



Introducing the Paramount Series 6 German Equatorial Mounts



Since 1996, Paramount™ mounts have set the standard for stability, performance, and reliability. The latest Paramount Series 6 models offer the following refinements, enhancements, improvements, and changes. The table on page 6 shows a side-by-side comparison of the features and changes in the Paramount Series 6 versus earlier models.

Updated Telescope Control System

The MKS 6000™ is Software Bisque's latest dual-axis DC servomotor telescope control system (TCS) for gear-driven Paramount mounts. The MKS 6000 TCS features:



Expanded Communication Options: Includes USB-C, Ethernet, and Wi-Fi for computer to mount communication.

Improved Reliability: Use either the USB-C or Ethernet ports for hard-wired communication. Or, with a Wi-Fi enabled device, wirelessly control the mount (supports ad hoc and infrastructure networks).



MKS 6000 is Compatible with Earlier Models: Upgrade kits are available for earlier model Paramount MYT, MX+, and ME II mounts. The latest information about upgrade kits is available at <https://www.bisque.com/6K>.

Paramount Series 6 with Optional On-Axis Absolute Rotary Encoders Now Available



On-Axis Rotary Encoder Features:

- ✓ Mechanical mount initialization (or *homing*) is not required.
- ✓ No periodic error.
- ✓ Exceptional pointing and tracking results using fewer TPoint™ calibration points.
- ✓ 26-bit Renishaw absolute rotary encoders have 0.02 arc second precision provide optimal performance.
- ✓ The extended temperature range (ETR) Renishaw encoder read heads can operate between -40°C and $+80^{\circ}\text{C}$.
- ✓ Rotary encoders can be installed at the factory or in the field.
- ✓ Renishaw encoder communication directly supported by the MKS 6000.

Before January 1, 2024, Software Bisque offered optional absolute on-axis encoders on the following gear-driven Paramount models:

- Paramount ME II
- Paramount Taurus 400
- Paramount Taurus 500

These models used Renishaw **tape encoders** that are affixed directly to the gears. The MKS 5000 PCB also required an optional WiSky printed circuit board to read the standard BiSS protocol used by Renishaw encoders. The MKS 6000 PCB has built-in inputs for BiSS encoder communications (see Figure 1), so it can read all sizes and types of Renisha encoders. Software Bisque adds the proper connector to the Renishaw encoders read heads to make them compatible with the MKS 6000.

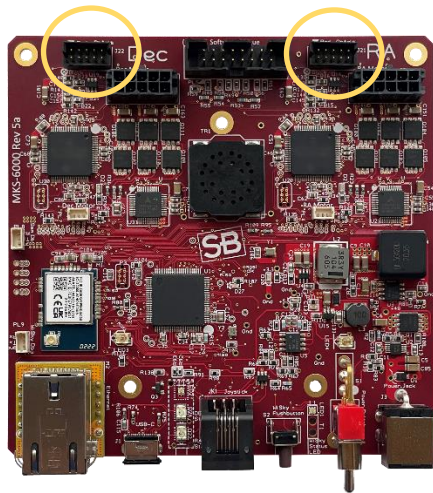


Figure 1: Location of the BiSS encoder input ports on the MKS 6000.

The redesigned Paramount Series 6 models (MYT, MX, ME, and Taurus 400) offer optional on-axis absolute **rotary encoders** that can be installed at the factory or later in the field. The table below shows the size of the rotatory encoders for each model mount.

| Paramount Series 6 Model | Rotary Encoder Size |
|--------------------------|------------------------------|
| MYT | 75 mm on each axis |
| MX | 100 mm encoders on each axis |
| ME | 100 mm encoders on each axis |
| TAURUS 400 | 100 mm encoders on each axis |

TheSky Universal Software Bundle



All Paramount Series 6 mounts now include TheSky Universal bundle software. Out of the box, you'll receive *TheSky Professional* edition, the *Cameras+* module, *Domes* module, *TPoint* module, and *Weather* modules. Additionally, the included *Multi-OS+* module lets you install TheSky on macOS™, Ubuntu™ Linux (ARM64), Ubuntu™ Linux (x86_64), and Windows™ operating systems.



Improvements and Enhancements

MYT and MX Increased Carrying Capacity

- The Paramount MYT Series 6 has larger internal bearings to provide exceptional stability for heavier payloads (see page 6).
- The Paramount MX Series 6 has a larger declination axis that gives a direct and easy route to run cables through the mount with increased stability.

The Paramount ME Series 6 carrying capacity is unchanged (see the table in the section “*Paramount Series 6 vs. Paramount Classic Models*” below).

Improved Versa-Plate™ Telescope Mounting Adapter

- Includes four integrated clamping knobs that securely captivate the telescope dovetail.
- Like the Paramount MYT, the Paramount MX Versa-Plate has slotted mounting holes to make finding the ideal balance point easier.
- The drop-in dovetail design makes attaching the telescope much simpler.
- The Instrument Panel can be mounted to either end of the Versa-Plate, placing the power connectors and pass-through Ethernet port close to your equipment.

Streamlined Instrument Panel: The redesigned lower-profile Instrument Panel includes three XT60 power connectors are capable of delivering up to 30A at 500V max power, an Ethernet port for mount control and ample room your USB 3 cables for USB 3-based CMOS cameras.

Updated Through the Mount Power Solution and Cabling: The base of the hour angle axis includes one XT60 power connector, one pass through Ethernet port, and one Keystone module that accepts low-voltage power jacks, CAT6 ports, USB ports and other connectors.

New Polar Axis Altitude Adjuster (Paramount MX Series 6 Only)

- The Paramount MX Series 6 incorporates the same step latching altitude adjustment mechanism found in the classic Paramount MYT. The adjuster makes large scale polar axis elevation adjustments more convenient.
- The polar axis can access latitudes between 0° to 70°.

Relocated Axis Locking Knobs

- The altitude and azimuth locking knobs are now on the gear covers, with axis locking holes at 10-degree increments to make locking the axis during setup easier.
- The wider locking knob is easier to grasp and rotate.

Durable External Finish. The red components are powder coated for a durable, fade-resistant finish. The black components are anodized.

Spring-Captivated Power Input Port



The 48V DC power in port and the DC power supply connector are new. Together they provide greater physical contact and require a greater force to insert and remove the barrel from the port. While the MKS 5000 power in connector employed a *single spring* to captivate the barrel connector, MKS 6000 connector uses *six separate springs* to captivate the barrel connector. The barrel connector also has two clamping leads that offer a firm connection to the center tip. This means the force required to pull the plug out of the connector is many times greater than typical DC barrel connectors and ensures consistent electrical contact.

On some of the classic models, the barrel connector was captivated with a threaded ring and could only be removed by unscrewing the ring by hand. While the new style connector will remain in place during normal operation, if the power cable ever gets snagged or tripped over, the connector will safely separate from the input power port without causing damage.

Operational Changes

New Homing Position

- The mechanical home position on Paramount Series 6 gear-driven mounts is hour angle 0, declination 0 when the telescope is on the east side of the pier.
- The home position on all earlier Paramount models is hour angle 2, declination 0 when the telescope is on the west side of the pier.

Note that Paramount Series 6 mounts with optional on-axis absolute encoders do not need to be homed.

Drop-In Dovetail on the Versa-Plate

The Versa-Plate dovetail on pre-Series 6 mounts required the you to align the male dovetail on the telescope with one end of the Versa-Plate, then slide the telescope into place. The dovetail on the Paramount MYT and MX Versa-Plate is wider to make installing the telescope easier. The entire length of the male dovetail can be placed on the bottom edge of the Versa-Plate's female dovetail, and then the telescope can be rotated in place, then captivated using four brass plungers.

Paramount Series 6 vs. Paramount Classic Models

The table below lists the significant changes between the Paramount Series 6 and the classic models.

| Feature | MYT Series 6 | MYT Classic | MX Series 6 | MX+ | ME Series 6 | ME II |
|---|--------------------------------------|---|--------------------------------------|---|--------------------------------------|--|
| Telescope Control System | MKS 6000 | MKS 5000 | MKS 6000 | MKS 5000 | MKS 6000 | MKS 5000 |
| Optional On-Axis Absolute Encoders | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| Maximum Carrying Capacity (telescope) | 70 lb. (32 kg) | 50 lb. (22 kg) | 125 lb. (56 kg) | 100 lb. (45 kg) | 240 lb. (109 kg) | 240 lb. (109 kg) |
| Total Carrying Capacity (telescope+ counterweights) | 140 lb. (64 kg) | 100 lb. (45 kg) | 250 lb. (113 kg) | 200 lb. (90 kg) | 480 lb. (218 kg) | 480 lb. (218 kg) |
| Mount Weight (counterweight shaft removed) | 35 lb. (16 kg) | 34 lb. (15 kg) | 54 lb. (24 kg) | 50 lb. (23 kg) | 85 lb. (38 kg) | Est. 85 lb. (38 kg) |
| Included Software ¹ | TheSky Universal Bundle ¹ | Paramount MYT Software Suite ² | TheSky Universal Bundle ¹ | Paramount MX+ Software Suite ³ | TheSky Universal Bundle ¹ | Paramount ME Software Suite ⁴ |

| Feature | MYT Series 6 | MYT Classic | MX Series 6 | MX+ | ME Series 6 | ME II |
|---|--|--|--|--|--|--|
| Versa-Plate and Instrument Panel Ports | <ul style="list-style-type: none"> Drop-in dovetail locking knobs Four dovetail locking knobs Three XT60 power connectors Pass-through Ethernet port | <ul style="list-style-type: none"> Slide-in dovetail Three dovetail locking knobs Auto-guider port Pulse focuser port 12V and 5V power out ports Two USB 2.0 ports Auxiliary power out port | <ul style="list-style-type: none"> Drop-in dovetail locking knobs Four dovetail locking knobs Three XT60 power connectors Pass-through Ethernet port | <ul style="list-style-type: none"> Slide-in dovetail 3 dovetail locking knobs Auto-guider port Pulse focuser port 12V and 5V power out ports Two USB 2.0 ports Auxiliary power out port | <ul style="list-style-type: none"> Drop-in dovetail locking knobs Four dovetail locking knobs Three XT60 power connectors Pass-through Ethernet port | <ul style="list-style-type: none"> Slide-in dovetail Three dovetail locking knobs Auto-guider port Pulse focuser port 12V and 5V power out ports Two USB 2.0 ports Auxiliary power out port |
| Electronics Box | <ul style="list-style-type: none"> Ethernet port USB-C port Wi-Fi antenna Spring-captivated power connector | <ul style="list-style-type: none"> USB Mini-B connector Optional Wi-Fi Threaded power barrel connector | <ul style="list-style-type: none"> Ethernet port USB-C port Wi-Fi antenna Spring-captivated power connector | <ul style="list-style-type: none"> USB Mini-B connector Optional Wi-Fi Threaded power barrel connector | <ul style="list-style-type: none"> Ethernet port USB-C port Wi-Fi antenna Spring-captivated power connector | <ul style="list-style-type: none"> USB Mini-B connector Optional Wi-Fi Threaded power barrel connector |
| Through the Mount Power | XT60 input to three XT60 output connectors on the Instrument Panel | 1A 5V/12V 2.1 mm port, plus a Kycon-connector through the mount power | XT60 input to three XT60 output connector on the Instrument Panel. | 1 A 5V/12V 2.1 mm port, plus a Kycon-connector through the mount power. | XT60 input to three XT60 output connector on the Instrument Panel. | 1 A 5V/12V 2.1 mm port, plus a Kycon-connector through the mount power. |
| Home Position | HA 0 Dec 0 | HA 2 Dec 0 | HA 0 Dec 0 | HA 2 Dec 0 | HA 0 Dec 0 | HA 2 Dec 0 |
| 48V DC Power Input Port Captivation | Six internal springs hold the barrel connector in place | Barrel connector threads into power port | Six internal springs hold the barrel connector in place | Barrel connector threads into power port | Six internal springs hold the barrel connector | Six internal springs hold the barrel connector in place |

| Feature | MYT Series 6 | MYT Classic | MX Series 6 | MX+ | ME Series 6 | ME II |
|--|--|---|---|---|--|---|
| Polar Axis Elevation Adjustment | Same as MYT Classic | <ul style="list-style-type: none"> Coarse adjustment: Manually raise or lower the polar axis to the approximate latitude. Fine adjustment: Rotate a fine-threaded knob. | <ul style="list-style-type: none"> Coarse adjustment: Manually raise or lower the polar axis to the approximate latitude. Fine adjustment: Rotate a fine-threaded knob. | Rotating jacking screw | Same as ME II | Rotating jacking screw |
| External Finish | Red components are powder coated; black components are anodized aluminum | Red components are anodized; black components are anodized aluminum | Red components are powder coated; black components are anodized aluminum | Red components are anodized; black components are anodized aluminum | Red components are powder coated; black components are anodized aluminum | Red components are anodized; black components are anodized aluminum |
| Axis Locking Positions | Lock axes in 10-degree increments in both HA and Dec. | Lock axes at 90-degree increments in both HA and Dec. | Lock axes in 10-degree increments in both HA and Dec. | Lock axes at 90-degree increments in both HA and Dec. | Lock axes in 90-degree increments in both HA and Dec. | Lock axes in 90-degree increments in both HA and Dec. |
| Location of Axis Locking Knobs | On the HA and Dec axes | On the worm block | On the HA and Dec axes | On the worm block | Same as ME II | Install separate locking bolts |

¹The Universal bundle includes *TheSky Professional*, *Cameras+* module, *Domes* module, *Multi-OS+* module, *TPoint* module and the *Weather* module. After the first year, an optional annual subscription is \$200.

²The Paramount MYT Software Suite included *TheSky Professional*, *Cameras+* module, *Multi-OS+* module, and *TPoint* module. The optional annual subscription renewal is \$100.

³The Paramount MX+ Software Suite included *TheSky Professional*, *Cameras+* module, *Multi-OS+* module, and *TPoint* module. The optional annual subscription renewal is \$100.

⁴The Paramount ME Software Suite included *TheSky Professional*, *Cameras+* module, *Domes* module, *Multi-OS+* module, and the *TPoint* module. The optional annual subscription renewal is \$100.

Paramount Series 6 Frequently Asked Questions

Q. When will Paramount Series 6 mounts start shipping?

A. Visit <https://www.bisque.com/series6> for the latest shipping status.

Q. What is an XT60 power connector?

A. XT60 power connectors are typically found in solar panels, electronic bicycles, and RC vehicle wiring systems. They are rated to carry up to 500V at 30A maximum (15 KW) and accept 12 AWG wires. They can handily carry all the 12V DC power that is needed by the astronomical equipment on your telescope. Pre-made cables with XT60 connectors are widely available and affordable. Search the web for “*XT60 connectors*” for more information.

Q. Can the earlier model Paramount mounts be upgraded to use the MKS 6000?

A. Yes. The latest information about the upgrade kits is available at <https://www.bisque.com/6K>.

Q. Can the earlier Paramount MYT, MX and MX+, ME and ME II models be upgraded to accept absolute on-axis encoders?

A. No. The Paramount Series 6 models have been redesigned to accept the Renishaw absolute rotatory encoders. The Paramount ME II is the only mount that can be upgraded to use *tape* encoders.

Q. If I purchase a Paramount Series 6 model without the optional on-axis absolute encoders, can they be installed later?

A. Yes, *Paramount Series 6 mounts*, only, can be retrofitted with the optional on-axis absolute ring encoders.

Q. Does the Paramount have an external SBIG ST-4-style autoguider port?

A. No. When autoguiding, TheSky’s Direct Guide™ autoguider “relay” issues autoguider corrections directly to the MKS 6000 TCS. Autoguider ports and failure-prone autoguider cables are not required. Third-party automation software accesses Direct Guide through TheSky’s scripting interface.

Q. Does the Paramount mount include software?

A. Yes, all Paramount mounts include Software Bisque’s *Universal bundle* that includes TheSky Professional edition, the Cameras+ module, the Domes module, the TPoint™ module, and the Weather module. Also included is the Multi-OS+ module that lets you install TheSky on macOS™, Ubuntu™ Linux (ARM64), Ubuntu™ Linux (x86_64), and Windows™ operating systems.

Q. Are the on-axis absolute ring encoders compatible with older model Paramount mounts?

A. No, Paramount Series 6 models, only, can accept the on-axis absolute encoder components.

Q. Do you have a trade-in program for earlier Paramount models?

A. At this time, Software Bisque does not presently have a Paramount trade-in program.

Q. When upgraded with the MKS 6000, will the earlier Paramount models have an increased maximum weight capacity?

A. No. The maximum weight capacity of the Paramount Classic models remains the same. See the *Paramount Series 6 vs. Paramount Classic Models* table above for a side-by-side comparison.

Q. Can the Paramount ME II or Taurus mount with tape encoders be upgraded to the MKS 6000?

A. Yes, with the following caveat. Upgrading these model mounts requires that the connectors on the existing encoder read heads to be modified for the MKS 6000. As this process requires expensive crimping tools for the very small terminals to the end of the wires, Software Bisque strongly recommends returning the mount to the factory so that our technicians can perform the MKS 6000 upgrade and encoder cable conversion.



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