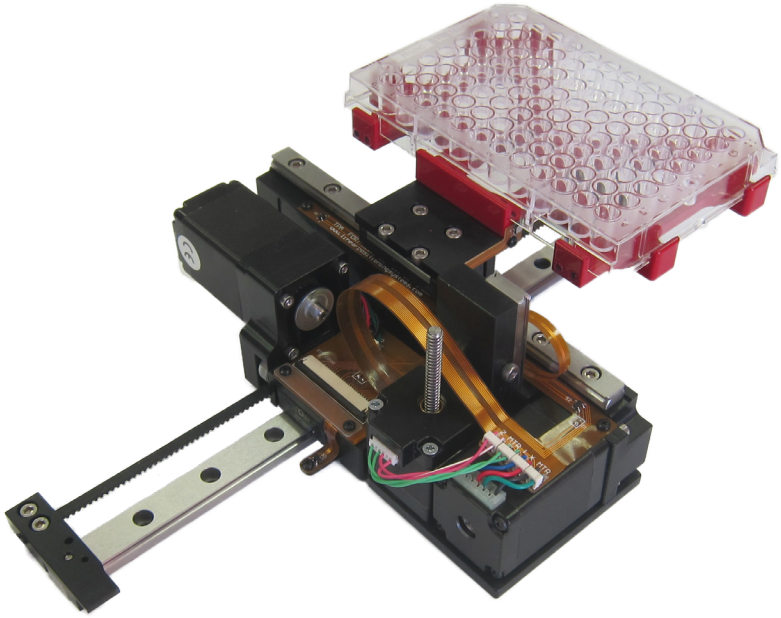
TPA Motion

TPA Motion, LLC
800-284-9784

4215 Pleasant Rd.
Fort Mill, SC 29708



Instrument Robots

Designed Specifically for Your Medical Instruments or Lab Automation Devices

TPA designs and manufactures robots for handling microplates, glass slides, and other payloads inside your instrument.

Learn more about TPA's capabilities and Instrument Motion Platforms by visiting our website at:

www.tpamotion.com/robots
or
www.linearpositioningsystems.com

ASSEMBLY FOOTPRINT

Are you in the process of developing a medical or lab automation device? If so, you should talk to us. We have developed some of the **smallest XYZ robotic** motion systems. Enveloped dimensions such as

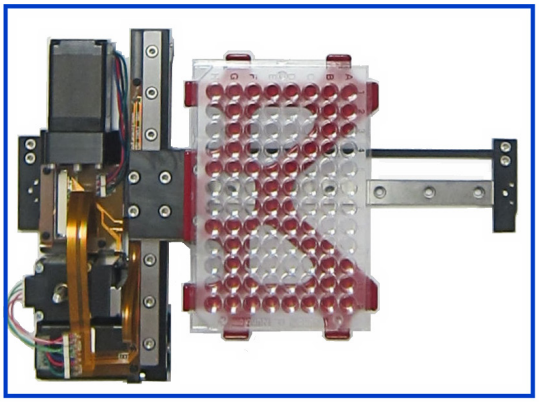
Length	Width	Height
250 mm (9.8 inches)	180 mm (7.1 inches)	80 mm (3.1 inches)

are within our capability.

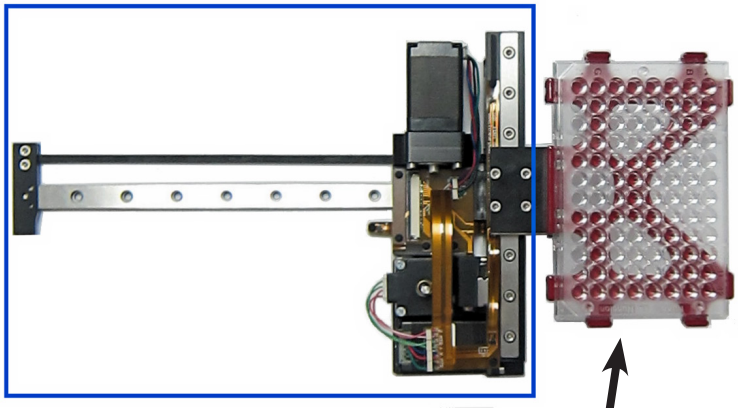
Instrument manufacturers have been forced to design their own motion platforms because existing packaged systems are either too expensive, too large, or not readily available.

Our goal is to do this so you don't have to. More of your time can be utilized in other areas where IP and creativity are important.

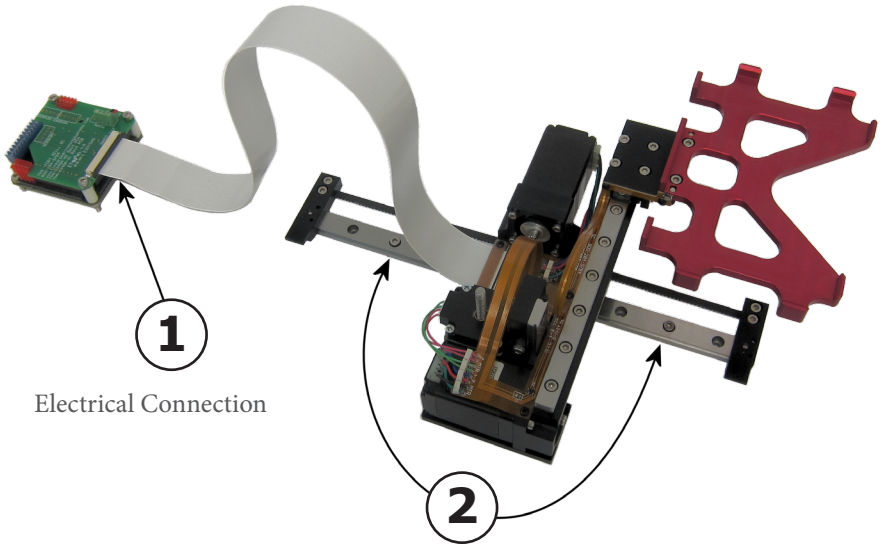
Length 250 mm



Width 180 mm



Extends Beyond Instrument Housing



Electrical Connection

Mechanical Connection

EASY

"1 - 2"

INSTALLATION

Assembly into your instrument is as easy as "1 - 2"; that is making the electrical and the mechanical connection as shown in the picture to the left.

Mechanical Specifications

DESCRIPTION	X-Axis	Y-Axis	Z-Axis
Motor Type	2 phase, bipolar, 1.8° deg step motor		
Mechanical Drive	Belt Drive		Leadscrew
End-of-Travel Sensor	Hall Effect		
Travel (sensor to sensor)	115 mm	175 mm	33 mm
Travel (stop to stop)	119 mm	178 mm	36 mm
Max Velocity	500 mm/sec		25 mm/sec
Max Acceleration	1 m/s/s		1 m/s/s
Resolution	36 mm/rev		2.54 mm/rev
Accuracy	250 µm		100 µm
Repeatability	±100 µm		50 µm
Straightness of Travel	50 µm		25 µm
Plate Holder Coplanarity	125 µm TIR		
Payload Capacity	1 Kg		
Operating Temp Range	-40 to +85 ° C		
Humidity	90%, non-condensing		
Life	> 1,000,000 cycles		

Electrical Specifications

DESCRIPTION	X-Axis	Y-Axis	Z-Axis
Motor Current	0.67 amps		1.0 amps
Motor Voltage	24 - 48 VDC		
Sensor Supply	2.5 V to 5.5 VDC Max		
Sensor Output Current	2 mA Max, 5.5 VDC Max		
Switch Contact Rating	1 mA Max, 5.5 VDC Max		
Cable	26 Conductor FFC, 1 mm pitch		

TPA Controller Specifications

DESCRIPTION	Motion Controller
Power Input	9 - 32 VDC, 4A
Communication	USB 2.0 (mini-B) and RS485
Resolution	16x µstep: XY = 88.89 steps/mm, Z= 1260 steps/mm
Spare Axes	1x Step Motor Driver with 2 Limit inputs
Spare Inputs	2x Configurable as Digital or Analog
Spare Outputs	2x Rated for 1A continuous / 2A peak
Encoders	2x Single Ended (A / B)
Compliance	CE, RoHS
Operating Temp Range	- 20 to + 85 °C

Mechanical Specifications

DESCRIPTION	X-Axis	Y-Axis	Z-Axis
Motor Type	2 phase, bipolar, 1.8° deg step motor		
Mechanical Drive	Leadscrew		
End-of-Travel Sensor	Hall Effect		
Travel (sensor to sensor)	115 mm	175 mm	33 mm
Travel (stop to stop)	119 mm	178 mm	36 mm
Max Velocity	50 mm/sec		25 mm/sec
Max Acceleration	1 m/s/s		1 m/s/s
Resolution	5.08 mm/rev		2.54 mm/rev
Accuracy	100 µm		100 µm
Repeatability	± 25 µm		50 µm
Straightness of Travel	50 µm		25 µm
Plate Holder Coplanarity	125 µm TIR		
Payload Capacity	1 Kg		
Operating Temp Range	-40 to +85 ° C		
Humidity	90%, non-condensing		
Life	> 1,000,000 cycles		

Electrical Specifications

DESCRIPTION	X-Axis	Y-Axis	Z-Axis
Motor Current	1.0 amps		
Motor Voltage	24 - 48 VDC		
Sensor Supply	2.5 V to 5.5 VDC Max		
Sensor Output Current	2 mA Max, 5.5 VDC Max		
Switch Contact Rating	1 mA Max, 5.5 VDC Max		
Cable	26 Conductor FFC, 1 mm pitch		

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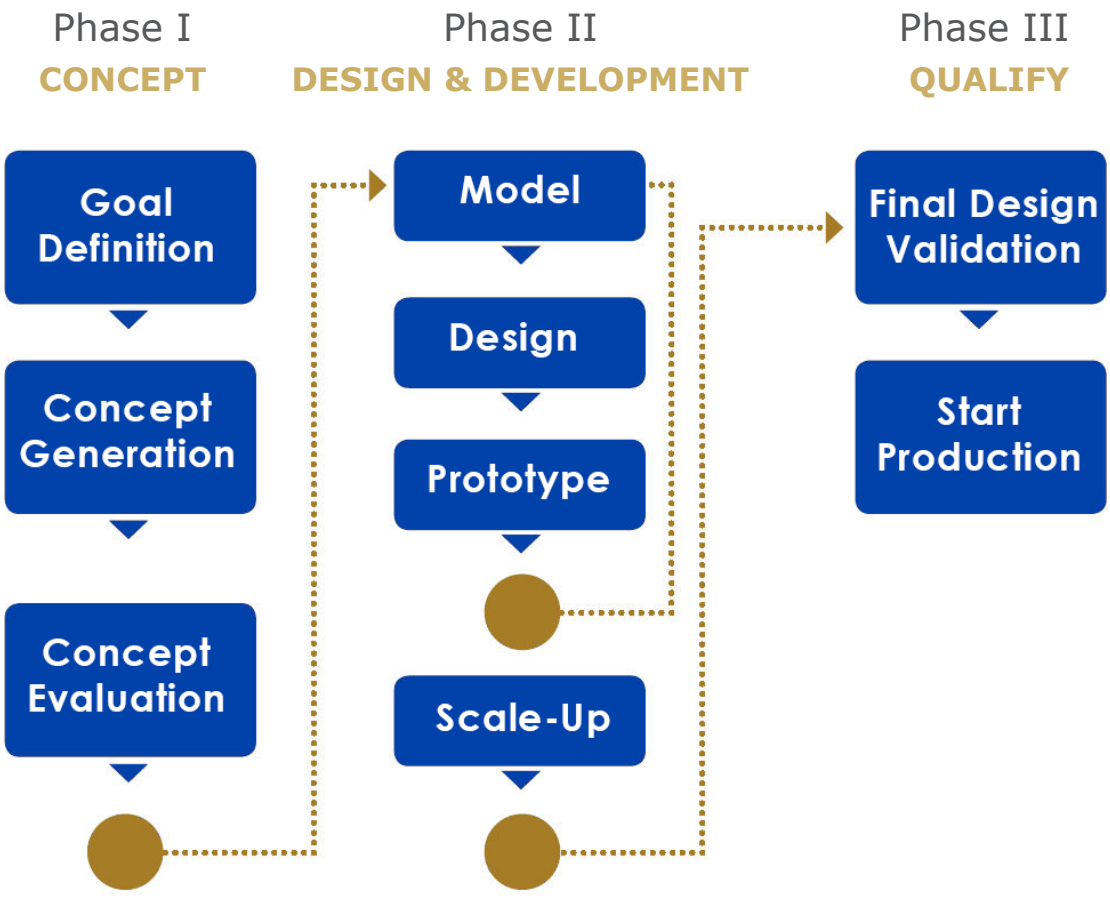
Why TPA Motion?

- So you can make the most compact space saving device
- So your device is energy efficient (e.g., low power consumption)
- For higher throughput capability (e.g., smaller, less inertia moves faster)
- You don't have time to design, build, and validate a new assembly yourself
- You have special requirements that cannot be met with existing solutions

The most important reason to choose TPA Motion is that we focus our resources on the new product development process. We've been through it many times with OEM corporate groups. Concepts change quickly once the first piece is placed in the hands of the customer. We keep a part of our engieering and fabrication team available for quickly turning out prototypes for testing and evaluation as the process move from Phase I to Phase III as shown below.

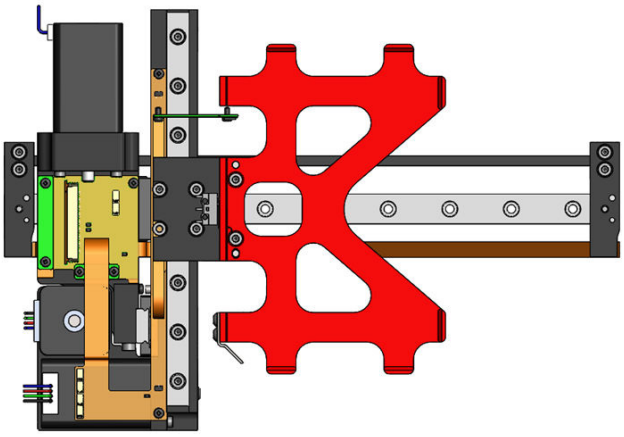


NEW PROJECT

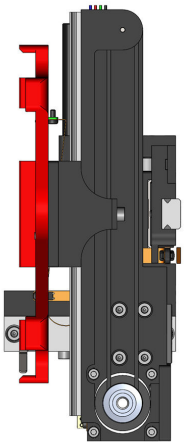
To start a new project with us we will need a few bits of data from you.

First will be a complete application description along with any 3D CAD models or sketches that are available.

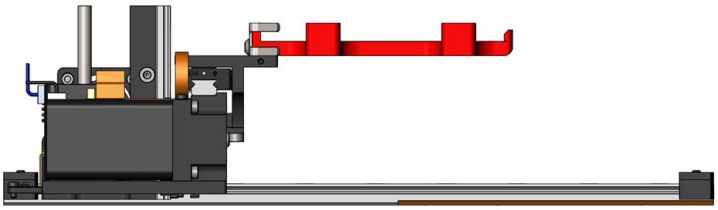
Along with that we will want to review the requirements necessary to make this successful in the application. This is sometimes referred to as the acceptance cirteria. Examples of such data are listed below:



1. Min/Max **Payload** Requirement
2. X, Y, and Z axis **Travel** Requirement
3. Instrument **Internal Envelope** Dimensions
4. Min/max **Speed** Requirement
5. Operation **Environment** (i.e. hot, cold, humid)
6. X, Y, and Z axis **Accuracy**
7. **Duty Cycle** (i.e., 24/7 or intermittently)
8. Minimum **Life** Expectancy



Other important questions will be, how many units per year do you require for production and what are your timelines for first prototype delivery and production.



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