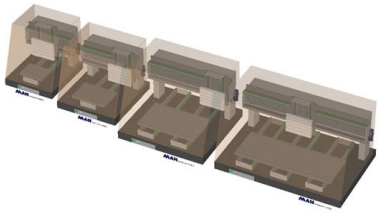

KOSY3 Machines in small format

Technical data for all machines

Technical data of the mechanical elements	
Coordinate table	
Machine body	
Massive base, Body in Alu profiles, screwed	
Embedded linear profiles and columns	
Measures of the base, A3-Version (length x width x height) Measures of the base, A3lang-Version (l x w x h) Measures of the base, A4-Version (l x w x h) Measures of the base, A5-Version (l x w x h)	approx. 720 x 750 x 110 (mm) approx. 720 x 1050 x 110 (mm) approx. 580 x 540 x 110 (mm) approx. 500 x 450 x 110 (mm)
Protection hood, shock-resitant	Equipment with pivoting protection hood with CNC-machine. When used as coordinate table only, protection hood is not required.
Body height without protection hood A3, A3long, A4 - Version A5 - Version	 Approx. 530 mm approx. 480 mm
Body height with closed protection hood A3, A3long, A4 - Version A5 - Version	 approx. 570 mm approx. 520 mm
Body height with opened protection hood A3, A3long A4 - Version A5 - Version	 approx. 950 mm approx. 860 mm approx. 760 mm
Length (Depth) with opened protection hood A3-Version A3long-Version A4-Version A5-Version	 approx. 950 mm approx. 1050 mm approx. 910 mm approx. 800 mm
Linear drives / coordinate table	
Closed version	Protection IP 2X
Roller-tracks with 2 hardened guide shafts	supported by special profile
Distance between the steel shafts	Approx. 140 mm
Min. 4 rollers per axis Version KS3x1 ++ Optional equipment	dust protected ball-bearing Grooved ball bearing Rollers with antifriction bearing, covers with wipers
Linear movements by ball screws	12 x 4 (mm), ball bearing on both sides
Precision of the spindle	< 0,01 mm
Travel X - Y - direction, A3-Version	> DIN A3 , approx. 520 x 320 (mm)
Travel X - Y - direction, A3 long-Version	> DIN A3 , approx. 820 x 320 (mm)
Travel X - Y - direction, A4-Version	> DIN A4 , approx. 320 x 265 (mm)
Travel X - Y - direction, A5-Version	> DIN A5, approx. 220 x 170 (mm)
Travel Z - direction, A3, A3long, A4 - Version	Approx. 108 mm
Travel Z - direction, A5 - Version	Approx. 70 mm
Each axis with 1 two-phase-stepping-motor	>1,8 Ampere / 2,4 Volt; 1,8 °
Holding torque of the stepping-motors	Approx. 50 Ncm
End switch for reference position	software supported

Technical data of the mechanical elements, all machines	
Utility data of the coordinate table	
Resolution (1 step of the stepping motor)	0,0025 mm, Microstep
Accuracy of repetition (100 repetitions)	< 0,05 mm
Accuracy of positioning of each axis, A3 a. A3long-version	< 0,1 mm
Accuracy of positioning of each axis, A5 a. A4-version	< 0,05 mm
Working area (Y-table), A3-Version	Approx. 500 x 300 (X x Y mm)
Working area (Y-table), A3 long-Version	Approx. 800 x 300 (mm)
Working area (Y-table), A4-Version	Approx. 300 x 245 (mm)
Working area (Y-table), A5-Version	Approx. 200 x 148 (mm)
Surface accuracy, Y-table A3-Versions	< +- 0,1 mm, surface plane milled
Surface accuracy, Y-table A4 a. A5 -Version	< +- 0,05 mm, surface plane milled
Max. clearance (height of workpiece) x distance of pillar), A3 A3 lang A4 A5 - Version	 approx. 100 x 580 (mm) approx. 100 x 890 (mm) approx. 60 x 370 (mm) approx. 55 x 290 (mm)
Machining power when used as coordinate table	< 150 N In the base construction, shear planes are avoided. When customers assemble own elements, please take care to avoid shearing.
max. feed, all directions/axes when used as coordinate table	33 mm/sec (2m/min) * > 33 mm/sec, if industrial customer takes own protection measures
Machining data, when used as CNC-machine (Coordinate table moves machining unit for milling, drilling, etc.) Machine load only (different machining units cannot reach these values)	
max. depth of steps in wood / PVC	* 10 mm / 5 mm ** 5 mm / 2 mm
max. depth of steps in Aluminium (AlMgSi05)	* 2 mm ** 0,5 mm
max. depth of steps in brass,	* 1 mm ** 0,2 mm
max. tooldiameter	* mill and drill 6 mm, all types. ** mill 3,17mm drill 6mm, solid carbide only (FHM) because of breaking pattern
max. feed X-, Y-direction (in rapid mode)	° 100 mm/sec (6 m/min) °° 33 mm/sec (2 m/min)
max. feed X-, Y-direction (in working mode)	° 50 mm/sec °° 33 mm/sec
max. feed Z-direction (in working mode)	33 mm/sec
max. load Z-table	KS3x1: 2 kg ++ KS3x2: 5 kg / 10kg with balancer
machining force X/Y/Z bei 10mm/s feed	° > 100 N (ca. 10,2 kp) < 200 N °° limited to 120 N
machining force in rapid mode	° > 40 N °° limited, lower dynamics
max. machining force Z	° > 200 N °° begrenzt auf 120 N
Technical data of the electronics	
Controlling electronics with IF5, MultiController MCS	
General information	
Controlling electronics compl. with power pack	integrated in body
MicroController	MultiController-System with Master and AxisControllers (Slaves)
AxisControllers (slaves) for main axes	X, Y and Z
AxisController (slave) for C-axis	integrated, connection lead upwards by energy chain
AxisController (slave) for U-axis	optional, connection also optional ++ KS3x2 standard
Flash in master and slaves	content (firmware) to exchange
Voltage	230 Volt V +- 5% / approx. 200 Watt
Control connection	Serial port RS 232, 9 pol. D-sub
Connection cable to PC	cable included in delivery

Technical data of the electronics, continued	
System extension	++ Connections for optional operational elements: Handwheels JoyStick TeachIn-Aids Override Automation elements (Sockets behind frontlid with KS3x1 for extra charge) Connection in all packages for: Scanner Tool-length measurer
Connections for endswitches of the linear drives	Software support
Blocking of machining	through whole keyboard and switch "Sperren" ("Block")
Control of stepping motor	
Max. phase current of output stages	2,5 Ampere, limitation
Current regulation	pulse-width-modulation
Current reduction at standstill Current reduction with open hood	to approx. 30% of rated current reduction of machining force
Frequency generating and current regulation	by integrated micro controller
Clock frequency	independent from PC clock frequency
Elements for automation	
1 Low-heat-device socket, on/off programmable	230 Volt / 720 Watt , e.g. for BAE10
Dsub-socket 15pol, all operating data programmable	stepping motor with encoder, e.g. C-axis BAE5x
++ 1 small voltage, on/off and level programmable	Approx. 2....24 Volt / 0,1 A and 0,5 .... 10 Volt / 0,1 A , e.g. for BAE6x
++ 7 free availible relays on/off progr.	conducting capacity 24 V / 0,5 A, changer
1 small voltage	Fix 24 Volt / 0,1 Ampere
Digital inputs at master Digital inputs at slaves	3 x direct, 16 x prepared in matrix 5 at each slave prepared, optional also in optocoupler
6 analog inputs	0 ... 3,3/5 Volt prepared, oftware support
Technical data Software	
Software and operation	
Allgemeines	
nccad = CAD/CAM/CNC-Software with direct machine control from MAXcomputer in level Prof.	Description under KOSY- Components/Software/nccad Specialversion since 7.5 for MultiController MCS
Manual operation Programming	by keyboard or digital handwheels (option with KS3x2) or JoyStick (option with KS3x2) TeachIn or CNC-Code DIN/ISO 66025 or CAD/CAM
Emergency stop	Level 1: press any key on keyboard or mouse Level 2: switch "Sperren" (Lock) at the front panel Level 3: Mushroom-shaped emergency stop on your way-out
PC with at least Windows2000, and higher	
General data	
Surrounding conditions	5 to 40°C (class 3K3), max. 60% rel. Humidity
Users (some data may differ)	* adult qualified personnel ** for adolescents from 14 and more
maintenance interval, first maintenance /subsequently	after 50 operating hours/ as required ask for special conditions in industrial long-term usage!
Manual for start-up	delivered together with software in printed
Proved security	CE after EU-guidelines
Please note for transportation: Weight of coordinate table, IF and power pack	Approx.: 55 kg (A5); 70 kg (A4); 110 kg (A3); 140 kg (A3lang)

Notice:
Subject to modifications and amendments that serve technical progress !
The data are valid for „Standard“ machines (KS3x1) ans „Special“ (KS3x2)
* Industrial use
** Use in schools
° Protection hood closed
°° Protection hood open
++ Improved elements for version „Special“