

Smart factory

DINOX NC TOOLING SYSTEM

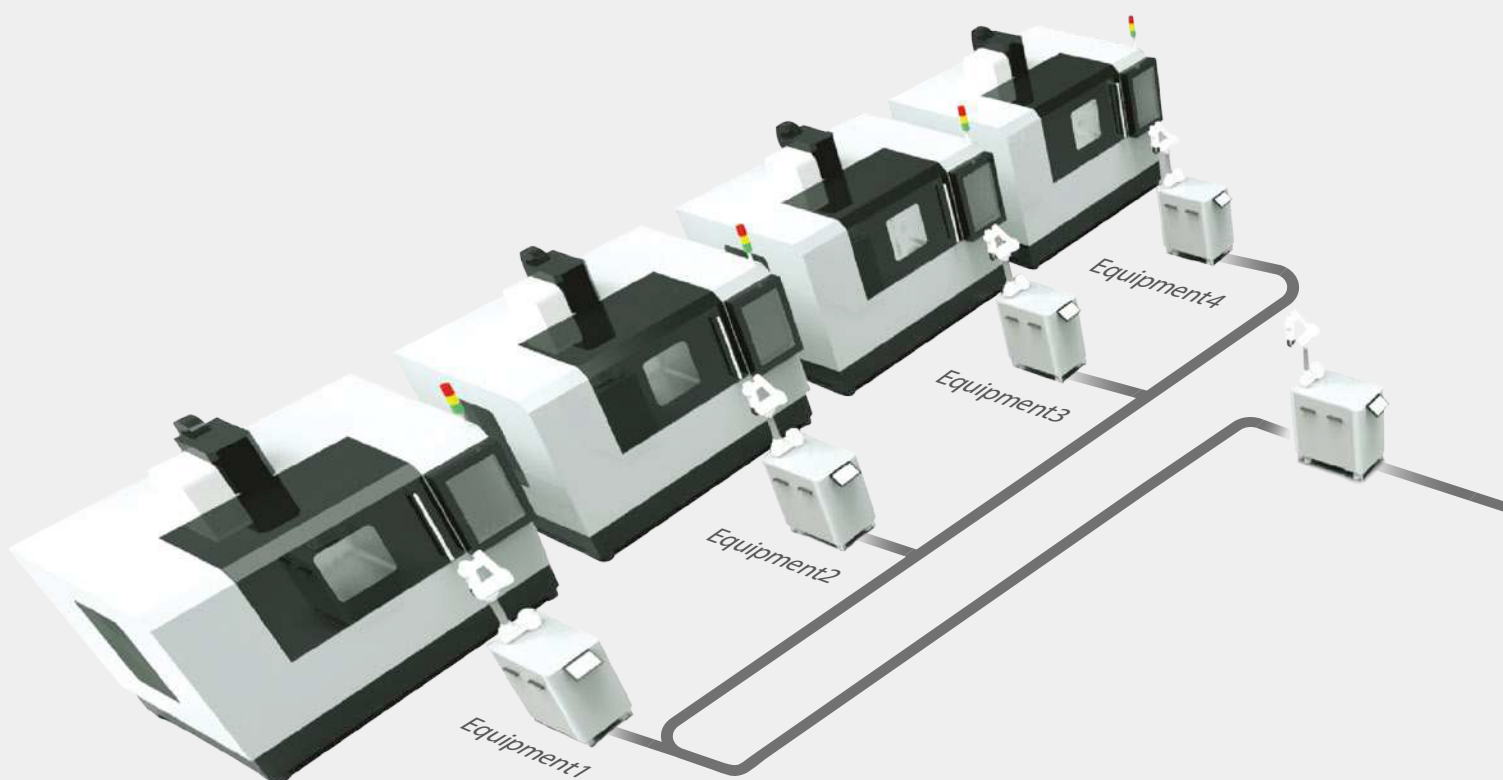
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SMART FACTORY

SOLUTION MAP

DINE's Collaborative Robot solution that coexists with humans and creates new values



Collaborative Robot (Collaborative Robot)

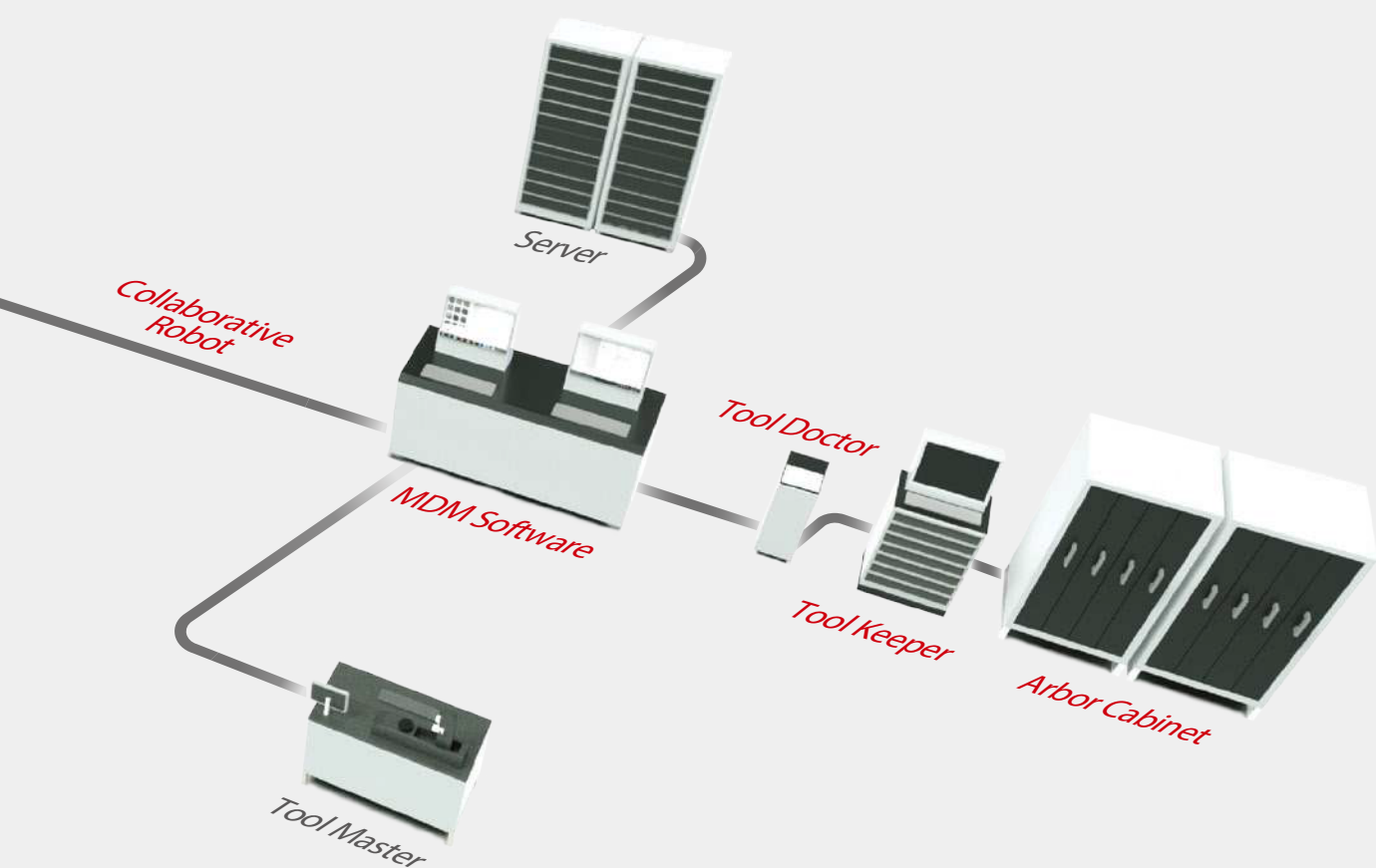
- Optimized for repetitive work in a small space
- Effective for heavy work burdensome for humans

Tool Master (Tool presetter)

- Measures length correction values for tools in advance
- Setting time shortened / equipment downtime reduced

MDM (Tool management S/W)

- Tool holder information management
→ tool diameter, length, storage location
- Integrated management for tools, production, CAM, etc.



Tool Doctor (Monitoring system)

- Manages production defect in mass-production process
→ Tool damage, non-machining, re-machining
- Manages the trend of tool service life

Tool Keeper (Tool management equipment)

- Day/night entering & release control
- Systematic inventory and order management
- Manages the transparency of tool usage results

Arbor Cabinet (Arbor dedicated storage box)

- Functionality of increasing space efficiency and protecting tools (foreign substance inhibited on the site)
- Operates virtual warehouse for Tool Keeper (tool location / quantity management)

Total tool management system that enables the user to identify tool information about tool diameter, length, storage location, etc. stored in the server only by reading the 2D bar code printed on the tool (chuck). It helps all users share information so that work can be performed in an accurate and fast manner.

MDM System



- Assemble by searching the end tool and chuck by equipment and by process
(The protrude length of the assembly tool adjustable)
- Reduction, enlargement, and rotation of shapes available
- Through modeling of shapes



- Cutting conditions can be set according to workpiece, tool, machining equipment, etc.
- Can be utilized throughout all departments by establishing the standardized cutting machining data






- Automatic measuring system using the bar code
- Automatic transfer measured data values to MCT
- Permissible tolerance test of the usable tool available
(comparison of actually measured value vs. setting tolerance)



- Spot stock can be identified in real time
(The protrude length of the assembly tool adjustable)
- Preemptive inventory management process available
(priority order appropriate for safe quantity, etc.)

MDM Introduction effect

	Improves productivity through a shorter C/T	<ul style="list-style-type: none"> Productivity is increased 20~30% through a shorter time for tool setting and measurement.
	Builds an integrated management system	<ul style="list-style-type: none"> Integrated management for tools, production, and CAM, etc. is available.
	Increases convenience and decreases defects	<ul style="list-style-type: none"> Human errors can be prevented by automatic measurement data transfer.

MDM System Cycle



Data assembly	<ul style="list-style-type: none"> Assemble the tool according to database plan/ parts list to which tool holder 2D ID is allocated.
Set value	<ul style="list-style-type: none"> Deploy the tool to the presetter and scan 2D ID. Get the set value and measuring function from the database.
Measured value	<ul style="list-style-type: none"> Measure the tool with the tool presetter and store a measured value in the central database in an automatic manner.
Selective tracking	<ul style="list-style-type: none"> Re-measure or disassemble the tool in case of tool change
Technical data	<ul style="list-style-type: none"> Set up the measured tool on the equipment and 2D ID is detected in the equipment. Exchange information with the CNC control.



Collaborative Robot

Doosan Robotics' official distribution partner
Meet DINE's more varied collaborative robot solutions.

M Series

- Provides the world's top class stability
- Enables exquisite and delicate work
- Enables various work operations including bolting and polishing



A Series

NEW

- Provides the lowest price in the industry
- Faster work speed
- Suitable for simple and repetitive work



Model No

M Series

M0609

- Payload 6kg
- Operating radius 0.9m

Optimized for fast repetitive work in a small space

M0617

- Payload 6kg
- Operating radius 1.7m

Efficient for 2 processes at least or long distance work

M1013

- Payload 10kg
- Operating radius 1.3m

Basic model fit for all work processes

M1509

- Payload 15kg
- Operating radius 0.9m

Effective for heavy goods work burdensome for humans

A Series

A0509

- Payload 5kg
- Operating radius 0.9m

Optimized for fast repetitive work in a narrow space

A0912

- Payload 9kg
- Operating radius 1.2m

Collaborative robots with fast behavior speed appropriate for all work

What is Collaborative Robot?



Safe & Fenceless

- Its built-in collision detection function protects the operator against collision
- Enables fenceless collaboration with the operator in a work environment



Easy

- Its easy programming solution enables the operator to easily change work setting in case of process change
- The customer can directly change the program through simple training.



Flexible

- Easy and simple installation. Can be installed within a small space without changing the conventional layout.
- Its 6 torque sensors enables high level tasks.

Option

M Series

Direct Control Unit-Cockpit



Ideal option that can maximize the convenience of direct teaching

Anti Stain Paint (Navy Color)



Dust and pollution proof paints used

Common option

Dart Platform



Software that enables the control of the robot from a PC

A Series

Direct Control Unit-Cockpit



Ideal option that can maximize the convenience of direct teaching

Smart Pendant



Ultra-small pendant only with necessary functions

FT-Sensor



Precise force detection sensor necessary for exquisite and delicate work (6-axis single mounting)

Accessories

Water Jacket



Moisture infiltration prevented to protect the robot from being polluted by liquids

Mobile Base



Robots and controllers embedded to be moved and redeployed freely on the site

Smart Vision Module



On-board image process that enables vision work without a separate PC

Dress Pack



Arrange various harnesses connected to the end tool of the robot for work efficiency



DINE 'S COBOT

WE COEXIST WITH HUMANS

DINE's cobot model line-up

M0609

- Robot with 6kg of payload and 0.9m of operating radius
- Optimized for fast repetitive work in a small space

- Payload : 6kg
- Reach : 900mm



M0617

- Robot with 6kg of payload and the industry's longest operating radius (1.7m)
- Most efficient for 2 work processes at least or long distance work

- Payload : 6kg
- Reach : 1,700mm



M1013

- Robot with 10kg of payload and 1.3m of operating radius
- Basic model fit for all work processes

- Payload : 10kg
- Reach : 1,300mm



M1509

- Robot with the industry's largest payload (15kg) and 0.9m of operating radius
- Effective for heavy goods work burdensome for humans

- Payload : 15kg
- Reach : 900mm



A0509

NEW

- Robot with 5kg of payload and 0.9m of operating radius
- Entry-type collaborative robot fit for fast repetitive work in a narrow space

- Payload : 5kg
- Reach : 900mm



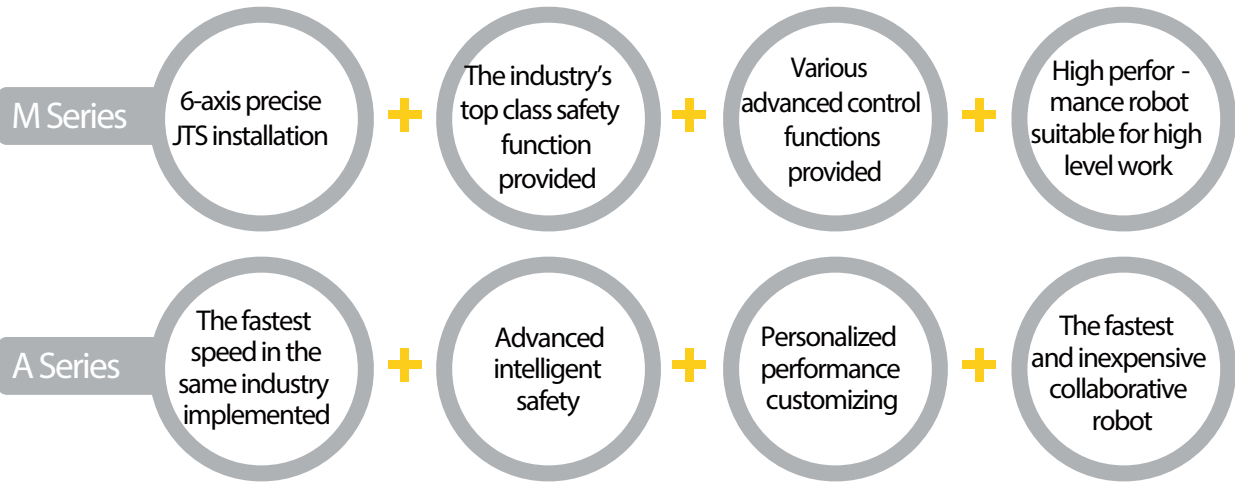
A0912

NEW

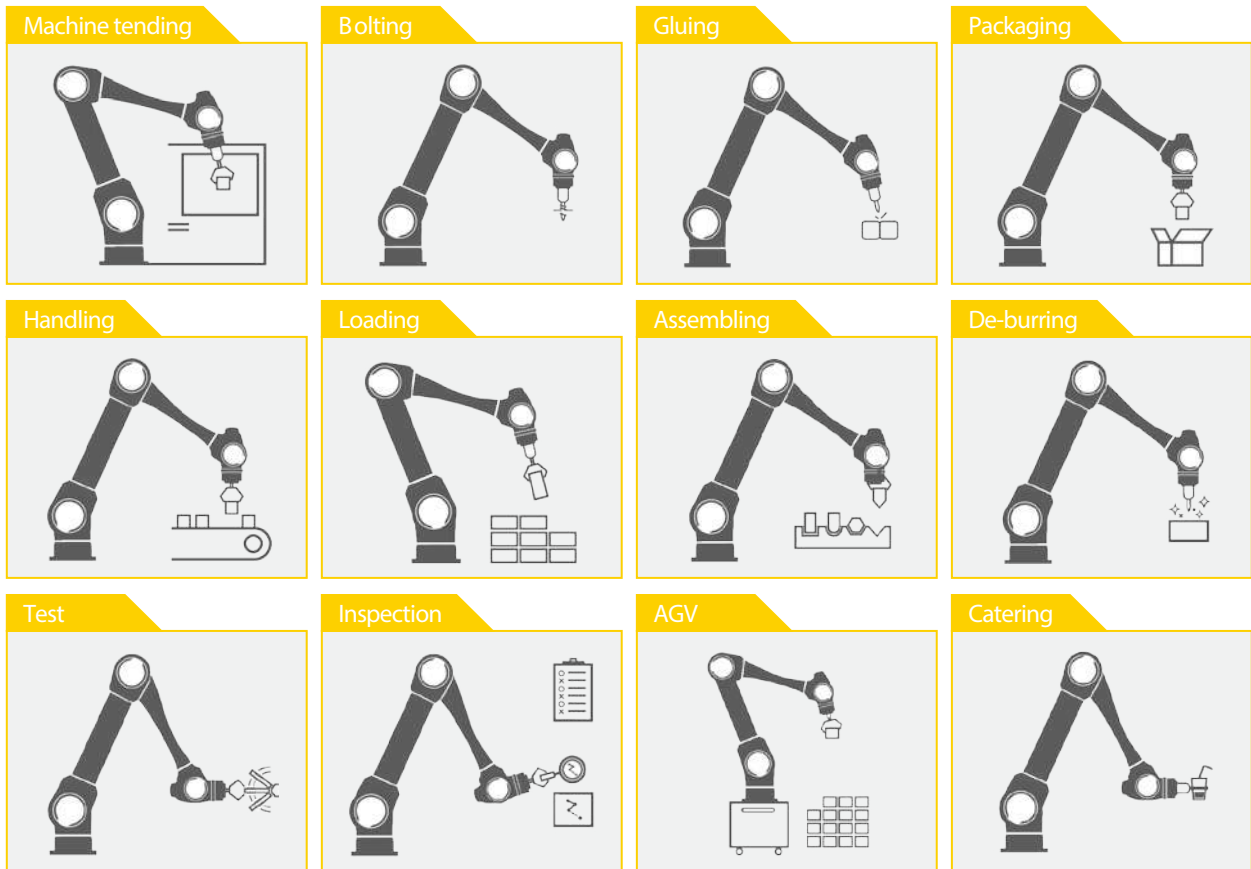
- Robot with 9kg of payload and 1.2m of operating radius
- Entry-type collaborative robot fit for all work processes with fast behavior

- Payload : 9kg
- Reach : 1200mm





Application





TOOL MASTER

Swiss Made/Produced

Domestic Sales Only(in Korea)

Tool Master is a tool presetter by Swiss EVOSET with more than 25-year's experience.

Tool presetter : equipment that measures length correction values for tools before installation in the equipment

Why use it? : It helps cost reduction through productivity improvement due to reduced equipment downtime as well as a shorter setting time.

*the smart way
of tool presetting!*

Payback formula

Using Tool Master reduces a setting time by about 3 minutes per tool.

For example, if you re-setup 20 tools 4 times in a week, you will get another 240 minute production time in a week and additional 192 hours in a year. Multiplying it by your company's equipment production cost per hour, you will get cost reduction to be obtained by using Tool Master. You can calculate an investment payback period through this.

Be sure to consider Tool Master in the case of the company with equipment and tools or the company that frequently sets up tools.

70 seconds



Tool Master 0

250 seconds



Tool Master X

Full line-up of TOOL MASTER

	TOOL MASTER Lite	TOOL MASTER Basic	TOOL MASTER Quadra
Version	Economy type	General entry type	General type
Measurement method	Contact type	Non-contact type (camera)	Non-contact type / Contact type (option)
Scale	General scale	Sylvac scale	Glass scale
Measuring range Norm. (Ømm/Lmm) Max. (Ømm/Lmm)	X250 / Z0... Z300	X400 / 40 ... 600 Z400 / 40 ... 600	X400 / 40 ... 600 Z400 / 40 ... 600
Rapid feed	Manual (by hand)	By pressing the handle button	By pressing the handle button
Tool port	Needle bearing ISO40/50	Needle bearing ISO40/50	Needle bearing ISO40/50 or ISO40/50 KV spindle (Air intake spindle)
Measurement method	Digital reader (0.01mm)	EyeRay® Hawk	EyeRay® Buzzard or Hawk TipRay with Dial indicator



TOOL MASTER LITE

Swiss Made/Produced

Domestic Sales Only(in Korea)

TM Lite is a simple-design economy-type tool presetter that can only measure simple diameter and tool length.

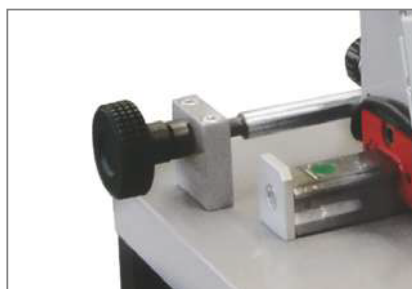


Features

- Tool setting time reduced
- Excellent quality versus price (economy type)
- Easy operation due to simple structure
- Needle bearing tool port
- Digital reader (0.01mm unit)
- No electricity or air needed .
- Weight : 23KG
- Size : 410 x 150 x h540
- AA battery

TECHNICAL DATA

Item	Manual drive
Measurement range	ø mm 250 / L mm 0...300
How to fix the axis	Mechanical type
Fine-adjustment	X axis fine tuning
Measured value indication unit	0.01mm
How to measure	Contact type using a cemented carbide tip





TOOL MASTER BASIC

Swiss Made/Produced

Domestic Sales Only(in Korea)

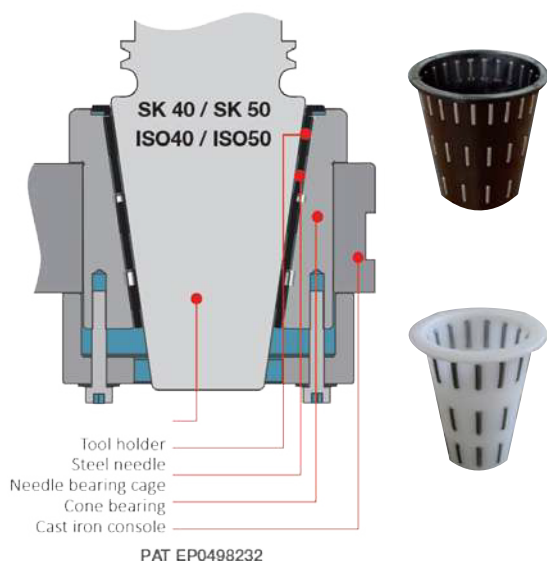
TM Basic is an economical and efficient start-up solution with all standard measurement functions.



Features

- Plug & Work solution
- Simple operation method
- Compact structure and robust body
- HP-PC 20" screen solution
- Fast cutting edge focusing
- Telecentric lens type CMOS camera
- High concentricity
- Best repetitive accuracy
- ISO 50 or ISO 40 integral tool port
- PWB EyeRay[®] Hawk software
- X axis and Y axis endless fine tuning

Patent: Needle Bearing



TECHNICAL DATA

Item	Manual drive
Measurement range	ø mm 400 / L mm 40 400 ø mm 400 / L mm 40 600
How to fix the axis	Pneumatic
Fine-adjustment	X-, I-, Z-axis hand wheel
Tool mounting	Rotary clamping or air injection type needle bearing or KV spindle
How to measure	Image processing through EyeRay [®] Hawk



TOOL MASTER QUADRA

Swiss Made/Produced

Domestic Sales Only(in Korea)

TM Quadra is a fast and simple manual presetter with a high-accuracy measurement method suitable for all users.



Features

- Manual operation at X, I, Z, and C axes
- EyeRay[®] software HWAK or BUZZARD
- All in One PC 20.0" touchscreen technology
- Glass scale
- Telecentric lens type CMOS digital camera
- Cross-sectional inspection
- X axis and Y axis endless fine tuning
- ISO 50 or ISO 40 integral tool port
- Adapter and tool management
- Label printer / table
- Holder for tool storage
- Data transfer to all types of machine tools and third-party systems
- High concentricity
- Best repetitive accuracy

Applicable measurement method

TipRay : Contact type (cemented carbide tip+indicator)
diameter, height only measurement



EyeRay Hawk : Non-contact type (Vision)_Basic
EyeRay Buzzard : Non-contact (Vision)_Advanced
- Diameter, height, angle, due-diligence test,
multi-cutting measurement, etc.



TECHNICAL DATA

Item	Manual drive Practical design and easy-to-use operation
Measurement range	\varnothing mm 400 / L mm 40 400 \varnothing mm 400 / L mm 40 600 \varnothing mm 400 / L mm 40 700 \varnothing mm 600 / L mm 40 400 \varnothing mm 600 / L mm 40 600
How to fix the axis	Pneumatic
Fine-adjustment	X-, I-, Z-axis hand wheel
Tool mounting	Rotary clamping or vacuum injection available needle bearing or KV spindle
How to measure	Image processing through EyeRay [®] Hawk or Buzzard

For Z axis measuring range (Z40~Z605), indicate Z6 behind the product name.

e.g.) TM Quadra EyeRay Hawk Z605

※ For a product whose measuring range is higher than the range supported, please contact us as TM5 separately.

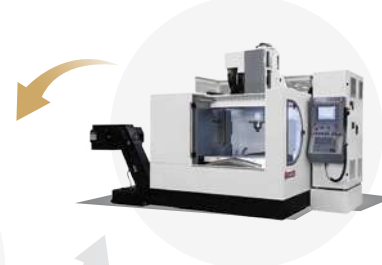


Comparison of components and options per model

Swiss Made/Produced

Domestic Sales Only(in Korea)

Composition and option matters	TM Lite	TM Basic	TM Quadra	
		EyeRay	EyeRay	TipRay
Needle bearing spindle	O	O	O	O
KV spindle ISO50 (air intake)	X	Option		
Measurement method	Cemented carbide contact type	Non-contact 50x camera	Non-contact 50x camera	Non-contact 50x camera
Measuring Scale	General scale	Sylvac Scale	Glass Scale	Glass Scale
LED Front light test function	X	Option	O	Option
20" Monitor and built-in desktop	X	O	X	X
20" Touchscreen All-in-One PC	X	X	O	O
Mouse	X	O	O	O
Keyboard	X	O	O	O
Label printer (Brother)	X	Option	O	Option
Table	X	Option	O	Option
Tool cradle (for 3 tools)	X	Option	O	Option
Test bar included or not	X	O	X	X
Data transfer	X	Option (RFID / 2DID / Post Processor)		
Weight of maximum measurable tool	20Kg	50 Kg		
Power supplied or not	Battery (AA)	Necessary		
Air supplied or not	Unnecessary	Necessary		





ADAPTER

Swiss Made/Produced

Domestic Sales Only(in Korea)



Reduction ISO50 / 40 : ISO available for ISO 10 / 15 / 20 / 25 / 30 / 35 / 40 / 45 / 50

TM Lite / Basic / Quadra



Reduction ISO50 / 40 : HSK (Form A to F) available for HSK 25 / 32 / 40 / 50 / 63 / 80 / 100 / 125

TM Basic / Quadra



Reduction ISO50 / 40 : VDI with clamp lever available for VDI 16 / 20 / 25 / 30 / 40 / 50 / 60

TM Basic / Quadra



Reduction ISO50 / 40 : VDI with index (4x90°) available for VDI 16 / 20 / 25 / 30 / 40 / 50 / 60 / 80

TM Basic / Quadra



Reduction ISO50 : Capto 'easy' available for Capto C3 / C4 / C5 / C6 / C8 / C10

TM Basic / Quadra



Clamp insert K-HSK available for HSK 40 / 50 / 63 / 80 / 100

TM Basic / Quadra

Chuck

Arbor / Modular

Boring tool

Angular head

cBN/PCD

Smart factory

TAUMAX

OTHER



 **MEMO**

 **MEMO**

