

ROMER / CIMCORE PRODUCT DATA SHEET

3000i SC, 7th Axis Portable Coordinate Measuring Machine



9/25/02

General:

Machine Model - Seven Axis Articulated Portable Coordinate Measuring Machine

Type of Probing System - Rigid, Flexible or Non-Contact.

Modes of Operation - Manual, Articulated by User

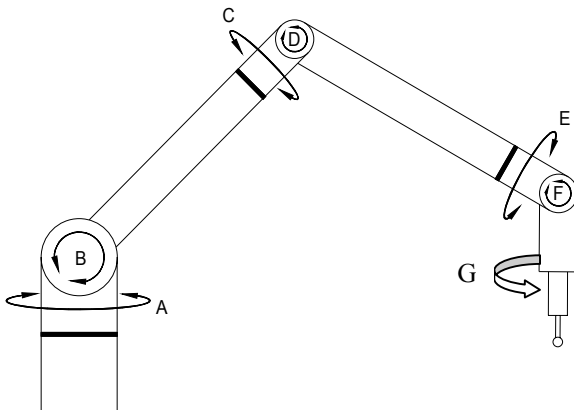
Control Modes - Manual

Special Accessories - 7th Axis Linear Rails, Additional Contact and Non-Contact probes, GridLOK Positioning System, SpaceLOK Removable External Counterbalance, Power Probe™

Machine Classification, Degrees of Freedom - 2-2-3

Axis	A	B	C	D	E	F	G
Degrees of Rotation	Infinite	170°	Infinite	180°	Infinite	180°	300°

Degrees of Rotation with C/Balance	Infinite	145°	Infinite	180°	Infinite	180°	300°
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Dimensions, Weights and Moments:

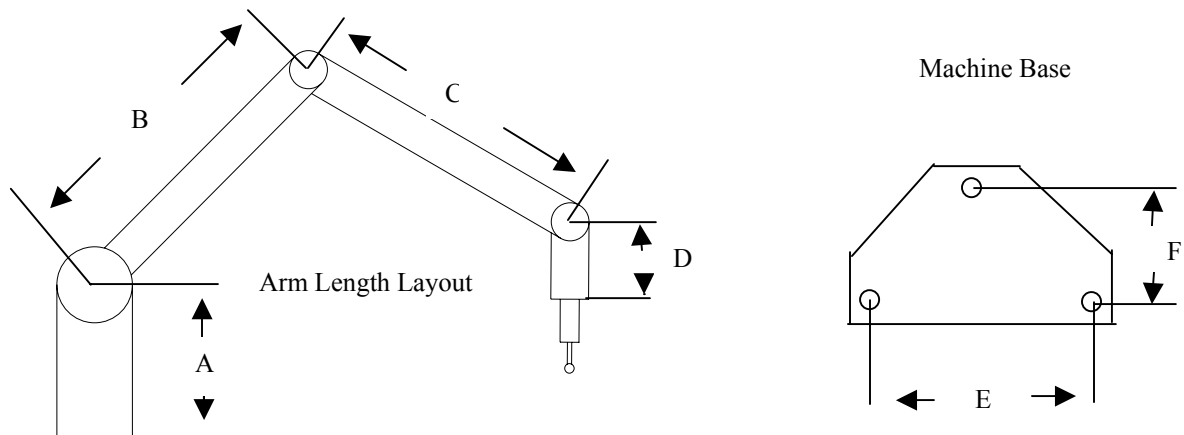
Measuring Range (X,Y,Z - Spherical)

Arm Model	Range (mm)	Range (Inches)
3012i	1200 mm	48 inches (4')
3018i	1800 mm	72 inches (6')
3024i	2400 mm	96 inches (8')
3028i	2800 mm	108 inches (9')
3030i	3000 mm	118 inches (10')
3036i	3600 mm	144 inches (12')

Minimum Installation Area for the System :

Width -	250 mm, (10")
Length -	380 mm, (15")
Height -	610 mm, (24")

Arm Dimensions



Arm Model	"A" Dim.	"B" Dim.	"C" Dim.	"D" Dim.	"E" Dim.	"F" Dim.
3012i	390 mm	390 mm	390 mm	70 mm	175 mm	125 mm
3018i	390 mm	498 mm	442 mm	70 mm		
3024i	390 mm	690 mm	471 mm	70 mm		
3028i	390 mm	776 mm	530 mm	70 mm		
3030i	390 mm	955 mm	635 mm	70 mm		
3036i	390 mm	1004 mm	760 mm	70 mm		

Mass

Arm Model	Mass (Kg.)	Mass (lb.)
3012i	5.4 Kg	12
3018i	5.8 Kg	13
3024i	7.0 Kg	15.5
3028i	8.0 Kg	17.5
3030i	8.2 Kg	18
3036i	8.6 Kg	19

*** Arm Weights are ARM ONLY**

Laptop Computer: 2.25 Kg. (5 lb.)

Counter Balance: 1 .00Kg. (2 lb.)

Transportation Case:

Small: 7.25 Kg. (16 lb.) - (3012 & 3018i models)

Large: 11.3 Kg. (25 lb.) - (3024i, 3028i, 3030i, 3036i models)

Software - WinRDS Interface / Support Software

Various Application Software Packages, (See Catalog)

Operating Systems - Win98, WinNT, Windows 2000, WinXP (WinRDS 2.3.3 + up)

Performance Data

Arm Model	Point Accuracy (2 Sigma)	Length Accuracy (2 Sigma)
3012i	+/- 0.00078" (.020 mm)	+/- 0.0011" (.028 mm)
3018i	+/- 0.0014" (.035 mm)	+/- 0.0020" (.050 mm)
3024i	+/- 0.0016" (.042 mm)	+/- 0.0024" (.060 mm)
3028i	+/- 0.0020" (.050 mm)	+/- 0.0028" (.071 mm)
3030i	+/- 0.0024" (.061 mm)	+/- 0.0034" (.087 mm)
3036i	+/- 0.0032" (.080 mm)	+/- 0.0045" (.113 mm)

Point Accuracy: Obtained via Single Point Articulation Test, Values at 2 Sigma Confidence per Pending B89 Specification, Range/2 method

Length Accuracy: Obtained via Volumetric Length Accuracy Test, Values at 2 Sigma Confidence per Pending B89 Specification, Range/2 method

Arm Model	Linear Displacement Accuracy
3012i	+/- 0.0018" (.045 mm)
3018i	+/- 0.002" (.050 mm)
3024i	+/- 0.0022" (.055 mm)
3028i	+/- 0.0024" (.060 mm)
3030i	+/- 0.0028" (.071 mm)
3036i	+/- 0.003 " (.080 mm)

Linear Displacement Accuracy: Obtained on certified step-gage throughout measuring volume. Horizontal (X & Y) orientations and 45° inclinations at 2 Sigma Confidence. Certification statistics calculated via "Range/2" method.

System Resolution

Resolution of Measuring System, (Radial): 0.65 Arc Seconds

Resolution of Measuring System, (Linear): Dependent on distance

Resolution at a distance = $(2\pi / 2 \times 10^6) * R$ (in mm)

Arm Model	Linear Resolution at Maximum radial distance
3012i	0.00180 mm / mm
3018i	0.00283 mm / mm
3024i	0.00372 mm / mm
3028i	0.00440 mm / mm
3030i	0.00465 mm / mm
3036i	0.05650 mm / mm

Probing system: Three Point Kinematic Seat

Probing mounting error: 0.0127 mm (0.0005")

Measuring forces (applied during point measurement)

Fixed Value	.15 N
Pre-selectable	NO
Pre-selectable in steps (resolution):	N/A
Maximum stylus mass:	450 g
Maximum stylus length:	300 mm

Repeatability of probe/stylus change:

In all planes referred to probe tip center (range)	0.0127 mm (0.0005")
For a probe length of:	300mm

Scanning

Resolution: (See Arm Resolution)

Operating Range: Entire Spherical Volume of Arm

Data Rate: 66 Points / Second Max

Probing error: (See Arm Performance Specifications)

Time for scanning mode test: Manual, Operator Dependant

points/s
μm
s

Operating conditions

1. Stylus Length: Variable
2. Type Diameter: Variable
3. Number of Measurement Points: 66 Points / Second Max
4. Scanning Speed: 66 / Sec Max
5. Number and Location of measurement lines: Single Point, Probe Center

Speed of Travel and Acceleration:

Probing speed:	Operator / Application Dependant	mm/s
Speed in CNC Operation:	Manual Mode Only	mm/s
Acceleration:	Operator / Application Dependant	mm/s ²
Speed in set-up and testing operation:	N/A	mm/s

Measuring time on a sphere: Operator Dependant, Manual Measurement s

Supply Data:

Universal Worldwide Voltage

Power supply

Voltage:	110 Volts or 220 Volts	v
Current:	15 A	A
Permissible voltage variation:	100 - 240 Volts (10%)	%
Permissible voltage peaks between	1 μ s and 100 μ s:	at 250 Vp
Power consumption (detailed specification, if required):		54 VA
Frequency:	From 50 Hz to 60 Hz	

Air supply

Pressure:	N/A
Consumption at:	N/A
Purity Specification:	N/A

Permissible Environmental conditions

Air Humidity: Relative Humidity from 5% to 95%, Non-Condensing

Vibration (55 to 2000Hz): $\leq 100 \text{ ms} / \text{s}^2$ EN 60 068-2-6

Shock (6ms): $\leq 1000 \text{ ms} / \text{s}^2$ EN 60 068-2-27

Protection: Provides protection to IP 64 Standards

Temperature range:

Of machine not in use: 32°F to 115°F (0° C to 46° C)

Required for operation: 32°F to 115°F (0° C to 46° C)

Temperature conditions in which the specified length-measuring uncertainties are guaranteed:

Ambient temperature: 20° C \pm 6.5° C (68° F \pm 12° F)

Air temperature variation: Per Hour: \pm 2° F

Acceleration:

Permissible angular: 105 rad/s²

Vibration maximum: 55 to 2000 Hz (IEC 68-2-27)

Shock and Impact: 6ms (IEC 68-2-27)

DOCUMENT REVISION HISTORY

<u>DATE</u>	<u>DESCRIPTION OF REVISION</u>	<u>RELEASED BY</u>
9-25-02	Initial Official Release of Document	Steve Ilmrud, V.P. Operations