:hager

(FR) (GB)

EE180:
Electronic astronomical clock **1 channel** over 7 days + programming key

EE181:
Electronic astronomical clock **2 channels** over 7 days + programming key.

EE180, EE181

Product description

Astronomical clocks EE180 and EE181 are electronic weekly programming clocks designed to control various loads automatically according to sunrise and sunset times.
Examples of applications: street lighting, neon signs, store windows, monuments, frontages…

- Astronomical clock **EE180 1-channel operates in astronomical mode**:
  It is pre-programmed according to times of sunrise and sunset, but this mode allows the user adding On and Off program steps to customize the program.
  The following programming orders are available in the expert mode: On / Off / On ☆ (= astronomical On) and Off ☆ (= astronomical Off).
- Astronomical clock **EE181 2-channel** makes it possible to associate the **desired** operating mode to each channel: **expert mode or astronomical mode**.

Programming of longitude and latitude parameters (using the provided chart) based on geographical location of your project allows automatic commutation of controlled circuit according to sunrise and sunset times.
A key is provided to save user programming.

Major characteristics

- Product delivered with current time and date set.
- Automatic change of winter / summer time ☼/❄ .
- Programming key ▬ .
  - for permanent overrides,
  - for program copy or save.
- Programming for day or group of days.
- 56 program steps On, Off or On ☆ , Off ☆ .
- Astronomic mode 1 or 2 channel.
- Permanent overrides On or Off (✋ permanent light on).
- Temporary overrides On or Off (✋ flashing); On or Off, On 15, On 30, On 60, (✋ permanent light on).
- Display bar graph of daily profile for both channels.
- Keyboard locking possible 🔒 .
- Programmable with power off.

EG005
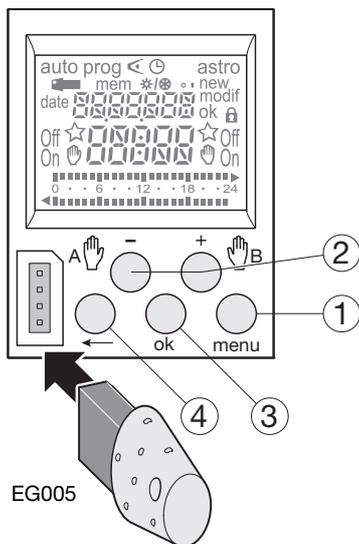
Keys:
① menu : selection of operating mode
    auto: mode of running according to the program selected.
  prog : **new** for programming mode.
  prog : **modif** to modify an existing program.
     ◁ : checking of the program.
     🕐 : modification of time, date and selection of the winter / summer time change mode ☼/❄ .
  astro: astronomical mode.
    ☆ : indicates that the channel is in astronomical mode

② + and - : navigation or setting of values.
  A ✋ : in **auto** mode, selection of overrides,
  B ✋   or waivers.

③ ok : to validate flashing information on display.

④ ← : to return to the previous step.

You may return into **auto** mode at any moment using menu.

If no action is taken for 1 min, the switch returns into **auto** mode.

Resetting the program
The program can be totally deleted by pressing the following three keys simultaneously:
menu, enter, ← , the time and date are retained.

Reboot
Pressing the -, +, enter, menu keys simultaneously reboots the product.

Setting time and day
Winter / summer time change

Select the mode 🕐 with menu then ok.
Modify the day, month, year, the hour and the minutes using + or - and ok.
The time switch next suggests the winter / summer time changes ☼/❄ .
Select the type of change desired using + or - . Validate with ok.

The type of change depends on the geographical zone
Types available:

Type	Start of time change Summer	Start of time change Winter	Zone of application
Euro*	Last Sunday in March	Last Sunday in October	European Union
USA	Second Sunday in March	First Sunday in November	North America
AUS	First Sunday in October	First Sunday in April	Australia
USER	Date freely programmed	Date freely programmed	
No	No change	No change	

* type according defect

The change always takes place between 2:00 and 3:00 a.m.
When the USER type is selected:
1. Enter the day then the month of the date of change of the summer time with + or - and ok.
2. Enter the day then the month of the date of change of the winter time with + or - and ok.

The time switch will check which days of which weeks correspond to these dates and will apply changes to the same periods for the following years independently of the date.

Configuration of astronomical mode

It is imperative to do the following settings when installing the clock according to the geographical location of your project.
You may use the chart provided with the product to help you define precisely your geographical location. These data will allow the clock to calculate automatically sunrise/sunset times.

1. In order to set longitude and latitude, select the **astro** mode using the menu then validate by ok.
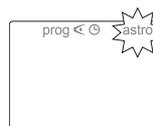
2. Set longitude "**Lo**" using keys + and - .
The setting values range from 180°E (East) to 180°W (West). Validate by ok.
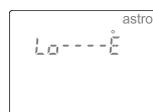
3. Set latitude "**LAt**" using keys + and - .
The setting values range from 90°N (North) to 90°S (South). Validate by ok.
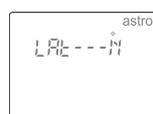
4. Set the time zone "**Udt**" using keys + and -: -12.00 to +12.00 compared to the Greenwich meridian line.
UDT (= universal day time). Validate by ok.
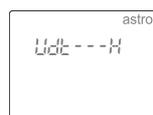
The 2 following steps will allow you to perform a permanent time correction in order to more precisely set sunrise/sunset times of your project location.
The range of possible correction is –120 to +120 minutes.

5. Set the time correction of sunrise times "**RI**" using + and - keys then validate by ok.
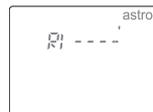
6. Set the time correction of sunset time "Set" using + and - keys, then validate by ok.

SEt----   astro

7. Activate the **astro** mode by selecting **On** ☆ using + and – then ok to have the product switch on the control circuit automatically according to the astronomical parameters.

8. For 2-way clock, select channel **A** or **B** using + or - and validate with ok.
The symbol ☆ on main display will indicate if the channel is in **astro** mode.

AStRO   astro
Off ☆ A
On

Programming

Programming may be done for each day or for a group of days. In this case instructions are common to several days.
Days: 1 = Monday, 2 = Tuesday, 3 = Wednesday... 7 = Sunday.

prog   new
123--67
20:11
On
0 · · 6 · · 12 · · 18 · · 24

1. Select the **prog** mode using menu, then ok.
2. Select the channel (**A** or **B**) using + or -, then ok (Only applicable to 2-channel clock EE181). The number of remaining program steps appears for a short time.
3. If a program already exists, **new** will flash, press **ok** to validate this new program steps, if not move to 4.
4. Choose the day(s) using + or -. Validate with ok.
5. ok flashes. Use ok to validate the group of days. - or ← makes it possible to reset the group of days if necessary
6. Using + or -, select instruction state:
   On or **Off** if your are in automatic astronomical mode.
   On, Off, On ☆ or **Off** ☆ if your are in expert mode.
7. Enter the time of switch-on using + or -. Validate with ok.
8. Enter minutes with + or -. Validate with ok.

Program the other instructions of the group of days by repeating operations 3 to 8.

The day or the group of days may be modified at the during step 3 by pressing the +, - or ← .

At the end of programming return to **auto** mode using the menu button.

To set the program of the other channel, return to **prog** mode and proceed according to steps 2 to 8. In this mode it is also possible to add an instruction to the program set up.

Proceed as described above.

Limit of operation in astronomical mode

In this mode the clock is pre-programmed according to sunrise and sunset hours.
On and **Off** interrupt steps can be added to customize the program.
The programming is impossible between **Astro Off** and **Astro On**.

Programming
impossible

//////////

0 h   Astro   Astro   24 h
           Off   On
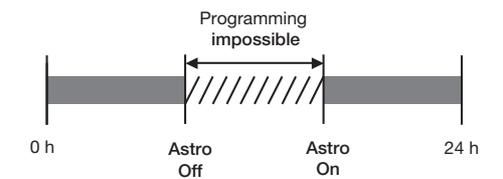
Display   ◁

To check the daily profile set up without the risk of modification or deletion:
Select the mode ◁ using menu and press ok.
Select the channel (**A** or **B**) using + or - and ok.
The first step of Monday is displayed as well as the daily profile.
Two options available for display :

1. Pressing repeatedly + or -: lets you shift days. In this case only the first daily step is displayed as well as the daily profile.
2. Pressing ok: all steps of each day appear one after the other.

Modification or clearing of a program step: prog modif

Select the **prog** mode with menu and press ok.
Select the channel (**A** or **B**) using + or - and ok.
Select the **modif** mode with + or -. Validate with ok.
The number of remaining program steps appears for a short time.
The first step of the first day or group of days appears.
Repeatedly pressing the ok key displays all programmed steps one at a time.
Any flashing field (state, hour, minute) may be modified using + or -, then validated with ok.
When the cursor is positioned on **ok** located behind the group of days, you may display successively the days or the groups of days and switch directly to the one that has to be modified using + or -.
To remove a program step:
select the state of the channel (**On, Off, On** ☆ or **Off** ☆), press simultaneously + and -.
Clear appears on the screen. Validate with ok.

Key   ⬅

As soon as the key appears on the switch, ⬅ appear on the screen.

Two types of operation:

A. Permanent override:
Insert the key into the switch. After 10 seconds the program contained in the key will be executed without clearing the program contained in the time switch. As soon as the key is removed the program of the time switch is again valid.

B. Copy (load) / Save (save):
The key makes it possible to save a program contained in the time switch.
It is also possible to copy the contents (program + settings **Astro**) of the key into the clock.
1. Insert the key and wait for 2 sec.
2. Using menu select the mode:
   save to save a program contained in the time switch,
   load to load the program of the key into the time switch,
   ◁ to check the program contained in the key.
3. Validate the selection with ok.
4. For **save** and **load** reconfirm with ok.
The following error messages may appear on the screen:
   no prog: the key is empty, it does not contain any program.
   Error: incompatible key type.
In these two cases:
- Only the **save** mode is possible.
- The error message remains on display as long as the key is present, but in this case the program of the time switch is executed.

Override

EE180: by pressing repeatedly on - for channel **A**
EE181: by pressing repeatedly on - for channel **A** and on + for channel **B**.
If the state of the output is **On**:
1st press : temporary waiver. **Off** and ✋ flash. The next program step will let you return to the automatic mode.
2nd press : permanent override. **On** and ✋ are permanent. This override must be cancelled manually.
3rd press : temporary override 15 minutes. **On**, ✋ and **15** are permanent. The return to automatic mode will take place after 15 min.
4th press : temporary override 30 minutes. **On**, and ✋ and **30** are permanent. The return to automatic mode will take place after 30 min.
5th press : temporary override 60 minutes. **On**, and ✋ and **60** are permanent. The return to automatic mode will take place after 60 min.

6th press: permanent override. **Off** and ✋ are permanent. This override must be cancelled manually.
7th press: return to the automatic mode.

Locking   🔒

To prevent all undesirable actions, the keyboard of the time switch may be locked using a key EG004.
Unlocking is done in the same way.
Full product reset remains feasible when the keyboard is locked.

Technical specifications

Electrical characteristics
- Supply voltage: 230 V AC ± 15%
- Frequency: 50/60 Hz
- Power consumption   max. 6 VA to 50 Hz
- Output EE180: 1 changeover volt free contact
- Output EE181: 2 changeover volt free contacts
- Maximum load:
  AC1   μ16A 250 V~
  Cos φ = 0,6   μ10A 250 V~
  Incandescent lighting   2300 W
  Halogen lighting 230 V   2300 W
  Compensated fluorescent tubes //
  (max. 45 μF)   400 W
  Non compensated fluorescent tubes, compensated in series   1000 W
  Compact fluorescent lamps   500 W
- Minimum current.
  AC1
  100 mA 250 V~
- Galvanic insulation between power supply and output < 4 kV

Functional characteristics
- Programming capacity: 56 steps
- Minimum time between 2 steps: 1 minute
- Running accuracy: ± 1,5 sec / 24h
- Astronomical time accuracy: ± 10 minutes
- Operating reserve: lithium battery provides 5 years of backup.
- The product is set in standby mode (display is off) if power goes off.
  It is set back in **auto** mode when power is back on. With power off, the screen display is turned on when striking any key. After one minute, it is turned off.
- Protection degree: IP 20
  The products need to be protected according to the standards NFC15 100 and/or IEC 60 364-1

Environment
- Operating temperature: -10 °C to +55 °C
- Storage temperature: -20 °C to +60 °C

Connection
- Flexible capacity: 1 to 6 mm²
- Rigid capacity: 1,5 to 10 mm²

Connection diagrams:

L / +
N / -
EE180: 1 channel
1 3 5 7
EE180
2 4 6 8

L
N
EE181: 2 channels
1 3 5 7
EE181
2 4 6 8

Hager 03.2012   OCOM 113567