PI

Q-845 Q-Motion® SpaceFAB

High Precision and High Stiffness
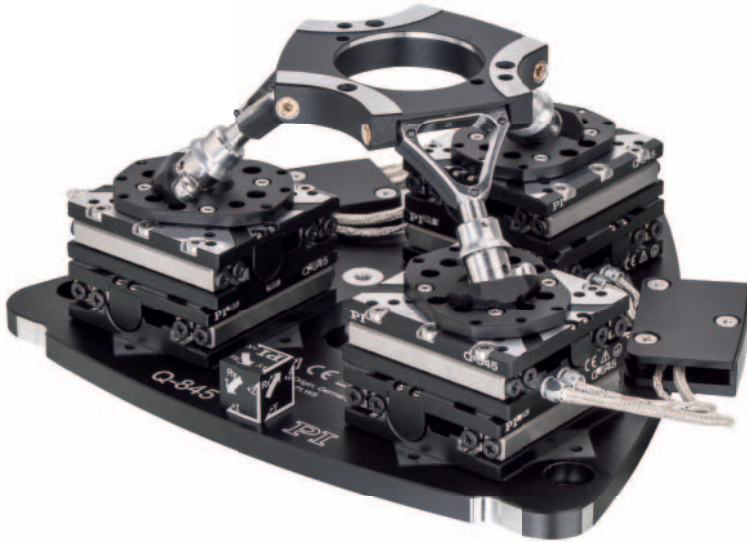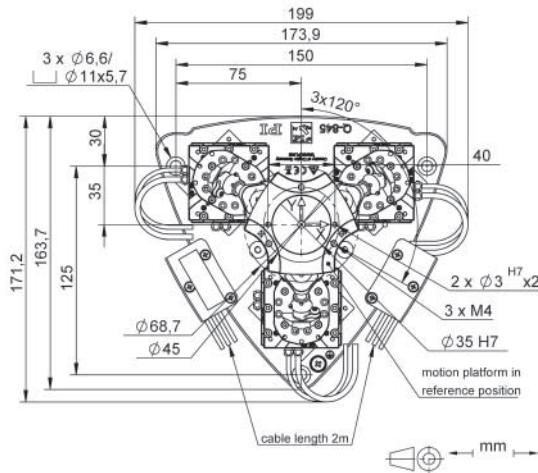
- Six degrees of freedom
- ±7 mm travel range in X and Y, and ±5 mm in Z
- ±7° rotation range in θ_X, θ_Y, and ±8° in θ_Z
- 10 N load capacity, center mounted
- Self-locking, no heat generation at rest
- Crossed roller guides, anti-creep
- Vacuum-compatible to 10^{-6} hPa

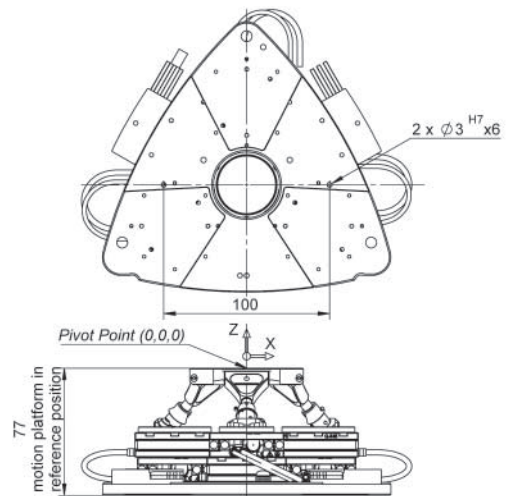Top view of the Q-845.140, dimensions in mm.
The reference position corresponds to the center position of all axes.

Bottom and side view of the Q-845.140, dimensions in mm.
The reference position corresponds to the center position of all axes.

Applications

- Fine adjustment of the smallest components during assembly
- Photonics / Alignment Applications
- Microscopy
- Beamline systems
- Semiconductor technology
- Test laboratories

>> **Parallel Kinematics, Hexapods**
>> **Q-Motion® Piezoelectric Inertia Drive**
>> **Vacuum-Compatible Versions**

	Q-845.140	Unit	Tolerance
Motion and positioning			
Active axes	X, Y, Z, θ_X, θ_Y, θ_Z		
Integrated sensor	Incremental linear encoder		
Travel range* in X, Y	±7	mm	
Travel range* in Z	±5	mm	
Rotation range* in θ_X, θ_Y	±7	°	
Rotation range* in θ_Z	±8	°	
Sensor resolution	1	nm	
Minimum incremental motion in X, Y	6	nm	typ.
Minimum incremental motion in Z	20	nm	typ.
Minimum incremental motion in θ_X, θ_Y, θ_Z	0.9	µrad	typ.
Unidirectional repeatability in X, Y	±30	nm	typ.
Unidirectional repeatability in Z	±35	nm	typ.
Unidirectional repeatability in θ_X	±20	µrad	typ.
Unidirectional repeatability in θ_Y	±10	µrad	typ.
Unidirectional repeatability in θ_Z	±6	µrad	typ.
Backlash in X, Y	40	nm	typ.
Backlash in Z	60	nm	typ.
Backlash in θ_X, θ_Y	35	µrad	typ.
Backlash in θ_Z	20	µrad	typ.
Max. velocity in X, Y, Z	5	mm/s	max.
Max. angular velocity in θ_X, θ_Y, θ_Z	50	mrad/s	max.
Mechanical properties			
Stiffness in X, Y	1	N/µm	
Stiffness in Z	2	N/µm	
Load capacity in X, Y	5	N	max.
Load capacity in Z (base plate horizontal)	10	N	max.
Holding force, power off (base plate horizontal / any orientation)	20 / 10	N	max.
Permissible torque in θ_X, θ_Y, θ_Z	0.5	N·m	max.
Drive type	Piezoelectric Inertia Drive		
Miscellaneous			
Operating temperature range	0 to 40	°C	
Connection	6x Sub-D 15 (m)		
Material	Stainless steel, aluminum		
Mass	1.9	kg	±5 %
Mass without cable and connector	1.2	kg	±5 %
Cable length	2	m	±10 mm

Technical data specified at 20±3 °C.
Ask about custom designs!
* The travel ranges of the individual coordinates (X, Y, Z, θ_X, θ_Y, θ_Z) are interdependent.
  The data for each axis in this table shows its maximum travel range, where all other axes and the pivot point are at the reference position.
For operation in a vacuum, we recommend a reduced duty cycle of 20 % and a maximum motor push / pull force of 30 % compared to a standard environment.
The intrinsic mass of the slider plate must be considered accordingly.