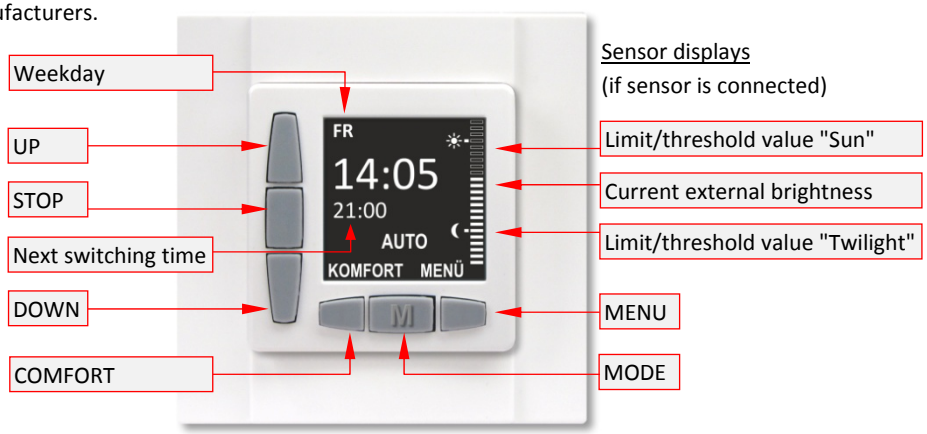
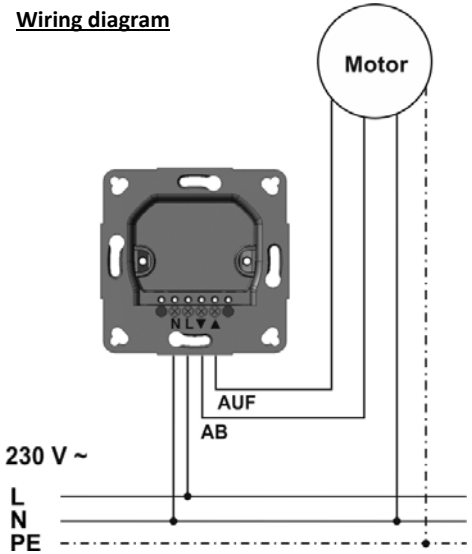
User Manual — ROJAL SAT - Timer

ROJAL SAT is a electronic timer for controlling a 230 V AC shutter or blind drive.

Functions: ASTRO function, day/week program, holiday switching, inching mode, variable travel time, auto slats turn/ventilation function, automatic switchover winter-/summertime, variable comfort position (partial lowering), backlit display (6 colours), connection for an optional sun/twilight sensor, all menu items/settings in plain text. The installation dimensions of 50 x 50mm (according to DIN 49075) enable the appliance to be installed in most standard switch programs of leading switch manufacturers.



Wiring diagram



Technical data

Operating voltage:	230V/50Hz
Switching voltage:	250V AC
Switching capacity:	3A (cos phi=1)
Temperature range:	0°C to +45°C
Travel time:	0-180 s.
Accuracy:	< 3 s/day
Power reserve :	≥ 72 hours
Terminal:	max. 2.5mm²
Power consumption:	< 1W
Degree of protection:	IP 40
Safety class:	II

Brightness sensor setting range:

Sun function	5-70 kLux
Twilight function	1-500 Lux

ATTENTION! Work on the 230V mains may only be carried out by authorised electricians!

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they are supervised or have been given instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Operating the timer

UP < 1 s.	Inching mode or move up (if inching mode deactivated)
UP > 1 s.	Move up
DOWN < 1 s.	Inching mode or move down (if inching mode deactivated)
DOWN > 1 s.	Move down
STOP	Stop running motor
COMFORT	Move to Comfort position (shade position/partial lowering)
MODE > 2 s.	Change operating modes (MAN, AUTO, HOLIDAY)
MENU > 2 s.	Input/output programming

Possible operating modes

Press and hold the **MODE (M) button > 2 s.** to switch between the available operating modes. Three modes are available:

MAN Manual operations (automatic timing and sensor functions deactivated)
AUTO Automatic timing and sensor functions (if sensor available) activated
Holiday Automatic timing, random generator and sensor functions (if available) activated

In the operating mode **HOLIDAY** the random generator is activated in addition to the automatic timing. The programmed switching times are delayed randomly by 1-30 minutes. The next switching time is shown correspondingly in the display with the symbol "+" (e.g. 21:00+).

Switchover winter/summer time

The switchover between winter time and summer time is done automatically by means of the date. Where necessary, this can be switched on/off in the menu item SETTINGS/SU-/WINTERTIME.

Illumination and display colour scheme

The display colour scheme can be set in the menu item SETTINGS/COLOUR SCHEME. The LCD light is switched off after 5 minutes in standby mode, and switches back on automatically on the next status change (a button is pressed, a switching process is triggered, the limit/threshold value of one of the sensor functions was reached).

Power reserve

All settings, switching times, etc. remain permanently stored. Only the current time and date have to be reset after a power failure ≥72 hours.

Inching mode

Pressing the UP/DOWN buttons briefly (< 1 s.) slants the blind slats or positions the blinds exactly. The inching mode can be switched on/off at any time in the menu SETTINGS/INCHING MODE.

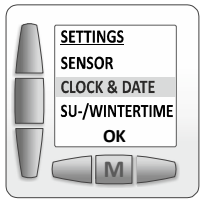
Reset/factory settings

Where required the factory settings of all function parameters can be reset in the menu item SETTINGS/RESET:

Operating mode	**MAN**	Menu language	**German**
Time/date	**12:00, 01 July 2020**	Travel time	**60 s.**
Country/region	**DE-Mitte [Central Germany]**	Inching mode	**OFF**
ASTRO UP	**Sunrise + 0 h**	Turn function	**0 s.**
Locking time UP	**No earlier than 07:00**	Comfort position	**10% shade**
ASTRO DOWN	**Sunset + 1 h**	Limit value "Sun"	**approx. 30 kLux**
Locking time DOWN	**No later than 21:00**	Limit value "Twilight"	**approx. 4 Lux**

Set time and date

The current time and/or the date must be set during the first start-up or after a longer power failure (≥ 72 hours) with the following steps:

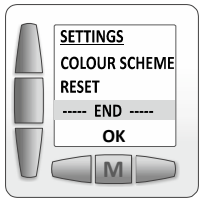


1	**Select menu item SETTINGS/CLOCK+DATE**
	Hold the **MENU > 2 s.** (bottom right), then select the item **SETTINGS** in the MAIN MENU and then select the item **CLOCK/DATE**, confirm by pressing **M** (MODE).

2	**Select the parameter**
	Use the **UP/DOWN** and **Left/Right** buttons (bottom of the display) to select the desired parameter (e.g. the hours display) and confirm by pressing **M** (MODE). The selected parameter starts to flash.

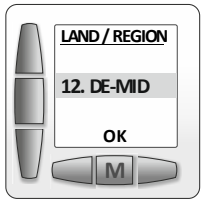
3	**Set the desired value**
	Use the UP/DOWN buttons to set the value and confirm by pressing **M** (MODE). The display stops flashing.
	Repeat steps 2-3 if other parameters ("Minutes", "Day", "Month" or "Year") in the display have to be corrected.

4	**Leave the active window**
	If all parameters are set correctly, use the **UP/DOWN** buttons to select the field **"OK"** and confirm by pressing **M** (MODE).



5	**Return to main menu**
	Use the **UP/DOWN** buttons to select the item **–END-** and confirm by pressing **M** (MODE), or…
	leave programming
	Alternatively, hold the button **MENU > 2 s.** (bottom right) and leave programming.

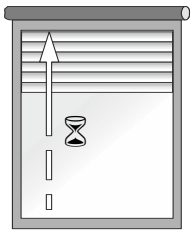
ASTRO: Set land/region



It is important to specify the land or region for correct calculation of the astronomical sunrise/sunset times in your area.
The following countries/regions can be set in the menu item **SETTTINGS/ASTRO**:

PT	Portugal	**ES**	Spain
UK	United Kingdom	**IT-NORD**	Italy north
AT	Austria	**IT-SUED**	Italy south
BIH, SRB	Bosnia & Herzegovina	**CZ, SK**	Czech Republic, Slovakia
CH	Switzerland	**SE**	Sweden
DK	Denmark	**FIN**	Finland
FR	France	**PL**	Poland
HR, SLO	Croatia, Slovenia	**BG, RO**	Bulgaria, Romania
HU	Hungary	**GR**	Greece
DE-MID	Germany center	**TR-EAST**	Turkey east
DE-NORTH	Germany north	**TR-WEST**	Turkey west
DE-EAST	Germany east	**UA**	Ukraine
DE-SOUTH	Germany south	**BY**	Belarus
DE-WEST	Germany west	**NO**	Norway
NL, BE, LU	The Netherlands, Belgium, Luxembourg		
EST, LT, LV	Estonia, Lithuania, Latvia		
MNE, MK, AL	Montenegro, Macedonia, Albania		

Set the motor travel time

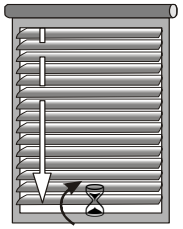


The travel time is the period in which the shutter/blind motor is switched as soon as an UP or DOWN command is triggered at the timer. The factory setting for the travel time is 60s. and this can be reset at any time as required in the menu item **SETTINGS/TRAVEL TIME** to a period between 0 and 180s.

In the ideal case, the set travel time corresponds to the actual time that the shutter/blind requires to move from the lower to the upper end position.

This adjustment is not essential but is practical, because the Comfort position (partial lowering) is set and calculated as a percentage of the travel time.

Set the auto slats turn function



The auto slats turn function is a brief automatic UP movement of the shutter or blind after a completed DOWN operation. The brief UP movements can be used for subsequent slanting of the blind slats or to ventilate the shutters.

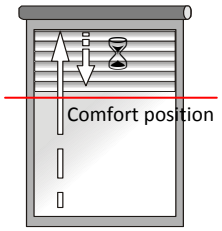
The auto slats turn function is carried out automatically:

- On every DOWN operation (triggered by the DOWN switching time of the time program, by manual operation or by the Twilight function of the brightness sensor), **after expiry of the preset travel time**;
- After complete movement to the Comfort position (triggered by pressing the COMFORT button or by the Sun function of the brightness sensor);

The turn function is not carried out if the operator interrupts the above operations manually.

The duration of the turn impulse/ventilation movement can be set in the menu item **SETTINGS/TURN FUNCTION** from 0.0s. (factory setting) up to 5.0s.

Set the Comfort position



The Comfort position is an adjustable part lowering or shaded position of the shutter or blind that is approached after the sensor's Sun function is triggered (the "Sun" limit value was exceeded for 10 min.).

In addition, the Comfort position can be approached at any time by pressing the COMFORT button briefly, including where there is no brightness sensor.

The duration of the part lowering into the Comfort position is calculated as a percentage of the set travel time (e.g. if the travel time is set to 60s. and the Comfort position is 10% , the duration of the part lowering is 6s.). This percentage can be set in the menu item **SETTINGS/COMFORT POSITION** as a degree of shading between 10% and 90%.

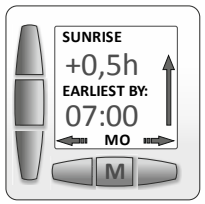
If the travel time was adjusted in the menu item TRAVEL TIME to the system's actually required movement time, a 40% Comfort position, for example, corresponds optically as well to 40% shading of the window.

Astro function and switching times

Please ensure that the correct time/date is set in the menu item SETTINGS/TIME & DATE and that the desired country or region is set in the menu item SETTINGS/ASTRO (factory setting: DE-MID [Central Germany]).

The UP and DOWN switching times of the ROJAL SAT are linked to the astronomical sunrise/ sunset times of the selected region and follow these astronomical times with a time interval set by the operator (options: -2 h, -1.5 h, -1 h, -0.5 h, 0 h, +0.5 h, +1 h, +1.5 h, +2 h, ASTRO OFF). The UP and DOWN switching times are thus automatically delayed or brought forward by a few minutes each day due to the change in the length of the day over the course of the year.

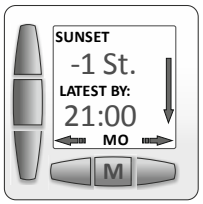
However, since the astronomical sunrise and sunset times may be uncomfortably early or late (e.g. in June: sunrise around 05:30, sunset around 22:00), there is an option to define the earliest and latest locking times at which the shutters move up in the morning and down in the evening.



An example of the UP switching time:

- ↑ (MOVE UP) on **MO** (Monday)
- **0.5 h after sunrise**
- but **no earlier than 07:00**

Thus the shutters are always opened at the later time!



An example of the DOWN switching time:

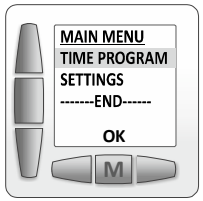
- ↑ (MOVE DOWN) on **MO** (Monday)
- **1 h before sunset**
- but **no later than 21:00**

Thus the shutters are always closed at the earlier time!

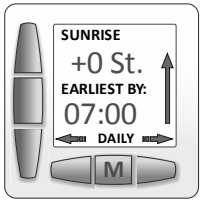
One UP switching time and one DOWN switching time can be programmed each day.

If the switching times are identical on all days, it is sufficient to set the switching times in the first two windows **"**DAILY **UP" "**DAILY **DOWN"** without having to enter the settings for each weekday. The changes in the window "DAILY **UP**" are automatically applied to all the individual windows "Mo **UP**", "Tu **UP**" ... "Su **UP**". In the same way, the changes in the window "DAILY **DOWN**" are automatically applied to all the individual windows "Mo **DOWN**", "Tu **DOWN**" ... "Su **DOWN**".

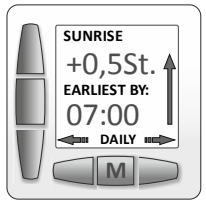
Set switching times



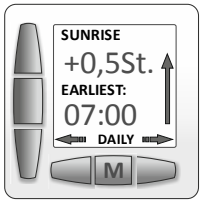
1	**Select the menu item TIME PROGRAM**
	Hold the **MENU >2 s.** (bottom right), use the UP/DOWN buttons to select the item **TIME PROGRAM**, confirm by pressing **M** (MODE).



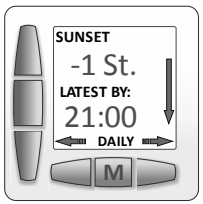
2	**Check the switching times in the "DAILY UP" window and correct as follows as required:**
	Use the **UP/DOWN** and **Left/Right** buttons to select the desired parameter (e.g. "**+0**" – Move up exactly with the sunrise) and confirm by pressing **M** (MODE). The "**+0 h**" display starts to flash.



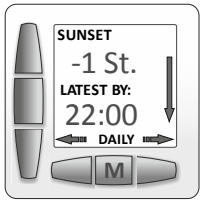
3	**Set the desired value**
	Use the **UP/DOWN** buttons to change the value (e.g. from **"+0 h"** to **"+0.5 h" –** move up 0.5 h after sunrise) and confirm by pressing **M** (MODE). The display stops flashing.
	Repeat steps 2-3 if other parameters in the display have to be corrected.



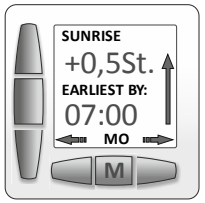
4	**Change to the window "DAILY UP"**
	Use the **UP/DOWN** buttons to select the display **"DAILY"**, use the **Right** button to change to the next window **"DAILY DOWN"**



5	**Check the switching times in the "DAILY DOWN" window and correct as follows as required:**
	Use the **UP/DOWN** and **Left/Right** buttons to select the desired parameter (e.g. the locking time **"21:00" –** Move down no later than 21:00) and confirm by pressing **M** (MODE). The hours display **"21:00"** starts to flash.

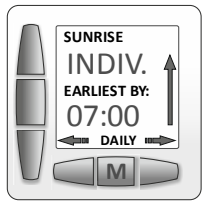


6	**Set the desired value**
	Use the **UP/DOWN** buttons to set the value (e.g. change from **"21:00"** to **"22:00"**) and confirm by pressing **M** (MODE). The display stops flashing.
	Repeat steps 5-6 if other parameters in the display have to be corrected.

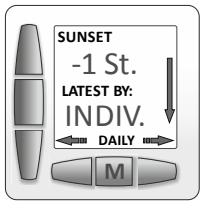


7	**Change switching times on certain days separately as required...**
	Use the **UP/DOWN** buttons to select the display **"DAILY"** (bottom center display), move to the desired weekday with the **Left/Right** buttons (**"Mo UP", "Mo DOWN", "Tu UP", "Tu DOWN",** etc.) and make the changes
	...or leave the time program
	Use the **Left/Right** buttons to move to the "Leave time program?" (between "Daily" and "Mo") and confirm by pressing **M** (MODE).

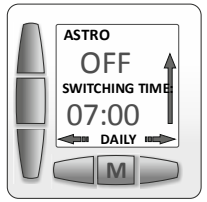
If the UP/DOWN switching times or locking times during the week are not identical but are set individually, this is indicated in the first two windows – **"DAILY UP"** and **"DAILY DOWN"** – in this case by the heading **"INDIV"** (individually set), e.g.:



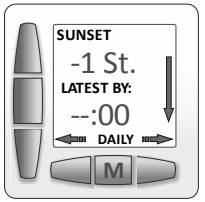
or



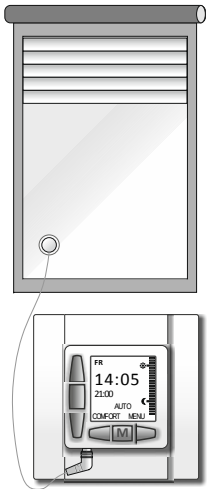
Linking of the switching times to the astronomical times of sunrise/sunset and the locking times can be deactivated separately if required, e.g.:



or



Brightness sensor

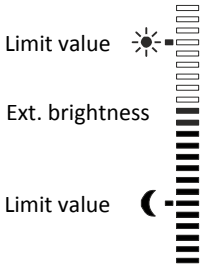


The optional brightness sensor can be used to achieve optimal shading of the interior rooms when the sunlight is very bright and/or to close the shutter automatically on the onset of twilight.

Use the suction pad to attach the sensor to the bottom half of the window pane. Clean or degrease the pane at this point before attaching the suction cap to enable it to adhere better.

The timer recognises the brightness sensor automatically when it is connected. The display shows the brightness scale and the item SENSOR in the menu SETTINGS.

Where required, the sun and twilight function can be activated or deactivated separately in the item SENSOR. In addition, the two limit values/threshold values can be amended at any time in this item.



The sensor's sun and twilight functions are only active in the AUTO and HOLIDAY modes and are shown in the display with the symbols "Sun" or "Moon". The positions of these symbols on the brightness scale correspond to the currently set limit values of the two functions.

In the daily sequence the die sensor functions start as soon as the shutter/blind is moved up **for the period of the preset "Travel time"**, e.g. triggered by:
A) the UP switching time of the time program;
B) manual operation (the UP or COMFORT buttons).
The "Sun" and "Moon" symbols appear in the display.

The sensor functions are ended as soon as a DOWN operation **for the period of the preset travel time** is concluded.
This DOWN operation can be triggered by:
A) the DOWN switching time of the time program;
B) manual operation (DOWN button);
C) the sensor's twilight function
The "Sun" and "Moon" symbols then disappear from the display.

Sun function If external brightness measured by the sensor increases during the day above the currently preset limit/threshold value "Sun", the sun symbol starts to flash immediately. If the external brightness remains permanently above the "Sun" limit value for the next 10 min., the sun symbol shows constantly after expiry of these 10 minutes and the shutter/blind moves to the preset Comfort position (partly lowered).

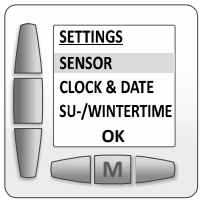
If the measured external brightness falls below the "Sun" limit value in the further course of the day, the sun symbol starts to flash again. If the external brightness remains permanently below the "Sun" limit value for the next 10 min., the shutter/blind moves up on expiry of this time.

The Sun function can be carried out several times a day, depending on the change to the external brightness.

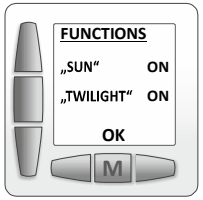
Twilight function If the measured external brightness falls in the course of the day (e.g. evening) below the "Twilight" limit/threshold value, the moon symbol starts to flash immediately. If the external brightness remains permanently below the "Twilight" limit value for the next 10 min., the moon symbol shows constantly after expiry of these 10 minutes and the timer triggers the command to move down (the shutter/blind is closed).

The sensor's Twilight function is independent of the DOWN switching time in the time program, i.e. the shutter can be automatically closed with the DOWN switching time of the time program or through the Twilight function.

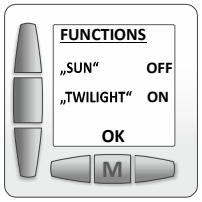
Set the sensor parameters



1	**Select SETTINGS/SENSOR**
	Hold the button **MENU > 2 s** (bottom right), select the item **SETTINGS** and then the item **SENSOR**, confirm in each case by pressing **M** (MODE).

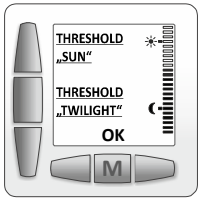


2	**Select the parameter**
	Use the **UP/DOWN** buttons to select the parameter (e.g. Sun function "SUN" **ON**), confirm by pressing **M** (MODE). The "**ON**" display starts to flash.

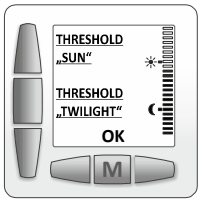


3	**Set the parameter**
	Use the **UP/DOWN** buttons to select the value (e.g. Sun function "SUN" **OFF**), confirm by pressing **M** (MODE). The display stops flashing.
	Repeat steps 2-3 if other corrections are necessary.

4	**Leave the active window**
	Use the **UP/DOWN** buttons to select the field **"OK"** and confirm by pressing **M** (MODE).

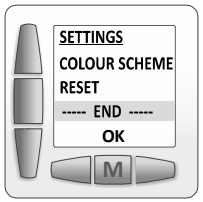


5	**Select the parameter**
	Use the **UP/DOWN** buttons to select the desired parameter (e.g. the symbol ☀ - **Sun**) and confirm by pressing **M** (MODE). The symbol ☀ **(Sun)** starts to flash.



6	**Changing the limit/threshold value**
	Use the **UP/DOWN** buttons to move the flashing symbol step-by - step to the desired position on the scale and confirm by pressing **M** (MODE). The symbol stops flashing.
	If the "Twilight" limit value has to be adjusted as well, repeat steps 5-6 with the symbol ☾ **(Moon)**

7	**Leave the active window**
	Use the **UP/DOWN** buttons to select the field **"OK"** and confirm by pressing **M** (MODE).



8	**Return to main menu...**
	Use the **UP/DOWN** buttons to select the item **–END-** and confirm by pressing **M** (MODE),
	or
	hold the button **MENU > 2 s.** (bottom right) and leave programming.

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