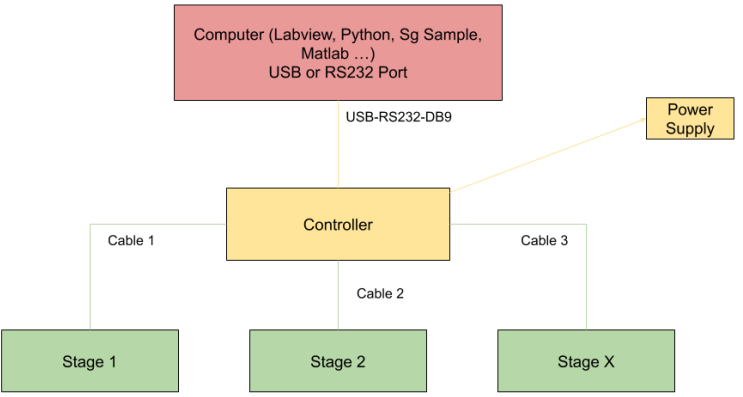


OPTOSIGMA EUROPE

Motorized Stages

Motorized Stage Setup

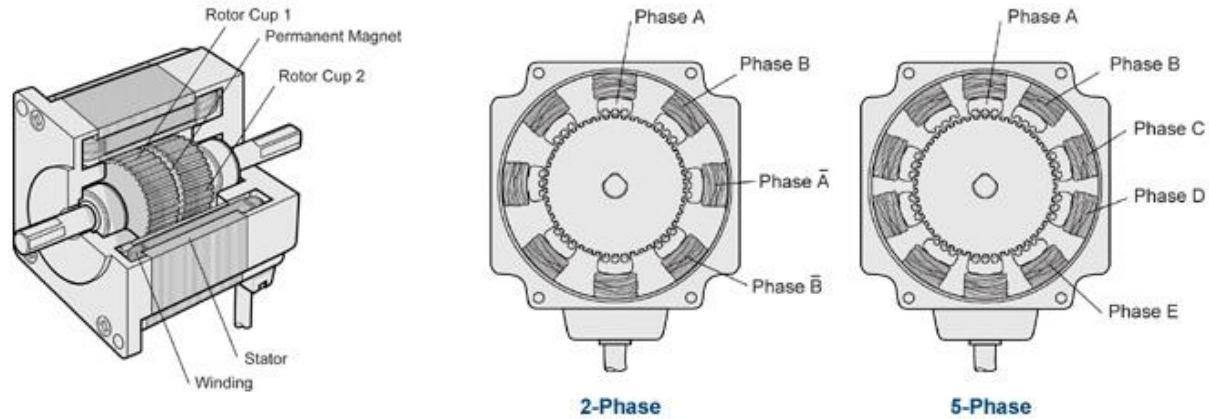


- Connected Assembly
- Controller | Cables | Stages

- ✓ High Load Capacity
- ✓ High Precision
- ✓ Small Frame
- ✓ Long Travel

Precision	Linear		Rotation		Goniometer	
	Series Name	Relevant Product	Series Name	Relevant Product	Series Name	Relevant Product
	HST Crossed Roller <small>Reference > G068 -</small>		HST-YAW Bearing <small>Reference > G086</small>			
	TAMM Crossed Roller <small>Reference > G064</small>		HDS-YAW Bearing <small>Reference > G088</small>		OSMS Ball Guide <small>Reference > G090</small>	
	HPS Ball Guide <small>Reference > G060</small>		OSMS-YAW Bearing <small>Reference > G082 -</small>			
	OSMS Outer Rail <small>Reference > G032 -</small>				SGSP Crossed Roller <small>Reference > G096</small>	

Motor

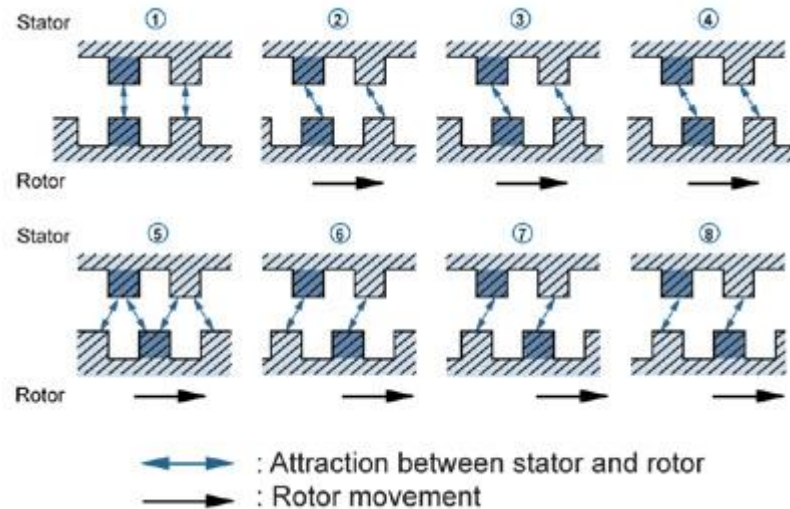


- **2- phase stepper motor**
8 magnetic poles \rightarrow 2 phases

\rightarrow 200 step for 1 rotation
 $\rightarrow 360/200=1,8 \rightarrow$ Step angle **1,8°**

- **5-phase stepper motor**
10 magnetic poles \rightarrow 5 phases

\rightarrow 500 step for 1 rotation
 $\rightarrow 360/500=0,72 \rightarrow$ Step angle **0,72°**

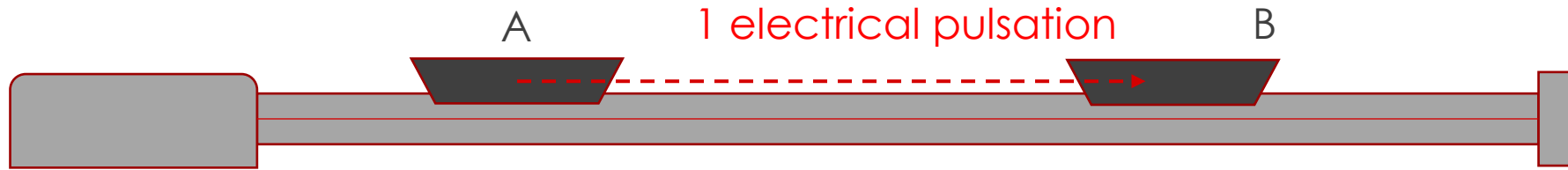


Important Specs on Controllers & Stages

Specs \ Controller	GSC	SHOT	HIT-M/S
Number of Axis	1-2	2-4	1-8
Compatibility	Simple and Small Stages	All Stages	All Stages
Step Division	NO	YES	YES
Price Range	300€-600€ (€)	2500€-3500€ (€€€)	1200€-3000€ (€€)
Display	NO	YES	NO

Specs \ Stage	OSMS	HPS	HST	TAMM
Min Travel Range	35mm	20mm	50mm	10mm
Max Travel Range	500mm	60mm	200mm	100mm
Precision	From 1-2µm to 5-10µm	1-2µm	1-2µm	1-2µm
Load Capacity	Around 10Kg	Around 7,5Kg	Around 40Kg	Around 7,5Kg
MIM	200nm	200nm	100nm	100nm
Size (Frame)	Large	Small	Large	Small

Step division



Step division

- 1 electrical pulsation to move the stage
- Pulsation power \Rightarrow stage travel length
- Divide step \rightarrow divide pulsation power \rightarrow divide stage travel length

Max Division Possible : 250

Only for some controllers

Max division possible to apply depends on:

- The controller
- The stage

Minimal Incremental Motion (MIM) :

The minimal movement we can guarantee the stage is able to perform with repeatability.

Specs \ Stage	OSMS	HPS	HST	TAMM
MIM	200nm	200nm	100nm	100nm

Project Presentation : LIGO

Laser Interferometer Gravitational-Wave Observatory

LIGO / NSF / MIT

OptoSigma provided LIGO our custom motorized translation stages.

They are now incorporated within the interferometer arms.

These are custom configured, multi-axis, motorized translation stages and controllers

The Laser Interferometer Gravitational-Wave Observatory was built for 1995 to 2002.

It consists of two interferometers, each with two, 4 km (2.5 miles)", long arms arranged in the shape of an "L".

These instruments act as 'antennae' to detect gravitational waves.



Project Presentation : Microscope Mapping

Cryostat Microscope Mapping @400nm

Friedrich Schiller Institute Jena

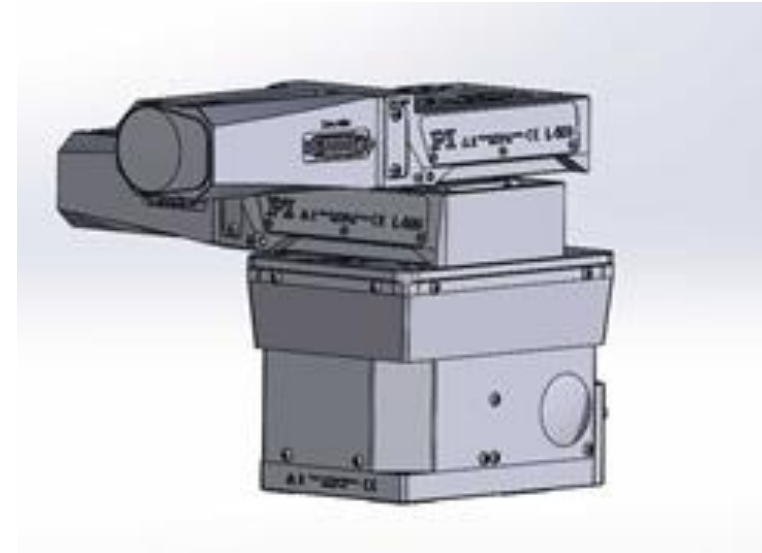
We provided them the XYZ assembly using our :

- OSMS80-20ZF-0B (Z stage) (Load capacity : 15Kg)
- TAMM100-50C(XY) (XY stage) (Load capacity : 8Kg)
- SHOT-304GS (Controller for 4 Axis with display)
- We also helped them for their custom Python code.

For this project, the Institute of Jena wanted to perform a mapping using a cryostat working @400nm.

They wanted an XYZ motorized stage assembly with **100nm** precision.

They went on our OptoSigma Website, requested a quote with the stages and we exchanged with them for a month in order to find the best stage for their application.



Project Presentation : Large Scale Mapping

Large Scale Mapping

Customer (Confidential)

For this, we custom made a rail allowing the Observation unit to travel all over the said object.

Then we used our XYZ stages for smaller adjustment.

We also provided some rotation stage for alignment.

For this project, the goal was to create a large scale custom XYZ assembly using our standard stages for mapping over large objects.

The challenge was to combined large travel ranges with great precision.

