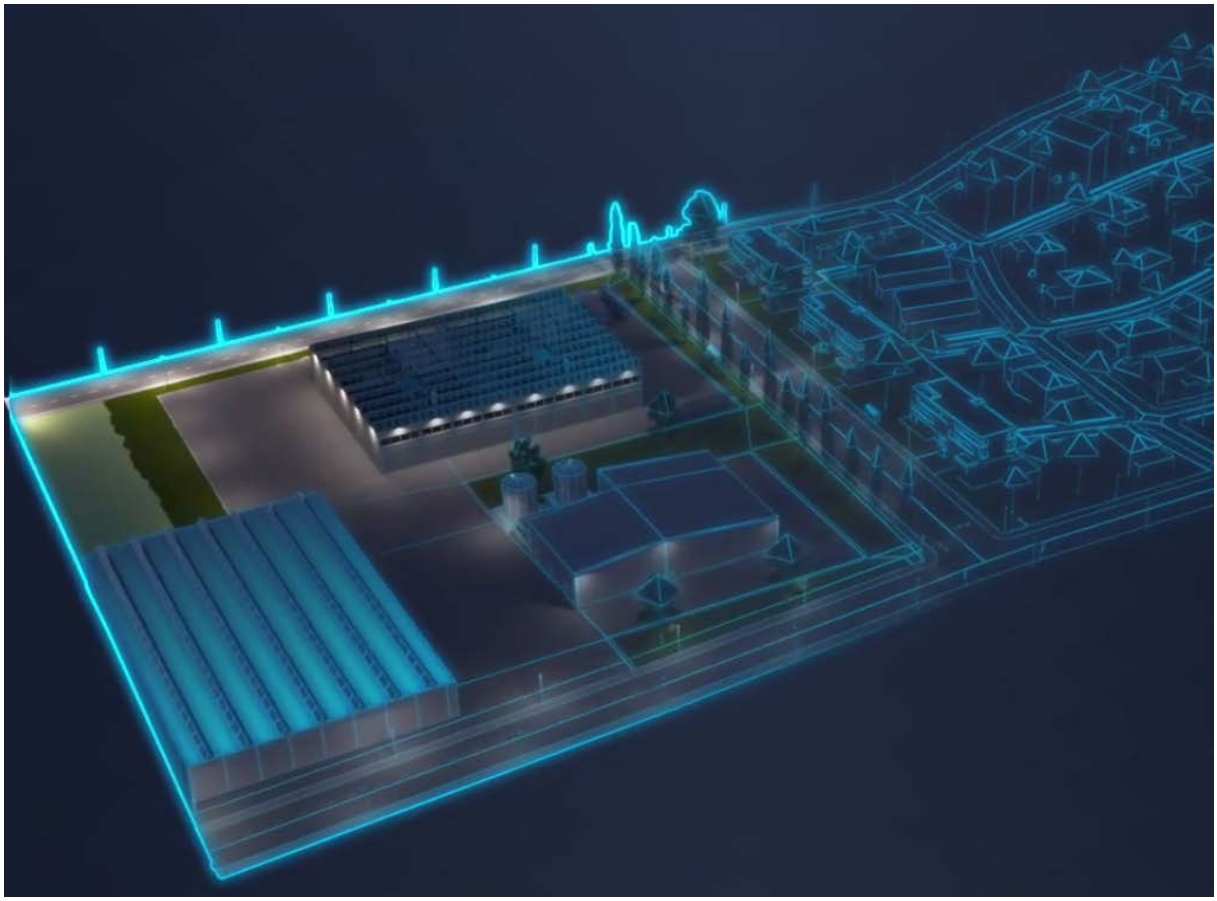
chronoSTEP 2 Instruction manual
U6Me2 programming



Overview

1. Description

In the outdoor lighting and street lighting sector, it often makes sense to dim the lighting level during night hours in order to save energy. The chronostep2 function is a tool that makes this easy to do. The device automatically measures the switch-on and switch-off times of the lighting installation over the past three days. The switch-on and switch-off times are typically the times at which the sun sets and rises. The midpoint of these two reference points is the time referred to as Virtual Midnight. To allow immediate operation it is possible to send time difference from actual time to midnight by mains programming command (for the first night).

The overall time between switch-ON and switch-OFF is called On-Time.
Overall there are 8 profiles, 5 are predefined by factory and 3 can be programmed by customer using mains programming protocol U6Me2. Balancing and output current can also be set via this way as well as reset to factory values and selecting of the intended scene.
Programming is also possible via DALI commands and ready2mains.

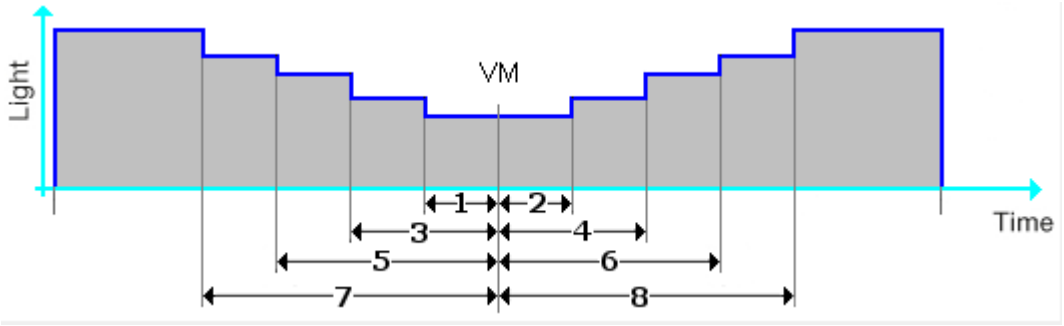
2. Overview applications chronoSTEP 2

2.1 Features overview

Configured via DALI (masterCONFIGURATOR in factory) and Mains-programming (programmer)

	① Factory		
Feature	ready2mains programmer	masterCONFIGURATOR	manually script generator
chronoSTEP	*in preperation*	available	available
CLO	*in preperation*	available	available
ITG	*in preperation*	available	*in preperation*
	② Street - pole		
Feature	ready2mains programmer	masterCONFIGURATOR	manually script generator
chronoSTEP	*in preperation*	available	available
CLO	*in preperation*	available	available
ITG	*in preperation*	available	*in preperation*
	③ Street - cabinet		
Feature	ready2mains programmer		
chronoSTEP	available		
CLO	*in preperation*		
ITG	*in preperation*		
	④ Maintenance		
Feature	ready2mains programmer		
chronoSTEP	available		
CLO	*in preperation*		
ITG	*in preperation*		

2.1 Profile overview



2.2 Default profiles:

Profile 0
- ***Disabled*** / chronoSTEP is disabled (Factory default) and light output is set to 100%.

Profile 1

Red, time 1	3 h	0 min	51 %	Red, time 2	5 h	0 min	51 %
Red, time 3	0 h	0 min	100 %	Red, time 4	0 h	0 min	100 %
Red, time 5	0 h	0 min	100 %	Red, time 6	0 h	0 min	100 %
Red, time 7	0 h	0 min	100 %	Red, time 8	0 h	0 min	100 %

Profile 2

Red, time 1	0 h	0 min	100 %	Red, time 2	1 h	0 min	70 %
Red, time 3	0 h	0 min	100 %	Red, time 4	4 h	0 min	51 %
Red, time 5	0 h	0 min	100 %	Red, time 6	6 h	0 min	70 %
Red, time 7	0 h	0 min	100 %	Red, time 8	0 h	0 min	100 %

Profile 3

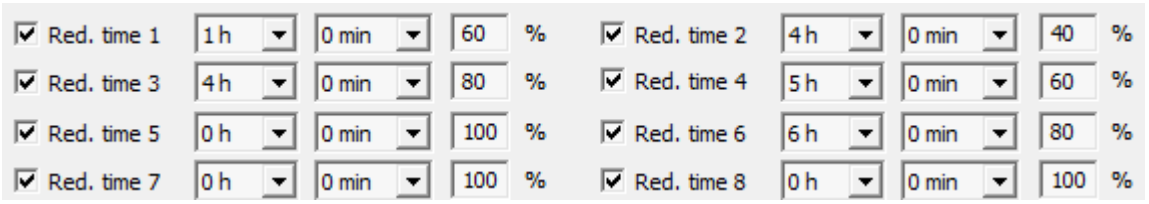
Red, time 1	1 h	0 min	60 %	Red, time 2	4 h	0 min	40 %
Red, time 3	2 h	0 min	80 %	Red, time 4	5 h	0 min	70 %
Red, time 5	0 h	0 min	100 %	Red, time 6	0 h	0 min	100 %
Red, time 7	0 h	0 min	100 %	Red, time 8	0 h	0 min	100 %

Profile 4

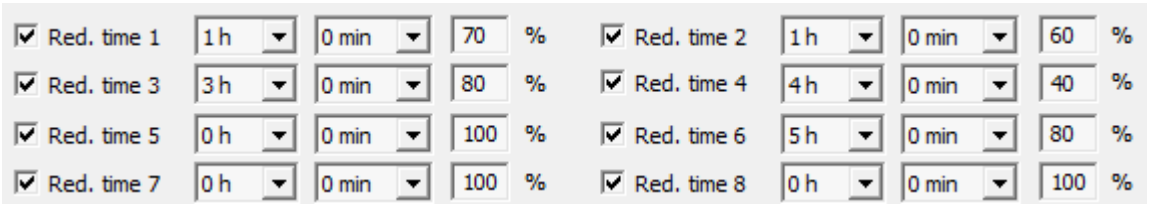
Red, time 1	1 h	0 min	30 %	Red, time 2	1 h	0 min	30 %
Red, time 3	2 h	0 min	51 %	Red, time 4	4 h	0 min	10 %
Red, time 5	3 h	0 min	70 %	Red, time 6	5 h	0 min	51 %
Red, time 7	5 h	0 min	80 %	Red, time 8	7 h	0 min	80 %

2.3 User defined profiles:

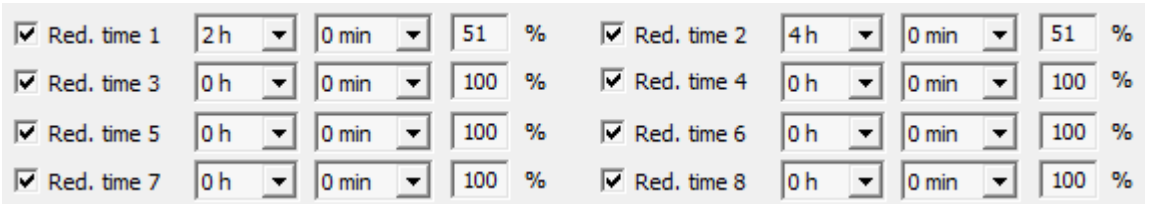
Profile 5



Profile 6

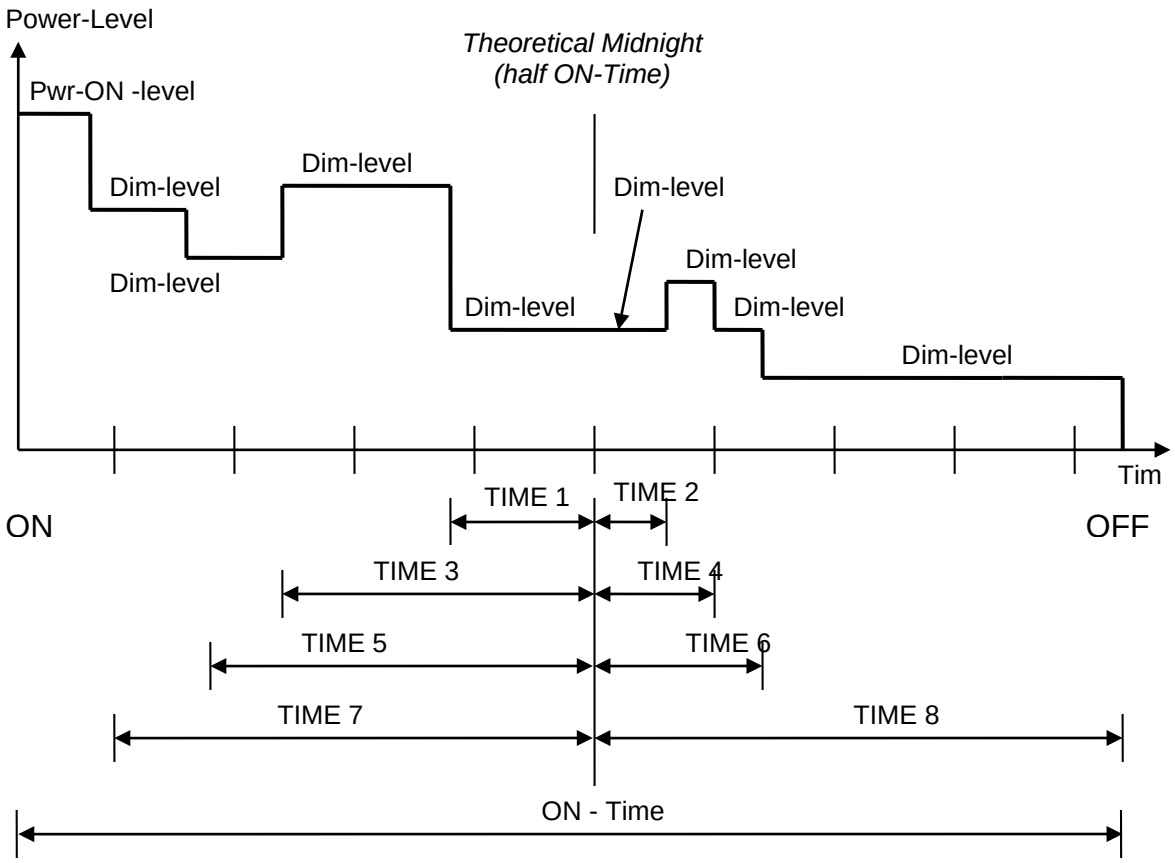


Profile 7



3. Mains programming Basics

4.1 Dimming sequence

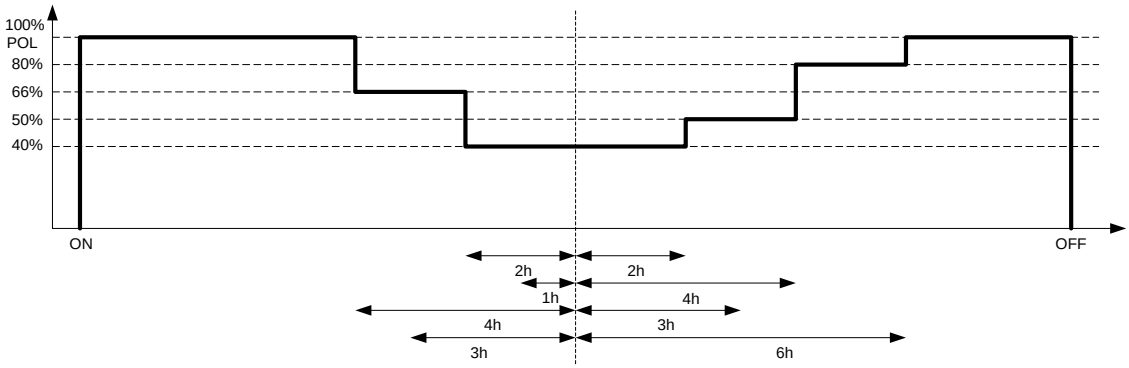


4.2 Behavior on overlapping values

In a sequence where the time values don't increase strictly, these times will be ignored:

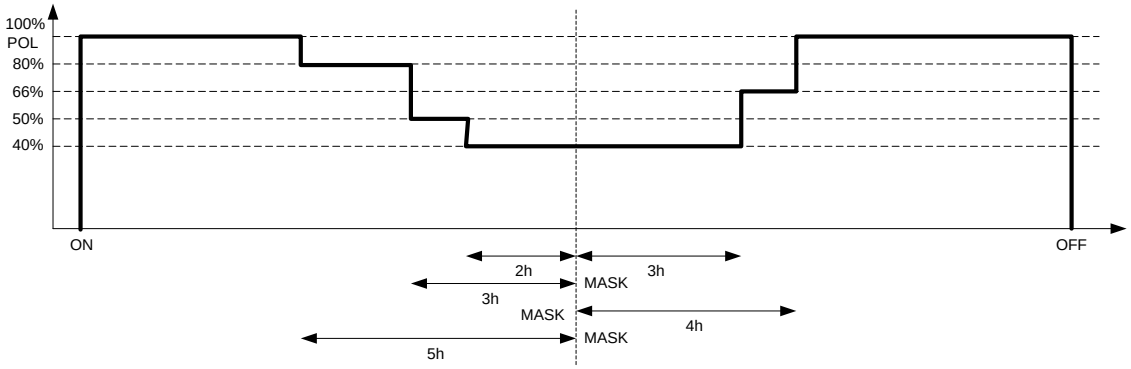
•	• Time	• Level
• 1	• 2h	• 40%
• 3	• 1h	• is ignored
• 5	• 4h	• 60%
• 7	• 3h	• Is ignored
• 2	• 2h	• 40%
• 4	• 4h	• 50%
• 6	• 3h	• Is ignored
• 8	• 6h	• 80%

These settings will result in this sequence:



If time values are overlapping each other, than the devices should stay on actual level till next valid time

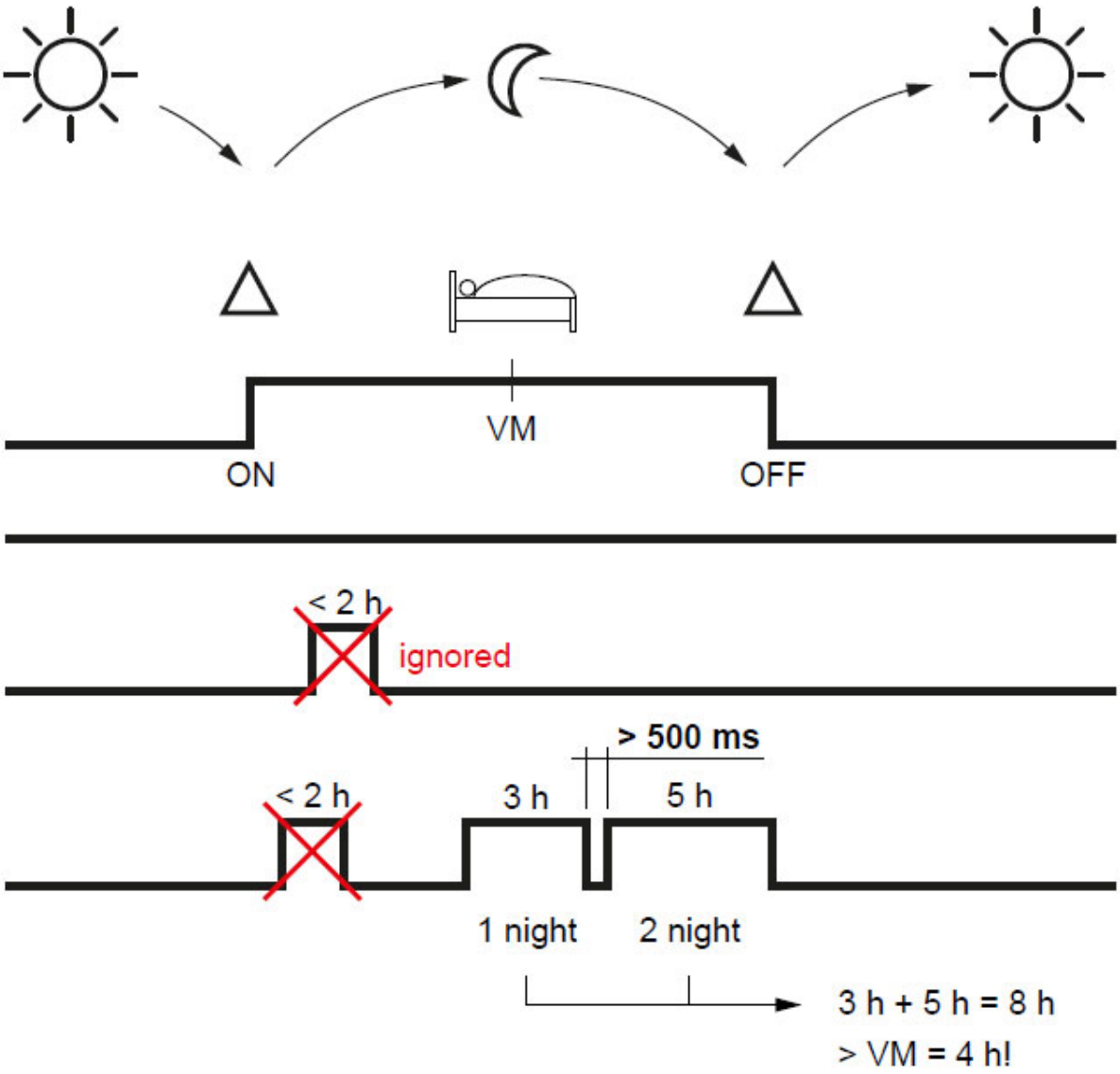
4.3 Behavior on enclosed MASK time values



If MASK time values are within a sequence which is followed by a valid Time value in the Sequence the Device should stay on the old level till the next valid time/value pair is reached.
MASK = 0

4. Schematic overview of sequences

chronoSTEP

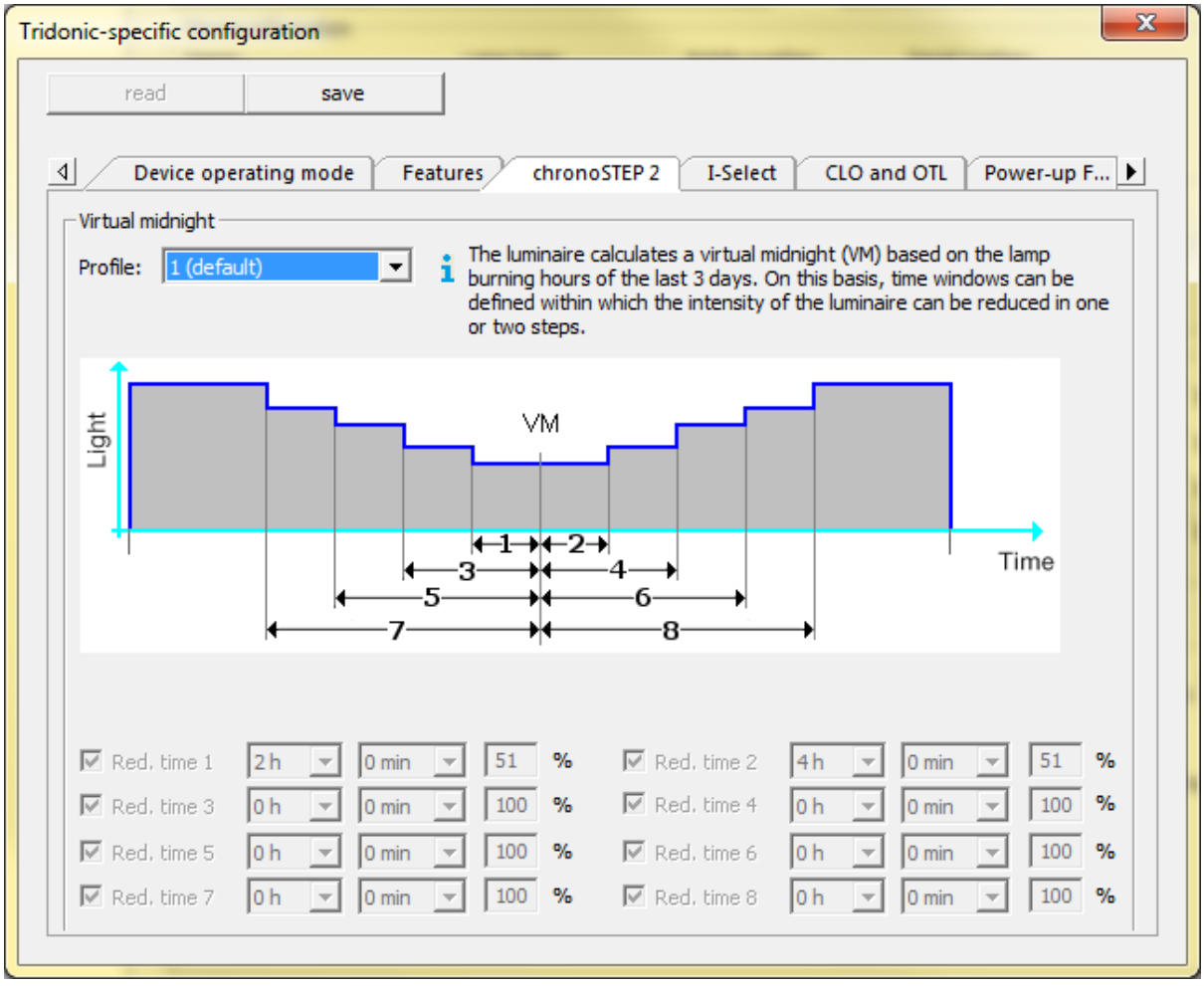


Your application:

5. Programming via masterCONFIGURATOR

How to configure the chronoSTEP2 function is described in this chapter.
chronoSTEP2 is a further development of chronoSTEP and offers more profiles and settings.

For programming the chronoSTEP2 functionality add the device to the masterCONFIGURATOR > 2.16.0.1407. After successfully addressing the driver you can program it via right mouse button and Tridonic specific parameter:



5.1 chronoSTEP 2 profiles

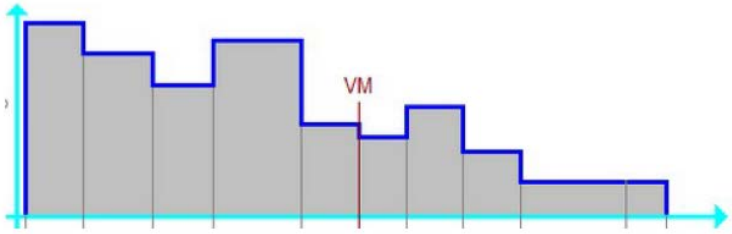
You can choose between 7 profiles. 4 profiles are pre-defined standard profiles. The other 3 profiles can be adjusted individually. See Chapter 2.0 for more infos.

Notice:

If the chronoSTEP2 and corridorFUNCTION functions are enabled at the same time, this may cause problems.
Therefore check the device operating mode (Device operating mode tab) and ensure that corridorFUNCTION is **not** selected.

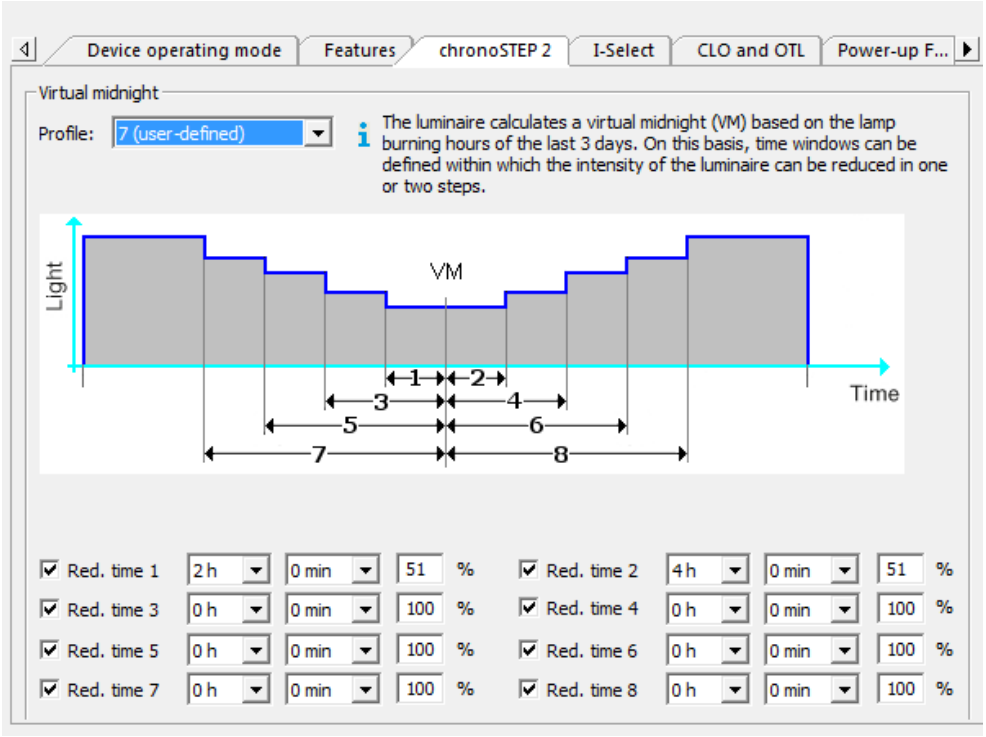
5.2 Adjusting the profiles

The profiles can be adjusted by setting the values for 8 different reduction times.
The time can be set via two drop-down menus for hours and minutes.
The intensity can be entered as a percentage value.



5.3 User defined profiles

Profile 5-7 could be programmed individually.

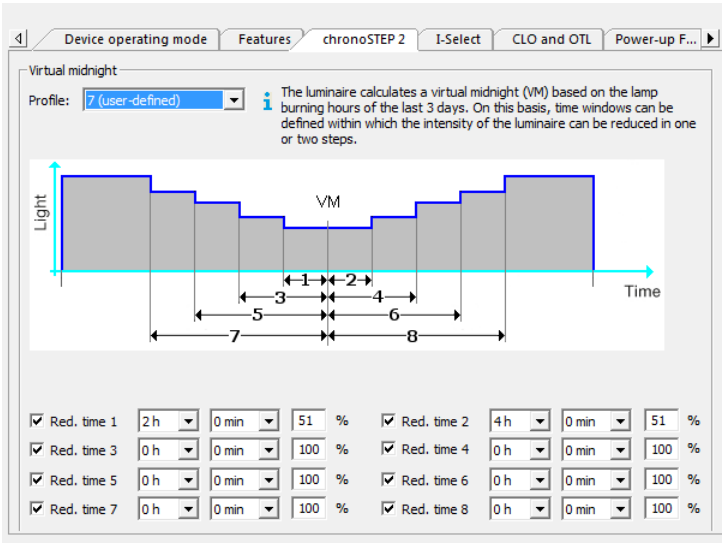


6 Programming via U6Me2

6.1 Example of programming sequence

The programming must be done via switch 230V on mains terminals with following ON/OFF commands.

How to configure: (**outdoor mode** / **userprofile 7** / **60 min Time 1** / **50%** and **90 min Time 2** / **50%)**



Single commands:

Start		3-5 s	*(delay 5 s)*	3-8 s	*(delay 5 s)*	3-8 s	*(delay 5 s)*	
Start programming here:								
Mode outdoor	**Start**	**Cmd**		**Parameter**		**L Ack**		**S Ack**
Mode outdoor	**Start**	15 s	*(delay 5 s)*	**15 s**	*(delay 5 s)*	25	*(delay 5 s)*	5
Sequence	**Start**	**Profile**		**Sequence**		**L Ack**		**S Ack**
Sequence	**Start**	10 s	*(delay 5 s)*	**45 s**	*(delay 5 s)*	20	*(delay 5 s)*	5
Time 1	**Start**	**Time 1**		**Level 1**		**L Ack**		**S Ack**
Time 1	**Start**	**30 s**	*(delay 5 s)*	**60 s**	*(delay 5 s)*	30 s	*(delay 5 s)*	5
Time 2	**Start**	**Time 2**		**Level 2**		**L Ack**		**S Ack**
Time 2	**Start**	**40 s**	*(delay 5 s)*	**60 s**	*(delay 5 s)*	35 s	*(delay 5 s)*	5

Multi commands:

Start		3-5 s	*(delay 5 s)*	3-8 s	*(delay 5 s)*	3-8 s	*(delay 5 s)*	
Start programming here:								
Mode outdoor		**Cmd**		**Parameter**		**L Ack**		
Mode outdoor	**Start**	15 s	*(delay 5 s)*	**15 s**	*(delay 5 s)*	25	*(delay 5 s)*	
Sequence		**Profile**		**Sequence**		**L Ack**		
Sequence		10 s	*(delay 5 s)*	**45 s**	*(delay 5 s)*	20	*(delay 5 s)*	
Time 1		**Time 1**		**Level 1**		**L Ack**		
Time 1		**30 s**	*(delay 5 s)*	**60 s**	*(delay 5 s)*	30 s	*(delay 5 s)*	
Time 2		**Time 2**		**Level 2**		**L Ack**		**S Ack**
Time 2		**40 s**	*(delay 5 s)*	**60 s**	*(delay 5 s)*	35 s	*(delay 5 s)*	**5**

6.2 Mode outdoor

Mode outdoor – set to operating moder “134” which is outdoor

Internal commands	Remarks	CMD	CMD - time	Parameter	Parameter - time
Factory reset	Reset all chronostep2 parameters to default	0	10s	0	10s
Change mode	Changes the operating mode of the gear between automatic and specific Outdoor mode	1	15s	Mode	10-45s
Power On Level		2	20s	Level	10-110s
Time until Midnight		3	25s	Time	10-485s
CH2 Enable	Preliminary has to be checked before implementation	4	30s	0	10s
CH2 Disable	Preliminary has to be checked before implementation	5	35s	0	10s

6.3 Sequence

Programming times for different sequences are defined as following

Sequence	ON per.
0	10s
1	15s
2	20s
3	25s
4	30s
5	35s
6	40s
7	45s

Table 1 Sequence selection via U6me2

6.4 Time table

Eight time intervals and eight corresponding Dimming/Light-Levels can be defined for each “var” sequence.

Time 1 defines how many hours before Virtual Midnight the lighting is dimmed to the value of Level 1;
Time 2 defines how many hours after Virtual Midnight the dimming level is according to Level 2.

Programming time [seconds]	Resulting in field [minutes]	Resulting in field [hours]
10	0	0
15	15	0,25
20	30	0,5
25	45	0,75
30	60	1
35	75	1,25
40	90	1,5
45	105	1,75
50	120	2
55	135	2,25
60	150	2,5
65	165	2,75
70	180	3

75	195	3,25
80	210	3,5
85	225	3,75
90	240	4
95	255	4,25
100	270	4,5
105	285	4,75
110	300	5
115	315	5,25
120	330	5,5
125	345	5,75
130	360	6
135	375	6,25
140	390	6,5
145	405	6,75
150	420	7
155	435	7,25
160	450	7,5
165	465	7,75
170	480	8
175	495	8,25
180	510	8,5
185	525	8,75
190	540	9
195	555	9,25
200	570	9,5
205	585	9,75
210	600	10
215	615	10,25
220	630	10,5
225	645	10,75
230	660	11
235	675	11,25
240	690	11,5
245	705	11,75
250	720	12

Max. value Time 1-8

6.5 Light level tabel

Programming time [seconds]	dimmed by [%]	resulting Lightlevel [%]
10	0,0%	100,0%
15	5,0%	95,0%
20	10,0%	90,0%
25	15,0%	85,0%
30	20,0%	80,0%
35	25,0%	75,0%
40	30,0%	70,0%
45	35,0%	65,0%
50	40,0%	60,0%
55	45,0%	55,0%
60	50,0%	50,0%
65	55,0%	45,0%
70	60,0%	40,0%
75	65,0%	35,0%
80	70,0%	30,0%

85	75,0%	25,0%
90	80,0%	20,0%
95	85,0%	15,0%
100	90,0%	10,0%
105	95,0%	5,0%
110	100,0%	0,0%

7 Programming via Script Generator and Programmer

7.1 Script Generator

7.2 General information

The software tool Script Generator is based on MS EXCEL and is used to generate user-defined parameter sets, called scripts.
These scripts can then be transferred via the ready2mains Programmer into ready2mains capable Tridonic LED Drivers.
This provides a simple, efficient and flexible way for luminaire manufacturers to program LED luminaires.

Full manual and operating handbook for programming with the tool can be found here:
Programmer > Downloads > **Product handbook**

- ready2mains outdoor: scripts including indoor as well as outdoor parameters (chronoSTEP2 - Virtual Midnight function) to program outdoor LED Drivers via the ready2mains protocol

- U6Me: scripts including chronoSTEP2 sequences to program outdoor LED Drivers via U6Me2

The latest version of the Script Generator can be found on Tridonic website (ready2mai ns Programmer > Downloads > **Script Generator**
The tool requires a PC with Microsoft Excel installed.

7.3 Start worksheet

After starting the Script Generator please select ready2mains Outdoor or U6Me2 function.

7.4 First steps

Before programming and setting up values for the function, you have to enable the chronoSTEP functionality.
Factory default parameter is “chronoSTEP deactivated”

Therefore you have to enable the outdoor mode first.
Go into the script generator, choose ready2mains Outdoor and check the parameter:
“Set operating mode”

X		0 ms	134	Set operating mode 0 => Dali mode; 128=> Automatic mode; 129=> DSI mode; 130=> SwitchDim mode; 131=> Corridor mode; 132=> 1-10V mode; 133=> ready2mains mode; 134=> ChronoStep2 mode	list	list

Fill in “X” and the value 134 for ChronoStep 2 mode.

After programming the ChronoStep mode to the device, automatically **Profile 1** will be set!

7.5 Progamming sequences and fiels

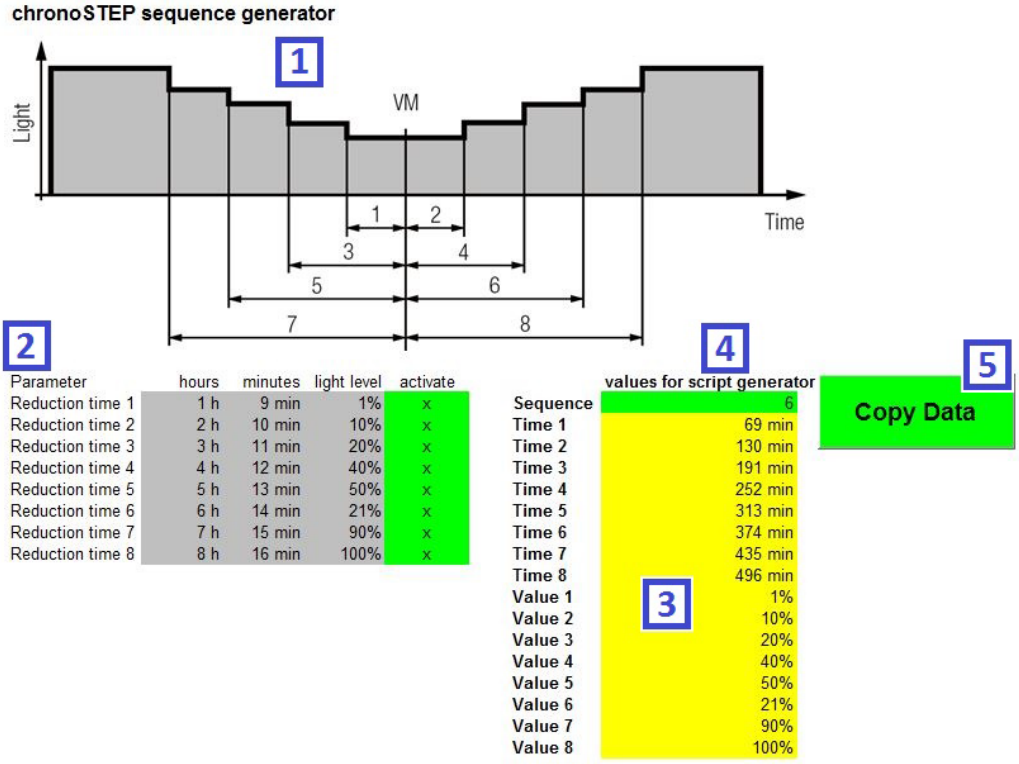
In some script types chronoSTEP profiles can be integrated for outdoor applications. To simplify this procedure it is recommended to use the separate worksheet chronoSTEP sequence generator.

The chronoSTEP sequence generator is available in these script types:

- ready2mains outdoor
- DALI
- U6Me2

If one of these script types is chosen, the chronoSTEP sequence generator worksheet will automatically be displayed.

7.6 How to create chronoSTEP profiles



1.)	chronoSTEP sequence overview - shows the general setup of a chronoSTEP sequence
2.)	Parameter field - define duration and light level of each sequence segment. Enter character "x" into column "activate" to integrate each line into the sequence
3.)	Automatically calculated values based on the parameter field; no changes possible
4.)	Sequence selection - select the target profile number for the chronoSTEP sequence (5, 6 or 7)
5.)	Press "Copy Data" to transfer profile parameter to the general script worksheet. The data is then automatically inserted into the target profile

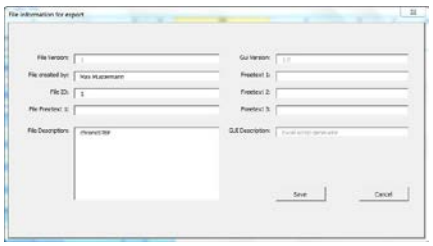
After conducting the steps described above, the created profiles can be found in the data set and generation worksheet

Excel Script Generator

105	X	0 ms		69 min	chronoSTEP2 Reduction Time 1 (Sequence 6)	0	720 min
106	X	0 ms		130 min	chronoSTEP2 Reduction Time 2 (Sequence 6)	0	720 min
107	X	0 ms		191 min	chronoSTEP2 Reduction Time 3 (Sequence 6)	0	720 min
108	X	0 ms		252 min	chronoSTEP2 Reduction Time 4 (Sequence 6)	0	720 min
109	X	0 ms		313 min	chronoSTEP2 Reduction Time 5 (Sequence 6)	0	720 min
110	X	0 ms		374 min	chronoSTEP2 Reduction Time 6 (Sequence 6)	0	720 min
111	X	0 ms		435 min	chronoSTEP2 Reduction Time 7 (Sequence 6)	0	720 min
112	X	0 ms		496 min	chronoSTEP2 Reduction Time 8 (Sequence 6)	0	720 min
113	X	0 ms		1%	chronoSTEP2 Reduction Level 1 (Sequence 6) set dim level to x %.	0	100%
114	X	0 ms		10%	chronoSTEP2 Reduction Level 2 (Sequence 6) set dim level to x %.	0	100%
115	X	0 ms		20%	chronoSTEP2 Reduction Level 3 (Sequence 6) set dim level to x %.	0	100%
116	X	0 ms		40%	chronoSTEP2 Reduction Level 4 (Sequence 6) set dim level to x %.	0	100%
117	X	0 ms		50%	chronoSTEP2 Reduction Level 5 (Sequence 6) set dim level to x %.	0	100%
118	X	0 ms		21%	chronoSTEP2 Reduction Level 6 (Sequence 6) set dim level to x %.	0	100%
119	X	0 ms		90%	chronoSTEP2 Reduction Level 7 (Sequence 6) set dim level to x %.	0	100%
120	X	0 ms		100%	chronoSTEP2 Reduction Level 8 (Sequence 6) set dim level to x %.	0	100%

7.7 Save ready2mains scripts

When pressing the "save to XYZ file" button the following window appears:



Enter any additional information into the given fields, e.g. the creators name and a short description of the script content.
The script name is requested after pressing **Save**, whereon the script is saved to its place of destination.

7.8 Load scripts on the Programmer

Connect the Programmer via the enclosed USB cable to the PC. All software drivers will automatically be installed
on the PC, which may take several minutes. After an initial installation, the Programmer is automatically recognized as a removable disk with approx. 4 GB internal memory.

Download the scripts by drag and drop via any file manager (e.g. Windows Explorer).
The scripts need to be stored in the root folder of the Programmer as subfolders are not supported.

⚠ CAUTION!

- It is recommend to backup all scripts and log files stored on the Programmer.
- Scripts need to be store in the root folder of the Programmer. Subfolders are not supported!