean the slats, the blind must be lowered and the control of the blinds must be disabled. Enable the function “Block” and program rocker 4 of a Control Element to activate. The block function has a higher priority than wind or rain alarm.

Test the behavior of the Blind/Roller Shutter Actuator JRA/S by means of i-busTool, e.g. simulate the wind speed in the Weather Unit WZ/S (function threshold).



4. Automatic sun protection: “Standard”

The automatic sun protection function is already included in the Blind/Roller Shutter Actuator JRA/S. It can be used to establish easy-to-use automatic sun protection control. Automatic control can be activated via control element, superior system, time switch or visualization. If the automatic sun protection is activated, the Blind/Roller Shutter Actuator JRA/S moves automatically to the position for sun or no sun.

Enable the function “Automatic sun protection”. Use a delay time for sun of two seconds.

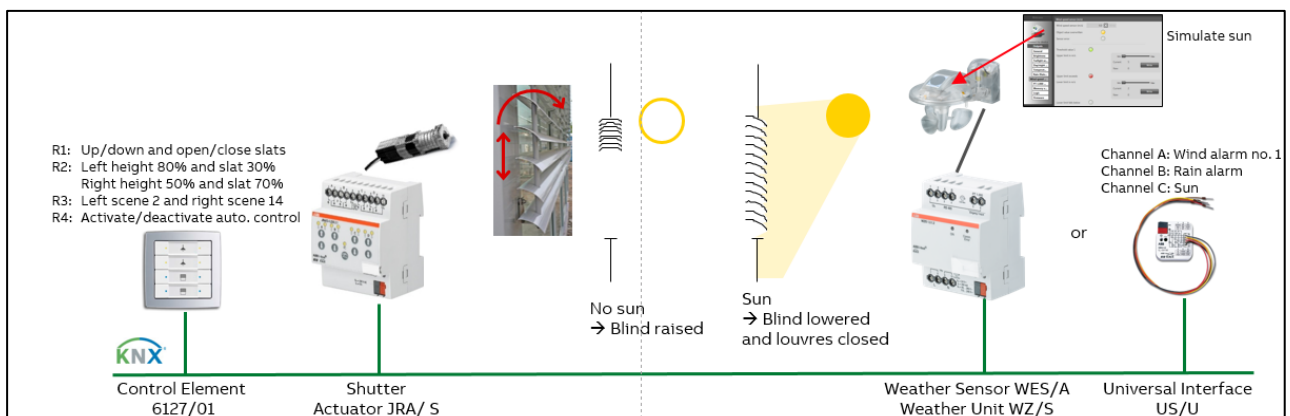
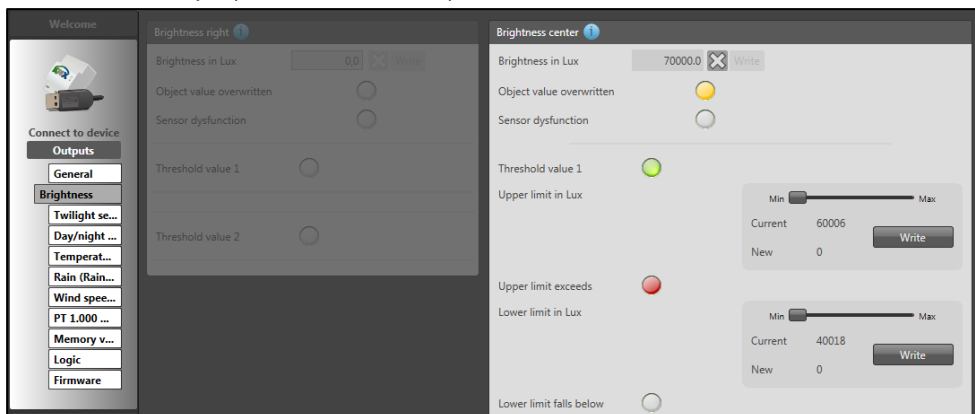
Control is activated:

- Sunshine (more than 60.000 lx): The blinds drive down
- No Sunshine (less than 40.000 lx): The blinds drive up
- A direct operation of the blind stops the automatic sun protection

Program rocker 4 of a Control Element to activate/deactivate the automatic sun protection.

What happens if automatic control is active and wind alarm is triggered?

Test the behavior of the Blind/Roller Shutter Actuator JRA/S by means of i-busTool, e.g. simulate the sun in the Weather Unit WZ/S (function threshold).



5. Automatic sun protection: “Tracking of the sun’s position”

Together with a Shutter Control Unit JSB/S, the Blind/Roller Shutter Actuator JRA/S can provide convenient automatic sun protection control according to the level of sunlight. Depending on the strength and direction of the sun, the shutter/blind is moved into a set position via an 8-bit value or into a variable position depending on the situation.

The current position of the sun is continually calculated in the Shutter Control Unit JSB/S (synchronization with time and date required). The shutter/blind is moved into the optimum position to deflect direct sunshine but to let through as much diffuse light as possible.

The automatic sun protection “Tracking of the sun’s position” is an advanced function of the automatic sun protection “Standard”. In sunshine, the Blind/Roller Shutter Actuator JRA/S receives the position for height and slat from the Shutter Control Unit JSB/S.

Control is activated:

- Sunshine (more than 60.000 lx): The blinds receive position for height and slat via object from JSB/S
- No Sunshine (less than 40.000 lx): The blinds drive up
- A direct operation of the blind stops the automatic sun protection

The following settings must be enabled in the Shutter Control Unit JSB/S:

- Receive time and date via object (slave mode)
- Send slat angle with a change of 5 degrees.
- Shutter height when sunshine and brightness level 1: Variable (user defined)
- Horizontal louveres/slat
- Building location(e.g. longitude 9° and latitude 49°)
- Façade A orientation from north to south: 180° and window as a grid

Test the behavior of the Blind/Roller Shutter Actuator JRA/S by means of i-busTool

- Activate/deactivate automatic control
- Activate/deactivate sun
- Write different values of position for height and slat
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Deactivate the cyclical monitoring of the weather station in the Blind/Roller Shutter Actuator JRA/S (monitoring period = 0).

Disconnect the Weather Unit WZ/S from KNX

Start ETS group monitor, send group addresses and check receiving telegrams.

- Send date (2/1/200) and time (2/1/201) to synchronize the Shutter Control Unit JSB/S
- Activate automatic control (rocker 4 or send 2/1/21) and check status of automatic control (2/1/38)
- Simulate the Weather Unit WZ/S and send no sun ("0" 2/1/202)
→ The blinds should drive up
- Simulate the Weather Unit WZ/S and send sun ("1" 2/1/202)
→ The Shutter Control Unit JSB/S calculates the position of the sun and sends "sun on façade", the position of the height and slat to the Blind/Roller Shutter Actuator JRA/S
- Send different times (2/1/201; 7:00, 8:00,...21:00) and dates (2/1/200) to the Shutter Control Unit JSB/S.
How does he react and what does he send to the bus?

#	*	Time	Service	Fla	Prio	Source	Source Name	Destination	Destination Name	Rout	Type	DPT	Info
1		25.06.2018 11:31:37,187	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/200	Date		6	GroupValueWrite	11.001 date	19 06 12 6/25/2018
2		25.06.2018 11:31:47,462	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	26 00 00 Monday, 6:00:00 AM
3		25.06.2018 11:31:48,370	from b...	Low	1.155	JSB/S1.1 Shutter Control Unit,MD...	2/1/23	JRA/S Output A Move to height for sun		6	GroupValueWrite	5.001 percentage (0..100%)	\$00 0 %
4		25.06.2018 11:31:48,510	from b...	Low	1.155	JSB/S1.1 Shutter Control Unit,MD...	2/1/22	JRA/S Output A Sun		6	GroupValueWrite		\$00 Off
5		25.06.2018 11:31:59,812	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/33	JRA/S Output A Status Height [0...255]		6	GroupValueWrite	5.001 percentage (0..100%)	\$00 0 %
6		25.06.2018 11:31:59,833	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/34	JRA/S Output A Status Slat [0...255]		6	GroupValueWrite	5.001 percentage (0..100%)	\$00 0 %
7		25.06.2018 11:31:59,853	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/35	JRA/S Output A Status Upper end position		6	GroupValueWrite		\$01 On
8		25.06.2018 11:32:06,895	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	27 00 00 Monday, 7:00:00 AM
9		25.06.2018 11:32:11,591	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	28 00 00 Monday, 8:00:00 AM
10		25.06.2018 11:32:15,785	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	29 00 00 Monday, 9:00:00 AM
11		25.06.2018 11:32:21,370	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	2A 00 00 Monday, 10:00:00 AM
12		25.06.2018 11:32:22,376	from b...	Low	1.155	JSB/S1.1 Shutter Control Unit,MD...	2/1/23	JRA/S Output A Move to height for sun		6	GroupValueWrite	5.001 percentage (0..100%)	\$CC 80 %
13		25.06.2018 11:32:22,404	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/35	JRA/S Output A Status Upper end position		6	GroupValueWrite		\$00 Off
14		25.06.2018 11:32:22,508	from b...	Low	1.155	JSB/S1.1 Shutter Control Unit,MD...	2/1/22	JRA/S Output A Sun		6	GroupValueWrite		\$01 On
15		25.06.2018 11:32:35,410	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/33	JRA/S Output A Status Height [0...255]		6	GroupValueWrite	5.001 percentage (0..100%)	\$CC 80 %
16		25.06.2018 11:32:35,429	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/34	JRA/S Output A Status Slat [0...255]		6	GroupValueWrite	5.001 percentage (0..100%)	\$0F 6 %
17		25.06.2018 11:32:44,097	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	28 00 00 Monday, 11:00:00 AM
18		25.06.2018 11:32:44,375	from b...	Low	1.155	JSB/S1.1 Shutter Control Unit,MD...	2/1/23	JRA/S Output A Move to height for sun		6	GroupValueWrite	5.001 percentage (0..100%)	\$99 60 %
19		25.06.2018 11:32:47,017	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/33	JRA/S Output A Status Height [0...255]		6	GroupValueWrite	5.001 percentage (0..100%)	\$99 60 %
20		25.06.2018 11:32:52,526	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	2C 00 00 Monday, 12:00:00 PM
21		25.06.2018 11:32:56,532	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	2D 00 00 Monday, 1:00:00 PM
22		25.06.2018 11:32:59,344	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	2E 00 00 Monday, 2:00:00 PM
23		25.06.2018 11:33:03,500	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	2F 00 00 Monday, 3:00:00 PM
24		25.06.2018 11:33:06,936	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	30 00 00 Monday, 4:00:00 PM
25		25.06.2018 11:33:10,015	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	31 00 00 Monday, 5:00:00 PM
26		25.06.2018 11:33:10,373	from b...	Low	1.155	JSB/S1.1 Shutter Control Unit,MD...	2/1/23	JRA/S Output A Move to height for sun		6	GroupValueWrite	5.001 percentage (0..100%)	\$CC 80 %
27		25.06.2018 11:33:15,485	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/33	JRA/S Output A Status Height [0...255]		6	GroupValueWrite	5.001 percentage (0..100%)	\$CC 80 %
28		25.06.2018 11:33:19,281	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	32 00 00 Monday, 6:00:00 PM
29		25.06.2018 11:33:19,369	from b...	Low	1.155	JSB/S1.1 Shutter Control Unit,MD...	2/1/23	JRA/S Output A Move to height for sun		6	GroupValueWrite	5.001 percentage (0..100%)	\$00 0 %
30		25.06.2018 11:33:19,393	from b...	Low	1.155	JSB/S1.1 Shutter Control Unit,MD...	2/1/22	JRA/S Output A Sun		6	GroupValueWrite		\$00 Off
31		25.06.2018 11:33:30,808	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/33	JRA/S Output A Status Height [0...255]		6	GroupValueWrite	5.001 percentage (0..100%)	\$00 0 %
32		25.06.2018 11:33:30,830	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/34	JRA/S Output A Status Slat [0...255]		6	GroupValueWrite	5.001 percentage (0..100%)	\$00 0 %
33		25.06.2018 11:33:30,850	from b...	Low	1.151	JRA/S4.230.5.1 Blind/RollerShutte...	2/1/35	JRA/S Output A Status Upper end position		6	GroupValueWrite		\$01 On
34		25.06.2018 11:33:33,400	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	33 00 00 Monday, 7:00:00 PM
35		25.06.2018 11:33:37,414	to bus	Low	1.1255	USB/S1.1 USB-Interface,MDRC	2/1/201	Time		6	GroupValueWrite	10.001 time of day	34 00 00 Monday, 8:00:00 PM