SINA®
Robotics & Medical Innovators

Sina flex
Robotic Telesurgery System

Comfort for Surgeon
Safety for Patient

Sina*flex* is a robotic surgery system which can be used for performing abdominal surgery operations in an ergonomic posture for surgeon and also remotely through internet or other communication channels. This system has two main subsystems including a master robotic console at the surgeon's side and a slave robotic system at patient's side.

The master robots receive the surgeon's hands movements and transmit them to the patient's side robots that mimic the surgeon's hand movements in a real-time manner. Simultaneously, the slave robots measure the robot and patient interaction forces/torques, including the pinch forces under instruments jaws and transmit them to the surgeon's side master robotic system.

As a result, all tool-tissue interaction forces are fed backed to the surgeon's hands. This system has the advantages of high accuracy and quality of surgery, less incision for patients and more ergonomic posture for surgeons.

Master Robotic Console Technical Specifications	
Console type	Ergonomic two postural
Total dimensions (L*W*H)	110*95*100 to 170 cm3
Total weight	120 kg
No. of total active DOFs	11 motorized joints
No. of total passive DOFs	9 DoFs
Communication freq.	10 kHz (Local)
Main monitor type	IPS, eye-care
Main monitor resolution	4k (3840 x 2160 pixels)
Remote setting panel	SD touch panel
Workspace of each handle	20*20*20 cm3
Accuracy of pos./orient. rec.	± 0.1 mm/ ± 0.1 degree
Resolution of pos./orient.Rec .	0.01 mm/ 0.01 degree
Repeatability of pos ./ orient.	0.1 mm/ 0.1 degree
Movement scaling:	Up to 10X scale down
Movement indexing (clutch):	Up to 20 cm in each direction
Rang of force feedback	10, 5 N (directional, pinch)
Accuracy of force feedback	± 1, ± 0.5 N (directional, pinch)
Resolution of force feedback	
Repeatability of force feedback	± 0.5, ± 0.25 N (directional, pinch)

Slave Surgery subsystem technical Specifications	
Surgery bed type	General
Total dimensions (L*W*H)	200*220*Max.215 cm³
Total weight	260 kg
Surgery bed total active DOFs	3 motorized joints
Surgery bed movements range	Height: 77-107 cm Pan & Tilt angle: -15 to 15 degree
Surgery bed total manual DOFs	1 head support
Quantity of surgery robots	2 or 3 (optional)
Each Surgery robot active DoFs	7 motorized joints
Local communication frequency	10 kHz
Remote setting panel	SD touch panel
Workspace of each robot	20.000 cm3
Accuracy of pos./ orient.	± 0.1 mm, ± 0.1 degree (no load)
Resolution of pos./ orient.	0.01 mm/ 0.01 degree
Repeatability of pos./ orient.	0.1 mm/ 0.1 degree (no load)
Rang of force detection	10, 40 N (directional, pinch)
Accuracy of force detection	± 1, ± 0.5 N (directional, pinch)
Resolution of force detection	± 1, ± 1 N (directional, pinch)
Repeatability of force detection	± 1, ± 1 N (directional, pinch)

Unique values of the Sina Surgical System

Low Capital, Maintenance and Operational Costs
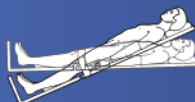
Intuitive Interaction Like Open Surgery

Force Feedback Capability

Ergonomic Postures for Surgeon

High Configuration Flexibility

Non-interruptive Repositioning of Surgical Bed

More accurate,
More flexible but economical

Using the Sina system, surgeon may use single or multiple use straight instruments for simple surgeries and also single use flexible instruments for more complex surgeries. This strategy will reduce the cost of instruments per surgery
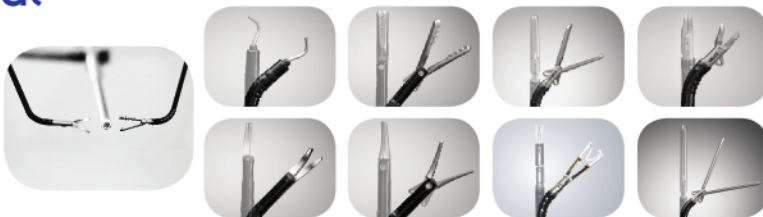
Non-interruptive reorienting of surgical bed

Due to availability of surgical bed reorientation and patient docking during surgery, without any interrupt; surgeons may perform all kind of General surgeries using Sina robotic surgery system. This system may also be used for Cardiac surgery, Colorectal surgery, Gynecologic surgery, Head & Neck surgery, Thoracic surgery and Urologic surgery.

Reconfigurable surgery site

The *Sina_flex* slave robotic surgery subsystem, has a modular design for placement of surgical robots, so surgeons may design their surgery architecture themselves by reconfigure the placement of surgery robots at one side or both side of surgery bed.


Customized ergonomic posture exactly for you

The *Sina_flex* system has a reconfigurable surgery console. Using this system the surgeon may sit behind the surgery console and adjust it for the best ergonomic posture of him/herself. Also for long lasting surgeries which surgeon may prefer to stand during surgery and reduced his fatigue, the console may be pre adjusted and reconfigured to standing posture with special ergonomic parameters of specific surgeon.

SiNa ®

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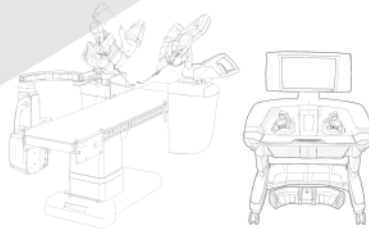
Certified ISO 9001:2015

Product design, development, production and after sales service in all parts of mechanical, electrical and software sections comply with
ISO 9001, ISO 13485, ISO 14971, ISO 62366, ISO 15223, ISO 9241, ISO 780
IEC 60601, IEC 62304, IEC 60384, IEC 60950, IEC 60245, IEC 60707, IEC 60529, IEC 60127, IEC 60335, IEC 60227, IEC 60950, IEC 60825, IEC 60878, IEC 60068, IEC 60417
(certificates pending)

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