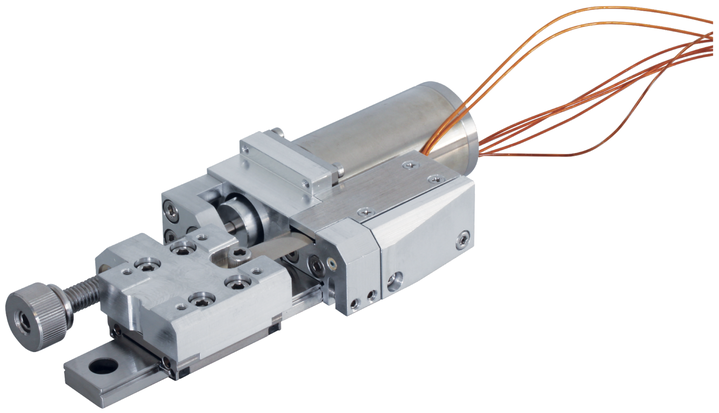
AntRail Extreme



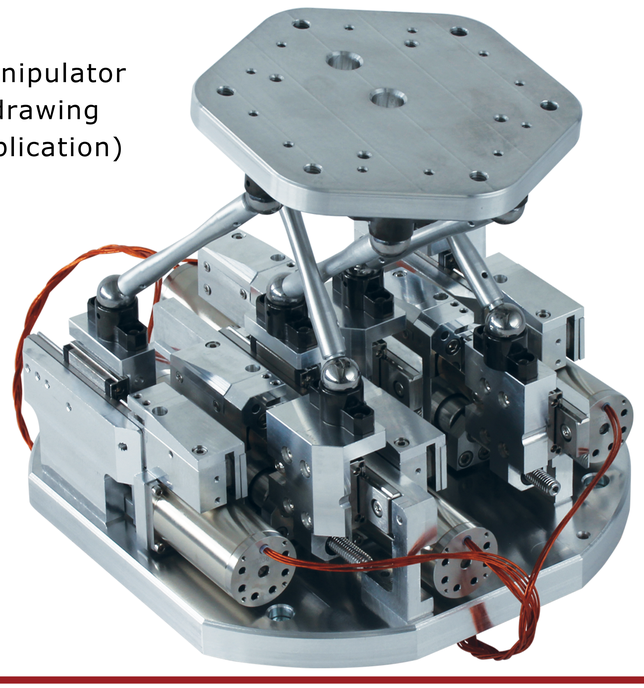
These miniature linear translation stages are designed to run in extreme environmental conditions such as Vacuum, High Vacuum and Ultra High Vacuum; this design matches load capacity, compactness and micro-positioning performances at a competitive price.
Multi-axes assemblies can be done with simple and pre-aligned interfaces for X or XYZ configurations.
The lead screw is non reversible and keeps the position stable even when the motor is off, a knob allows to do manual adjustment which is always very useful in the system mounting operations before connecting the controller.
The material choice allows dry lubrication for highest vacuum requirements.

AntRail Extreme
motorized linear stages

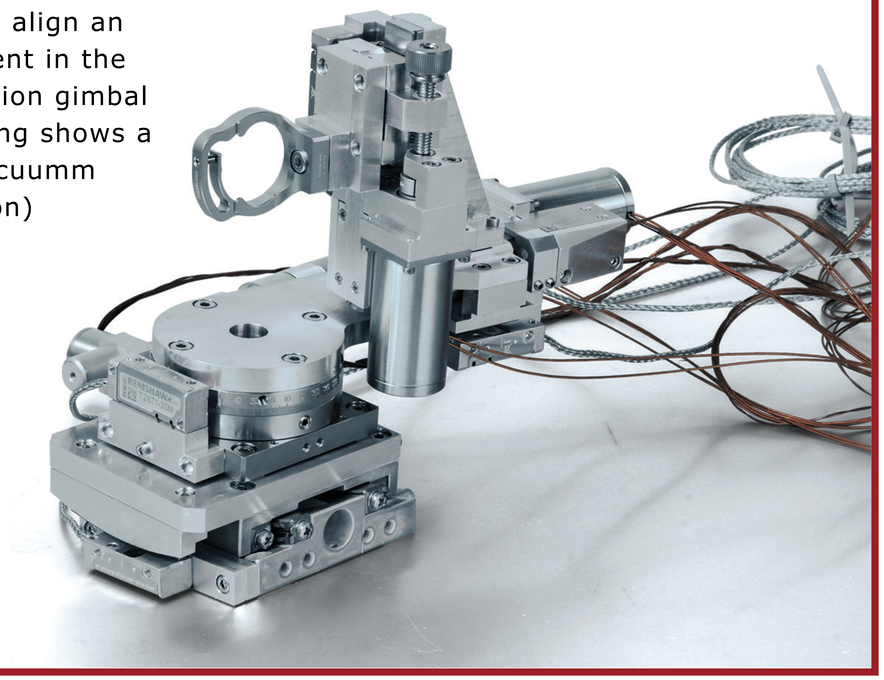
- Vacuum, HV and UHV
- ultra compact and light weight
- high resolution and repeatability
- dry lubrication lead screw
- maintenance free and reliable
- XY and XYZ multi-axes assemblies
- stroke 13, 26, 52 and 104mm
- open and closed loop

- examples of applications -

6DOF parallel kinematic manipulator based on AntRail-M (the drawing shows a High Vacuumm application)



UHV 4 axis CLoop Goniometer: a two axis YZ assembly of AntRail-S-Cloop align an optical component in the center of a precision gimbal mount (the drawing shows a Ultra High Vacuumm application)



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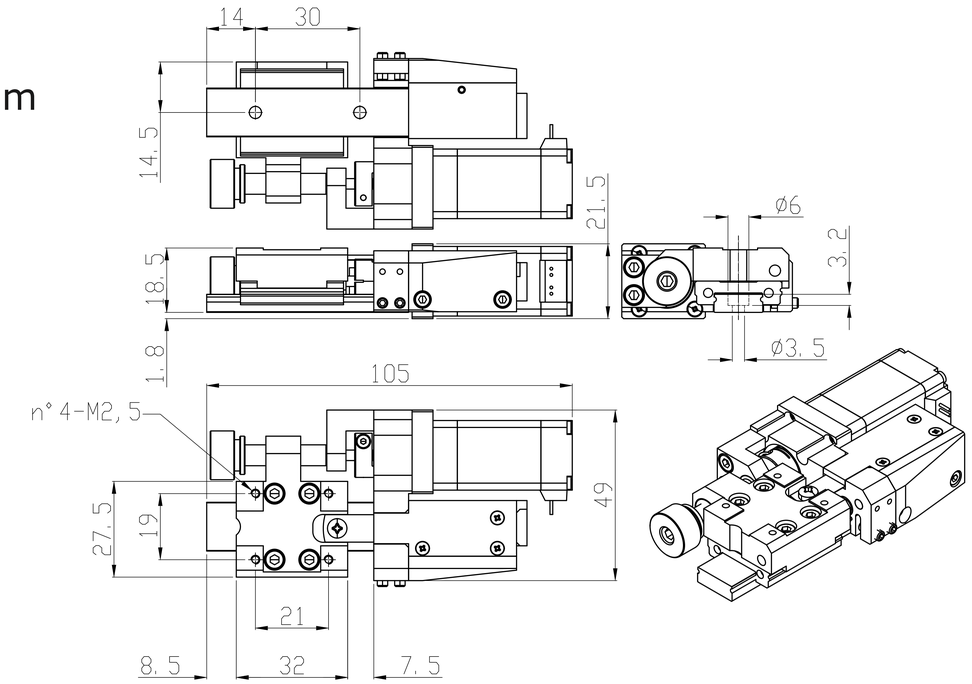
ARX-S-V

AntRail eXtreme Small for Vacuum

Specifications (Typical*)	Value	Unit
Travel range	13	mm
Load capacity (Fz, FY)	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s



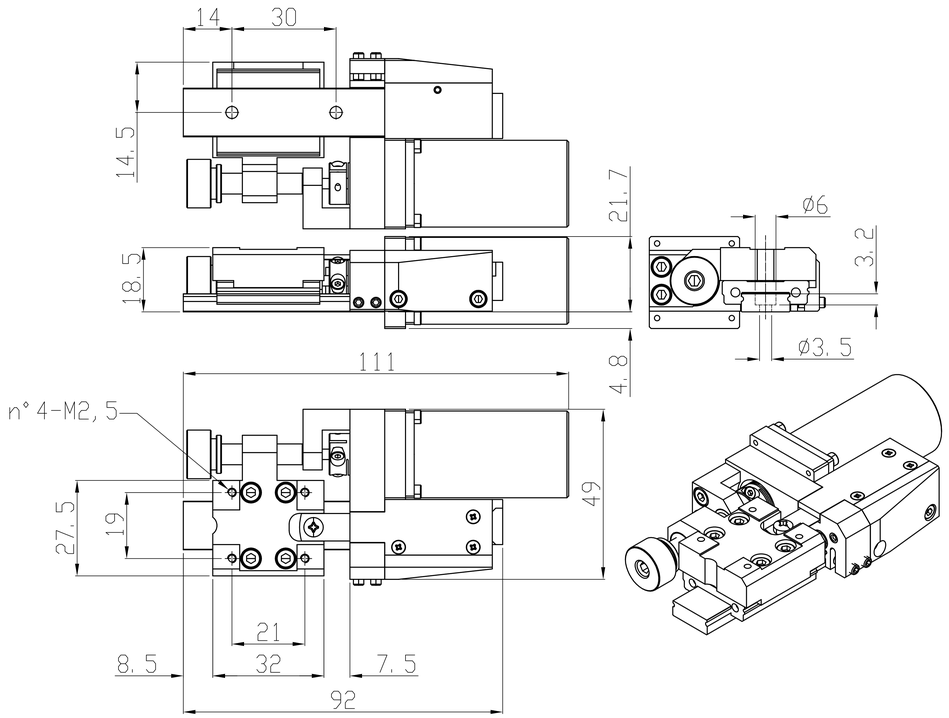
Technical notes

- Vacuum ready for 10^{-6} mbar
- bake-out temperature up to 80°C
- integrated homing sensor
- kapton insulated braided cable to the vacuum feed-through
- dry pre-loaded lead-screw

ARX-S-HV or UHV

AntRail eXtreme Small for High Vacuum or Ultra High Vacuum

Specifications (Typical*)	Value	Unit
Travel range	13	mm
Load capacity (Fz, FY)	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s



Technical notes

- integrated homing sensor
- kapton insulated braided cable to the HV ready for 10^{-7} mbar
- UHV ready for 10^{-9} mbar
- bake-out temperature up to 110°C
- vacuum feed-through
- dry pre-loaded lead-screw

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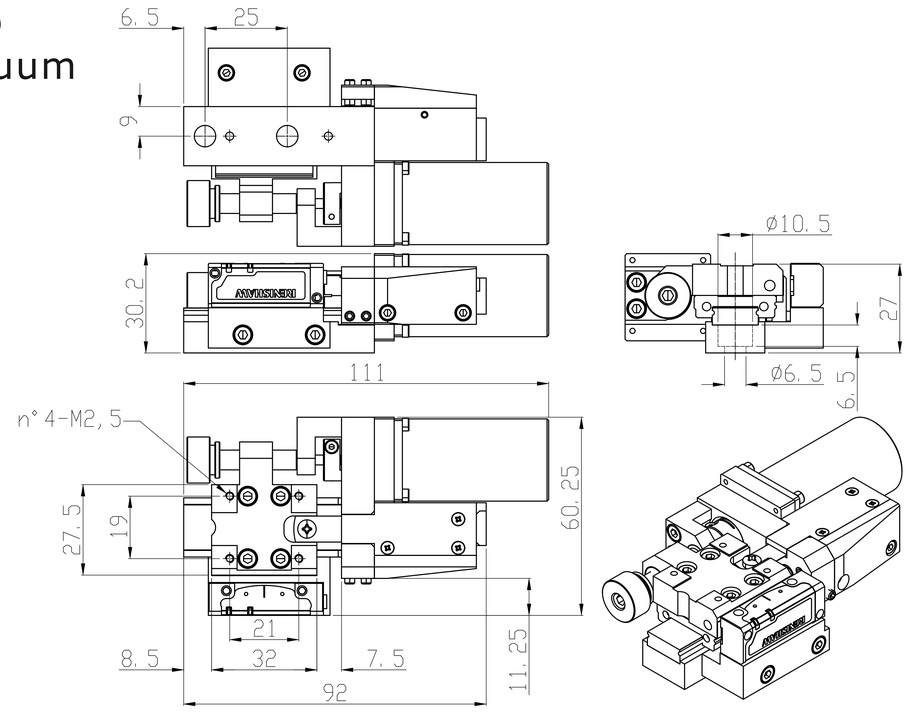
ARX-S-CLOOP-HV or UHV

AntRail eXtreme Small Closed Loop for High Vacuum or Ultra High Vacuum

Specifications (Typical*)	Value	Unit
Travel range	13	mm
Load capacity (Fz, FY)	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s



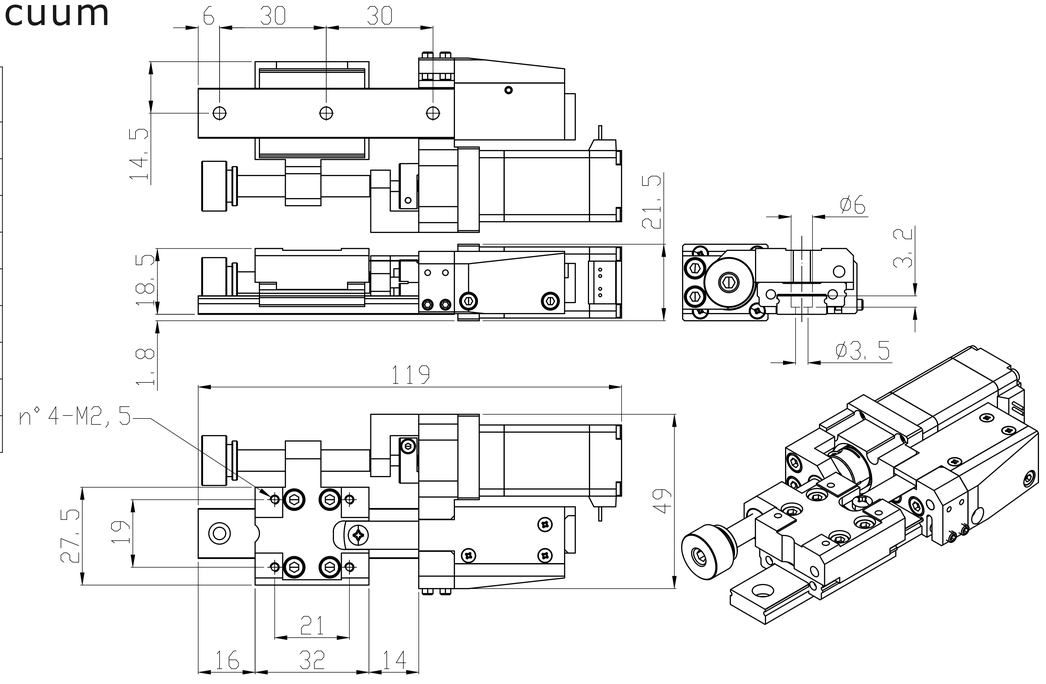
Technical notes

- HV ready for 10^{-7} mbar
- UHV ready for 10^{-9} mbar
- bake-out temperature up to 110°C
- integrated homing sensor
- kapton insulated braided cable to the vacuum feed-through
- dry pre-loaded lead-screw

ARX-M-V

AntRail eXtreme Medium for Vacuum

Specifications (Typical*)	Value	Unit
Travel range	26	mm
Load capacity (Fz, FY)	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s



Technical notes

- HV ready for 10^{-7} mbar
- UHV ready for 10^{-9} mbar
- bake-out temperature up to 110°C
- kapton insulated braided cable to the vacuum feed-through
- dry pre-loaded lead-screw

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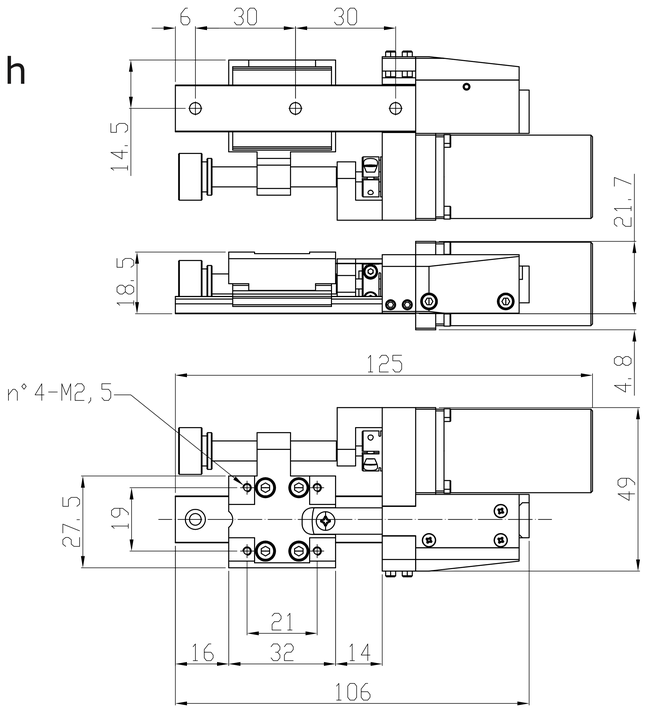
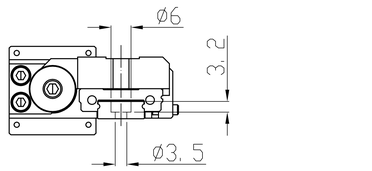
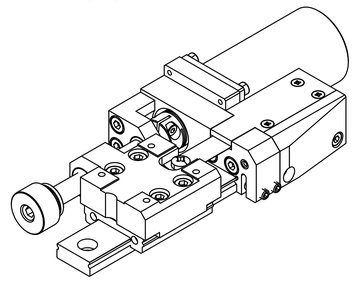
ARX-M-HV or UHV

AntRail eXtreme Medium for High Vacuum or Ultra High Vacuum

Specifications (Typical*)	Value	Unit
Travel range	26	mm
Load capacity (Fz, FY)	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s







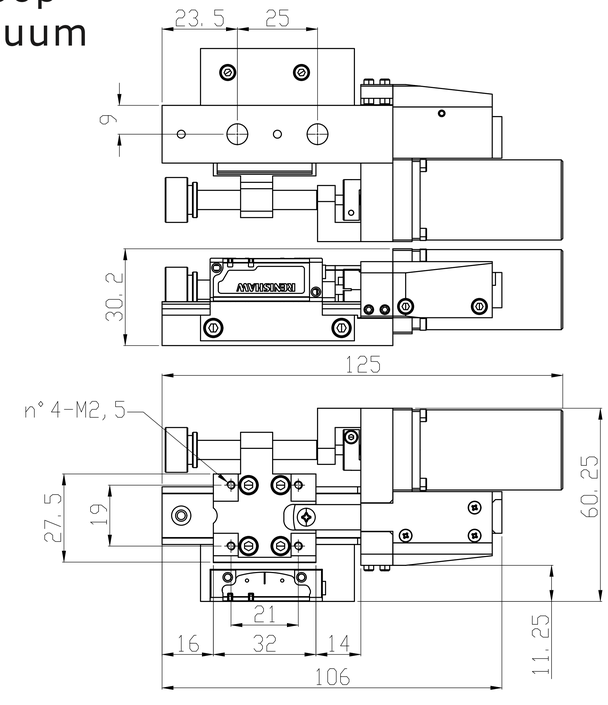
Technical notes

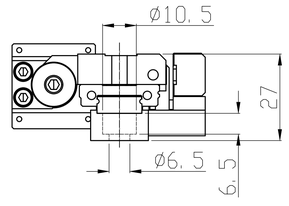
- HV ready for 10^{-7} mbar
- UHV ready for 10^{-9} mbar
- bake-out temperature up to 110°C
- integrated homing sensor
- kapton insulated braided cable to the vacuum feed-through
- dry pre-loaded lead-screw

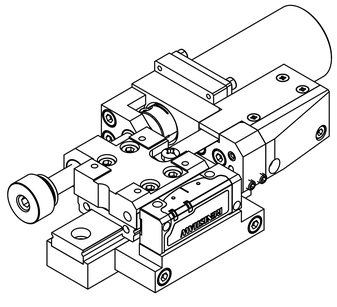
ARX-M-CLOOP-HV or UHV

AntRail eXtreme Medium Closed Loop for High Vacuum or Ultra High Vacuum

Specifications (Typical*)	Value	Unit
Travel range	26	mm
Load capacity (Fz, FY)	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s







Technical notes

- HV ready for 10^{-7} mbar
- UHV ready for 10^{-9} mbar
- bake-out temperature up to 110°C
- integrated homing sensor
- kapton insulated braided cable to the vacuum feed-through
- dry pre-loaded lead-screw

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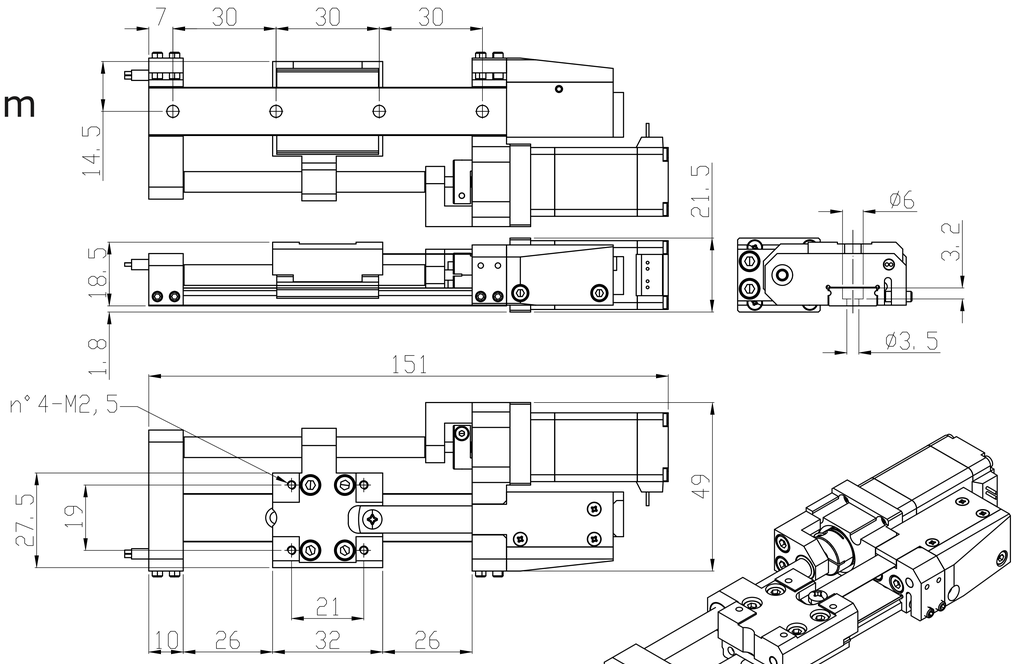
ARX-L-V

AntRail eXtreme Large for Vacuum

Specifications (Typical*)	Value	Unit
Travel range	26	mm
Load capacity (Fz, FY)	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s



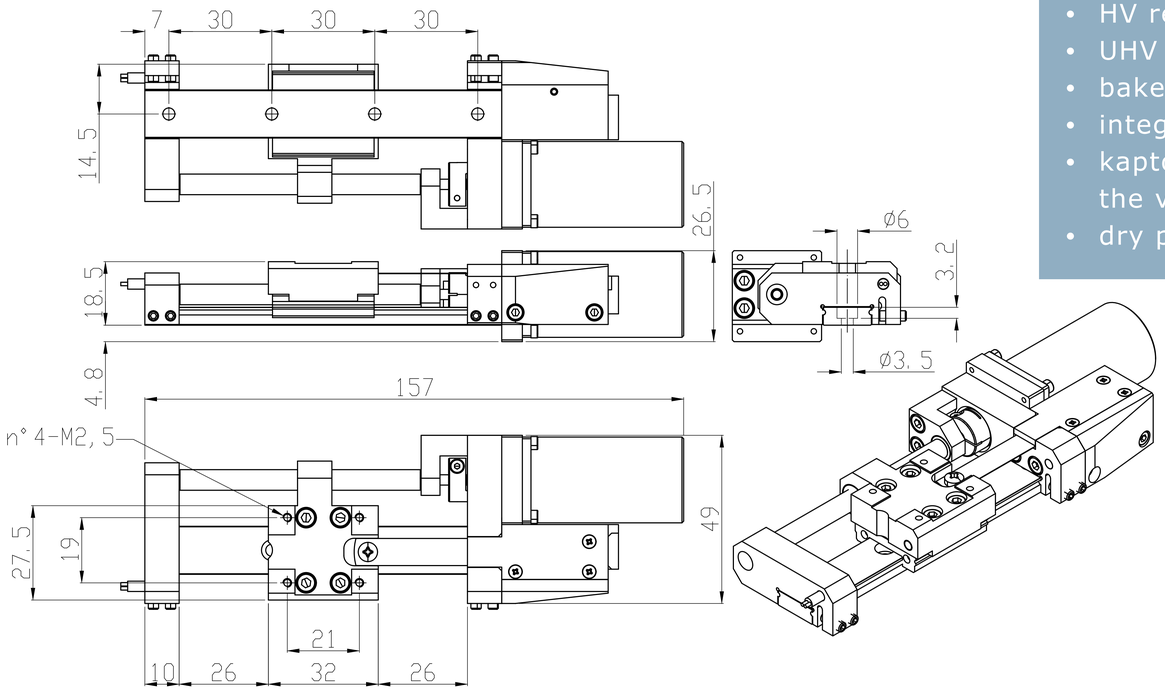
Technical notes

- Vacuum ready for 10^{-6} mbar
- bake-out temperature up to 80°C
- integrated homing sensor
- kapton insulated braided cable to the vacuum feed-through
- dry pre-loaded lead-screw

ARX-L-HV or UHV

AntRail eXtreme Large for High Vacuum or Ultra High Vacuum

Specifications (Typical*)	Value	Unit
Travel range	52	mm
Load capacity	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s



Technical notes

- HV ready for 10^{-7} mbar
- UHV ready for 10^{-9} mbar
- bake-out temperature up to 110°C
- integrated homing sensor
- kapton insulated braided cable to the vacuum feed-through
- dry pre-loaded lead-screw

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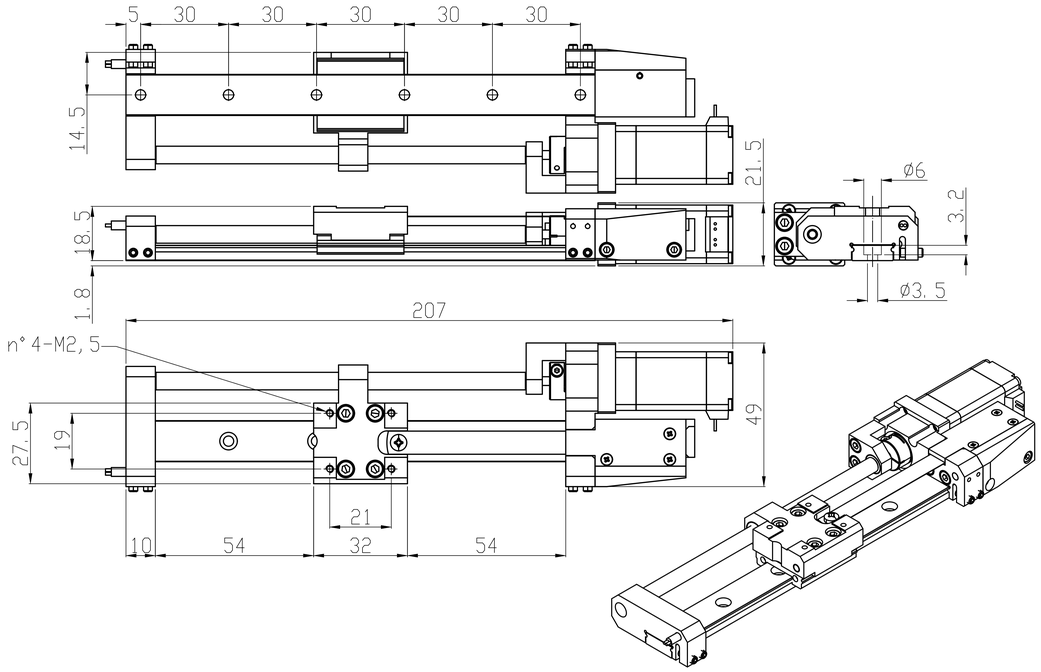
ARX-XL-V

AntRail eXtreme ExtraLarge for Vacuum

Specifications (Typical*)	Value	Unit
Travel range	104	mm
Load capacity (Fz, FY)	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s



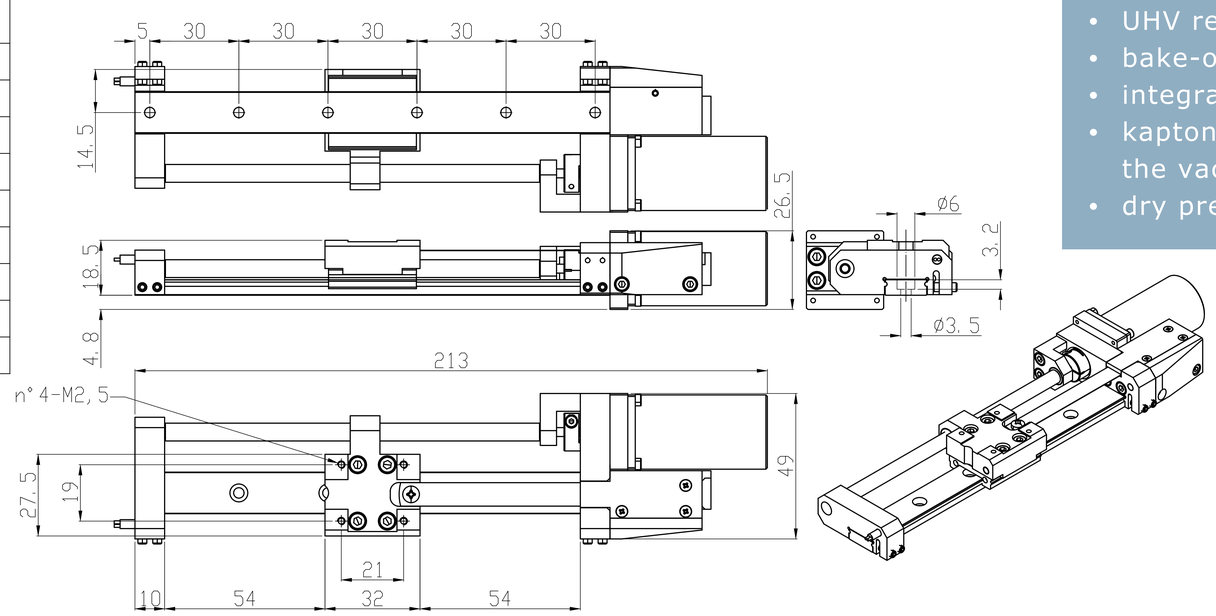
Technical notes

- Vacuum ready for 10^{-6} mbar
- bake-out temperature up to 80°C
- integrated homing sensor
- kapton insulated braided cable to the vacuum feed-through
- dry pre-loaded lead-screw

ARX-XL-HV or UHV

AntRail eXtreme ExtraLarge for High Vacuum or Ultra High Vacuum

Specifications (Typical*)	Value	Unit
Travel range	104	mm
Load capacity (Fz, FY)	30	N
Axial load capacity (Fx)	10	N
Moment (Mx, My, Mz)	6	Nm
Uni-directional repeatability (2σ)	<1	µm
Bi-directional repeatability (2σ)	<10	µm
smallest motion step	0.1	µm
motor full step equivalent motion	9.61	µm
Max Speed	20	mm/s



Technical notes

- HV ready for 10^{-7} mbar
- UHV ready for 10^{-9} mbar
- bake-out temperature up to 110°C
- integrated homing sensor
- kapton insulated braided cable to the vacuum feed-through
- dry pre-loaded lead-screw

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Questionnaire

Fill in this questionnaire and mail it to ufficiovendite@vacuumfab.it to get our consultancy for the positioning system design, free of charges:

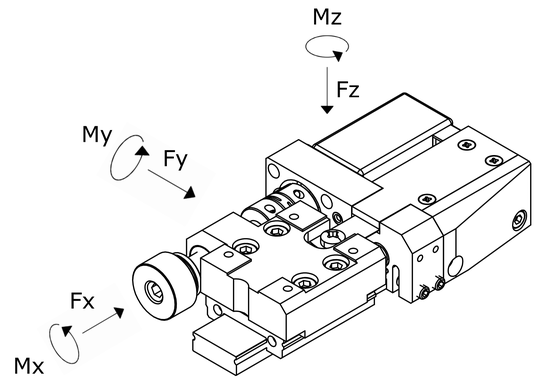
CUSTOMER'S REFERENCE

Name, surname: Institute/company:
Phone Number: Email:

WEIGHT/SPECIMEN INFORMATION

Dimensions (mm): lenght width height
Shape: (description or better attach drawing)
Weight (g):
Center of gravity coordinates from the center of the carrier (mm): X Y Z

Notes:



POSITIONING REQUIREMENT

Travel range required (mm):
Positioning resolution required (µm):
Repeatability required (µm): ☐ uni-directional ☐ bi-directional
Applied force (N): Fx Fy Fz
Applied Moment (Nm): Mx My Mz
Speed required (mm/s):
Acceleration required (mm/s²):
Duty Cycle:
Other degrees of freedom required: please specify and possibly add a sketch and a description f the application

WIRING REQUIREMENT

Cable lenght in air from the mechanics to the controller (m):

CONTROLLER REQUIREMENT

Motion control type: ☐ point to point ☐ linear interpolation ☐ contouring
Positioning application type: ☐ high resolution ☐ high repeatability
Computer connection port: ☐ Ethernet ☐ USB ☐ other (specify)
Software compatibility: ☐ DLL ☐ LabVIEW ☐ EPICS ☐ TANGO

Notes:

Date and signature:

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