

# MIRI MRS Target Acquisition

The [MIRI medium-resolution spectrometer \(MRS\)](#) requires target acquisition (TA) procedures for point sources, and may be used with or without target acquisition for extended sources.

## Target acquisition for MIRI MRS mode

*Parent pages: [MIRI Operations](#) → [MIRI Target Acquisitions](#)*

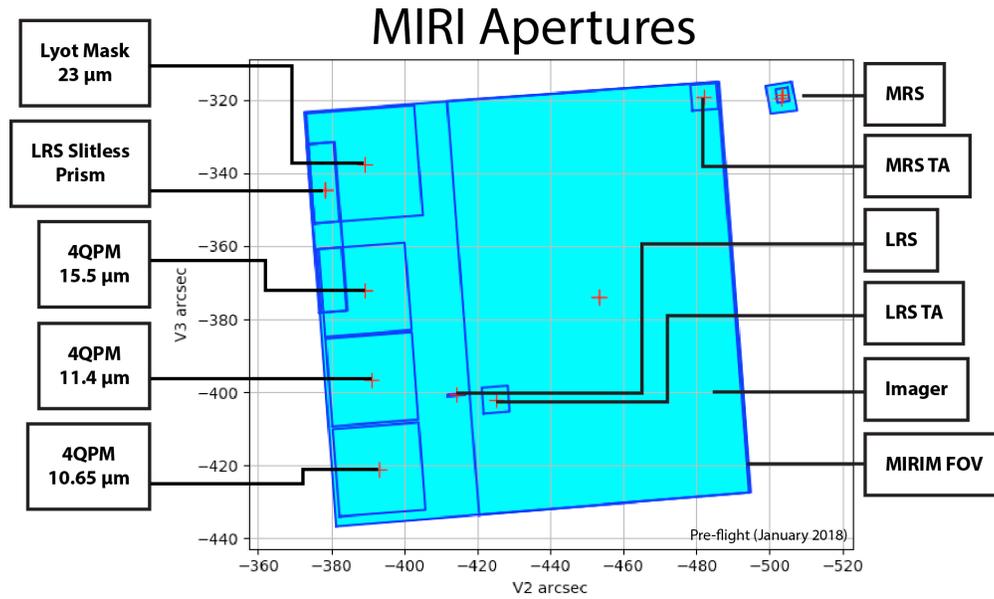
Observers using the MIRI [medium-resolution spectrometer \(MRS\)](#) [integral field unit \(IFU\)](#) may wish to use a target acquisition (TA) procedure to refine the blind [JWST pointing accuracy](#) prior to science observations, especially at the shortest wavelengths. This TA improves the pointing precision of the MIRI MRS to 90 mas (1- $\sigma$  radial), which is approximately the half width of a slice at the shortest wavelength. TA may be performed with the [FND](#), [F560W](#), [F1000W](#) and [F1500W](#) filters. Note that the TA centroiding procedure loses accuracy if the pixels are saturated so a brightness limit ([Table 1](#)) must also be considered for the target.

**Table 1. Saturation limits for MRS target acquisition for sources of a given blackbody temperature**

Filter	300 K hard saturation (Jy)	1,000 K hard saturation (Jy)
FND	4.7	5.5

The MRS target acquisition sequence uses a region of interest (ROI) on the MIRI imager located as close to the MRS as possible to minimize offset distances after target acquisition. As illustrated in Figure 1, a 64 × 64 pixel ROI is defined at the upper right corner of the MIRI imager.

Figure 1. Target acquisition box in MIRI MRS FOV



*The MIRI field of view is shown with the MRS TA box identified in the upper right. The V2 and V3 axes represent a spherical coordinate system measured in arcsec that maps to the sky, where the coordinates are Euler angles. See [MRS coordinate frames](#) for further detail.*

Science targets that are spatially extended should not be used for target acquisition. Instead, bright point sources can be used for target acquisition if they are within 16" of the science target (the TA source position must not require a greater than 40" spacecraft move to put the science target in the IFU; see [Target Acquisition Considerations](#)). This requires accurate coordinates for both the science target and the TA source.

Additionally, some observations with the MRS either do not require or cannot perform target acquisition. Examples of such observations are spectral mapping of extended objects, measurements of faint diffuse targets, or [dedicated background observations](#). APT 25.4.2 now supports this no-TA mode.

## References

Sivaramakrishnan, S. et al. 2006, NGST, DRD#D36177, Rev. B, JWST Pointing Error Allocation and Performance Prediction Analysis