OMEGA

Speedmaster

X-33 MARSTIMER

OPERATING INSTRUCTIONS

Fabricant / Manufacturer / Hersteller
OMEGA SA
Rue Jakob-Stämpfli 96
CH-2502 Bienne
Switzerland

CONTENTS

The Speedmaster X-33 Marstimer was specially designed in collaboration with the European Space Agency (ESA) for managing and following missions to Mars.

The various functions will enable you to follow the stages of such a mission, from take-off to landing on Mars, and tell you the local time at the rover's location on Mars, as well as the number of sols[1] elapsed since landing. With the Speedmaster X-33 Marstimer, you can also use the functions in everyday life to manage the stages of a project or trip, for example.

The Speedmaster X-33 Marstimer is manufactured under licence from the European Space Agency (ESA), and is protected by the patent below:

- **Title** ELECTRONIC WATCH FOR SPACE AND/OR SURFACE EXPLORATION
- **Application no.** PCT/EP2020/061140
- **Publication no.** WO2021/213640A1

The European Space Agency (ESA) is an intergovernmental organisation, and as such, is not involved in the manufacture and/or marketing of the Speedmaster X-33 Marstimer.

[1] *A sol is a Martian day, which lasts 24 hours, 39 minutes and 35.244 seconds.*

INTRODUCTION SPECIAL RECOMMENDATIONS

What do I need to do to make sure that my OMEGA watch will work perfectly for many years to come?

Magnetic fields: avoid placing your watch on a magnet, speaker, refrigerator or electronic tablet case, since they can generate powerful magnetic fields that can disrupt your timepiece.

Bathing in the sea: always rinse your watch in fresh water afterwards.

Impacts: avoid exposing your watch to mechanical or any other impacts, as well as thermal shocks.

Crown: push the crown back into the neutral position to prevent water from penetrating the mechanism.

Cleaning: for metal bracelets, rubber straps and water-resistant cases, use a toothbrush and soapy water for cleaning, and a soft cloth for drying.

Chemicals: avoid direct contact with solvents, detergents, perfumes, cosmetics, mosquito repellents, etc., since they can damage the wristlet, case or gaskets.

Temperatures: avoid exposing your watch to extreme temperatures (higher than 60°C or 140°F and lower than 0°C or 32°F), or to extreme variations.

Water resistance: the absolute water resistance of a watch cannot be guaranteed forever. In particular, it can be affected by ageing of the gaskets, or by an accidental impact on the crown. As stipulated in our service instructions, we recommend having your watch's water resistance tested once a year by an approved OMEGA service centre.

Pushers: do not operate the pushers underwater, to prevent water from penetrating the mechanism.

Different strap sizes: For leather, rubber and fabric straps, there are various sizes available from your OMEGA point of sale, other approved points of sale, or from omegawatches.com.

Bracelet length adjustment: you can visit an OMEGA point of sale or approved service centre to have the bracelet length adjusted to your wrist. The specialists will measure your wrist circumference, and provide guidance to optimise the wearing comfort of your watch.

What are the intervals between services?

Like any precision instrument, a watch requires regular servicing to ensure it operates perfectly. We cannot specify the frequency of this operation, since it is entirely dependent on the model, climate and care that each owner takes with their watch. As a general rule, a watch should be serviced every 5 to 8 years, according to the conditions under which it is used.

Who should I contact for any battery service or replacement operation?

We recommend contacting an approved OMEGA service centre or an authorised OMEGA dealer. They will have the tools and equipment required to undertake this work, and perform the necessary checks in a professional manner. In addition, these specialists can guarantee that their work will comply with the strict quality standards applied and stipulated by OMEGA.

A drained battery must be replaced as quickly as possible, to prevent the risk of leakages, which can damage the movement. The battery type is stated on the warranty card accompanying your watch.

Important information about lithium button batteries:

⚠ WARNING
KEEP THE BATTERY OUT OF REACH OF CHILDREN
Swallowing can lead to chemical burns, perforation of soft tissue and death. Severe burns can occur within two hours of ingestion. If swallowed, seek medical attention immediately.

Environmental protection

Collection and processing of quartz watches at their end of life*

This symbol indicates that this product must not be disposed of in household waste. It must be taken to an approved collection point. By applying this procedure, you will contribute to protecting the environment and human health. Recycling of materials will help conserve natural resources.

* applicable in European Community Members States, and in countries with comparable legislation.

OMEGA INTERNATIONAL WARRANTY

(Valid for U.S.A. only)

OMEGA SA* GUARANTEES YOUR WATCH FOR SIXTY (60) MONTHS UNDER THE TERMS AND CONDITIONS OF THIS WARRANTY, STARTING FROM THE DATE OF PURCHASE, FOR ALL OMEGA* WATCHES PURCHASED AS OF 1 JULY 2018.

The international OMEGA warranty covers material and manufacturing defects existing at the time of the purchase of the OMEGA watch ("defects"). The warranty only comes into force if the warranty certificate is dated, fully and correctly completed and stamped by an official OMEGA dealer ("valid warranty certificate").

During the warranty period and by presenting the valid warranty certificate, you will have the right to have any defect repaired free of charge. In the event that repairs are improper to restore the normal conditions of use of your OMEGA watch, OMEGA SA guarantees its replacement by an OMEGA watch of identical or similar characteristics. For all watches purchased as of 1 July 2018, the warranty for the replacement watch ends sixty (60) months after the date of purchase of the replaced watch.

THIS MANUFACTURER'S WARRANTY DOES NOT COVER:

- The life of the battery.
- Normal wear and tear and ageing (for example scratched crystal; alteration of the colour and/or material of non metallic straps and chains, such as leather, textile, rubber).
- Any damage on any part of the watch resulting from abnormal/ abusive use, lack of care, negligence, accidents (knocks, dents, crushing, broken crystal, etc.), incorrect use of the watch and nonobservance of the operating instructions provided by OMEGA SA.
- The OMEGA watch handled by non-authorized persons (for example for battery replacement, service or repair) or which has been altered in its original condition beyond OMEGA SA's control.

ALL APPLICABLE IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE GIVEN TO YOU BY LAW ARE HEREBY LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY. UNDER NO CIRCUMSTANCES WILL OMEGA SA BE LIABLE FOR ANY INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND.

Some states do not allow limitations on how long implied warranties last, or exclusions or limitations of incidental or consequential damages, so exclusions or limitations mentioned may not apply to you. This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

OMEGA SA's OBLIGATION IS STRICTLY LIMITED TO REPAIR OR REPLACEMENT AS EXPRESSLY STATED IN THIS LIMITED WARRANTY. YOUR AUTHORISED OMEGA RETAILER CARRIES SOLE RESPONSIBILITY FOR ANY OTHER GUARANTEES.

The OMEGA customer service ensures the perfect working order of your OMEGA watch. If your watch needs maintenance, rely on an authorised OMEGA retailer or an authorized OMEGA Service Center as set forth on the OMEGA website: they can guarantee service according to OMEGA SA's standards.

* OMEGA SA
Rue Jakob-Stämpfli 96
CH-2502 Bienne

OMEGA INTERNATIONAL WARRANTY

OMEGA SA* guarantees your watch for sixty (60) months under the terms and conditions of this warranty, starting from the date of purchase, for all OMEGA* watches purchased as of 1 July 2018.

The international OMEGA warranty covers material and manufacturing defects existing at the time of the purchase of the OMEGA watch ("defects"). The warranty only comes into force if the warranty certificate is dated, fully and correctly completed and stamped by an official OMEGA dealer ("valid warranty certificate").

During the warranty period and by presenting the valid warranty certificate, you will have the right to have any defect repaired free of charge. In the event that repairs are improper to restore the normal conditions of use of your OMEGA watch, OMEGA SA guarantees its replacement by an OMEGA watch of identical or similar characteristics. For all watches purchased as of 1 July 2018, the warranty for the replacement watch ends sixty (60) months after the date of purchase of the replaced watch.

This manufacturer's warranty does not cover:

- The life of the battery.
- Normal wear and tear and ageing (for example scratched crystal; alteration of the colour and/or material of non-metallic straps and chains, such as leather, textile, rubber).
- Any damage on any part of the watch resulting from abnormal/abusive use, lack of care, negligence, accidents (knocks, dents, crushing, broken crystal, etc.), incorrect use of the watch and non-observance of the operating instructions provided by OMEGA SA.
- Any consequential or indirect damage resulting from the use, failure to operate, defects or lack of precision of the OMEGA watch.
- The OMEGA watch handled by non-authorised persons (for example for battery replacement, service or repair) or which has been altered in its original condition beyond OMEGA SA's control.

Any further claim against OMEGA SA, for example for damages additional to the above described warranty is expressly excluded, except mandatory statutory rights the purchaser may have against the manufacturer.

The above manufacturer's warranty:

- is independent of any warranty that may be provided by the seller, for which he carries sole responsibility;
- does not affect the purchaser's rights against the seller nor any other mandatory statutory rights the purchaser may have against the seller.

The OMEGA customer service ensures the perfect maintenance of your OMEGA watch. If your watch needs attention, rely on an authorised OMEGA retailer or an authorised OMEGA Service Centre as set forth in the enclosed list: they can guarantee service according to OMEGA SA's standards.

* OMEGA SA
Rue Jakob-Stämpfli 96
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OMEGA INTERNATIONAL WARRANTY

NOTE: If you purchased your OMEGA® watch in Australia or New Zealand, the International OMEGA* Warranty contained in the booklet provided with this watch and on the OMEGA website (www.omegawatches.com) does NOT apply to you, and is replaced by this Australian / New Zealand Warranty (referred to below as the "Warranty").

IMPORTANT NOTICE REGARDING YOUR CONSUMER RIGHTS

The benefits given to you under this Warranty are additional to, and do not detract from, other rights and remedies that you may have in relation to your OMEGA watch and its purchase under Australian or New Zealand laws, including consumer protection laws.

In Australia, OMEGA watches come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have your OMEGA watch repaired or replaced if it fails to be of acceptable quality and the failure does not amount to a major failure.

In New Zealand, OMEGA watches also come with guarantees that cannot be excluded under the New Zealand Consumer Guarantees Act.

THIS WARRANTY:

- Is not intended to change or exclude any statutory or consumer rights that cannot be lawfully changed or excluded;
- Is independent of any warranty that may be provided by the seller, for which he carries sole responsibility; and
- Does not affect your rights against the seller, including any mandatory statutory rights you may have against the seller under local consumer laws.

OUR WARRANTY TO YOU

This Warranty is provided by OMEGA SA of Rue Jakob-Stämpfli 96, CH-2502 Bienne, Switzerland. Telephone +41 32 343 9211.

All OMEGA watches purchased as of 1 July 2018 are guaranteed for 5 years from the date of purchase under the terms and conditions of this warranty.

This Warranty covers material and manufacturing defects existing at the time of delivery of the purchased OMEGA watch ("defects"). Where such defects become apparent during the warranty period and provided you present a valid warranty certificate, OMEGA SA will:

- Repair your watch free of charge; or
- In the event that repairs are unable to restore the normal conditions of use of your OMEGA watch, replace your watch with an OMEGA watch of identical or similar characteristics. Such replacement watch will have the benefit of this Warranty for the remainder of the Warranty Period applicable to the original (replaced) watch.

Please be aware that:

- Goods presented for repair may be replaced by refurbished goods of the same type rather than being repaired. Refurbished parts may be used to repair the goods;
- Any data you store in your watch may be lost in the course of a repair. It is your responsibility to back up any data that may be stored in your watch before presenting it for warranty service; and
- The Warranty is only valid if the warranty certificate enclosed with your OMEGA watch upon purchase is dated, fully and correctly completed and stamped and signed by authorised OMEGA retailer.

EXCLUSIONS AND LIMITATIONS

This warranty does not cover:

- The lifetime of the battery;
- Normal wear and tear and aging (e.g. scratched crystal; alteration of the colour and/or material of non-metallic straps and chains, such as leather, textile, rubber; peeling of the plating);
- Any damage on any part of the watch resulting from abnormal/abusive use, lack of care, negligence, accidents (knocks, dents, crushing, broken crystal, etc.), incorrect use of the watch and non-observance of the use directions provided by OMEGA SA;
- Indirect or consequential damages of any kind resulting from e.g. the use, the non-functioning, the defects or the inaccuracy of the OMEGA watch; or
- Defects caused by the OMEGA watch being handled by nonauthorized persons (e.g. for battery replacement, services or repairs) or altered in its original condition beyond OMEGA SA's control.

HOW TO MAKE A CLAIM UNDER THIS WARRANTY

To make a claim under this Warranty, we recommend that you wrap your OMEGA watch carefully so as to avoid any damage and send it by registered mail or drop it off in person to your nearest authorised OMEGA retailer or an official OMEGA Service Centre. To find current contact information for your nearest authorized OMEGA retailer or official OMEGA Service Centre, please telephone +61 3 8844 3300, email customer.service@swatchgroup.com.au or go to www.omegawatches.com.

You will be responsible for paying the expenses associated with making a claim under this Warranty, including postal or delivery expenses and any relevant taxes.

OTHER CONDITIONS

No authorised OMEGA retailer or official OMEGA Service Centre is authorised to make any modification, extension or addition to this Warranty. OMEGA SA provides no warranty against defects beyond the rights and remedies given under this Warranty and which are available under the Australian Consumer Law and the New Zealand Consumer Guarantees Act 1993.

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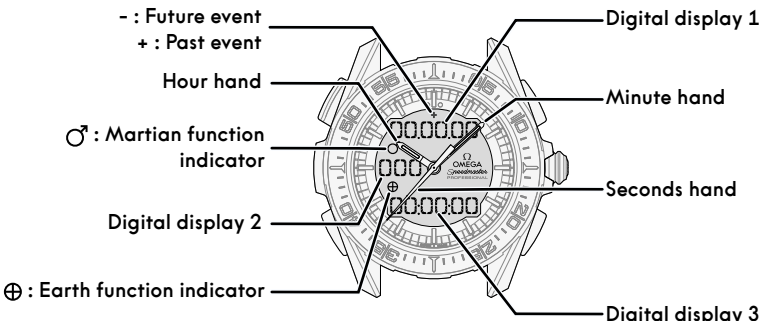
PRESENTATION DISPLAYS



The digital display indicators vary according to the function used.

PRESENTATION PUSHERS AND CROWN

Favourite function
⇨ *page 44*

Display
Back-lighting
Hands clearance
In programming mode
Enter / exit

In navigation mode
Previous function
In function mode
Specific action according to the function
In programming mode
Increment

In navigation mode
Switch between groups
In function mode
Enter and programming
In programming mode
Confirm and proceed to next setting

In navigation mode
Next function
In function mode
Specific action according to function
In programming mode
Decrease

Press once

Press twice

Press and hold
(~ 3 seconds)

The indicators for the pusher and crown functions vary according to the function used.

PRESENTATION NAVIGATION AND PROGRAMMING

The functions of the Speedmaster X-33 Marstimer are separated into 2 groups. You can navigate between functions using the pushers **P1** and **P2**. Simply pressing the crown will, according to the selected function, enter, exit or display more information on it. Pressing and holding the crown will toggle between 2 groups of functions.

In **programming mode**, the hands move so as to **clear the displays**.

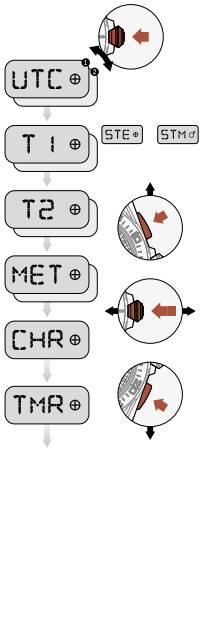
Programming mode exited automatically after 20 seconds without activity.

When a **chime** sounds, the **display flashes** and brings up the function concerned.

To reset a programmable function, enter **programming mode** for the function, and then **select** 000 to **erase the programming**.

To use the functions on your Speedmaster X-33 Marstimer, there are two examples of missions available ⇨ *pages 46 and 48*.

PRESENTATION NAVIGATION AND PROGRAMMING



Universal Time Coordinated
⇨ *page 20*

Time zone 1
True solar time on Earth (STE)
⇨ *page 22*

Time zone 2
⇨ *page 22*

Mission elapsed time
⇨ *page 27*

Chronograph
⇨ *page 45*

Timer
⇨ *page 35*

Mars Time Coordinated
⇨ *page 24*

Mars Time 1
True solar time on Mars (STM)
⇨ *page 25*

Mars Time 2
⇨ *page 25*

Phase 1 elapsed time
⇨ *page 29*

Phase 2 elapsed time
⇨ *page 29*

Phase 3 elapsed time
⇨ *page 29*

Alarm 1
⇨ *page 32*

Alarm 2
⇨ *page 32*

Alarm 3
⇨ *page 32*

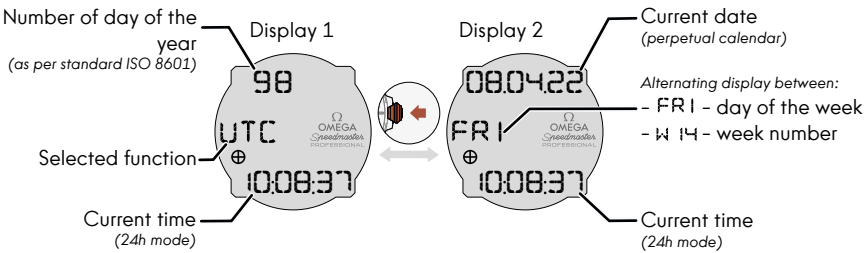
❶ Display 1
❷ Display 2

⊕ Earth function
♂ Martian function

UTC – UNIVERSAL TIME COORDINATED – DISPLAY

The UTC function (Universal Time Coordinated) displays the universal time coordinated.

Because UTC is the time base used for all the other watch functions, it must be programmed before the rest.



UTC – UNIVERSAL TIME COORDINATED – PROGRAMMING

Once the function has been selected, enter programming mode

Increase (+)

Confirm and proceed to next setting*

Decrease (-)

Exit programming mode

* Follow the same procedure for the settings below:

- year, month, day;
- hour, minute, seconds;
- leap seconds.

LEAP S "Leap seconds" is used to adjust the Universal Time Coordinated (UTC) in relation to solar time. These seconds are occasionally added by the IERS (International Earth Rotation and Reference Systems Service). The leap seconds LEAP S should be set to 37 seconds, the current value for 2022.

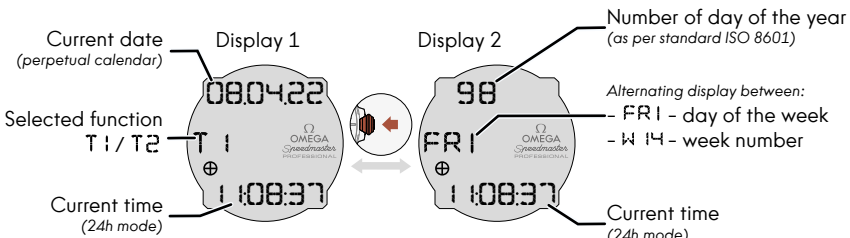
Consider checking the current leap seconds value.

T1 & T2 – TIME ZONES – DISPLAY

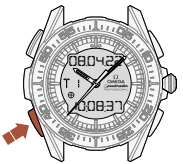
T1 is used for **local time**. The hands continuously display T1 time.

T2 is used for the **second time zone.** T2 is not displayed with the hands.

To set T1 and T2, only the time difference from UTC needs to be programmed. So the UTC time must be set before programming T1 and T2.



T1 & T2 - TIME ZONES - PROGRAMMING



Once the function has been selected, enter programming mode

Increase (+)

Confirm and proceed to next setting*

Decrease (-)

Exit programming mode

* Follow the same procedure for the settings below:

- hour, minute(1).

(1) The minute will be increased and decreased in 15-minute steps.

During programming, the "+" or "-" sign above the display indicates that the time difference from UTC is positive or negative.

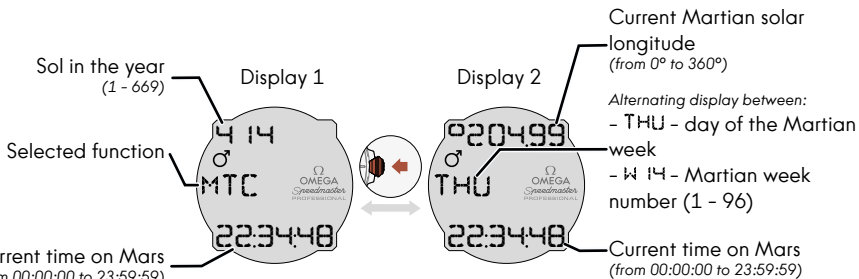
MTC – MARTIAN TIME COORDINATED – DISPLAY

The Martian Time Coordinated or MTC is the universal time on Mars at 0° longitude.

A sol (Martian solar day) lasts 24 hours, 39 minutes and 35.244 seconds. A Martian year lasts 668.599 sols or 95 weeks of 7 Martian days. A sol is divided into 24 Martian hours of 60 Martian minutes. Each Martian minute is divided into 60 Martian seconds. Mars is divided into 24 time zones, every 15° longitude.

The Speedmaster X-33 Marstimer counts leap years of 668 sols and 669 sols as well as 95 weeks and 96 weeks to compensate for the difference between the Martian solar year and the Martian calendar year.

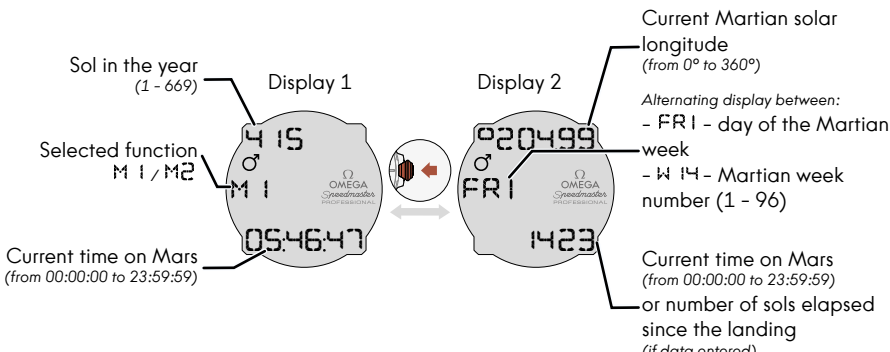
UTC must be correctly programmed for MTC to be correct.



No programming is required. MTC is calculated based on UTC and the leap seconds LEAP S.

M1 & M2 – Martian time zones – display

M1 and M2 display the Martian time at a given solar longitude, and can also display the number of sols elapsed since the landing of a mission on Mars, thanks to the landing date UTC, the previously entered Martian longitude, as well as the leap seconds at the time of the Mars landing.



The Martian time M1 can be displayed via the hands by pressing pusher **P2** twice. The hands display automatically goes back to T1 when you change the function, or if you press pusher **P2** twice again.

M1 & M2 – Martian time zones – programming

M1 or M2 are programmed according to a Martian longitude. A mission can also be entered according to its landing longitude, the landing date UTC, as well as the leap seconds at the time of the Mars landing.

Once the M1 or M2 function is displayed, enter programming mode

Increase (+)

Confirm and proceed to next setting*

Decrease (-)

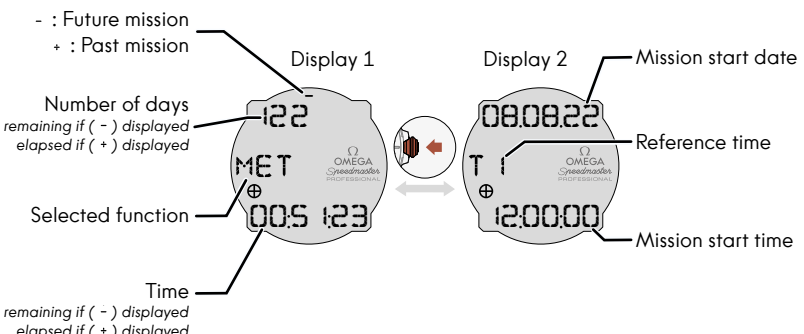
Exit programming mode

* Follow the same procedure for the settings below:

- landing longitude
- landing date
- leap seconds at the time of landing

MET - MISSION ELAPSED TIME - DISPLAY

This functions displays the remaining time (-) or elapsed time (+) since the start of a mission. MET can be programmed on UTC, T1 or T2.



If the mission start time has passed, the sign at the top of the display turns to " + " and the time continues to be counted from the mission time.

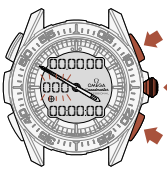
MET – MISSION ELAPSED TIME – PROGRAMMING

The MET function can be programmed up to a count of 999 days, 23 hours, 59 minutes, and 59 seconds.

Once the function has been selected, enter programming mode

The " - " sign indicates that the event is in the future.

The " + " sign indicates that the event is in the past.



Increase (+)

Confirm and proceed to next setting*

Decrease (-)

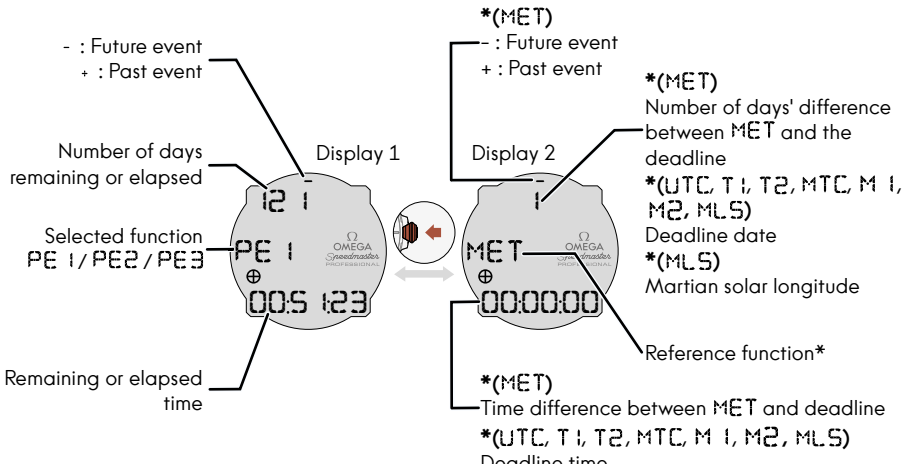
* Follow the same procedure for the settings below:

- reference time T1, T2, or UTC
- year, month, day
- hour, minute, seconds

Exit programming mode

PET (PE1, PE2 & PE3) – PHASE ELAPSED TIME – DISPLAY

Phase Elapsed Time or PE 1, PE2 and PE3 are phase alarms programmable on a relative basis before or after the mission time MET, on an absolute basis on a reference time UTC, T1, T2, MTC, M 1, M2 or the Martian solar longitude MLS.



The EARTH ⊕ or MARS ♂ signs are displayed according to the selected reference function.

PET (PE1, PE2 & PE3) - PHASE ELAPSED TIME - PROGRAMMING

The PE 1, PE2 and PE3 functions can be programmed for a count of up to 999 days, 23 hours, 59 minutes and 59 seconds.

Once the PE 1, PE2, or PE3 function is displayed, enter programming mode

Increase (+)

Confirm and proceed to next setting*

Decrease (-)

* Follow the same procedure for the settings below:

- reference time MET, UTC, T1, T2, MTC, M1, M2, MLS.

Relative programming as per MET:

- Number of days
- number of hours, minutes and seconds

PET (PE1, PE2 & PE3) – PHASE ELAPSED TIME – PROGRAMMING

Exit programming mode

Absolute programming (as per UTC, T1 T2 MTC M1 M2 or MLS):

- year, month, day, hour, minute, seconds (UTC, T1, T2 only)
- sol, Martian hour, Martian minute, Martian seconds (MTC, M1 and M2 only)
- Martian solar longitude (MLS only)

A first alarm sounds for 1 minute before the end of the count, and then again at the end of the count for 20 seconds. PET continues to count the elapsed time since the event.

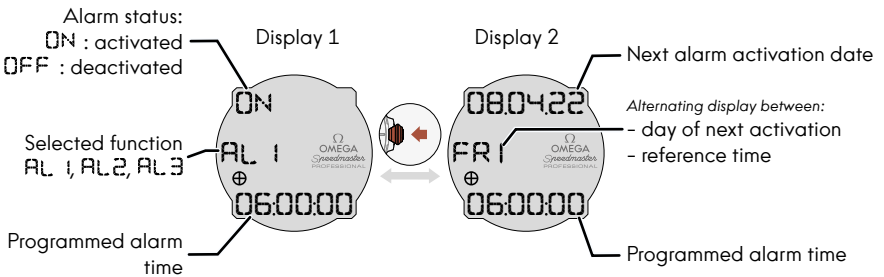
To stop an alarm, press any pusher.

To erase the programming, enter programming mode and then select 000.

AL1, AL2 & AL3 - ALARMS - DISPLAY

3 alarms, AL 1, AL2 and AL3, can be programmed on the reference times UTC, T1, T2, MTC, M1 and M2.

An alarm will sound for each possible occurrence, for example, if you only set the chime time, without incorporating the date or day, the alarm will sound every day at the set time.



The EARTH ⊕ or MARS ♂ signs are displayed according to the selected reference function.

AL1, AL2 & AL3 - ALARMS - PROGRAMMING

Once the AL 1, AL2, or AL3 function is displayed, enter programming mode

Increase (+)

Confirm and proceed to next setting*

Decrease (-)

Exit programming mode
The alarm will be activated

* Follow the same procedure for the settings below:

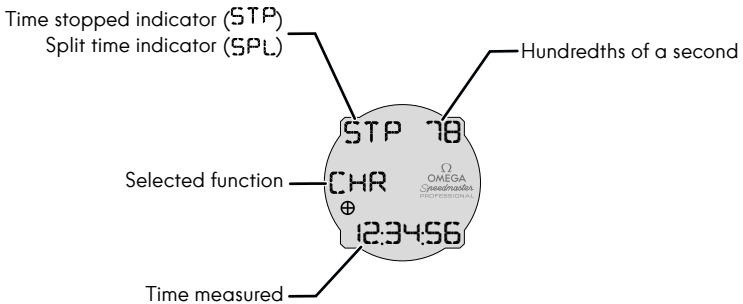
- reference time UTC, T1, T2, MTC, M1, M2
- year, month, day;
- hour, minute, seconds;
- day of the week.

Activate or deactivate the alarm

For information about the chimes see page 45.

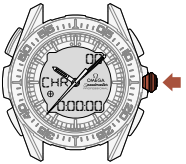
To erase the programming, enter programming mode and then select 000.

CHR - CHRONOGRAPH - DISPLAY



After 99 hours, 59 minutes, 59 seconds and 99 hundredths, timing is stopped and reset automatically.

CHR - CHRONOGRAPH - USE



Once the function has been selected, enter the CHR function.
When you exit the CHR function, the current timing will continue

Start / stop (STP) the time measurement
Press again to continue the time measurement

Display the split time (SPL)
Function present only if the chronograph is engaged.
Press again to continue the time measurement

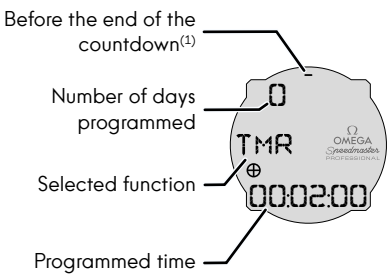
Reset the chronograph
Works only when the chronograph has been stopped (STP)

Before navigating to another function, consider exiting the function by pressing the crown once.

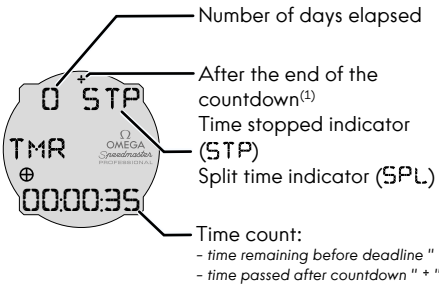
TMR – TIMER – DISPLAY

The timer function TMR allows you to count down a pre-defined time period, and then count the elapsed time after passing zero.

Before or during the countdown



After the countdown



(1) At the end of the countdown, the " + " sign appears in place of the " - " sign, and the time is counted from the countdown zero point.

The TMR can be programmed up to a count of 99 days, 23 hours, 59 minutes, and 59 seconds.

For information about the chimes see page 45.

TMR – TIMER – PROGRAMMING

Once the function has been selected, enter the TMR function

Enter programming mode

Increase (+)

Confirm and proceed to next setting

Decrease (-)

Exit programming mode

Before navigating to another function, consider exiting the function by pressing the crown once.

TMR – TIMER – USE

Start/stop (STP) the countdown/time count

Stop/restart from displayed time (SPL)
The countdown/time count continues

Reset to zero
When the TMR *has been stopped (*STP*)*
After resetting, the last programmed time is displayed

To stop an alarm, press any pusher.

To erase the programming, enter programming mode and then select 000.

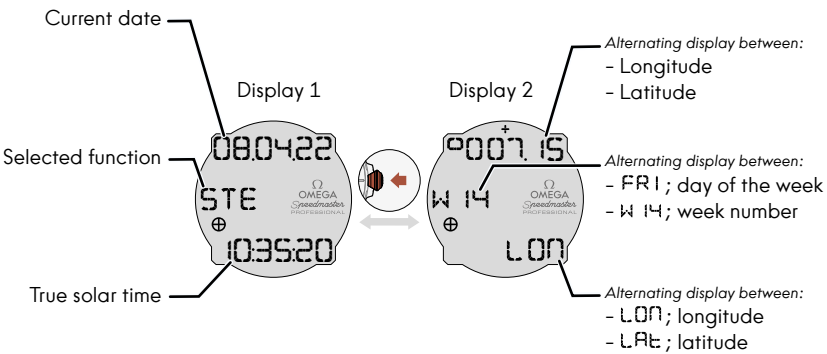
Before navigating to another function, consider exiting the function by pressing the crown once.

STE / STM – TRUE SOLAR TIME ON EARTH AND MARS – DISPLAY

The Speedmaster X-33 Marstimer is able to calculate and display the true solar time (LTST; Local True Solar Time) of a specific location on Earth (STE) or Mars (STM).

The difference between mean solar time and true solar time is the equation of time.

The STE and STM functions are only accessible via the main function.



STE / STM – TRUE SOLAR TIME ON EARTH AND MARS – USE

STE

STM

Once the T1 function has been selected, display the STE function

Once the M1 function has been selected, display the STM function

Enter programming mode

Increase (+)

Confirm and proceed to next setting*

Decrease (-)

*Follow the same procedure for the settings below:

STE:

- *Terrestrial longitude (-180° West to +180° East)*
- *Terrestrial latitude (-90° South to +90° North)*

STM:

- *Martian longitude (0° to 360° East)*
- *Martian latitude (-90° South to +90° North)*

STE / STM - TRUE SOLAR TIME ON EARTH AND MARS - USE

Exit programming mode

To determine the direction of North on Earth (STE) or Mars (STM), position the watch horizontally so that the 12 indicator is pointing to the sun. Press pusher P1; the seconds hand will point to north. Press pusher P1 again to display the seconds for local true solar time (LTST).

To exit the STE or STM function, press pusher P2.

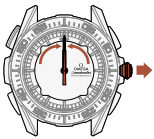
SPECIAL FUNCTIONS

ENERGY SAVING MODE

The energy saving mode is activated by pulling the crown out.

- the display disappears;
- the hands move to 12 o'clock;
- all the measurements in progress continue, but the chimes are deactivated.

Push the crown back in to exit energy saving mode.

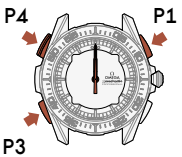


SYNCHRONISING THE HANDS

If the watch is in energy saving mode, it is possible to synchronise the hands manually if they do not display 12:00:00 exactly.

Follow the procedure below:

- Press **P4** to move the hour and minute hands forward in half-minute intervals;
- Press **P3** to move the hour and minute hands forward in one-hour intervals;
- Press **P1** to move the seconds hand forward in one-second intervals.



BACK-LIGHTING

Pressing **P3** once will activate the back-lighting of the digital display, to facilitate reading the information. After 5 seconds of inactivity, the back-lighting will go out automatically.

HANDS CLEARANCE

Double-pressing **P3** will clear away the hands, so as not to block the digital display. After 5 seconds, the hands will be repositioned as normal.

STANDBY MODE

Standby mode is activated automatically in case of 5 days' inactivity.

- The display disappears;
- The hands continue to indicate;
- All the measurements in progress continue;
- The alarms (AL 1, AL2, AL3), timer (TMR) and functions (PE 1, PE2, PE3) can still sound (if the chime is not stopped by the user, the watch returns to standby mode after 20 seconds).

Press one of the pushers or the crown to exit standby mode.

FAVOURITE FUNCTION

It is possible to save a directly accessible favourite function by pressing pusher **P4**.

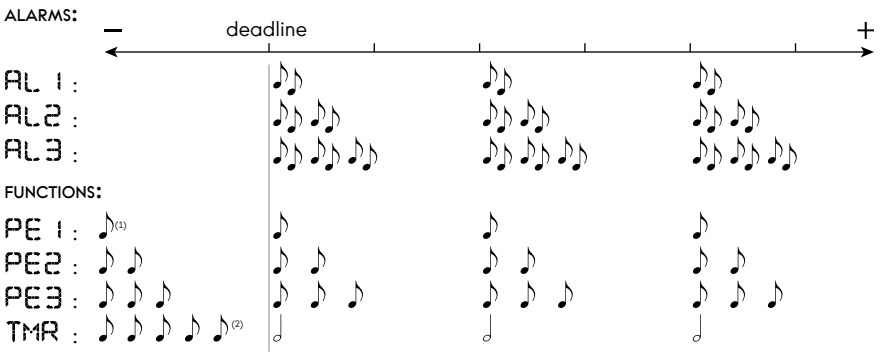
Once the function has been selected, assign the favourite function to pusher P4

Toggle between the favourite function and the last function displayed

CHIMES

Several types of chime are used for the following different functions and priorities:

SEQUENCES



(1) For all the functions PET, 3 chimes sound 1 minute before the deadline.

(2) The last 5 seconds sound before the TMR chimes.

PRIORITIES

- If two alarms (AL 1, AL2, AL3) or PET functions are due to sound at the same time, only the smaller number will sound;
- an alarm will interrupt a PET and the TMR;
- TMR will interrupt a PET.

MISSIONS TRIP PLANNING

The functions of the Speedmaster X-33 Marstimer can be useful in a host of situations in everyday life, for the office, sport or travel.

Let's take the case of planning a trip from Zurich to New York for the Christmas holidays.

With take-off scheduled at 09:50 from Zurich, and landing at 12:35 in New York on 21 December, you should program a wake-up time using an alarm, and the check-in time using a PET function (to tell you the time remaining until the check-in deadline).

Since the main deadline of the "mission" is take-off from Zurich, the MET function will be programmed to this time. The landing phase will be programmed according to New York time.

Setting the time zones:

T1 : Zurich time = UTC +1 hour (⇨ page 22)

T2 : New York time = UTC-5 hours (⇨ page 22)

Programming:

MET : reference T1 at 9:50 on 21.12.2022 (⇨ page 27)

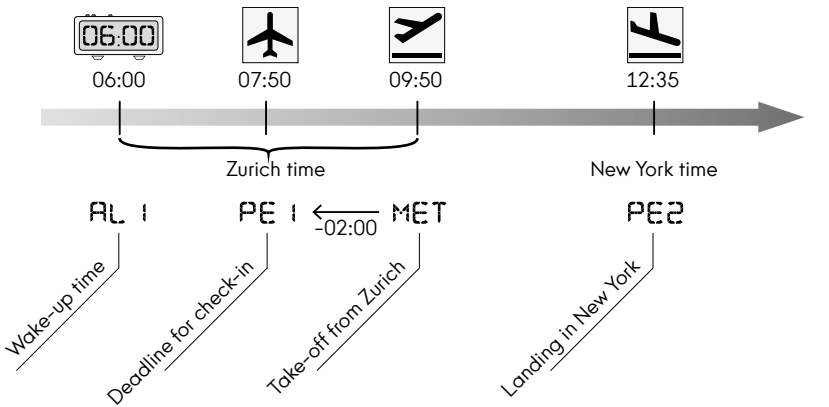
PE1 : reference MET -2 hours (relative programming, ⇨ page 29)

PE2 : reference T2 at 12:35 on 21.12.2022 (absolute programming, ⇨ page 29)

AL1 : reference T1 at 06:00 on 21.12.2022 (⇨ page 32)

MISSIONS TRIP PLANNING

The trip is made up of the following phases and deadlines:



MISSIONS SPACE MISSION TO MARS

The Speedmaster X-33 Marstimer was specially designed in collaboration with the European Space Agency (ESA) for managing and following missions to Mars.

The various functions will enable you to follow the stages of such a mission, from take-off to landing on Mars, and tell you the local time at the rover's location on Mars, as well as the number of sols elapsed since landing, with an example described below.

The dates and times of the space mission to Mars are given by way of example.

Voyage to Mars

Program the time zones:

UTC : reference time zone.

T1 : time zone for your current location.

T2 : time zone for the launching location at UTC+5 hours.

MISSIONS SPACE MISSION TO MARS

Program the functions for take-off:

MET : reference **UTC 15:10:00 on 20.09.2022** - scheduled rocket take-off (mission reference).

AL 1 : reference **UTC 15:10:00 on 20.09.2022** - rocket take-off.

AL2 : reference **UTC 01:55:00 on 21.09.2022** - upper stage separation from rocket.

AL3 : reference **UTC 01:55:00 on 28.09.2022** - launcher insertion correction.

Once take-off is complete, program the functions for landing:

AL 1 : reference **UTC 14:56:38 on 10.06.2023** - separation of carrier and descent modules (CM-DM).

MET and AL2: reference **UTC 15:25:51 on 10.06.2023** - entry interface point into the atmosphere (EIP).

3 minutes and 12 seconds after EIP: gravity altimeter triggered.

PE 1 **3 minutes and 18 seconds after EIP:** supersonic parachute triggered.

3 minutes and 37 seconds after EIP: supersonic parachute released.

PE2 **3 minutes and 37 seconds after EIP:** subsonic parachute deployed.

3 minutes and 48 seconds after EIP: front heat shield dropped.

PE3 : **5 minutes after EIP:** landing module separated.

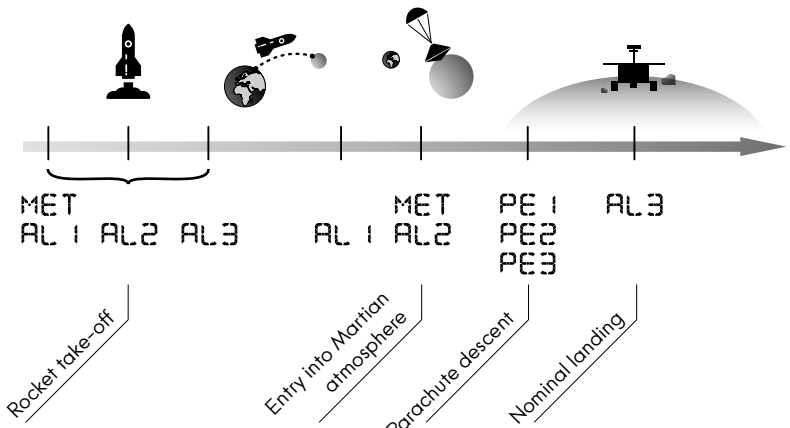
AL3 : reference **UTC 15:31:39 on 10.06.2023**: nominal landing.

MISSIONS SPACE MISSION TO MARS

Exploration on Mars

Once landing is complete, program the time zone on Mars:

M 1 : Oxia Planum time zone, at 335.65° longitude, and sols elapsed since the rover landing at 15:22:00, on 10.06.2023.



GLOSSARY

UTC	Universal Time Coordinated is the international reference time on Earth.
MTC	Mars Time Coordinated is the reference time on Mars.
Sol	A sol is a Martian day, which lasts 24 hours, 39 minutes and 35.244 seconds.
MET	Mission Elapsed Time is the elapsed time since the defined start of a mission. In the case of a space flight, it is the precise moment of rocket take-off.
PET	Phase Elapsed Time is the remaining time to an event, or the elapsed time since an event.
MLS	Mars Longitude Solar is the solar longitude on Mars.
CHR	Chronograph is the time measurement function.
TMR	Timer is the count function before or after an event.
STP	Stop indicates that the time has stopped (CHR and TMR functions only).
SPL	Split Time is the split time indication (CHR and TMR functions only).
STE	True Solar Time Earth is the time based on the position of the sun in relation to the Earth's axis.
STM	True Solar Time Mars is the time based on the position of the sun in relation to Mars' axis.

TROUBLESHOOTING

The hands do not show the same time as the T1 display:

- If this problem occurs, the hands will be desynchronised. To rectify this, look up the hands synchronisation procedure on page 42.

The seconds hand makes 5-second jumps:

- This means that the watch battery is at its end of life. The watch will function for a few more days, but the battery will need to be removed and replaced as soon as possible by an OMEGA® dealer.

After programming MET or PET, the count remains at 0:

- The date programmed would mean a count in excess of 999 days, 23 hours, 59 minutes and 59 seconds.

PICTOGRAMS

Calibre 5622

5-year international warranty


Quartz


Thermocompensated quartz movement


Chronograph


Split-seconds

Date

Day-date

Perpetual calendar


Time zone function

Second time zone


End of battery life indicator

Lithium-manganese dioxide button cell

Water-resistant to positive pressure of 3 bar (30 metres / 100 feet)

Titanium

Sapphire crystal

Double anti-reflective treatment


WEEE regulations

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