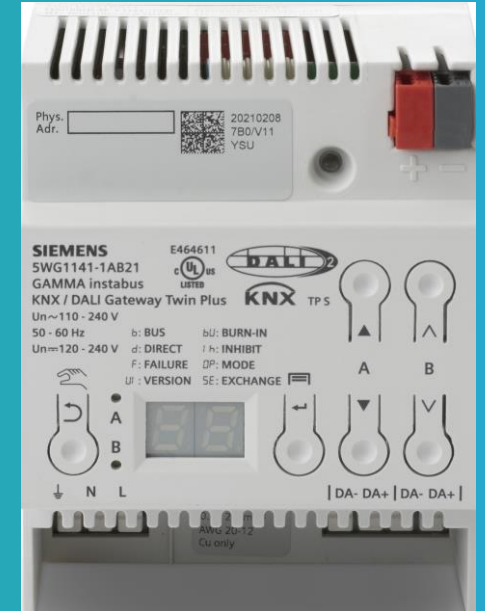


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KNX / DALI Gateway – N 141/xx

Use Cases Human Centric Lighting

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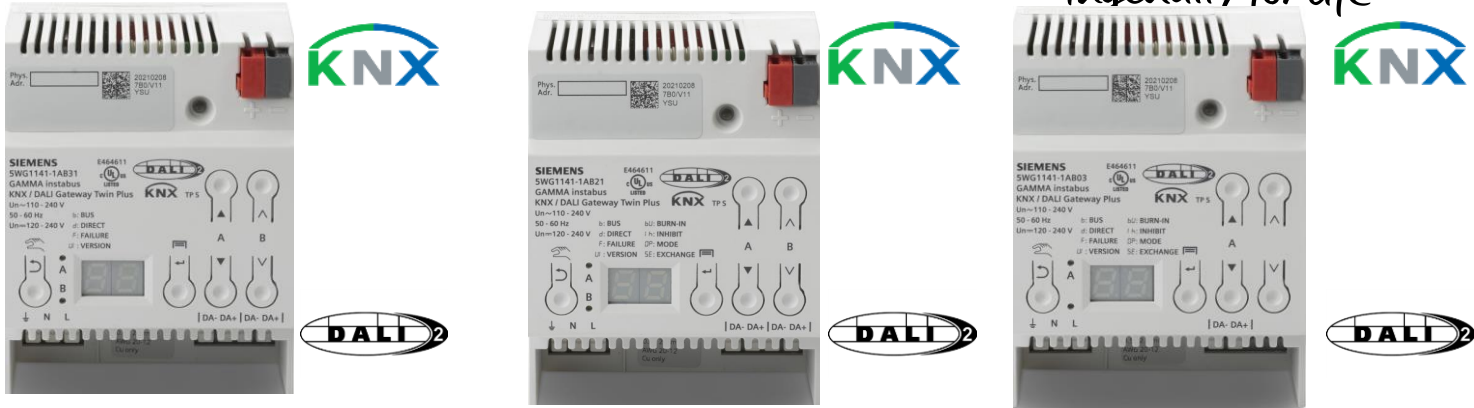
www.siemens.com/gamma

KNX/DALI GW N 141/xx

Overview

„Twin“ = 2 channels

„plus“ = all functions



	KNX/DALI Gateway Twin N 141/31	KNX/DALI Gateway Twin plus N 141/21	KNX/DALI Gateway plus N 141/03
DALI channels	2	2	1
ECG individual control	X		X
Tunable White	X		X
Emergency lighting	X		X
Standby	X		X
DALI sensors			X
Scenes	X		X
2-point light control and constant light controller			X
Effect and scheduler			X
Exchange of ECG without software	X		X

KNX/DALI GW N 141/xx

Human Centric Lighting (HCL)

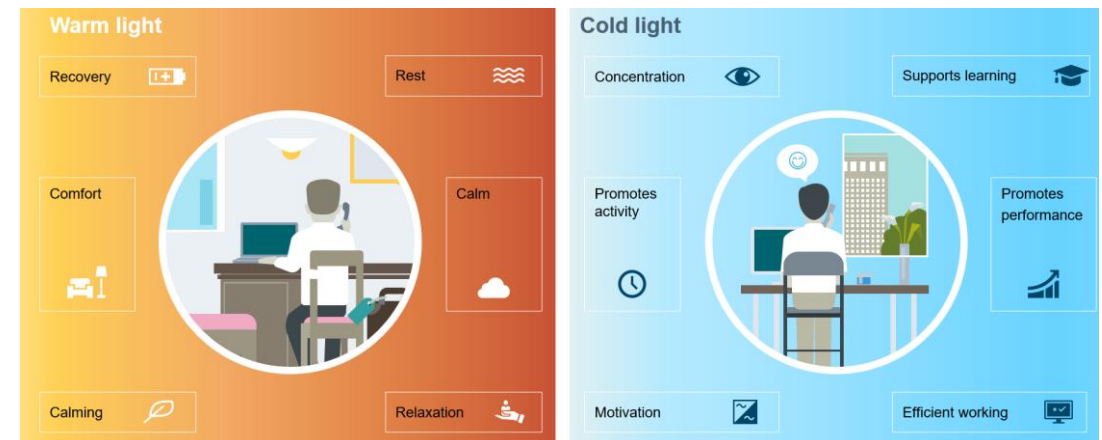
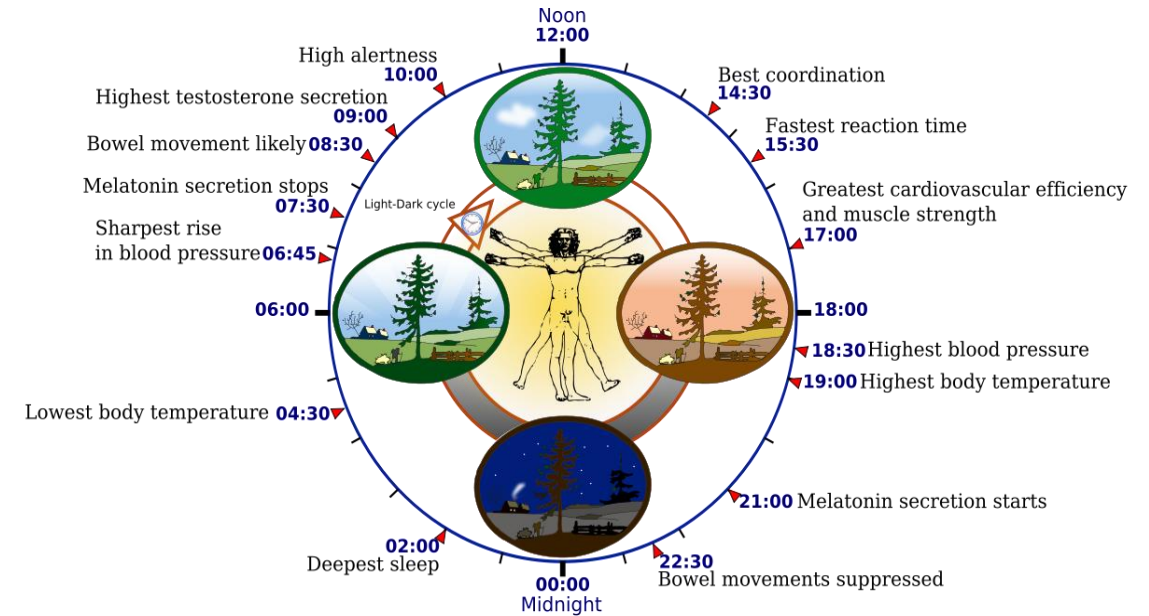
- The **human** is now the main focus of lighting design
 - Set the **right** light at the **right** time in the **right** location
- A proper illumination of spaces might have a **positive effect** on health and well-being of the humans, as well as **contributing** to the improvement of creativity and productivity
 - With artificial light it is possible to influence melatonin and consequently the **circadian rhythm** of humans
 - Depending on the color temperature our body might **react** differently
- **Tunable White** (White color temperature):
 - Is measured in **kelvin** degrees
 - Typically from 2700K (**Warm** white) to 6500k (**Cold** white)

HCL supports health, well-being and performance of humans by combining visual, biological and emotional benefits of light*

• Paper by LightingEurope and IALD, 2017

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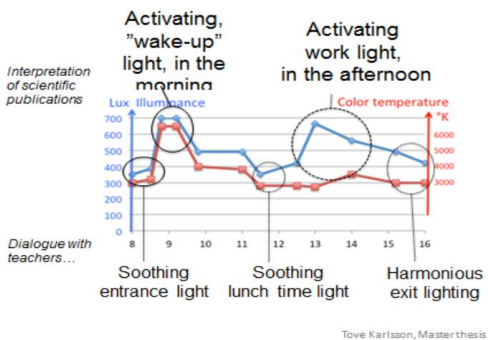
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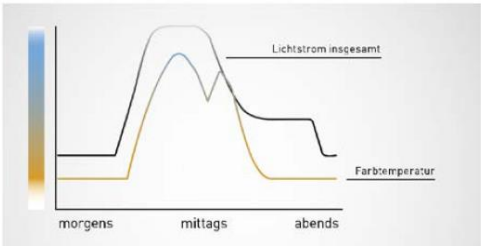
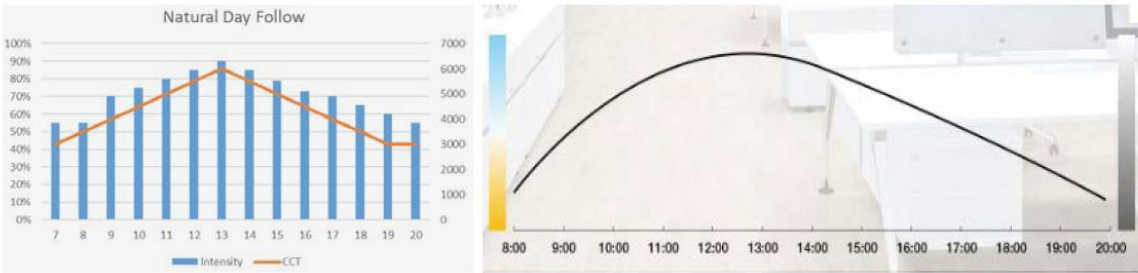
Jorge Sanchis / SI BP CD RS

KNX/DALI GW N 141/xx

Human Centric Lighting profiles



Time	Intensity	CT
08:00	70 %	2700
08:40	100 %	6500
09:00	100 %	5000
11:00	70 %	4000
11:30	70 %	3000
12:00	70 %	2700
12:20	80 %	4000
13:00	90 %	5000
13:20	70 %	4000
14:00	70 %	3500
14:20	70 %	3500
14:50	70 %	3500
15:20	60 %	2700



There is no a standardized HCL profile.

KNX/DALI GW N 141/xx

Use Cases

Use Cases Human Centric Lighting

- 1.- School, automatic control with schedules and scenes
- 2.- Meeting room, effect control with constant lighting
- 3.- Office building, automatic and manual control
- 4.- Factory, automatic control with shift work
- 5.- Retail, fixed control with push button
- 6.- Small administration building, control depending on external brightness
- 7.- HCL 4 seasons in Switzerland
- 8.- Relative curve + 2 and 3 shifts in Switzerland
- 9.- And many more...

Questions and discussion

1. After the presentation of each case
2. At the end of the presentation on any topic

Motivation

1. Learn device functions through practical case scenarios
2. Have an open discussion

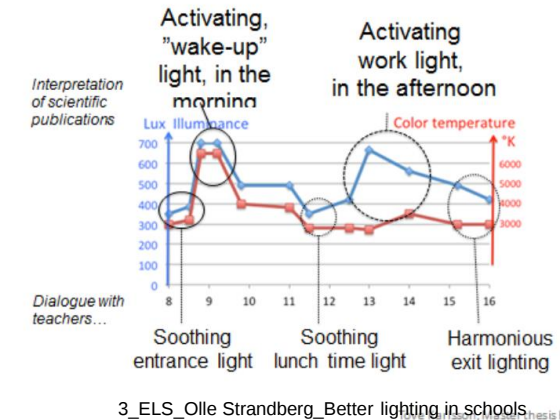
KNX/DALI GW N 141/xx

1.- School, automatic control with schedules and scenes



Lighting requirements

- Tunable White between 2700 K and 6500 K
- Fixed brightness values
- A central visualization controls the lighting (and shading, HVAC)
- HCL: The color temperature and brightness are controlled by time programs with the following behavior



Proposal

- KNX/DALI GW N 141/31
- IP Control Center N 152

KNX/DALI GW N 141/xx

1.- School, automatic control with schedules and scenes

Solution

- KNX/DALI GW N 141/31 for **2 DALI lines** with up to 64 ECGs and 16 scenes per line
 - **Color temperature** control (Tunable White) thanks to the support of DALI Device Type 8
 - **Tunable White and brightness** values configured in scenes
- IP Control Center N 152 for **control and visualization** of the KNX installation
 - **HCL application** with time programs that send a number scene to the N141/31

Time	Intensity	CT
08:00	70 %	2700
08:40	100 %	6500
09:00	100 %	5000
11:00	70 %	4000
11:30	70 %	3000
12:00	70 %	2700
12:20	80 %	4000
13:00	90 %	5000
13:20	70 %	4000
14:00	70 %	3500
14:20	70 %	3500
14:50	70 %	3500
15:20	60 %	2700

S --- KNX/DALI Gateway Twin N 141/31

Scenes			
New Delete Copy Paste Read scene values			
Name	Scene number	Dimming time	A,G1: Classroom
Scene 1	1	0,7sec	70%/2,700 K
Scene 2	2	0,7sec	100%/6,500 K
Scene 3	3	0,7sec	100%/5,000 K
Scene 4	4	0,7sec	70%/4,000 K
Scene 5	5	0,7sec	70%/3,000 K
Scene 6	6	0,7sec	70%/2,700 K
Scene 7	7	0,7sec	80%/4,000 K
Scene 8	8	0,7sec	90%/5,000 K
Scene 9	9	0,7sec	70%/4,000 K
Scene 10	10	0,7sec	70%/3,500 K
Scene 11	11	0,7sec	70%/3,500 K
Scene 12	12	0,7sec	70%/3,500 K
Scene 13	13	0,7sec	60%/2,700 K

KNX/DALI GW N 141/xx

2.- Meeting room, effect control with constant lighting



Lighting requirements

- Tunable White and constant light control with 600 lux setpoint
- Room Unit to control the lighting
- HCL: Different moods so that the light might support the purpose of the meeting
 - Beginning of the session, presentation of the objectives to be achieved during the session -> Neutral white 4500 K
 - Brainstorming, creativity is called for to bring out ideas -> Warm white 3000 k
 - Decision making, concentration and attention -> Cold white 6000 K



Proposal

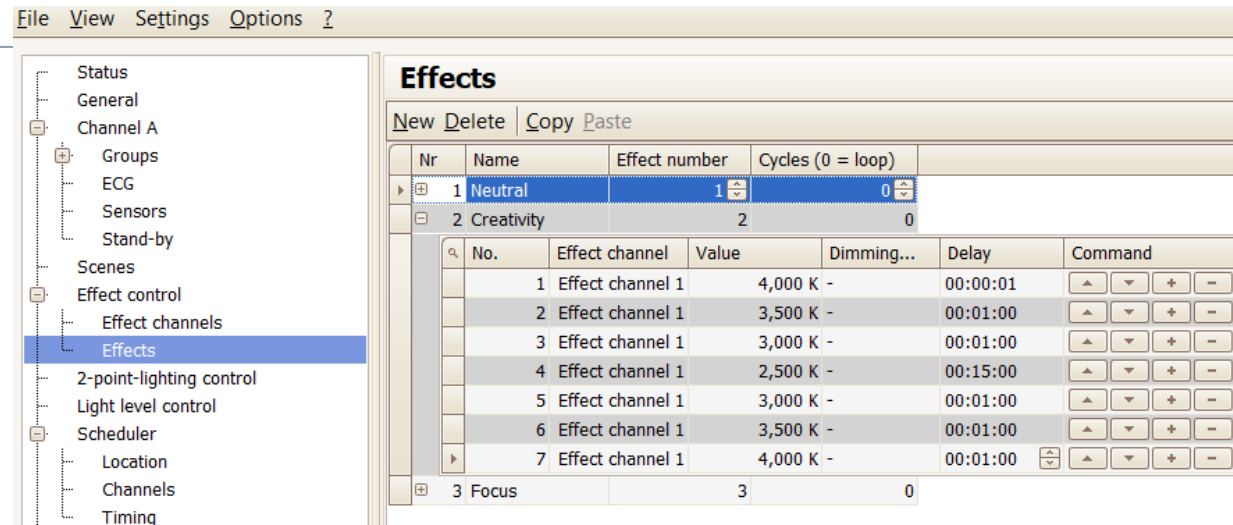
- KNX/DALI GW N 141/03
- Presence detector WIDE UP 258/D51
- Room Unit UP 227

KNX/DALI GW N 141/xx

2.- Meeting room, effect control with constant lighting

Solution

- KNX/DALI GW N 141/03 for **1 DALI line** with up to 64 ECGs and 4 effects (20 effect channels)
 - **Color temperature** control (Tunable White) thanks to the support of DALI Device Type 8
 - **HCL application** with three effects to create different lighting moods (Neutral, creativity, focus)
- Presence detector UP 258D51 with a covered area up to **64m2** for presence and measurement of temperature, humidity and CO2
 - **Constant light control** with 600 lux setpoint
- Room Unit UP 227 with **display and/or control** of lights, shading, temperature, humidity and CO2
 - It calls the **effects**



KNX/DALI GW N 141/xx

3.- Office building, automatic and manual control



Lighting requirements

- Tunable White and constant light control with 600 lux setpoint
- Room Unit to control the lighting manually
- HCL: Circadian rhythm profile with smooth curve
 - Beginning of the working day, calm -> Warm white 2700 K
 - Middle of the working day, max. performance-> Cold white 5500 k
 - End of the working day, relax -> Warm white 2700 K

Proposal

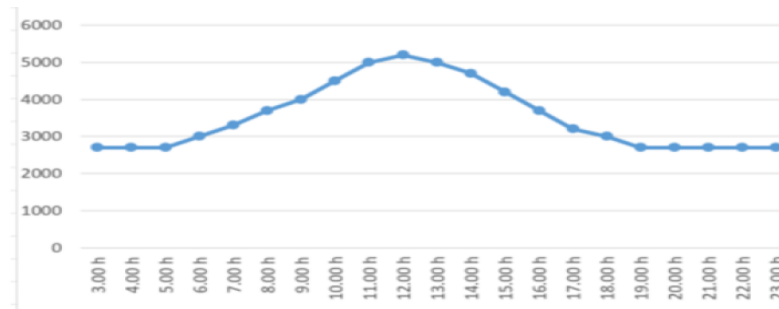
- KNX/DALI GW N 141/31
- Presence detector WIDE DualTech UP 258/D61
- Room Unit UP 227
- IP Control Center N 152

KNX/DALI GW N 141/xx

3.- Office building, automatic and manual control

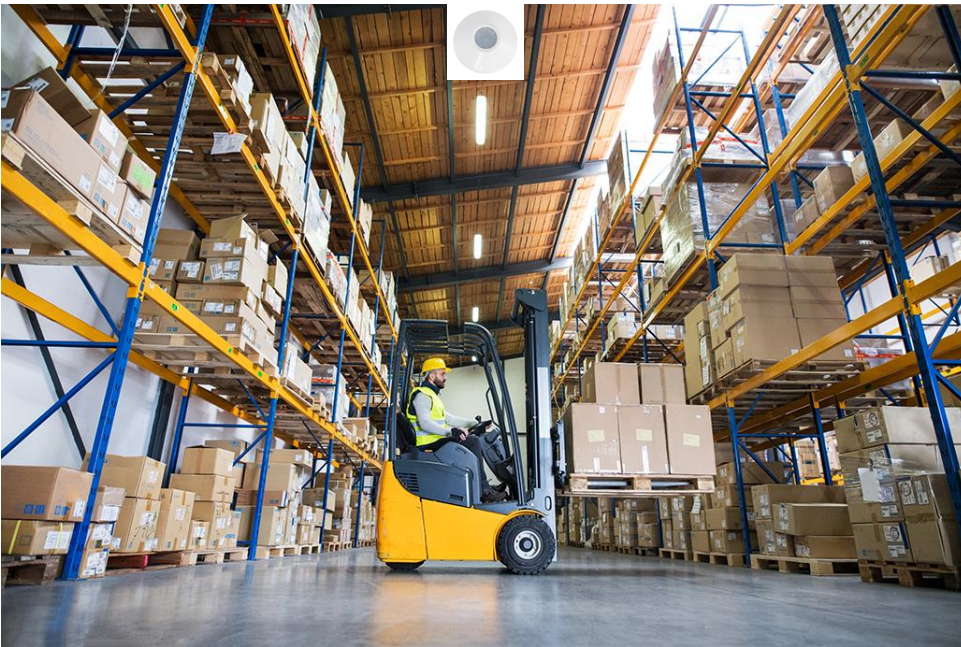
Solution

- KNX/DALI GW N 141/31 for **2 DALI lines** with up to 64 ECGs per line
 - **Color temperature** control (Tunable White) thanks to the support of DALI Device Type 8
- Presence detector UP 258D61 with a covered area up to **28m2** for presence and measurement of temperature
 - **Constant light control** with 600 lux setpoint
- Room Unit UP 227 with **display and/or control** of lights, shading and temperature
 - It controls the brightness and the color temperature **manually** with dimming commands (4 bits)
 - It **locks** the schedules of the N 152 to disable the automatic control
- IP Control Center N 152 for **control and visualization** of the KNX installation
 - **HCL application** with time programs that send a color temperature values to the N 141/31



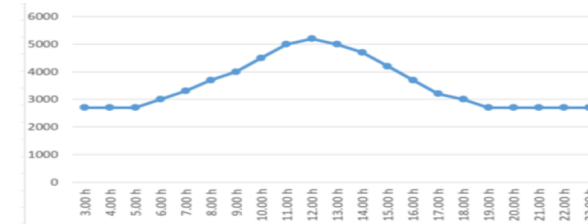
KNX/DALI GW N 141/xx

4.- Factory, automatic control with shift work



Lighting requirements

- Tunable White and constant light control with 600 lux setpoint
- HCL: Circadian rhythm profile with smooth curve for two shifts
 - Beginning of the working day, calm -> Warm white 2700 K
 - Middle of the working day, max. performance-> Cold white 5500 k
 - End of the working day, relax -> Warm white 2700 K



Proposal

- KNX/DALI GW N 141/21
- DALI Presence detector High Bay of Osram

KNX/DALI GW N 141/xx

4.- Factory, automatic control with shift work

Solution

- KNX/DALI GW N 141/21 for **2 DALI lines** with up to 64 ECGs per line, schedules and support of several DALI sensors of Osram
 - **Color temperature** control (Tunable White) thanks to the support of DALI Device Type 8
 - **HCL application** with time programs of color temperature values for the two work shifts
- DALI Presence detector High Bay of Osram with a covered area up to **18m** for presence and installation height of **13m**
 - **Constant light control** with 600 lux setpoint configured in the KNX/DALI GW N 141/21

S 1.1.1 KNX/DALI Gateway Twin plus N 141/21

File View Settings Options ?

Timing

New Delete Copy Paste

No. ^	Description	Timing	Channel	Value	Effect start
1	Shift1	Daily at 7:00 AM	Channel 1	2,700 K	-
2	Shift1	Daily at 8:00 AM	Channel 1	3,500 K	-
3	Shift1	Daily at 9:00 AM	Channel 1	4,000 K	-
4	Shift1	Daily at 10:00 AM	Channel 1	4,500 K	-
5	Shift1	Daily at 11:00 AM	Channel 1	5,000 K	-
6	Shift1	Daily at 11:30 AM	Channel 1	5,500 K	-
7	Shift1	Daily at 12:00 PM	Channel 1	5,000 K	-
8	Shift1	Daily at 1:00 PM	Channel 1	4,500 K	-
9	Shift1	Daily at 2:00 PM	Channel 1	4,000 K	-
10	Shift1	Daily at 3:00 PM	Channel 1	3,500 K	-
11	Shift1	Daily at 4:00 PM	Channel 1	2,700 K	-
12	Shift2	Daily at 5:00 PM	Channel 1	2,700 K	-
13	Shift2	Daily at 6:00 PM	Channel 1	3,500 K	-
14	Shift2	Daily at 7:00 PM	Channel 1	4,000 K	-
15	Shift2	Daily at 8:00 PM	Channel 1	4,500 K	-
16	Shift2	Daily at 9:00 PM	Channel 1	5,000 K	-
17	Shift2	Daily at 9:30 PM	Channel 1	5,500 K	-
18	Shift2	Daily at 10:00 PM	Channel 1	5,000 K	-
19	Shift2	Daily at 11:00 PM	Channel 1	4,500 K	-
20	Shift2	Daily at 12:00 AM	Channel 1	4,000 K	-
21	Shift2	Daily at 1:00 AM	Channel 1	3,500 K	-
22	Shift2	Daily at 2:00 AM	Channel 1	2,700 K	-

KNX/DALI GW N 141/xx

5.- Retail, fixed control with push button



Lighting requirements

- Tunable White with fixed color temperature values
- Push button to send the values
- HCL: Different color temperature for different areas

Proposal

- Switch/Dim Actuator 2x DALI Broadcast N 525D11
- Push button quadruple DELTA



KNX/DALI GW N 141/xx

5.- Retail, fixed control with push button

Solution

- Switch/Dim Actuator 2x DALI Broadcast N 525D11 for **2 DALI lines** with up to 20 ECGs per line
 - **Color temperature** control (Tunable White) thanks to the support of DALI Device Type 8
- Push button quadruple DELTA with **control** of lights (on-off and fixed color temperature values)
 - **HCL application** with different color temperature values for different areas (Showcase, clothing, dresser, cash desk...) to create different moods



oktalite

KNX/DALI GW N 141/xx

6.- Small administration building, control depending on external brightness



Lighting requirements

- HCL: Because of the different Seasons, the "exterior light" is very different and one wants to control the mood of the people with Tunable White
- A weather station provides a brightness dependent color temperature control, which acts on the interior light
 - Grey days -> Weather station sends warm color temperature values (3000 °K)
 - Blue days -> Weather center sends cold color temperature values (6000 °K)

Proposal

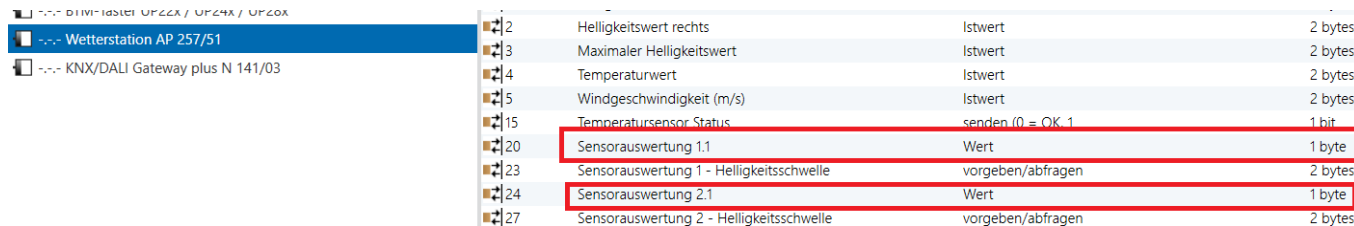
- KNX/DALI GW N 141/31
- Weather Station GPS AP 257/61

KNX/DALI GW N 141/xx

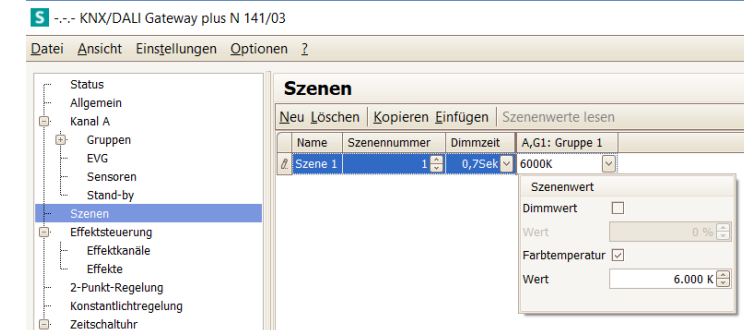
6.- Small administration building, control depending on external brightness

Solution

- KNX/DALI GW N 141/31 for **2 DALI lines** with up to 64 ECGs and 16 scenes per line
 - **Color temperature** control (Tunable White) thanks to the support of DALI Device Type 8
- Weather Station GPS AP 257/61 with control up to 8 **Façades** and 10 **Sensor Evaluations**
 - It sends a scene number (1 byte command) with two **sensor evaluations** (above or below 15000 lux)
 - The KNX/DALI GW receives the command via the scene object and controls the color temperature of all lights with two **scenes**
 - Grey days -> Scene 1 -> Color temperature values (3000 °K)
 - Blue days -> scene 2 -> Color temperature values (6000 °K)



2	Helligkeitswert rechts	Istwert	2 bytes
3	Maximaler Helligkeitswert	Istwert	2 bytes
4	Temperaturwert	Istwert	2 bytes
5	Windgeschwindigkeit (m/s)	Istwert	2 bytes
15	Temperatursensor Status	senden (0 = OK, 1	1 bit
20	Sensorauswertung 1.1	Wert	1 byte
23	Sensorauswertung 1 - Helligkeitsschwelle	vorgeben/abfragen	2 bytes
24	Sensorauswertung 2.1	Wert	1 byte
27	Sensorauswertung 2 - Helligkeitsschwelle	vorgeben/abfragen	2 bytes



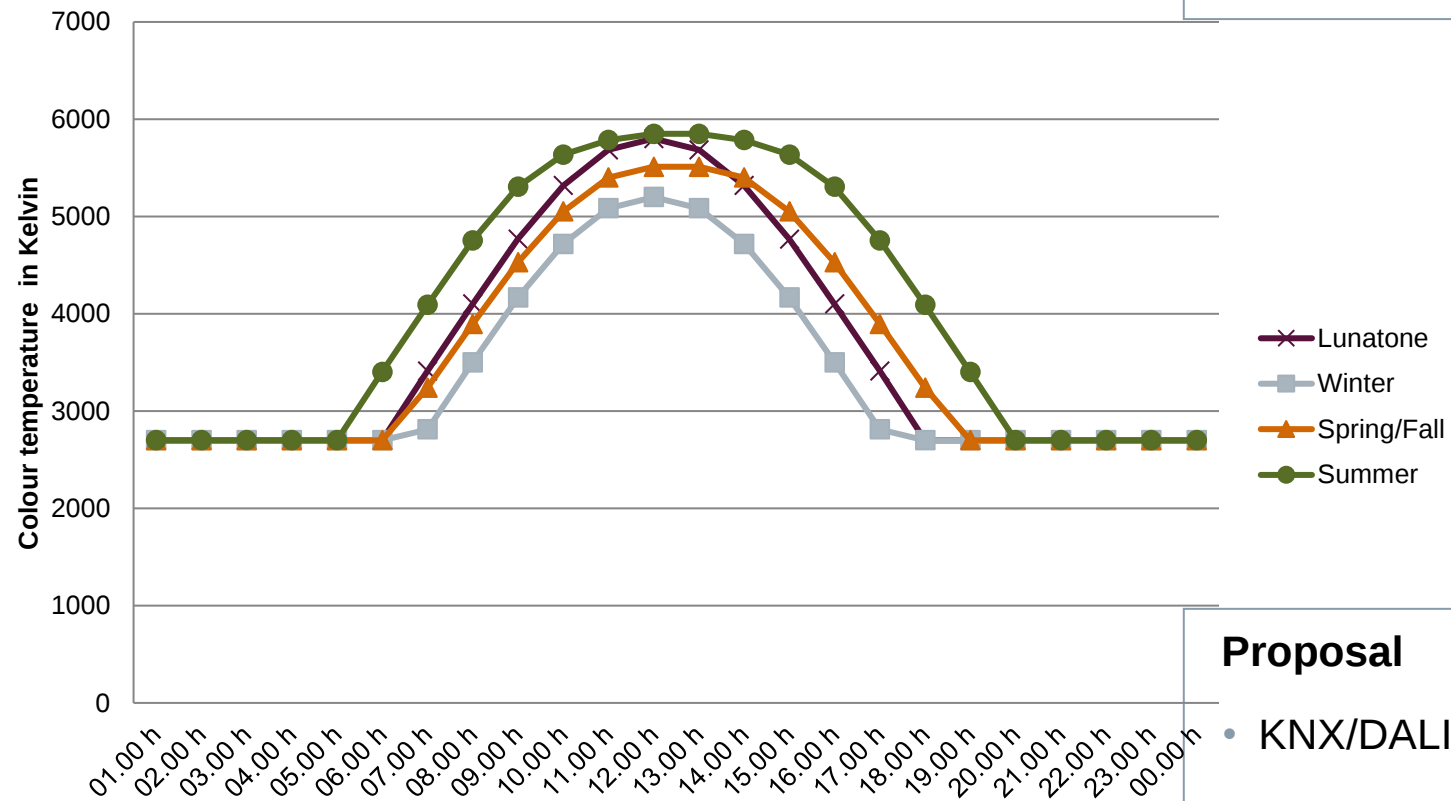
KNX/DALI GW N 141/xx

7.- HCL 4 seasons in Switzerland

Lighting requirements

- HCL: Depending on the seasons you need a different curve

Colour temperature curve



Proposal

- KNX/DALI GW N 141/03
- You may need a external KNX device to provide periodically the time and date to the KNX/DALI GW, in case you don't want to do it manually

KNX/DALI GW N 141/xx

7.- HCL 4 seasons in Switzerland



Solution

- KNX/DALI GW N 141/03 for **1 DALI lines** with up to 64 ECGs per line and schedules
 - **Color temperature** control (Tunable White) thanks to the support of DALI Device Type 8
 - **HCL application** with time programs of color temperature values. There are switching times for each season of the year which are enabled via annual schedule (the channels of the time switch can be activated/disabled via communication objects), so you get an automatically adjusted curve for each season

Channels				
New Delete Copy Paste				
	Nr	Name	Type	Update
▶	1	HCL Spring/Fall	Color temperature ▼	last ▼
	2	HCL Summer	Color temperature	last
	3	HCL Winter	Color temperature	last
	4	Spring/Fall	On / Off	no
	5	Summer	On / Off	no
	6	Winter	On / Off	no

Season definition	Sunrise/sunset time
Spring = 1 February - 30 April	06:42 - 19:05
Summer = August 1 - July 31	05:32 - 21:24
Fall = 1 August - 30 October	06:42 - 19:05
Winter = 1. November - 31. January	08:13 - 16:46
Location: Lucerne, CH	

KNX/DALI GW N 141/xx

7.- HCL 4 seasons in Switzerland

Solution

Timing						
New Delete Copy Paste						
No.	Description	Timing	Channel	Value	Eff	
1	2700 K	Daily at 1:00 AM	HCL Spring/Fall	2,700 K		
2	2700 K	Daily at 2:00 AM	HCL Spring/Fall	2,700 K		
3	2700 K	Daily at 3:00 AM	HCL Spring/Fall	2,700 K		
4	2700 K	Daily at 4:00 AM	HCL Spring/Fall	2,700 K		
5	2700 K	Daily at 5:00 AM	HCL Spring/Fall	2,700 K		
6	2700 K	Daily at 6:00 AM	HCL Spring/Fall	2,700 K		
7	3241 K	Daily at 7:00 AM	HCL Spring/Fall	3,241 K		
8	3896 K	Daily at 8:00 AM	HCL Spring/Fall	3,896 K		
9	4529 K	Daily at 9:00 AM	HCL Spring/Fall	4,529 K		
10	5052 K	Daily at 10:00 AM	HCL Spring/Fall	5,052 K		
11	5401 K	Daily at 11:00 AM	HCL Spring/Fall	5,401 K		
12	5510 K	Daily at 12:00 PM	HCL Spring/Fall	5,510 K		
13	5510 K	Daily at 1:00 PM	HCL Spring/Fall	5,510 K		
14	5401 K	Daily at 2:00 PM	HCL Spring/Fall	5,401 K		
15	5052 K	Daily at 3:00 PM	HCL Spring/Fall	5,052 K		
16	4529 K	Daily at 4:00 PM	HCL Spring/Fall	4,529 K		
17	3896 K	Daily at 5:00 PM	HCL Spring/Fall	3,896 K		
18	3241 K	Daily at 6:00 PM	HCL Spring/Fall	3,241 K		
19	2700 K	Daily at 7:00 PM	HCL Spring/Fall	2,700 K		
20	2700 K	Daily at 8:00 PM	HCL Spring/Fall	2,700 K		
21	2700 K	Daily at 9:00 PM	HCL Spring/Fall	2,700 K		
22	2700 K	Daily at 10:00 PM	HCL Spring/Fall	2,700 K		
23	2700 K	Daily at 11:00 PM	HCL Spring/Fall	2,700 K		
24	2700 K	Daily at 11:59 PM	HCL Spring/Fall	2,700 K		
25	2700 K	Daily at 1:00 AM	HCL Summer	2,700 K		
26	2700 K	Daily at 2:00 AM	HCL Summer	2,700 K		
27	2700 K	Daily at 3:00 AM	HCL Summer	2,700 K		
28	2700 K	Daily at 4:00 AM	HCL Summer	2,700 K		
29	2700 K	Daily at 5:00 AM	HCL Summer	2,700 K		
30	3403 K	Daily at 6:00 AM	HCL Summer	3,403 K		
31	4091 K	Daily at 7:00 AM	HCL Summer	4,091 K		

67	2700 K	Daily at 7:00 PM	HCL Winter	2,700 K	-
68	2700 K	Daily at 8:00 PM	HCL Winter	2,700 K	-
69	2700 K	Daily at 9:00 PM	HCL Winter	2,700 K	-
70	2700 K	Daily at 10:00 PM	HCL Winter	2,700 K	-
71	2700 K	Daily at 11:00 PM	HCL Winter	2,700 K	-
72	2700 K	Daily at 11:59 PM	HCL Winter	2,700 K	-
73		Yearly on February 1 at 12:05 AM	Spring/Fall	On	-
74		Yearly on February 1 at 12:10 AM	Summer	Off	-
75		Yearly on February 1 at 12:10 AM	Winter	Off	-
76		Yearly on May 1 at 12:05 AM	Summer	On	-
77		Yearly on May 1 at 12:10 AM	Spring/Fall	Off	-
78		Yearly on May 1 at 12:10 AM	Winter	Off	-
79		Yearly on August 1 at 12:05 AM	Spring/Fall	On	-
80		Yearly on August 1 at 12:10 AM	Summer	Off	-

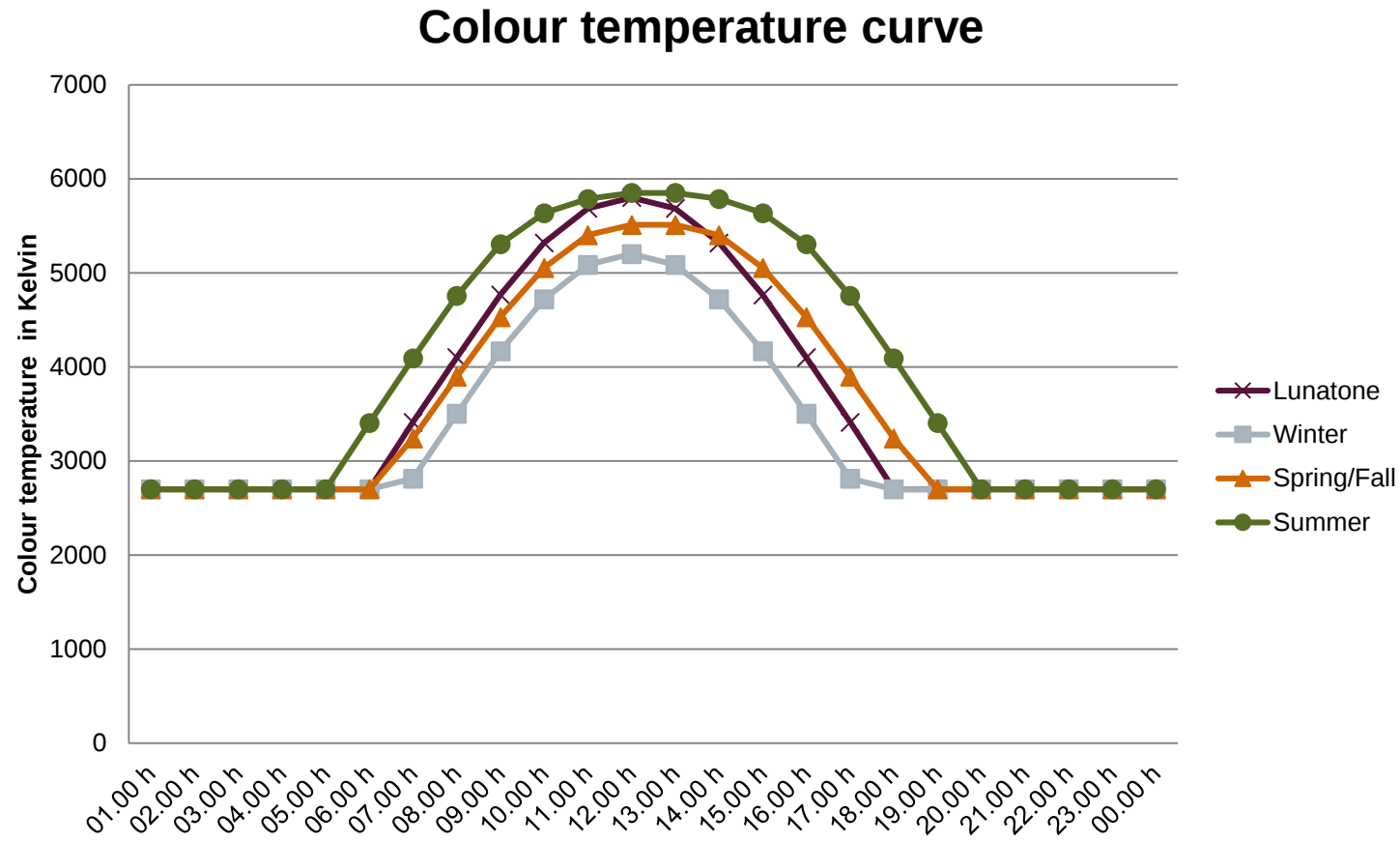
KNX/DALI GW N 141/xx

7.- HCL 4 seasons in Switzerland



Result

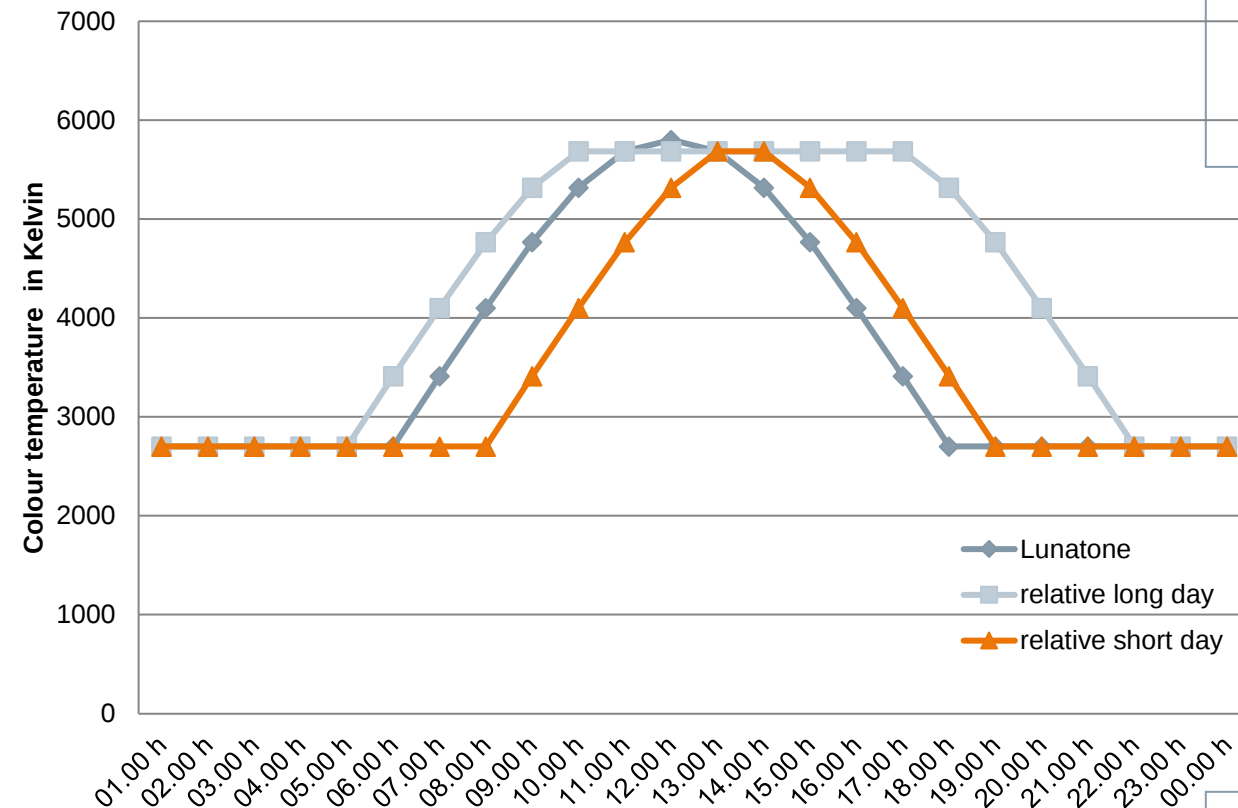
Daytime	Spring	Summer	Fall	Winter
	in Kelvin [K]			
01.00 h	2700	2700	2700	2700
02.00 h	2700	2700	2700	2700
03.00 h	2700	2700	2700	2700
04.00 h	2700	2700	2700	2700
05.00 h	2700	2700	2700	2700
06.00 h	2700	3403	2700	2700
07.00 h	3241	4091	3241	2812
08.00 h	3896	4755	3896	3501
09.00 h	4529	5305	4529	4167
10.00 h	5052	5635	5052	4718
11.00 h	5401	5786	5401	5085
12.00 h	5510	5850	5510	5200
13.00 h	5510	5850	5510	5085
14.00 h	5401	5786	5401	4718
15.00 h	5052	5635	5052	4167
16.00 h	4529	5305	4529	3501
17.00 h	3896	4755	3896	2812
18.00 h	3241	4091	3241	2700
19.00 h	2700	3403	2700	2700
20.00 h	2700	2700	2700	2700
21.00 h	2700	2700	2700	2700
22.00 h	2700	2700	2700	2700
23.00 h	2700	2700	2700	2700
00.00 h	2700	2700	2700	2700



KNX/DALI GW N 141/xx

8.- Relative curve + 2 and 3 shifts in Switzerland

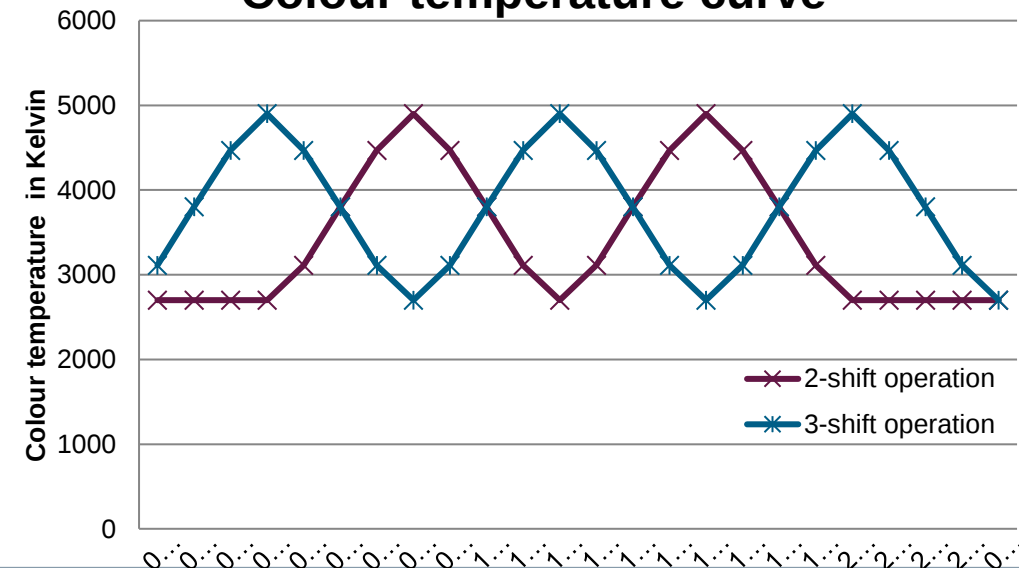
Colour temperature curve



Lighting requirements

- HCL: Depending on position of the sun, a different curve is needed. This must be adapted to a specific location. In addition, you may need to set two more curves for two shifts

Colour temperature curve



Proposal

- KNX/DALI GW N 141/03
- You may need a external KNX device to provide periodically the time and date to the KNX/DALI GW, in case you don't want to do it manually

KNX/DALI GW N 141/xx

8.- Relative curve + 2 and 3 shifts in Switzerland

Solution

- KNX/DALI GW N 141/03 for **1 DALI lines** with up to 64 ECGs per line and schedules
 - **Color temperature** control (Tunable White) thanks to the support of DALI Device Type 8
 - **HCL application** with time programs of color temperature values. The switching times are dependent on the sunrise and sunset of the configured location thanks to the astro function, so you get an automatically adjusted curve depending on the position of the sun. It can be extended for several shifts

Location	
Object type time-date	3-Byte time and date
Country	Switzerland
Time zone	default
Offset to GMT	+1:00
Start summer time (day)	last
Start summer time (weekday)	Sunday
Start summer time (month)	March
Start summer time (time)	2:00 AM
Difference summer / winter time	+1:00
End summer time (day)	last
End summer time (day)	Sunday
End summer time (month)	October
End summer time (time)	3:00 AM
Location	Bern
Longitude [-180° ... +180° E]	7
Longitude East [-59° ... +59° E]	25
Latitude [-90° ... +90° N]	46
Latitude [-59° ... +59° N]	57

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Timing						
New		Delete	Copy		Paste	
	No.	Description	Timing	Channel	Value	Eff
▶	1	2700 K	Daily at 1:00 AM	HCL	2,700 K	
	2	2700 K	Daily at 2:00 AM	HCL	2,700 K	
	3	2700 K	Daily at 3:00 AM	HCL	2,700 K	
	4	2700 K	Daily at 4:00 AM	HCL	2,700 K	
	5	2700 K	Daily at 5:00 AM	HCL	2,700 K	
	6	3412 K	Daily at 12:15 AM after Sunrise	HCL	3,412 K	
	7	4101 K	Daily at 1:00 AM after Sunrise	HCL	4,101 K	
	8	4767 K	Daily at 2:00 AM after Sunrise	HCL	4,767 K	
	9	5318 K	Daily at 3:00 AM after Sunrise	HCL	5,318 K	
	10	5685 K	Daily at 4:00 AM after Sunrise	HCL	5,685 K	
	11	5685 K	Daily at 4:00 AM before Sunset	HCL	5,685 K	
	12	5318 K	Daily at 3:00 AM before Sunset	HCL	5,318 K	
	13	4101 K	Daily at 2:00 AM before Sunset	HCL	4,101 K	
	14	3412 K	Daily at 1:00 AM before Sunset	HCL	3,412 K	
	15	2700 K	Daily at 12:15 AM before Sunset	HCL	2,700 K	
	16	2700 K	Daily at 10:00 PM	HCL	2,700 K	
	17	2700 K	Daily at 11:00 PM	HCL	2,700 K	
	18	2700 K	Daily at 11:59 PM	HCL	2,700 K	

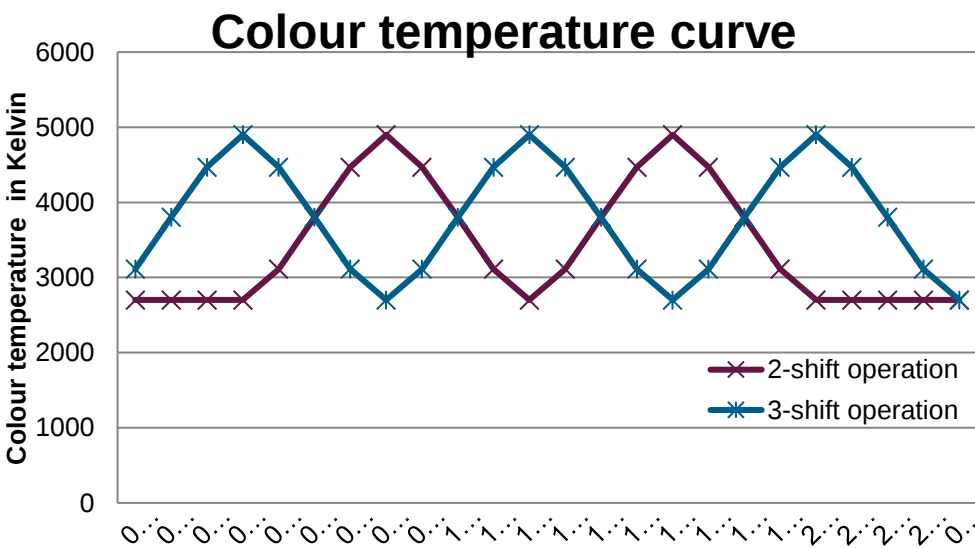
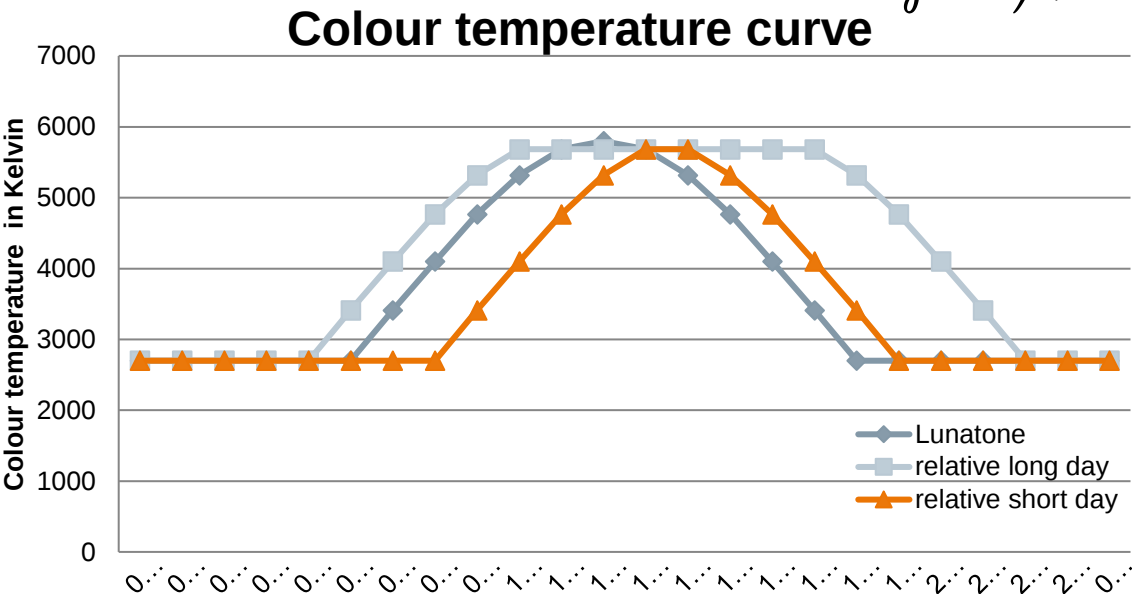
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8.- Relative curve + 2 and 3 shifts in Switzerland



Result

Daytime	Lunatone	rel. Summer	rel. Winter	2-Shift	3-Shift
			in Kelvin [K]		
01.00 h	2700	2700	2700	2700	3112
02.00 h	2700	2700	2700	2700	3801
03.00 h	2700	2700	2700	2700	4467
04.00 h	2700	2700	2700	2700	4900
05.00 h	2700	2700	2700	3112	4467
06.00 h	2700	3412	2700	3801	3801
07.00 h	3412	4101	2700	4467	3112
08.00 h	4101	4767	2700	4900	2700
09.00 h	4767	5318	3412	4467	3112
10.00 h	5318	5685	4101	3801	3801
11.00 h	5685	5685	4767	3112	4467
12.00 h	5800	5685	5318	2700	4900
13.00 h	5685	5685	5685	3112	4467
14.00 h	5318	5685	5685	3801	3801
15.00 h	4767	5685	5318	4467	3112
16.00 h	4101	5685	4767	4900	2700
17.00 h	3412	5685	4101	4467	3112
18.00 h	2700	5318	3412	3801	3801
19.00 h	2700	4767	2700	3112	4467
20.00 h	2700	4101	2700	2700	4900
21.00 h	2700	3412	2700	2700	4467
22.00 h	2700	2700	2700	2700	3801
23.00 h	2700	2700	2700	2700	3112
00.00 h	2700	2700	2700	2700	2700



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9.- And many more...

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Ingenuity for life



Lux Review Magazine



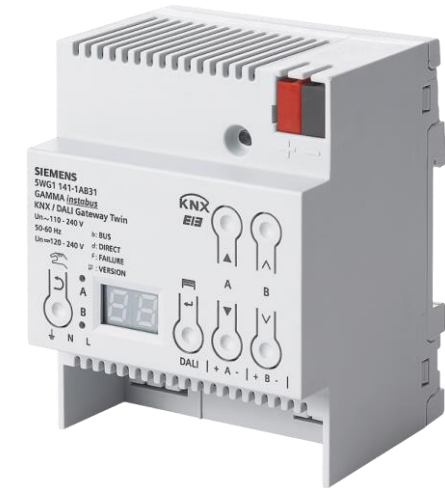
LEDs Magazine

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Links



- Technical documentation and application program for the ETS
[Siemens.com/gamma-td?ssn=5WG1141](https://www.siemens.com/gamma-td?ssn=5WG1141)
- Firmware Download Tool:
[Siemens.com/gamma-fdt](https://www.siemens.com/gamma-fdt)
- KNX Converter Library:
XML converter for the transfer of an old configuration of parameters
All old versions can be converted to newest version
[Siemens.com/gamma-converter](https://www.siemens.com/gamma-converter)
- Web based training:
[WBT](#)



Key take-aways from this session:

Artificial light
can imitate the
effect of the
sunlight to us

HCL means
the deliver of
the right light
for every
situation

There is no a
standardized
HCL profile

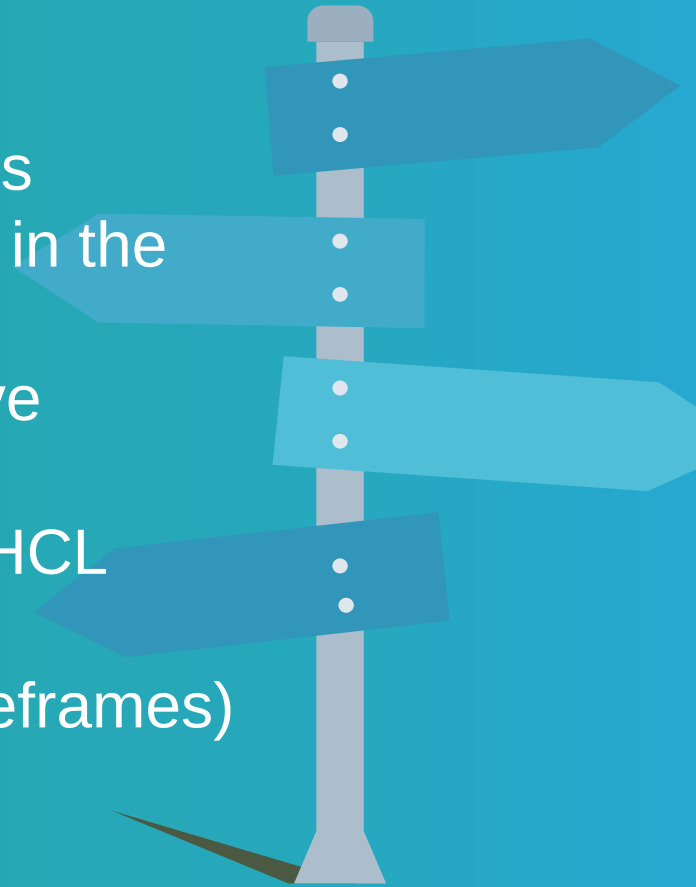
Depending on
the color
temperature our
body might
react differently



Each project
needs a
different and
probably
unique HCL
profile

Call for actions:

- I. Watch the KNX/DALI GW [WBT](#) to know the functions
- II. Use these Use Cases as a basic guide for HCL and in the next HCL project:
- III. Make sure you know the use of the building (Creative agency or serious notary?)
- IV. Find out what the customers wants to achieve with HCL (Daylight imitation or moods booster?)
- V. Be aware of the future habits of the occupants (Timeframes)



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