

FAQ Things to know about rechargeable telephone batteries

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For a better differentiation:

Disposable Battery

Can only be used once. Not rechargeable.

Rechargeable Battery:

Chargeable energy storage, can be recharged and reused.

Which charging technology is used at Gigaset?

Gigaset models that use NiMH cells have "extended balance control".

This means:

For this purpose, the rechargeable batteries are first fully charged after insertion (initial charge). The rechargeable batteries are then kept full with a very small current (trickle charge). When the handset is removed from the charging station, the discharge current is measured and added up over time. The handset then knows at all times how much capacity has been taken from the batteries (capacity = current x time). Therefore, it does not matter whether the handset is put back into the charging cradle after a very short time or only after several days. When the handset is placed back in the charging cradle, the capacity is recharged with the maximum possible current. The system then switches back to trickle charging.

If possible, the rechargeable battery should not be removed from the battery compartment, as an initial charge must be started again after reinsertion. Each time the rechargeable battery is inserted, the handset assumes that new (empty) battery cells are being used.

At what temperatures should batteries be charged and discharged?

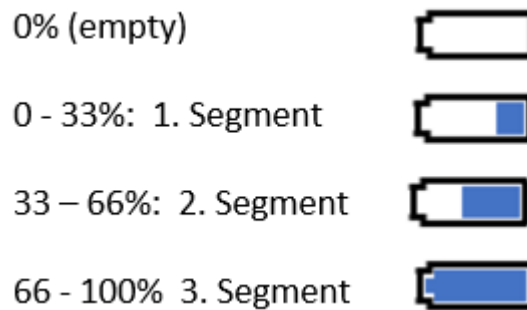
Discharging should be carried out at room temperature. At temperatures below 0°C, the capacity of rechargeable batteries decreases considerably. If possible, charging should take place in the range of 10 - 35°C, as this is where the batteries can absorb the most capacity. For NiMH cells, the handset interrupts charging at temperatures above 45° C, for Lilon cells below 5° C and above 40°-45° C, as the batteries must not be charged outside this temperature range.

Why is the charge level not displayed correctly when I insert full batteries into my Gigaset?

It is practically impossible to determine the capacity or state of charge of a NiMH cell by a quick measurement. It is only possible for the charging management of the handset to recognize completely empty or completely full (just charged) batteries by the voltage, these are then displayed with 1/3 or 2/3 full battery bar.

How does the rechargeable battery display work?

The battery display in the Gigaset handsets is directly coupled with the balance charge (see above). After initial charging, a balancing counter is set to zero and 100% charge status is displayed (all segments full, no flashing). If then the batteries are discharged (conversation, standby...) the balancing counter is slowly increased depending on current and time. The state of charge, e.g. 40%, is determined by the relation of the balancing counter to the battery capacity. The state of charge is then displayed accordingly with the symbols:



The battery voltage is also monitored. If this drops below a critical value, an acoustic warning is started and the last third starts flashing (LowBat warning). From then on, you can still make calls for about 5 - 10 minutes.

The capacity of the rechargeable battery is initially unknown, especially for standard cells (micro = AAA). During the first cycle, a typical telephone value is used for this (e.g. 750mAh for standard cells). However, once the batteries have been fully charged and then used until completely empty, the discharge capacity is calculated, stored and used for the state of charge calculation and display. This value is also updated with each complete charge cycle. So the display is always adapted to the real capacity of the rechargeable battery, even if e.g. a battery with a larger capacity is inserted or if the capacity decreases due to age. This patented procedure is called "learning procedure". However, the following is a precondition for this accurate indication:

- Do not remove rechargeable batteries from the device frequently.
- Charge the batteries in the first charging cycle and then charge them fully every now and then (no flashing battery symbol)
- Discharge the batteries in the first charging cycle and then discharge them completely every now and then (LowBat warning)

The battery indicator is also correct after switching the device off and on again. If the rechargeable batteries have been removed, the display is not correct at first. A new learning phase is required.

How long do rechargeable batteries last?

The durability of rechargeable batteries depends on many influencing factors:

- Battery technology: NiMH / Lilon
- Battery quality
- Loading method
- Number of cycles
- Type of cycles (complete discharge, partial discharge)
- Ambient temperature
- Overcharge frequency
- Operating time of the rechargeable batteries
- ...

When operating in the Gigaset handset, the durability of the batteries will be at least 1 year with frequent use, and over 2 years can be achieved with normal operation (e.g. 2h conversation per day).

However, improper use, e.g. one-time deep discharge in a flashlight, prolonged overcharging in an external charger or frequent charging at high temperatures can drastically shorten the service life. Therefore, do not use Gigaset batteries in other devices if possible!

According to the standard, the end of service life is reached when the rechargeable battery only has 60% of its rated capacity (imprint). In practice, however, this depends on subjective perception. In professional use (e.g. two-shift operation), it can be annoying when the battery capacity is only 75%. For "infrequent users" who also frequently place the handset in the charging cradle, even 20% of the initial capacity may be enough.


What determines the "end of life" of rechargeable batteries?

In the case of NiMH cells, not only the capacity but also the internal resistance of the rechargeable batteries normally determines the end of service life.

Since our handsets (like all other DECT devices) require high pulse currents, the battery voltage collapses sharply under load if the internal resistance is too high. The handset can then no longer transmit, displays "low battery" or even goes out completely. And this although the battery display shows more than 30% remaining capacity.

With each charging cycle (charging and discharging) the internal resistance increases. After about 300-500 cycles, the resistance is so high that the rechargeable battery becomes unusable and must be replaced.

There are different sized disposable batteries and rechargeable batteries. The following table shows the most common types of the so-called round cells.



Lady (N)	Mini (AAAA)	Micro (AAA)	Mignon (AA)	Baby (C)	Mono (D)	9-Volt-Block
N	AAAA	AAA	AA	C	D	9-Volt-Block
LR 1	LR 61	LR 3	LR 6	LR 14	LR 20	9.0 V
Ø 12 x 30 mm	Ø 8 x 42 mm	Ø 10,5 x 44,5 mm	Ø 14,5 x 50,5 mm	Ø 25,6 x 50 mm	Ø 33 x 61,5 mm	13x16x49 mm

Source: <https://www.reichelt.de/reicheltpedia/index.php/Batterie>

The most common battery is the alkaline manganese battery which provides a voltage of 1.5 V when new. Among rechargeable batteries, the nickel-metal hydride battery is the most common type for round cells today.

The typical cell voltage is 1.2V. In addition to voltage, battery capacity - the ability to store current - is the second most important parameter. The capacity is specified in milliampere-hours (mAh). For example, if the rechargeable battery says 1,000 mAh, it will provide 1,000 mA of current for one hour or 200 mA for five hours. After that, it is discharged and the voltage collapses under load. The capacity of the rechargeable batteries shown above is approximately between 500 mAh (Lady) and 12,000 mAh (Mono).

When a rechargeable battery ages, its capacity changes. The 750 mAh battery available in the Gigaset online store thus "gets smaller and smaller" over time. In a first approximation, you can imagine this as a water pipe that calcifies over time.



As you can see, all three tubes in the picture above are filled to the brim with water, or rather, all rechargeable batteries are as fully charged as they can be. The phone recognizes that no more current can be stored and reports a full battery. If you now measure the voltage with a voltmeter, it shows the maximum value for all 3 batteries. Of course, the right one is full and empty again much faster than the left one. The rechargeable battery has become unusable due to its much too low capacity and can only be replaced by a new one.

What is particularly harmful for NiMH cells?

1. Deep discharge

NiMH cells are particularly sensitive to deep discharge. If a cell is discharged to values below 0.9V, irreversible damage can occur. The capacity drops abruptly by 15% to 25%, the behavior before switching off the handset and when starting to charge becomes noticeable.

All Gigaset handsets feature deep discharge protection that switches the device off in time. However, if the rechargeable batteries remain in the device for a long time without being recharged, the cell voltage can still reach critical values as the residual current and self-discharge continue to discharge the cells. In most cases, however, deep discharge occurs due to mishandling, for example, when the Gigaset batteries are used in other devices. Many simple devices do not have deep discharge protection. Many flashlights, MP3 players or remote controls, for example, discharge rechargeable batteries down to 0V.

2. Overload

The second problem is overcharging: Especially in cheap chargers, rechargeable batteries are charged time-controlled or even without a time limit, even if the batteries have long been full. Such overcharging reduces the lifespan similarly to multiple cycles. This also happens in a weakened form when you insert full rechargeable batteries into a Gigaset.

3. High Temperatures

The third problem is high temperatures. Practically all chemical processes are accelerated at high temperatures. As a rule of thumb: factor 2 per 10°C increase in temperature. In the case of rechargeable batteries, the chemical processes during charging are particularly responsible for the service life. Rechargeable batteries charged at 35°C therefore only last about half as long as batteries charged at 25°C.

Conclusion:

- Therefore, do not use external chargers for the Gigaset rechargeable batteries if possible!
- If possible, do not use the Gigaset rechargeable batteries for other applications!
- Do not place the base station and charging cradles in warm places (heater, windowsill...)!

How long does it take until my handset is fully charged again?

The charging time depends on the discharge depth (battery indicator), the charging current and any other activities. As a rule of thumb: After 1h of conversation, charging takes a maximum of 1h until the same charge level is reached again. With external charging cradles, the charging time is only about 1/3 of the call time. If the devices are active during charging (baby monitor, handsfree in the charging cradle) or charging is interrupted, the charging time is extended. When the rechargeable batteries are completely empty, charging takes between 3 and 12h depending on the device. In practice, though, all rechargeable batteries are full again overnight. When charging is complete, the charge level indicator stops flashing.

Which rechargeable batteries can I use in my Gigaset?

We recommend:

Rechargeable batteries, identical to those supplied.
Rechargeable batteries offered in our online store.

Basic principle:

All our handsets are designed for rechargeable batteries with a capacity of up to 1000mAh.

I.e. even if a model was delivered with a rechargeable battery with lower capacity, you can use rechargeable batteries with 750mAh without hesitation.

Basically, our handsets are designed for the use of rechargeable batteries with a capacity of up to 750mAh.

In individual cases, rechargeable batteries with lower or higher capacity can also be used. Please check this in the respective operating instructions.

If you insert new rechargeable batteries in your handset, please proceed as follows:

- Make sure that you always change the rechargeable batteries pair wise, not only one.
- Only use rechargeable batteries by the same producer, with the same capacity and same production date (taken from the same package)
- Fully charge the handset until the display shows full and the flash icon goes out
- Then please leave the handset until it switches off completely by itself. During this time, the handset can be used normally.

By this procedure you calibrate the battery indicator.

Important: If the battery indicator is not calibrated as described above, the phone cannot correctly display the current charge status of the inserted rechargeable batteries.

Tip: To achieve maximum standby and talk time, please check the following settings:

- Menu > Settings > ECO DECT > at "No Radiation" there should not be a check in the box
- Menu > Settings > ECO DECT > at "Maximum Range" there should be a check in the box
- Menu > Settings > Display > Display Backlight > "Display Backlight Out of Charger" should be off

You can purchase rechargeable batteries from our online store that we have tested with our handsets. We have not tested rechargeable batteries from other manufacturers and can therefore not make a recommendation.

Why do the rechargeable batteries get warm during charging?

In NiMH cells, a part of the supplied energy is converted into heat at the end of the charging process, and the complete charging energy is converted into heat in the case of full rechargeable batteries. Rechargeable batteries of these two technologies therefore always get warm when you want to charge them completely or keep them full. Lilon rechargeable batteries, on the other hand, practically do not get warm during charging, since the charging current is reduced towards zero towards the end of charging. However, the charging circuits in the handset and in the base or charging cradle get warm in all devices. The amount of heating depends on the charging current, the charging concept, the design and the size of the devices.

Heating of certain parts of the equipment up to 40 - 50°C is normal.

Why is my rechargeable handset battery not fully charged in warm weather?

Depending on the battery technology, charging must be interrupted at battery temperatures of 40-45° C, otherwise the service life of the rechargeable batteries will be greatly reduced and the batteries will not reach their normal charge level. After cooling down, the charging process is continued. With ambient temperatures greater than 30° C, this can lead to charging times being greatly extended. If you experience this problem, check whether there is a cooler location for the charging cradle/base and place the handset in the charging cradle more frequently and preferably overnight. Even if the handset does not display "full" in high summer temperatures, there is usually still enough energy in the rechargeable batteries to make calls for some time.

What is the best way to take care of my rechargeable battery?

The rechargeable batteries in a Gigaset phone do not need to be maintained. Insert the rechargeable batteries and leave them in the device if possible. Only remove the rechargeable batteries from the handset if you will not be using it for a long time (e.g. extended vacation). When the rechargeable batteries are fully charged, they are gently kept at full charge with a low current without damaging them (trickle charge). When the rechargeable batteries are empty, the handset is switched off and power consumption is reduced to very low levels.

Can I use disposable batteries in my Gigaset?

No, disposable batteries look like rechargeable batteries from the shape (see photo above), but they are not rechargeable. Therefore, they can leak during charging and damage the handset.

What is the state of charge of rechargeable batteries at the time of purchase?

Rechargeable batteries are usually partially charged when shipped. The longer they lie in the store, the further the capacity drops.

Is my handset charged in the same way in the charging cradle as on the base?

The charging technology of the Gigaset devices is located in the handset and not in the charging cradle. Therefore, the charging process basically works the same way in a charging cradle as in the base station's charging slot. However, the charging currents in some base stations are lower than in the external charging cradle, which affects the charging times. In addition, the charging current is interrupted in the base when the base is active. Therefore, if you want short charging times, the external charging cradle is preferable.

Can I leave my handset on the base/charging cradle for a longer period of time (e.g. on vacation)?

Yes, the charging current is reduced to harmless levels in Gigaset devices when the rechargeable batteries are full.

Tip:





Alternatively, you can also partially or fully charge the batteries, remove the handset from the charging cradle and then switch the handset off. The power consumption in the device when switched off is so low that the batteries do not become deeply discharged even in several months. In this state, the handset does not ring and neighbors are not disturbed.

Problem: phone calls drop; rechargeable battery is quickly drained

There can be two different causes for the problem:

1. The rechargeable battery has reached the end of life
It is relatively easy to determine whether a rechargeable battery is still working well or has reached its end of life. Place the phone in the charging tray and observe the charging symbol. It consists of 2 components:

a stylized battery with the states:

-  Almost empty
-  At least 33% loaded
-  At least 66% loaded
-  Almost full as long as the ⚡ is still visible

Charging Flash:

The rechargeable battery is charged as long as the charging flash is visible. It is only fully charged when the flash no longer appears. If the flash is no longer visible and you take the phone out of the charging tray, the device should show the standby times (the phone is outside the charging tray without making a call) or the talk time (time for a continuous telephone call) shown in the instructions for new rechargeable batteries.

If, for example, you observe that the device switches itself off after less than a day out of the charging slot, or if a telephone call is ended after less than 20 minutes by the handset switching itself off, these are clear signs of a defective rechargeable battery. Another sign is a greatly reduced charging time. If the rechargeable battery is empty and is fully charged again after less than an hour, this is another sign of a defective battery.

How to solve the problem in this case:

It is essential to buy new rechargeable batteries here. Please replace both rechargeable batteries, otherwise the problem will occur again soon. We recommend to buy the rechargeable batteries directly from our online store, then you can be sure that you will enjoy your phone again for a long time. If you want to buy rechargeable batteries in other stores, please make sure that they are suitable for "DECT phones". Only then they will work for a long time. Please do not use disposable batteries.

2. The handset is at the range limit

If you move the handset too far away from the base station (which can be a telephone base or a corresponding router), the radio strength is no longer sufficient to hold the call and the call is dropped. This effect can be easily checked by moving closer to the base station. Within a certain distance, which varies depending on the apartment, the device works perfectly.

How to solve the problem in this case:

If your device has the "Ecomode" setting, please make sure that this is switched off.

If this does not solve the problem, it may help to choose a more suitable location for the base station. This should be chosen as centrally as possible. Any wall between the base station and the device, as well as floors and metal parts, limit the range.
