



# X-417 Scalable Integrated Multi-Axis System

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FAST CONFIGURATION, DELIVERY, AND STARTUP TO ACCELERATE  
THE IMPLEMENTATION OF PRECISION AUTOMATION PROCESSES

# Enabling Fast Fulfillment of Production Needs

## X-417 Integrated Multi-Axis System – Preconfigured and Scalable

Today, requirements of machine builders in precision automation, such as laser processing or test and inspection processes, cannot only aim at achieving the desired specifications at a purely component level. In order to reach their desired high performance, a coordinated and harmonized design and operation of the overall system is required. In addition to purely technical requirements, the business case needs consideration of the project budget, short development pressures, and suppliers to offer fast delivery times, even with respect to advanced manufacturing processes and machines.

With the standardized integrated multi-axis system X-417, PI supports machine builders to quickly configure and integrate the appropriate system, helping them to optimize their design and development time and ultimately become more competitive and able to expedite on their customers' demands.

### Your Key Benefits of the Solution

- Reduced costs and installation time
- Flexibility and scalability
- Realize more business opportunities
- Reliability to fulfill your requirements
- Fast time-to-quote
- On-time delivery
- On-site support by engineering and application experts
- Long warranties as standard

### Key Features of the Platform

- Exceptional contouring
  - Increased throughput
  - Increased feature accuracy
  - Easy integration of lasers and cameras
  - Delivered aligned, tuned, and calibrated
  - Supported by measurement data
- >> X-417 Integrated multi-axis system

### Z Adjustment of Laser Head or Camera

- High-load ball screw linear stage with holding brake for avoiding collision
  - Robust industrial IP65 connectors for flexible cable exit
- >> L-412 High-load linear stage

### XY Positioning of Workpiece

- High-dynamic ironless linear motors for fast and precise contouring
  - Reference edge to ease the alignment in the machine
  - Connector for purge air, side seal and hard cover to protect against particles
  - XY drag chain cable management for smooth integration
- >> V-417 High-load linear motor stages

### Motion Control and Laser Firing

- ACS EtherCAT® network motion control
- >> G-901 Motion Controller
- Synchronization of motion to laser/event for high-accuracy cutting at high speeds
- >> PEG / Laser Control Module\*
- Servo control for improved tracking at higher duty cycles and for disturbance rejection
- >> ServoBoost™\*
- Support of higher level languages: C, C#, .Net, LabView™, MATLAB®, Visual Basic®, Python
  - G Code\* for CNC-support



Controlled by  
**ACS**  
G-901 motion controller included

SCALABLE STANDARD INTEGRATION LEVELS WITH FLEXIBLE TRAVEL RANGES, PAYLOADS, MOUNTING OPTIONS AND OPTIONAL ACCESSORIES

### Further Applications That Benefit from the Motion Solution:



Learn more about how PI helps to improve the performance of your precision automation application

>> [automation.physikinstrumente.com](http://automation.physikinstrumente.com)

### Accessories

- Machine base for installation support
- Breadboards for mounting equipment
- Vertical bracket for flexible mounting possibilities
- Alternative cable sets
- Software packages

\* More optional add-ons

### SPC CAD/CAM Software\*

- Flexible CAD-to-motion import
- 2D and 3D formats: DXF, DWG, Gerber, STL ...
- Support for galvo scanner, laser, and camera integration
- Adaptive Mark-on-Fly for efficient processing of large parts
- Easy to implement and use



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