

Care and operating instructions for operating electronic devices (GoTo mounts and cameras)

Although astronomical mounts are designed for outdoor use, the electronics are still sensitive to moisture and extreme temperatures. Inadequate protection of the mount, especially against moisture or unfavorable humid storage, will damage the sensitive electronics of the mount, which is not covered by the warranty. Therefore, please treat your mount as you would any other high-quality electronic device and it will give you many years of pleasure. Above all, it is important that the mount is given sufficient time to dry out again after outdoor use. Think about it: Would you store your PC or TV under a plastic cover outdoors for a long period of time?

Please note that many electronic devices can react sensitively not only to overvoltage but also to undervoltage. If the supply voltage is too low, this leads to increased current consumption, which can ultimately damage the electronic components. Most mounts and cameras are designed for a voltage of $13.8\text{ V} \pm 15\%$. Both permanent deviations from this range and short-term voltage peaks or dips can lead to short or long-term damage or even complete failure. This can be recognized in the workshop by "fried" components.

Approved power supply units

Please only use the power supply units recommended by us. These are regulated power sources with sufficient power. An unregulated (cheap) power supply often generates too high voltages when idling and too low voltages under load. In addition, if the power supply is too underpowered, the voltage can drop under load, which can also lead to damage. Cheap products in particular, which are offered in vast numbers on online platforms, are very often inferior products that do not meet the minimum requirements of CE or EMC standards.

For the reasons mentioned above, it is also impossible for us to carry out our own market analysis and say whether this or that device is suitable.

Approved mobile power supplies (rechargeable batteries)

The frequently used lead batteries have a nominal voltage of 12V. Whether these are starter batteries, model batteries or similar systems is not important here. The chemical processes (lead-acid, lead-gel, AGM etc.) are also irrelevant in this case.

However, if these batteries age, are partially discharged or are used at low temperatures, the voltage can drop to values that are no longer compatible with the mount electronics. Especially at low temperatures, mounts also have an increased power demand.

Lithium iron phosphate batteries (LiFePo4), which have a higher nominal voltage of 12.8 V and a much flatter discharge characteristic, are better in this case. "Power banks" that have a regulated output voltage can also be a good choice. Due to previous negative experiences, we only allow the mobile power supplies that we have tested and that are linked in the accessories section of the shop presentation of the mount.

The following applies to both power supply units and mobile power supplies: As this is increasingly causing damage to the mount electronics, we can no longer approve the use of power supplies that are not distributed by us. Guarantee and warranty claims are therefore excluded for damage caused by such items from third-party suppliers, even if the power supply is within the general parameters of the manufacturer's operating instructions. This applies in particular and without exception to products from the manufacturer Sky-Watcher, see below (1)

Power cable

Ensure a secure electrical connection between the power source and the device. Loose contacts not only interfere with operation, but can also damage the electronics due to induced voltage peaks. Based on our many years of experience, we take a critical view of so-called "cigarette lighter plugs". The positive pole consists of only one tip, which is pressed against a small plate and the pressure is rather random. The cross-section of the contact is minimal here and is only a fraction of a square millimeter. As a result, there are contact resistances and also interruptions when the cable is moved. A better system is the hollow plug recommended by us, which is already used by many manufacturers on the power banks. We offer suitable connection cables for your mount.

Connection sockets

RJ sockets ("Western plugs") are used on many mounts. These have the advantage that they are easy to connect and protected against polarity reversal. However, it can happen that external devices are plugged into the wrong socket, especially in the dark. This can damage electronic components on both sides if, for example, a PC interface cable is plugged into the autoguider socket. All connections should therefore be made in (flashlight) light if possible. It is also advisable to cover unused sockets with insulating tape or similar. This will also protect them from moisture.

Interference due to radio frequency interference

Every unshielded cable is an antenna through which high-frequency radiation can be received and conducted into electronic assemblies. This often results in interference that cannot be reproduced by us after a complaint. Cheap switching power supply units without appropriate protective measures are particularly strong sources of such interference radiation, as they do not comply with the EMC guidelines (EMC = electromagnetic compatibility).

Even with high-quality power supply units, such effects cannot be completely ruled out. To protect the electronics of cameras, mounts etc., we recommend:

- Do not lay power and data cables closely parallel or crossed, better separate them
- High-frequency interference can be "filtered out" quite effectively using ferrite chokes mounted on the power and data cable close to the device.

(1) Warranty claim for Skywatcher Goto mounts

In principle, the manufacturer's warranty conditions and the statutory warranty claims apply. However, as we are the contractual partner of the buyer for the goods sold by us, we are also responsible for warranty claims. Our experience from previous sales has shown that the use of low-quality power supplies that are not sold by us often results in damage to the mounting electronics that can be clearly attributed to the power source. As these are beyond our control, we cannot accept any liability for their use. The warranty therefore only applies if Sky-Watcher mounts are operated exclusively with power sources recommended by us.

„Hot plugging“

This term refers to the plugging in or unplugging of electrical connections during operation. This can lead to high voltage peaks that can destroy devices. Therefore, please never disconnect or connect electronic devices during operation. Always make all connections first when the appliance is switched off, then switch it on. Conversely: first switch off, then disconnect.

Only USB cables may be connected or disconnected when the system is switched on. In the latter case, the device must first be logged off from the operating system ("Eject USB device") to avoid damage and data loss.

Please note:

- Damage caused by unsuitable power supplies or cables is not covered by the warranty. ICs and transistors destroyed by reverse polarity, overvoltage or overcurrent are relatively easy to detect.
- If possible, use separate power supplies for different devices. If several mechanically connected devices (e.g. a mount and an astro camera) are operated from one power source, i.e. are not electrically isolated from each other, this can lead to malfunctions and damage due to ground loops.

You are welcome to contact us if you have any questions:

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