

# Absolute Arm 7-Axis with AS1-XL

## Key features

### Infinite rotation

on major axes

### Absolute Encoders

exclusive to Absolute Arm, no referencing needed: power-on and measure

### SpinGrip and SpinKnob

ergonomic infinite-rotation handling grips minimise operator fatigue, ensure thermal stability and maximise accuracy

### Advanced materials

high-end carbon-fibre construction ensures thermal stability

### Arm architecture

uneven tube lengths, typical in industrial robot design, make the arm lighter to use

### HomeDock

secures the wrist with probe/sensor in a safe position

### OLED touchscreen wrist display

instant access to settings and monitoring

### Ergonomics

wrist design with intelligent button positioning allows total control during measurement, including removable handle and 3 pistol-grip sizes

### Absolute Scanner AS1-XL

fully certified, extra-wide blue laser line, up to 300 Hz scan-rate with 1.2 million points/sec, SHINE technology, IP54 rated, repeatable mounting (no realignment needed)

### Automatic probe and sensor recognition

change touch probes or mount sensors on the fly without any recalibration

### Zero-G counterbalance

minimises torque in the arm's base, giving effortless movement and greater accuracy

### SmartLock

safely locks the arm when at rest, or conveniently locks it at any intermediate angle while measuring

### Control Packs (WiFi and battery)

boost functionality with full probing performance over WiFi or single-cable connection (USB or Ethernet) and battery power (hot-swappable dual battery pack)

### Embedded LED pictograms

for visual feedback of arm's functions and status

### Robust feedback

instant visual, acoustic and haptic feedback

### Mounting options

selection of magnetic or vacuum bases, tripods and stands



### Measurement volume

2.5 m | 3 m | 3.5 m | 4 m | 4.5 m



### Volume extension

Leap Frog Kit or GridLOK system allows large-volume measurement



### 3 accuracy levels

83, 85 and 87 series



### Real-time remote monitoring

Compatibility with Hexagon's leading platform for Industry 4.0 asset performance management



### Full protection

the world's first IP54-rated portable measuring arm for complete protection and confidence in challenging environments



### 24-month warranty

on all Absolute Arm systems



### Probing accuracy

certification to ISO 10360-12 as standard

### Scanning System Accuracy

total system (arm and scanner) specification to ISO 10360-8 annex D



### Verification artefacts

supplied with each arm, allow users to verify system performance according to certification



### Service centres

an extensive network of Hexagon Service centres means quality service and support is always nearby



### SMART

proprietary software featuring Self-Monitoring Analysis and Reporting Technology (SMART) that manages the arm in the field by monitoring diagnostics including shocks and temperature

### Quick Measure

built-in utility program allows basic measurements without additional software



### SHINE technology

Systematic High-Intelligence Noise Elimination (SHINE) technology allows the Absolute Scanner AS1-XL to scan any surface, whatever the finish or material, and deliver full performance at all times – maximum frame rate with maximum laser width for maximum productivity



|             | Criteria for choosing Absolute Arm 7-Axis with Absolute Scanner AS1-XL                                                                                                                                                                                                                    | Hexagon                    | Other |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------|
| Accuracy    | Availability of different system sizes and accuracy/metrology levels?                                                                                                                                                                                                                     | Yes (5 sizes, 3 levels)    |       |
|             | Certification for volumetric accuracy of probing, according to ISO 10360-12 (certificate included)?                                                                                                                                                                                       | Yes                        |       |
|             | Certification for complete Scanning System Accuracy (arm and scanner), according to ISO 10360-8 Annex D (certificate included)?                                                                                                                                                           | Yes                        |       |
|             | Does the system include artefacts and software so you can verify its accuracy performance compared to the specifications (software scripts/guides)?                                                                                                                                       | Yes                        |       |
|             | Can the laser scanner acquire clean data (without noise, outliers or erroneous data points) from any surface (color, material) with default settings (highest speed, full laser-line width)?                                                                                              | Yes (SHINE technology)     |       |
|             | Does the system have environment monitoring sensors (vibration, displacement, tilt, inclination, joint-stress, ambient temperature) alerting the operator in any shop-floor environment (with audio, visual and haptic warnings), to ensure proper handling and prevent loss of accuracy? | Yes                        |       |
|             | Availability of extended-volume measurement options (i.e. up to 5-10 times the system's standard volumetric range)?                                                                                                                                                                       | Yes (Leapfrog/GridLOK)     |       |
| Robustness  | Does the system (arm and scanner) have IP54-rating for protection when measuring in harsh environments?                                                                                                                                                                                   | Yes                        |       |
|             | Does the system have IP54-status monitoring sensors to provide warnings when compromised?                                                                                                                                                                                                 | Yes                        |       |
|             | Can the arm measure repeatably in an environmental temperature up to 45°C?                                                                                                                                                                                                                | Yes                        |       |
|             | Is the system thermally stable (i.e. high-end carbon-fibre construction)?                                                                                                                                                                                                                 | Yes                        |       |
|             | Compliance with impact, shock vibration, emissions and environmental norms (CE, IEC, etc.)?                                                                                                                                                                                               | Yes (full list in manual)  |       |
|             | Does the system include high-quality cables with safe push-pull locking mechanism?                                                                                                                                                                                                        | Yes                        |       |
|             | Does the system include software for diagnostics and performance monitoring?                                                                                                                                                                                                              | Yes (S.M.A.R.T.)           |       |
|             | Is a 24-month warranty offered as standard with all systems?                                                                                                                                                                                                                              | Yes                        |       |
| Ease of use | Can the system measure immediately after power-on (no warm-up time)?                                                                                                                                                                                                                      | Yes                        |       |
|             | Does the system feature Absolute Encoders (with no need to be initialised before measurement)?                                                                                                                                                                                            | Yes                        |       |
|             | Can you easily swap probes and scanners without extra tools?                                                                                                                                                                                                                              | Yes                        |       |
|             | Can probes or scanners be mounted and used without stopping to calibrate or select the probe in the software?                                                                                                                                                                             | Yes                        |       |
|             | Does the system have a built-in display providing the operator with instant feedback on the arm status and the measurements taken?                                                                                                                                                        | Yes                        |       |
|             | Does the system offer both automatic and manual laser scanner exposure adjustment for scanning surfaces of different colours and reflectivity but without affecting the frame rate or laser line width?                                                                                   | Yes                        |       |
|             | Can the compatible scanners be hot swapped with no need to pause for alignment?                                                                                                                                                                                                           | Yes                        |       |
|             | Is the system compatible with a 3D laser scanner with extra-wide scanline (over 500mm), that allows it to cover large surfaces very quickly?                                                                                                                                              | Yes (AS1-XL)               |       |
|             | Is the system compatible with a 3D laser scanner with a large standoff (over 600mm), that can scan inside hidden areas and cavities?                                                                                                                                                      | Yes (AS1-XL)               |       |
|             | Does the arm allow infinite rotation on major axes?                                                                                                                                                                                                                                       | Yes                        |       |
|             | Does the system come with a single carrying case with wheels for mobility?                                                                                                                                                                                                                | Yes                        |       |
|             | Does the system's counterbalance mechanism allow the arm to be used comfortably and with a single hand (with an ergonomically designed wrist)?                                                                                                                                            | Yes                        |       |
|             | Does the arm include a safety locking mechanism when at its resting position to prevent accidental tilt?                                                                                                                                                                                  | Yes                        |       |
|             | Does the system have options for ergonomically positioned handling grips?                                                                                                                                                                                                                 | Yes (SpinGrip/SpinKnob)    |       |
|             | Are multiple handgrip sizes offered (small, medium, large) as standard, for comfortable usage by any operator?                                                                                                                                                                            | Yes                        |       |
|             | Can you remove the handgrip from the wrist, for easier laser scanning inside tight spaces or cavities?                                                                                                                                                                                    | Yes                        |       |
|             | Can you remove the laser scanner and handgrip for easier probing inside tight spaces or cavities?                                                                                                                                                                                         | Yes                        |       |
|             | Is the arm able to lock at least one axis at a desired angle for measurements in low-ceiling or confined areas?                                                                                                                                                                           | Yes (for arms up to 3.5 m) |       |
|             | Is battery operation available (with hot-swappable batteries)?                                                                                                                                                                                                                            | Yes (Control Pack W or B)  |       |
|             | Is wireless measurement available for probing and scanning?                                                                                                                                                                                                                               | Yes (Control Pack W)       |       |
|             | Is there a variety of mounting options (magnetic, tripod, vacuum base)?                                                                                                                                                                                                                   | Yes                        |       |
|             | Are other probe types (extended, angled, curved or tube-measurement probes) available?                                                                                                                                                                                                    | Yes                        |       |
|             | Can the laser scanner also be used with a laser tracker for larger-scale measurement?                                                                                                                                                                                                     | Yes                        |       |
|             | Can the system connect to an asset management platform providing real-time remote performance monitoring and location tracking through a user-friendly dashboard?                                                                                                                         | Yes                        |       |

Hexagon is the global leader in measurement technologies. We provide the confidence that vital industries rely on to build, navigate, and innovate. From microns to Mars, our solutions ensure productivity, quality, safety, and sustainability in everything from manufacturing and construction to mining and autonomous systems.

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