



**ATOMm-4000**

**Specifications**

***CMET***

**CMET INC.**

### 1. General Description

ATOMm-4000(it is called “Machine” hereafter) is high performance optical modeling machine.The machine mounts Ultra Violet solid laser excited by Laser Diode (LD). Optical scanning controller adopts a digital scanner. The operation system (OS) software uses Windows 7 for the system control.

### 2. System Configuration

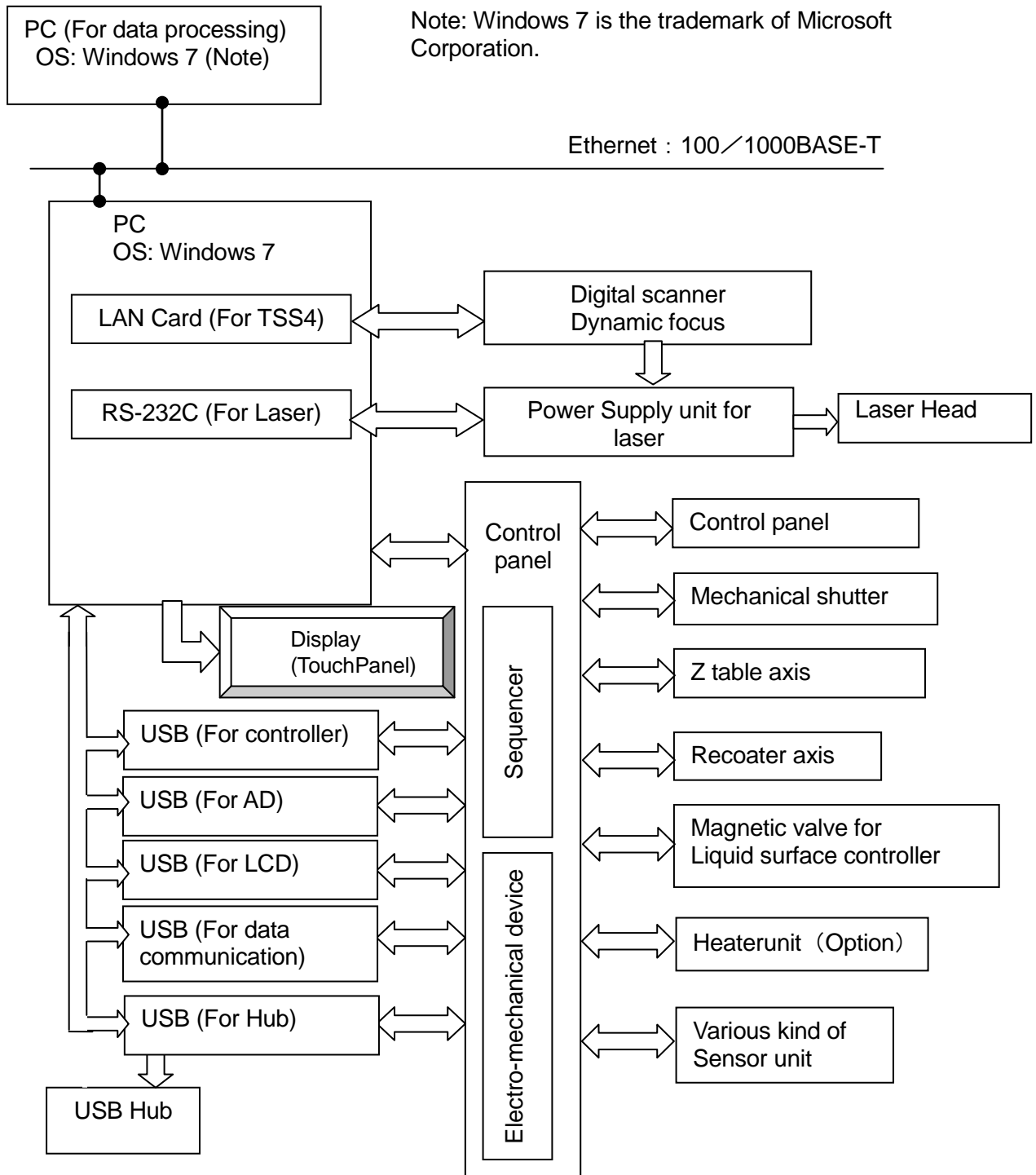


Fig.1 System Configuration

3. Specifications

1	<b>Modeling</b>		
	<b>Maximum modeling size</b>		400mm x 400mm x 300mm
	<b>Maximum modeling weight</b>		Approx. 25Kg
2	<b>Laser unit</b>	Type	Ultra Violet solid laser excited by Laser Diode
	<b>Laser head</b>	Oscillation wavelength	355nm
		Guaranteed optical output power	400mW (40KHz) Guaranteed 250mW at liquid surface
		Warranty period	1 year
<b>Laser power supply</b>	Warranty period for laser power supply	1 year	
3	<b>Optical unit</b>		
	<b>Shutter</b>	Laser ON/OFF controlling system	AOM control
		Laser beam shut off method	Electro magnetic solenoid shutter
		Slide shutter	Manual
	<b>Laser scanner</b>	Digital servo control method	With dynamic focus
		Resolution	0.002mm
		Accuracy of repetitive positioning	±0.006mm
		Maximum scanning speed	30m/sec
		Beam diameter variable method	Dynamic focus
	Beam diameter variable range	Φ0.1 to Φ0.6mm	
4	<b>Recoater unit</b>	Method	Blade recoater method (Bent recoater method:Option)
		Maximum moving velocity	200mm/sec
		Driving method	AC servomotor
5	<b>Z axis unit</b>		
	<b>Z axis</b>	Resolution	0.001mm
		Accuracy of positioning	Less than ±0.010mm
		Accuracy of repetitive positioning	Less than ±0.015mm
Moving velocity	Maximum 10mm/sec		
6	<b>Liquid surface control unit</b>	Liquid surface position adjustment range	To standard position between +3mm and -8mm
		Liquid surface measuring method	Untouched distance sensor
		Liquid surface adjust balloon control	Electro magnetic pump and valve control
7	<b>Resin tank</b>	Resin capacity	Approx. 82 liters
		Heating method (Option)	Electric heater with over heat free thermostat
8	<b>Control computer</b>	Operating system	Windows 7 Professional
		Network type	Ethernet IEEE802.3
		Communication protocol	TCP/IP

<b>9</b>	<b>Power supply</b>		
	<b>Voltage</b>	Voltage Frequency	AC100V±10% : 50/60Hz
	<b>Breaker capacity</b>	For control and laser	15A
		For heater(Optional)	10A
	<b>Power consumption</b>	For control and laser	Approx. 1 KW
		For heater(Optional)	Approx. 1 KW
<b>External output terminal</b>	Output power capacity	AC100V 5A	
<b>Grounding</b>	Primary	3 <sup>rd</sup> type grounding of Japan Electric Standard (less than 100 ohms)	
<b>10</b>	<b>Operating environmental condition</b>		
	<b>Room temperature</b>	Fluctuation under operating	23-27°C: less than 2°C/Hr
		Storage	15-35°C
	<b>Humidity</b>		40-60% RH
<b>Vibration</b>		Less than 0.0025G (10 to 50Hz) Liquid surface vibration free	
<b>11</b>	<b>Machine (Fig. 2)</b>		
	<b>Outward Size</b>	Maximum size Excluding projection	1565mm x 1050mm x1860mm Width x Depth x Height
	<b>Color</b>	Standard color (Japanese painting industry sample)	Off white: grey:
	<b>Total weight</b>		Approx. 550Kg (Dry condition)
	<b>Resin weight</b>		Approx. 95Kg (Resin: TSR-831)
<b>12</b>	<b>Option</b>	Bent recoat system	Bent process drive unit(with motor unit)
		Resin tank with the temperature control	Resin tank,Laber heater, Temperature controller, Thermostat
		Resin tank	400mmx400mmx150mm type
		Resin kit for spare	Resin tank, Z frame, Center table, Punching table, Recoater, Balloon, etc
		Battery capacity for UPS (Uninterrupted power supply)	1500VA for machine and laser 500VA for PC
<b>13</b>	<b>Warranty</b>	Machine and attachment	1 year after delivery Excluding expendables

**4. Machine configuration**

4-1 Electrical equipment unit	1 set
4-2 Laser unit	1 set
4-3 Optical unit	1 set
4-4 Z table unit	1 set
4-5 Recoater unit	1 set
4-6 Liquid surface control unit	1 set
4-7 Resin tank unit	1 set
4-8 Machine base, cover	1 set

**5. Summary of each unit**

## 5-1 Electrical equipment unit

- Electrical equipment unit is consists of the control computer, color display (with touch panel process) operating panel, control unit, external terminal board.
- The operation system of the control PC is Microsoft Windows 7 Professional.
- Machine can be operated with a PC display menu with your touch on a display.
- There is the control box in the place that opened the device right side surface door.
- UPS is not provided as a standard attachment.(option)
- This system watches a PC with a sequencer as a safety device and stop a laser, a heater(option), each axial system for at the time of PC abnormality.
- The cable color is CMET standard.

## 5-2 Laser unit

- Laser type is the ultra violet solid laser LD excited.
- Laser unit is connected with PC by RS232C and interlock circuit.
- PC menu enables to operate laser ON/OFF and output power adjustment.

## 5-3 Optical unit

- The optical unit consists of the digital scanner, mechanical shutter, dynamic focus unit, slide cover, power meter.
- The digital scanner and dynamic focus unit always adjust focus synchronizing with XY mirror.
- Laser beam is synchronizing to scanner movement, and puts rapidly on/off with AOM.
- The mechanical shutter shut off laser beam with electro magnetic solenoid during off operation.
- The optical unit is dust-proof using the double covers.
- Clean air is always sent into the optical unit. Clean air permeated HEPA (High Efficiency Particulate Air) filter prevents dust. The HEPA filter must be changed periodically.
- The slide cover operates synchronizing with the modeling door. When the door open, the slide cover closes, and vice versa.
- Power meter is mounted on the slide cover.

## 5-4 Z table unit

- Modeling table uses punching metal.
- The high resolution positioning is realized with the software correcting method. Hardware of the Z-axis control uses high accuracy ball screw and LM guide.
- AC servomotor with brake is used for the Z-axis motor.

#### 5-5 Recoater unit

- The recoater axis uses servomotor and enables to set the recoater range, recoating speed and recoating number of times.

#### 5-6 Liquid surface control unit

- Liquid surface control unit consists of the high accurate liquid surface sensor and adjusting balloon.
- The liquid surface sensor uses the high accurate untouched distance sensor, and it measures the liquid surface position.
- The adjusting balloon keeps the liquid surface level with the inside balloon air adjustment in case of the lever change. Air adjustment is carried out with the electromagnetic pump and the electromagnetic valve.

#### 5-7 Resin tank unit

- The resin tank unit consists of the resin tank, rubber heater, two systems of the tAC servomotor with temperature sensor.
- The rubber heater, connecting to exclusive controller, controls so as to keep the resin setting temperature.
- The rubber heater circuit provides a thermostat. The heater current is interrupted when the heater temperature exceeds 60deg.
- In case of the change of the resin tank, whole tank is extracted from machine.
- The resin exchange units are provided as an option.

#### 5-8 Machine base, cover

- The modeling parts can be opened three side which are front, left side and right side.
- Covers are fixed with screws or magnet.
- The cover painting color is CMET standard.

### **6.6 General items**

#### 6-1 Warranty

All CMET products are adjusted carefully on the manufacturing process, and confirmed the performance on the inspection. However, in case that the machine occurs some faulty because of the our design, manufacturing or material's quality, warranty period is 1 year after setting up the machine on site. Repair and parts exchange should be carried out free of charge. According to the case, the repair may take the machine to CMET specified factory. The consumable parts is not including in warranty.

#### 6-2 Maintenance contract

The maintenance contract is required after warranty period is over.  
Refer to the "Maintenance Contract" as for the contents of the warranty.

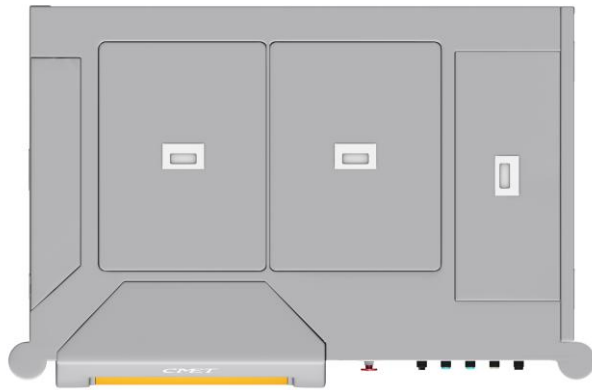
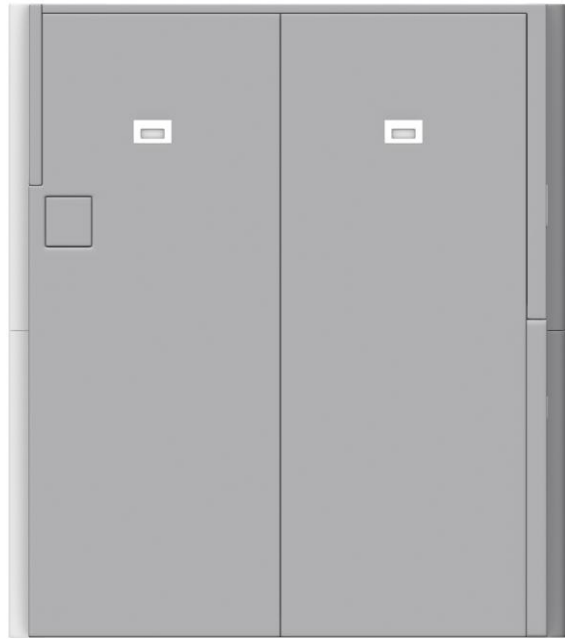


Fig.2 Outside  
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2. The contents of this manual may be changed without prior notice.
3. The utmost care was taken in the preparation of this manual, but if you find any problems, mistakes, or omissions, please notify us.
4. CMET Corporation shall not be held responsible for operational results affected by circumstances arising from conditions described in Item 3.

ATOMm-4000 Specifications

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