

# CBS<sub>5</sub> – CRYO BEARING STAGE 5



## Features

- Non-magnetic
- Spring preloaded roller guides; play free
- 20 mK to 375K, vacuum compatible
- Ask for non-superconducting possibilities
- xyz configurable
- Compact and robust design with large stroke
- Integrated scanner functionality
- Position feedback option -RLS
- Ceramic roller guides

## Description / Applications

The CBS<sub>5</sub> is the smallest model in the CBS series. A non-magnetic and robust linear stage for all-round applications in a cryo-vacuum, which will run both horizontally and vertically. The combination of long range stepping motion followed by short range scanning offers sub-nm positioning over the full range. The ceramic roller guides are spring preloaded, ensuring play free and smooth running from room temperature to cryogenic temperatures.

## Specifications

General info	
Type of motion	Linear, both horizontal and vertical
Dimensions	See drawings below
Operational environmental conditions	20 mK to 375 K, ambient to UHV
Weight	19 g, -RLS adds 1 g
Stepping motion	
Travel range	5,5 mm
Velocity @ 300 K	3 mm/s
Velocity @ 4 K	1 mm/s
Minimal step size @ 300 K	150 nm
Minimal step size @ 4 K	50 nm
Drive voltage	-30 V to 120 V
Scanning motion	
Scanning range @ 300 K	10 μm
Scanning range @ 4 K	2 μm
Minimal step size	Sub-nm
Drive voltage @ 300 K	-30 V to 120 V
Drive voltage @ 4 K	-30 V to 120 V
Forces and load capacity	
Driving force @ 300 K	0,8 N, increased to 2 N for -HF model
Driving force @ 4 K	0,8 N, increased to 2 N for -HF model
Load capacity @ horizontal motion	2 kg
Load capacity @ vertical motion	50 g, increased to 200 g for -HF model
Materials	
Main body	Titanium
Piezo actuator	Low voltage multilayer, ceramic insulated
Linear guides	Ceramic
Model specific information	
-RLS	Resistive Linear Sensor, typical resolution 100 nm RMS
-HF	High Force, to increase driving force to 2 N
Electronics CPSC	
Controller Base Cabinet	CAB
Driver for stepping and scanning	CADM
Position readout	RSM

## Ordering Information

### Available models

CBS5	Cryo Bearing Stage 5
CBS5-RLS	Cryo Bearing Stage 5-Resistive Linear Sensor
CBS5-HF	Cryo Bearing Stage 5-High Force
CBS5-RLS-HF	Cryo Bearing Stage 5-Resistive Linear Sensor-High Force

### Available Options

-HV	Upgrade to High Vacuum compatibility
-UHV	Upgrade to Ultra High Vacuum compatibility (not available for -RLS models)

### Accessories

I1-CBS5	Interface bracket for CBS5, to add z axis on x or xy
I2-CBS5	Tabletop bracket for CBS5 in z-configuration
AKM1	Accessory Kit Mechanical 1
AKE1	Accessory Kit Electrical 1

### Mechanical and electrical information

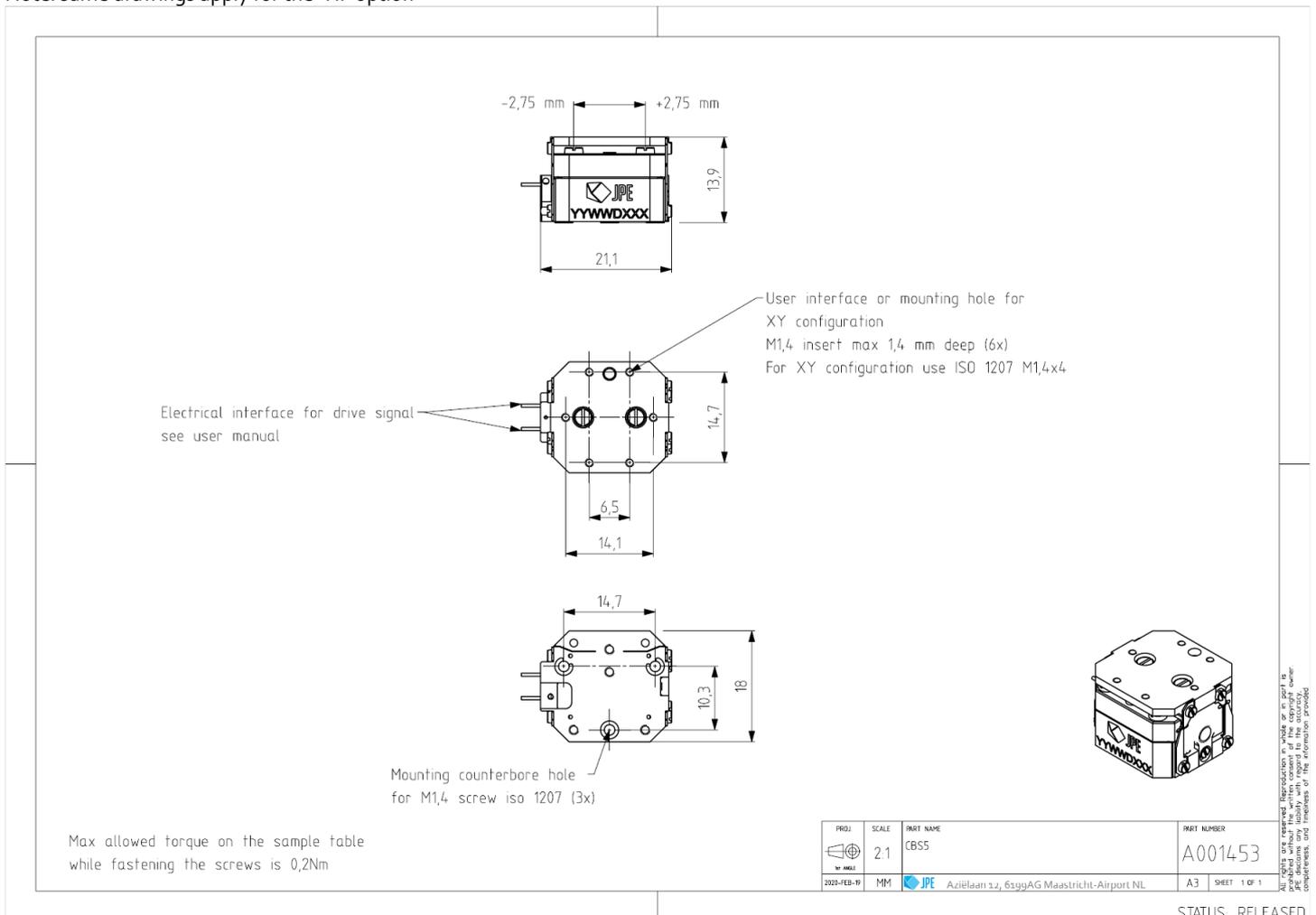
Download 3D step files and manuals from:  
<https://www.jpe-innovations.com/cryo-nano-products/>

### Contact

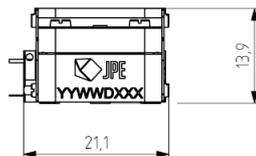
For quotations, specials, or engineering services, please contact us at:  
<https://www.jpe-innovations.com/contact/>

## Drawings

Note: same drawings apply for the -HF option

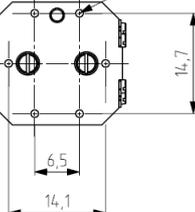


-2,75 mm      +2,75 mm

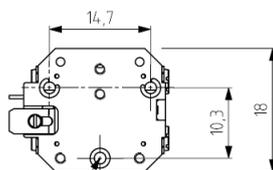


Electrical interface for position feedback  
see user manual

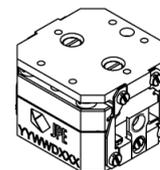
Electrical interface for drive signal  
see user manual



User interface or mounting hole for  
XY configuration  
M1,4 insert max 1,4 mm deep (6x)  
For XY configuration use ISO 1207 M1,4x4



Mounting counterbore hole  
for M1,4 screw iso 1207 (3x)



Max allowed torque on the sample table  
while fastening the screws is 0,2Nm

PROJ. 	SCALE 2:1	PART NAME CBS5-RLS	PART NUMBER A001403
BY 2020-FEB-10	MM	 Aziëlaan 12, 6199AG Maastricht-Airport NL	A3 SHEET 1 OF 1

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