



ACE measuring arm
and Skyline scanners:

Skyline Skyline Skyline
EYES - WIDE - OPEN

ACE

IRREPROACHABLE
3D MEASUREMENTS

Kreon[®]



ACE MEASURING ARM RANGE

PRECISELY FOR YOU

Thanks to innovative technology and state-of-the-art manufacturing, Kreon® measuring arms from the ACE range offer advanced 3D measuring solutions for both scanning and probing.

Compliant with the latest ISO standards and compatible with leading software available on the market, they meet increasingly stringent demands in terms of precision and productivity.

The ACE range comprises two models: the ACE and the ACE+ measuring arm. Working with the latest encoder technology, the ACE+ arm also boasts an advanced calibration method, ensuring exceptional levels of performance.

Portable and exceptionally easy to use, measuring arms from the ACE range have their place in any working environment – workshops, measuring labs, outdoor sites – and in a wide range of high-tech industries, such as automotive and aeronautics.

7 AXES AND 6 AXES

Kreon ACE measuring arms are available in 6-axis and 7-axis versions. Each offers benefits for specific applications.

6-AXIS VERSION FOR PROBING

- ▶ Perfect for applications requiring highly accurate probing
- ▶ At identical sizes, greater accuracy with 6 axes as compared to 7
- ▶ The compact ergonomics of the arm-end improves the access for the narrow measurement
- ▶ Compatible with Kreon 3D scanners (Zephyr and Solano ranges)



7-AXIS VERSION FOR SCANNING

- ▶ An additional axis and a joint enhance ergonomics when scanning
- ▶ Integration of the Skyline 3D scanners range
- ▶ Easy switchover from scanning to probing
- ▶ Both scanning and probing within the same measuring range
- ▶ Scanning precision up to 45 µm



7-AXIS VERSION WITH SKYLINE SCANNER = ACE SKYLINE

ACE arm

ACE+ arm



EXCELLENCE IN EVERY DETAIL

Efficient, lightweight and accurate, KREON ACE arms are the ultimate solution for ensuring flawless production quality, whatever your application and the size of your company.

ACE arms fitted with the Skyline 3D scanners can digitise any part in the twinkling of an eye. **Accurate and at high resolution, they capture the smallest details in the most complex parts.** A Skyline scanner combined with an ACE arm offers an ergonomic system for effortless scanning.

SAVE MORE TIME

with a reliable, performant and easy to use system, at an incredible acquisition speed.

SCAN ANY PART

dark or clear, dull or shiny, big or small or all at once. Its freedom of movement enables an access to internal or back side of difficult or closed volumes.

SCAN ANYWHERE

in a metrology room, a workshop, on a machine tool or even outside, due to temperature compensation

CONTROL WITH CONFIDENCE

the freeform parts with the extreme accuracy of Skyline scanner and the geometrical elements with the probe integrated under the scanner.

“All you need ...

Portable

Integrated battery
Wi-Fi connexion for probing
Temperature compensation
Universal Brunson attachment

Safe

Axes' limits autodetection
Stable magnetic rest position
Parking position bumper
Laser class 2M (no protection needed)

Easy to use

Quick set up
Freedom of movement
Short learning curve
No warm-up time
Compatible with leading metrology software

Effortless

Lightweight mobile parts
Counterbalance
Infinite joint rotation

Flexible

Removable scanner
Probe diameter autodetection
Ergonomic handle
«Push and Pull» trigger

Performant

High accuracy
High resolution
High speed
Compact and lightweight scanner
Probing and scanning in the same measuring range

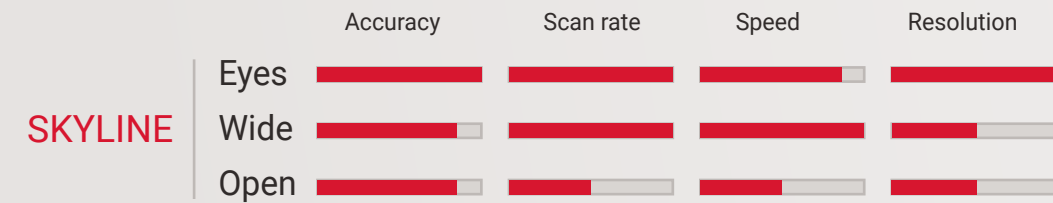
... and more”



SKYLINE SCANNERS: SPEED AND ACCURACY

Skyline scanners use state-of-the-art technologies developed by KREON for nearly 30 years. Apart from leading technical capabilities, they are highly reliable, compact and adapt to almost any working environment.

Based on a single technology platform, Skyline 3D scanners are available in three models: Skyline **Eyes**, **Wide** and **Open**.



Find out specifications at the next page

To better capture reality, keep
"EYES WIDE OPEN"

ADVANCED SCANNING SPEED 200mm* laser line

- ▶ Decreased number of scan passes on the part given to max 200 mm laser line*
- ▶ Faster movement of the 3D scanner assured by the increased frequency
- ▶ Acquisition speed of 600,000 points/sec, allowing to quickly get the dense point cloud*
- ▶ Ergonomic "push and pull" handle, providing a fabulous scanning efficiency

HIGH RESOLUTION 25µm* AND HIGH ACCURACY 9µm*

- ▶ 2,000 points per laser line for a high resolution level*
- ▶ Optimal accuracy, even on shiny reflective surfaces, due to blue laser fineness
- ▶ Temperature compensation of the 3D scanner to avoid pre-heating and to maintain a constant accuracy

EASE OF USE

- ▶ Scan longer owing to the 3D scanner lightness (weight less than 400 g)
- ▶ Reach and scan the hard-to-access zones of each part, thanks to compactness
- ▶ Visualize precisely the ideal scanning distance with the LED indicator
- ▶ Remove the scanner rapidly and without any tool to accelerate the probe mounting

Software used for probing and scanning:
Polyworks, Metrolog, Geomagic, PowerInspect, Capps, etc

*maximum values depending on the Skyline scanner model

SKYLINE EYES

THE MOST ACCURATE



catches the eye on the most challenging parts and applications

SKYLINE WIDE

THE FASTEST



is wide-awake to scan large surfaces at high speed

SKYLINE OPEN

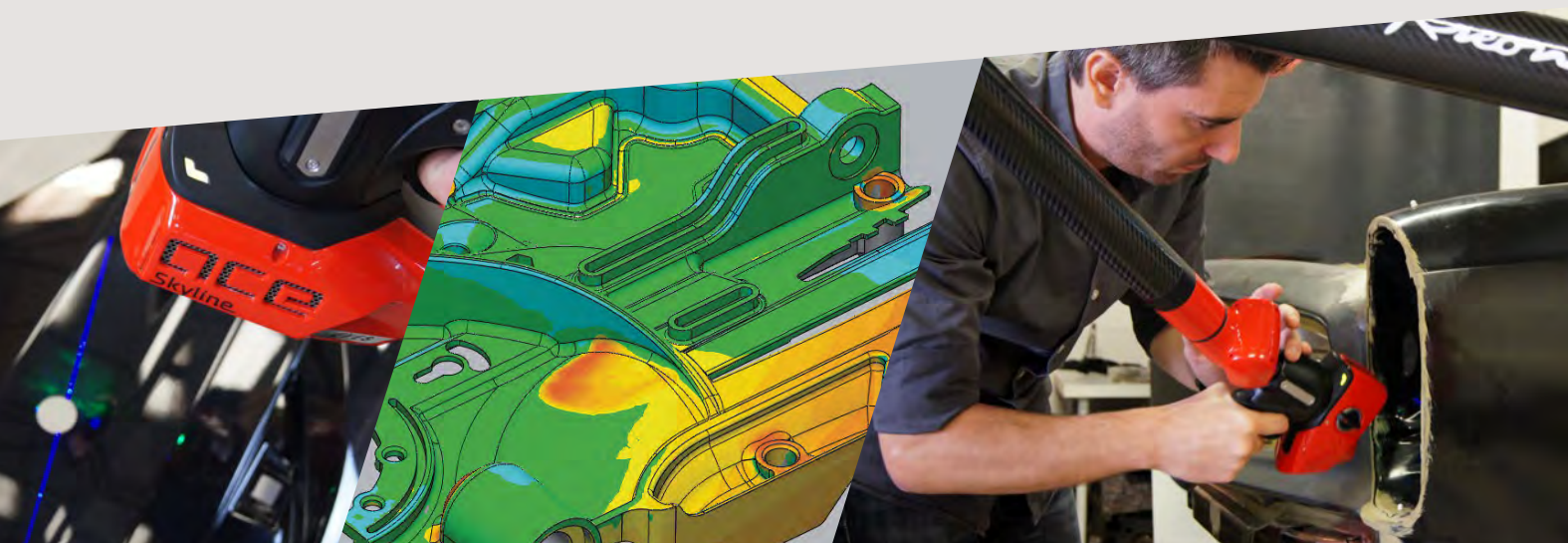
THE MOST AFFORDABLE



is open to any kind of project and application

SKYLINE SPECIFICATIONS

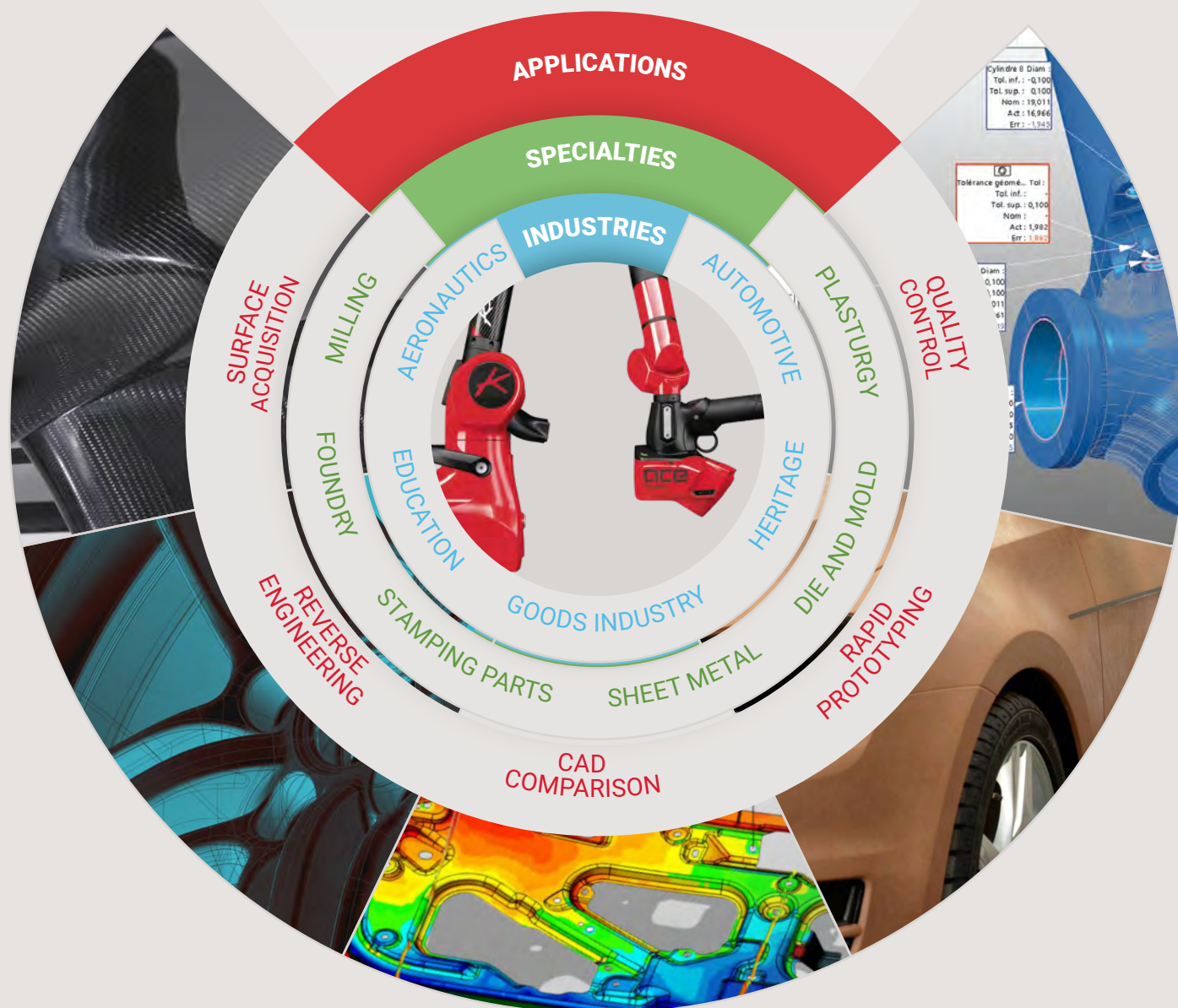
| | EYES | WIDE | OPEN |
|---------------------------------------|-----------------|-----------------|-----------------|
| Max scanning speed | 600.000 pts/sec | 600.000 pts/sec | 200.000 pts/sec |
| MPE (P[Size.Sph.All:Tr:ODS]) (2σ) *1 | 9 µm | 15 µm | 15 µm |
| MPL (P[Form.Sph.D95%:Tr:ODS]) (2σ) *2 | 15 µm | 17 µm | 20 µm |
| MPL (P[Form.Pla.D95%:Tr:ODS]) (2σ) *3 | 18 µm | 22 µm | 25 µm |
| Max laser line width | 100 mm | 200 mm | 100 mm |
| Max frequency | 300 Hz | 300 Hz | 200 Hz |
| Laser line color | Blue | Blue | Blue |
| Line resolution | 25 µm | 50 µm | 50 µm |
| Stand-off distance | 90 mm | 85 mm | 85 mm |
| Field of view | 80 mm | 110 mm | 110 mm |
| Led indicators | Yes | Yes | No |
| Temperature compensation | Yes | Yes | No |



APPLICATIONS

Kreon fulfills the needs and expectations of demanding customers regarding quality control, 3D measurement, deviation viewing, providing highly effective measurement solutions since many years.

**ACE Skyline optimizes
all your 3D measurement
processes**



TESTIMONIALS

Our customers choose ACE arms because...



Ryan Chapman, Head Metrologist at Mann Hummel:

"We never imagined that the ACE arm with its scanner would increase our productivity, inspection quality and profitability so significantly."



Michele Rausse, Head of Technical Department at IMarc:

"The ACE arm is a high-performance, versatile piece of equipment that meets all our measurement needs. Hard to see how we ever got by without it!"



Levi Meyer, Head Metrologist Herman Miller:

"The ACE Skyline arm, initially acquired for inspecting tubes, has come into its own in other applications too."



Marco Magnifico, Aerospace Engineer at Eurotech:

"Sometimes we use the Kreon measuring arm non-stop for a whole week. During these peak periods, we know we can count on its reliability."



Fabio Panarelli, Quality Inspector at Composittech:

"The speed and ease of use of the ACE Skyline arm have allowed us to significantly increase our productivity across the inspection phases."

SPECIFICATIONS

ACE MEASURING ARM

| | Arm model | Working volume | E _{UNI} * | P _{SIZE} * | P _{FORM} * | L _{DIA} * | SPAT* |
|--------|-----------|----------------|--------------------|---------------------|---------------------|--------------------|----------|
| 7 AXES | Ace-7-20 | 2 m | 0.033 mm | 0.012 mm | 0.020 mm | 0.043 mm | 0.022 mm |
| | Ace-7-25 | 2.5 m | 0.036 mm | 0.015 mm | 0.024 mm | 0.049 mm | 0.027 mm |
| | Ace-7-30 | 3 m | 0.059 mm | 0.020 mm | 0.035 mm | 0.081 mm | 0.042 mm |
| | Ace-7-35 | 3.5 m | 0.069 mm | 0.024 mm | 0.041 mm | 0.095 mm | 0.054 mm |
| | Ace-7-40 | 4 m | 0.083 mm | 0.029 mm | 0.048 mm | 0.115 mm | 0.066 mm |
| | Ace-7-45 | 4.5 m | 0.112 mm | 0.045 mm | 0.060 mm | 0.125 mm | 0.078 mm |
| | Ace-7-50 | 5 m | 0.140 mm | 0.060 mm | 0.075 mm | 0.135 mm | 0.095 mm |
| 6 AXES | Ace-6-20 | 2 m | 0.029 mm | 0.010 mm | 0.016 mm | 0.033 mm | 0.020 mm |
| | Ace-6-25 | 2.5 m | 0.032 mm | 0.012 mm | 0.019 mm | 0.038 mm | 0.025 mm |
| | Ace-6-30 | 3 m | 0.044 mm | 0.018 mm | 0.028 mm | 0.053 mm | 0.033 mm |
| | Ace-6-35 | 3.5 m | 0.056 mm | 0.021 mm | 0.037 mm | 0.068 mm | 0.042 mm |
| | Ace-6-40 | 4 m | 0.067 mm | 0.025 mm | 0.043 mm | 0.086 mm | 0.051 mm |
| | Ace-6-45 | 4.5 m | 0.080 mm | 0.029 mm | 0.048 mm | 0.100 mm | 0.069 mm |
| | Ace-6-50 | 5 m | 0.120 mm | 0.040 mm | 0.060 mm | 0.120 mm | 0.090 mm |

ACE+ MEASURING ARM

| | Arm model | Working volume | E _{UNI} * | P _{SIZE} * | P _{FORM} * | L _{DIA} * | SPAT* |
|--------|-----------|----------------|--------------------|---------------------|---------------------|--------------------|----------|
| 7 AXES | Ace+7-25 | 2.5 m | 0.029 mm | 0.012 mm | 0.022 mm | 0.045 mm | 0.025 mm |
| | Ace+7-30 | 3 m | 0.052 mm | 0.017 mm | 0.030 mm | 0.074 mm | 0.039 mm |
| | Ace+7-35 | 3.5 m | 0.063 mm | 0.021 mm | 0.037 mm | 0.089 mm | 0.045 mm |
| | Ace+7-40 | 4 m | 0.076 mm | 0.026 mm | 0.042 mm | 0.105 mm | 0.054 mm |
| | Ace+7-45 | 4.5 m | 0.103 mm | 0.040 mm | 0.051 mm | 0.114 mm | 0.067 mm |
| 6 AXES | Ace+6-25 | 2.5 m | 0.026 mm | 0.009mm | 0.017 mm | 0.037 mm | 0.021 mm |
| | Ace+6-30 | 3 m | 0.039 mm | 0.014 mm | 0.024 mm | 0.047 mm | 0.030 mm |
| | Ace+6-35 | 3.5 m | 0.052 mm | 0.017 mm | 0.031 mm | 0.063 mm | 0.036 mm |
| | Ace+6-40 | 4 m | 0.063 mm | 0.022 mm | 0.038 mm | 0.080 mm | 0.044 mm |
| | Ace+6-45 | 4.5 m | 0.073 mm | 0.025 mm | 0.043 mm | 0.093 mm | 0.059 mm |

*All specifications are subject to change without notification

ACE MEASURING ARM WITH SKYLINE SCANNERS

| Arm model | ACE | | | ACE+ | | |
|-----------|---|---|---|---|---|---|
| | Skyline Eyes L _{DIA scanning} * | Skyline Wide L _{DIA scanning} * | Skyline Open L _{DIA scanning} * | Skyline Eyes L _{DIA scanning} * | Skyline Wide L _{DIA scanning} * | Skyline Open L _{DIA scanning} * |
| Ace-7-20 | 0.040 mm | 0.044 mm | 0.046 mm | | | |
| Ace-7-25 | 0.046 mm | 0.050 mm | 0.052 mm | 0.042 mm | 0.046 mm | 0.049 mm |
| Ace-7-30 | 0.061 mm | 0.063 mm | 0.065 mm | 0.052 mm | 0.056 mm | 0.059 mm |
| Ace-7-35 | 0.076 mm | 0.079 mm | 0.081 mm | 0.066 mm | 0.071 mm | 0.073 mm |
| Ace-7-40 | 0.088 mm | 0.099 mm | 0.102 mm | 0.077 mm | 0.081 mm | 0.084 mm |
| Ace-7-45 | 0.120 mm | 0.130 mm | 0.132 mm | 0.095 mm | 0.104 mm | 0.110 mm |
| Ace-7-50 | 0.140 mm | 0.155 mm | 0.160 mm | | | |

Operating temperature range: 10-45 °C
 Power supply: universal worldwide voltage 100-250V
 Humidity: 95%, non condensing
 IP51



ACE ARMS ARE COMPLIANT WITH ISO 10360-12

According to ISO 10360-12, 2016 :
 EUNI (EUni:0:Tact.AArm) : Unidirectional distance error between two probed points in the arm volume
 P_{SIZE} (PSize.Sph.1x25:Tact.AArm) : Error on the measurement of a sphere diameter by probing
 P_{FORM} (PForm.Sph.1x25::Tact.AArm) : Dispersion value in measurement of a sphere radius by probing
 L_{DIA} (LDia.5x5:Art:Tact.AArm) : Errors due to arm articulations, mainly axes 5, 6 and 7 of the wrist, measured with probe
 SPAT : Measurement error when the probe is stationary and the arm elbow moves from left to right

SKYLINE SCANNERS ARE COMPLIANT WITH ISO 10360-8

According to ISO 10360-8:2013:
 L_{DIA scanning} (LDia:j:ODS) : Errors due to arm articulations, mainly axes 5, 6 and 7 of the wrist, measured with scanner
 *1 MPE (P[Size.Sph.All:Tr:ODS]): Error on the measurement of a sphere diameter by Scanning
 *2 MPL (P[Form.Sph.D95%:Tr:ODS]): dispersion value on 95% of the measured points on a sphere
 *3 MPL (P[Form.Pla.D95%:Tr:ODS]): dispersion value on 95% of the measured points on a plan



60

expert distributors
around the world

Contact us for a demo
contact@kreon3d.com



KREON3D.COM

KREON Technologies
19, Rue Columbia ESTER Technopole 87068 LIMOGES Cedex (FRANCE)
Tel : +33 555 42 80 40
E-mail : contact@kreon3d.com