

# FIRST light Mesu-Mount 200

**SKY SAYS...**  
The Go-To was very accurate, with test stars appearing near the centre of our CCD sensor each time

Don't let its industrial appearance and exposed bolts fool you; this mount is a triumph of design and engineering

WORDS: STEVE RICHARDS

## VITAL STATS

- **Price** £4,899
- **Load capacity** 100kg visual, 75kg imaging
- **Hand controller** SiTech wired eight-button handset
- **Database** 45,516 objects
- **Flash upgradeable** Yes
- **Autoguider port** ST4
- **Tripod** None supplied
- **Weight** Mount 25.7kg, Counterbalance bar 4.8kg
- **Supplier** Modern Astronomy
- **www.** modernastronomy.com
- **Tel** 020 8763 9953

The Mesu-Mount 200 is unlike any other mount you will have seen before. Finished in stainless steel, black silk powdercoat and anodised alloy, it is a triumph of function over form. If you insist on sweeping curves and soft edges, you won't find them here, but what you will find is solid, high-quality engineering. This mount is a pure engineering solution to a well-established problem – how to accurately locate and track celestial objects.

When the Mesu-Mount 200 was originally released it shipped with a ServoCat mount controller for basic operation and an Argo Navis Digital Telescope Computer hand controller to add full Go-To functionality. Although this system worked very well, there were calls for full robotic control from imagers who required greater computer integration. Mesu listened to this feedback – the latest version reviewed here comes with the well-respected and versatile SiTech Servo II controller from Sidereal Technology.

The SiTech controller is a customisable system comprising an electronic interface and processor, ASCOM-compatible but slightly quirky mount control software and a simple hand controller. Various additional software tools are included to implement 'plate solving' (a very accurate method of determining exactly where your telescope is

pointing) software-assisted polar alignment and automatic multi-point sky modelling. Each of these helps to improve the mount's Go-To accuracy.

Lifting the mount onto a pier or tripod is really a two-person task, as it weighs 25.7kg. However, assembly was straightforward, requiring approximate adjustment for your latitude, the attachment of the optional Losmandy- or Vixen-compatible saddle clamp using four socket head bolts and the positioning of a 40mm-diameter counterweight bar into the base of the declination axis. The counterbalance bar has a neat 'detent', a device that stops it from sliding out of the mount head, and an undercut and toe protector to ensure that the counterbalance weights cannot inadvertently slip off. The mount is attached to the optional mounting plate with a single central 12mm bolt. Counterweights are not included as standard, but are available in various weights from third-party suppliers. Chrome-plated 5kg and 10kg Geoptik weights were supplied for the purposes of this review.

## Technical prowess

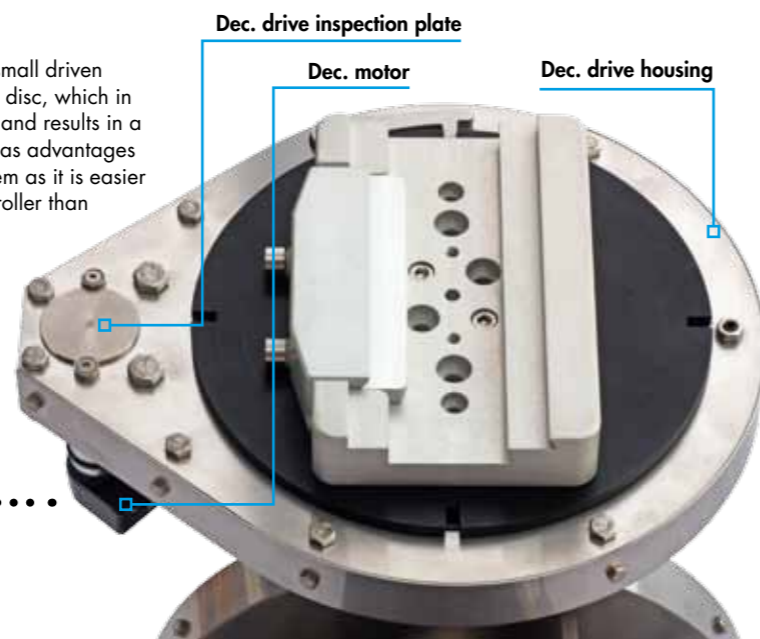
A bracket-mounted polarscope is available as an optional extra, but as this wasn't supplied with the review unit we used the SiTech's built-in polar alignment routine and achieved a satisfactory

## THE ART OF FRICTION

Most mounts use worm gears to drive the axes, but no matter how well engineered the gear system may be, there is never a perfect mesh between the teeth of the various gears. Coupled with the machining tolerances, the presence of a thin layer of lubricating grease means there will always be some backlash in the system.

Imperfections in the manufacturing process result in periodic error and although this can largely be corrected by autoguiding, backlash can never be completely eliminated which makes guiding more difficult. Rather than worm gears, the Mesu-Mount 200

uses a friction drive – a small driven roller driving a reduction disc, which in turn drives the main disc and results in a 2000:1 reduction. This has advantages over a conventional system as it is easier to machine an accurate roller than it is a worm drive and backlash is completely eliminated, resulting in a very rigid drive system. Low-current servo motors are used to drive each axis and Mesu claims a periodic error of just 4 arcseconds peak to peak.



## DUAL ENCODERS

Both axes have two encoders, an eight million tic/revolution encoder on the motor and a 10,000 tic/revolution encoder on the axis shaft. These high-precision encoders work with the SiTech controller to ensure that the axes move very accurately when tracking and performing Go-To slews.

## SITECH CONTROLLER

The SiTech Servo II has a plethora of connections to control the mount, while inputs from up to four encoders can be analysed to correct the drive's motion. A standard ST4 compatible autoguiding port, RS232 port and a USB port are also included.

## MOUNTING PLATE

A supplied optional mounting plate allows you to attach the Mesu-Mount 200 to a pier, but – recognising that it is a natural upgrade to the popular NEQ6 mount – the plate has been drilled and countersunk so it can be installed on an EQ6 tripod or compatible pier head. The plate also retains the azimuth adjustment post.

## ALTITUDE ADJUSTMENT

Altitude adjustment from the equator to the zenith is achieved by altering the position of a substantial eyebolt on a quadrant-shaped plate with mounting holes tapped at 10° intervals. Fine adjustment is made using two knurled knobs working against a fixed post on the side of the mount.

# FIRST light

**SKY SAYS...**

Now add these:

1. Illuminated polarscope
2. Mains power supply
3. Heavy-duty portable tripod



**HAND CONTROLLER**

The eight-button hand controller has no built-in memory, but hides several features that become available depending on which mode the mount is operating in. With the exception of Go-To, the mount can even be fully operated without being connected to a computer using this device.



► alignment. Adjusting the altitude and azimuth settings was extremely easy using the substantial knurled knobs, having first selected the correct mounting hole for the eyebolt in the stainless steel altitude quadrant.

The unusual friction drive is permanently connected, so there are no clutches as such, but the right ascension and declination axes can be locked by engaging two rotating, key-shaped hooks, which slot into matching cut-outs in each axis. With the hooks disengaged, the axes rotate freely, allowing accurate balancing to be carried out after the telescope has been attached. As the friction drive eliminates backlash, it is not necessary to offset the balance for autoguiding as you have to with a worm gear drive.

After carrying out a basic two-star alignment the Go-To was very accurate, with test stars appearing near the centre of our CCD sensor each time. Go-To accuracy was further improved by adding more alignment stars.

The Mesu-Mount 200 will be of particular interest to astrophotographers so we were keen to see how it lived up to its specification regarding periodic error, which has a large effect on image quality and star shapes. The lower the periodic error the better and in our tests we measured this at 4.37 arcseconds peak to peak (1.22 arcseconds root mean squared), which was an excellent result close to the manufacturer's claim. We would highly recommend this mount to any advanced astrophotographer wishing to make the leap to a true observatory-class imaging mount. **S**

**VERDICT**

ASSEMBLY	★★★★★
BUILD AND DESIGN	★★★★★
EASE OF USE	★★★★★
GO-TO ACCURACY	★★★★★
STABILITY	★★★★★
OVERALL	★★★★★

ALL PHOTOS: STEVE RICHARDS