

Ensenso X & XR Product Revision: New goniometer mechanics and 1.6MP models replacing 1.3MP models

Affected Products and Changes:	All Ensenso X30/X36, XR30/XR36 models: <ul style="list-style-type: none"> • X3x-1CP/-1FA: Discontinued, replaced by 2CP/2FA • X3x-5CP/-5FA: New goniometer mechanics • XR3x-2FA: New goniometer mechanics
Type of Product Change:	<ul style="list-style-type: none"> • Revision of Products/Parts • New articles will be provided for X3x-2CP/-2FA models
Document Version:	1.2
Document Release Date:	2021-03-11
Release date of new goniometer mechanics and X3x-2CP, -2FA models:	2021-04-01 (prelim.)
End of sale of X3x-1CP, -1FA models:	2021-06-31

Reasons and overview of the product revision

The Ensenso X/XR mechanics and camera setups will be optimized for image quality, shock resistance, and also harmonized data interface with the following changes:

New goniometer mechanics for CP Rev. 2 and FA cameras

- The new Ensenso X CP camera mounting brackets wrap around the lens mount for CP Rev. 2 cameras and thus provide improved stability in particular for heavy object lenses.
- The revised FA mounting brackets interface the FA cameras from the goniometer side only.

This mechanical revision applies to all Ensenso X and XR 1.6MP and 5MP models.

Improved image quality with 1.6MP resolution sensors

The lower resolution Ensenso X models are switched to the Sony 1.6MP sensor (IMX273, as featured in the Ensenso XR series) in combination with the Fujinon 5MP lenses to support the smaller pixel pitch:

- CP models are revised from 1.3MP uEye CP Rev. 1 cameras to 1.6MP uEye+ CP Rev. 2 cameras, introduced as **2CP models**.
- Likewise, the new **2FA models** bring the 1.6MP uEye+ FA cameras.

Discontinuation of the Ensenso X 1.3MP models

In consequence, the **Ensenso X3x-1CP and 1FA models are discontinued**. To allow a smooth transition to the 2CP/2FA model range, the end of sale date for all 1CP/1FA standard models is chosen ahead in time. Product support and service will remain in place according to IDS terms and conditions.

Detailed description of changes

Below are detailed descriptions of the changes. Further minor mechanical changes should be checked using the CAD models.

Please contact the IDS sales team if required.

Imaging geometry changes

Due to the smaller sensor size, the Ensenso X 2CP/2FA models cover a smaller view field compared to the 1CP/1FA models. Details can be verified using the Ensenso camera selector:

<https://en.ids-imaging.com/ensenso-selector.html>

Please note:

- *Until the selector supports the Ensenso X 2CP/2FA models use the XR-2FA models as reference.*
- *Example comparison: The minimum distance between Ensenso camera and a measurement volume of 1200 x 800 x 500mm is ca. 2000mm for the 2FA models compared to ca. 1500mm for the 1FA models.*

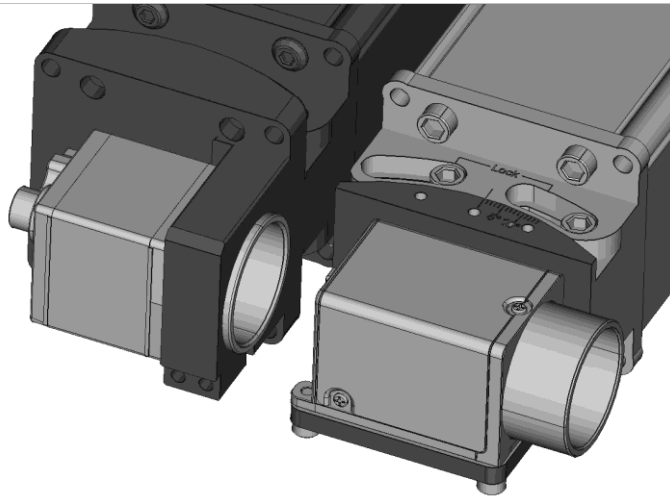
Please note that the 5CP/5FA models offer the largest available view fields and can be considered as alternative.

Change of camera data interfaces

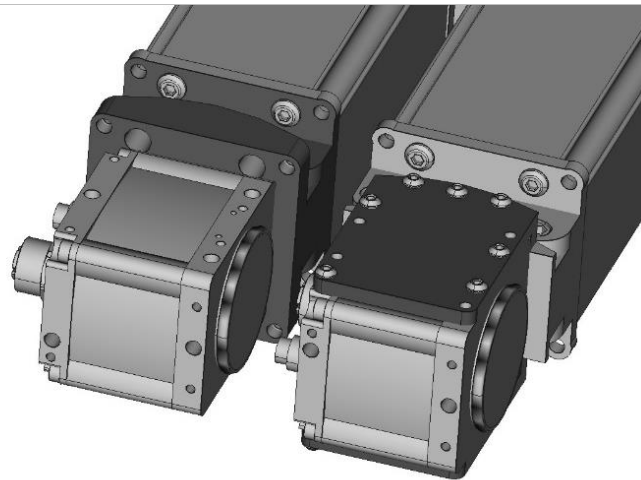
The Ensenso X 2CP/2FA models use the GigE Vision uEye+ cameras and do not require the IDS uEye Software Suite to be installed.

Comparison of goniometer mechanics and camera form factors

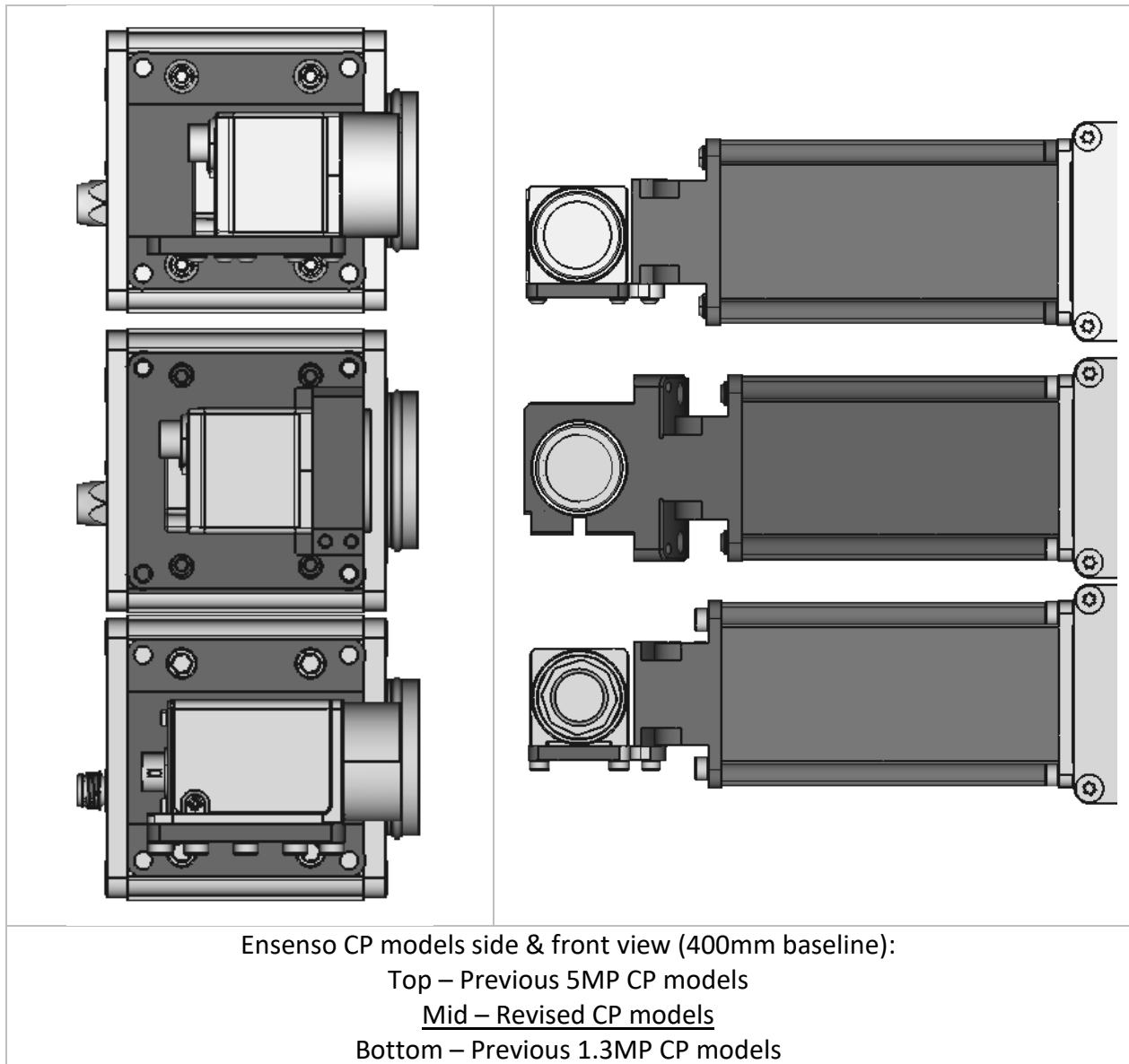
The revised camera mountings have a larger extent in width along the stereo baseline. For the 400mm baseline models, this is compensated for by shorter baseline extensions to achieve almost identical camera positions. Comparison drawings of Ensenso X/XR revised camera mountings and previous versions (no object lenses are shown):



Ensenso CP models (revised version shown left)



Ensenso FA models (revised version shown left)



Differences of lens length, front positions, and diameters

No difference occurs between the 1FA and 2FA models. Due to the revised mechanics and lens models the Ensenso X 2CP models have slightly different lens front positions compared to the 1CP models:

Models	Focal length	2CP lens length	Lens front position difference (pos. = protrusion)	Lens diameter (changes)
X3x-2CP-8/...	8mm	51.5mm	+8.8mm	29.5mm (instead of 42mm)
X3x-2CP-12/...	12mm	51.5mm	-0.2mm	29.5mm (no change)
X3x-2CP-16/...	16mm	51.5mm	+13.3mm	29.5mm (no change)
X3x-2CP-25/...	25mm	46.5mm	+2.5mm	29.5mm (instead of 32mm)
X3x-2CP-35/...	35mm	41.5mm	+0.1mm	29.5mm (no change)

Difference of optical center of cameras

Depending on the stereo baseline, the optical center of the cameras of the Ensenso X/XR 2CP/2FA models are slightly displaced compared to the 1CP/1FA models:

Models	Baseline change / X offset	Y offset
2CP 200mm baseline	Each camera +6mm farther out	+1mm
2CP 400mm baseline	No change	+1mm
2FA 200mm baseline	Each camera +6mm farther out	No change
2FA 400mm baseline	No change	No change

Recommended actions for customers

- For questions regarding last-time orders of Ensenso 1.3MP models please contact the IDS Sales team.
- For existing application setups, please use the detailed change descriptions above to evaluate the switch to the revised Ensenso X/XR models.