

FAST MOVING TECHNOLOGY

*STÄUBLI*

# TS2 robot range

Robotics | Experts in Man and Machine



reddot winner 2021



STÄUBLI VISION

# Experts in Man and Machine



“Today, our robots work both for, and with, people. They have to be fast and precise, collaborative and agile, user-friendly and highly mobile. In all kinds of industries, they redefine performance. Even in the most sensitive environments, they make production smarter. Providing smart data, in an easily connected world, where we share our expertise. A world of solutions.”

People drive change, robots accelerate the pace.

**Christophe Coulangeat,**  
Group Division Manager Robotics

TS2 SCARA RANGE

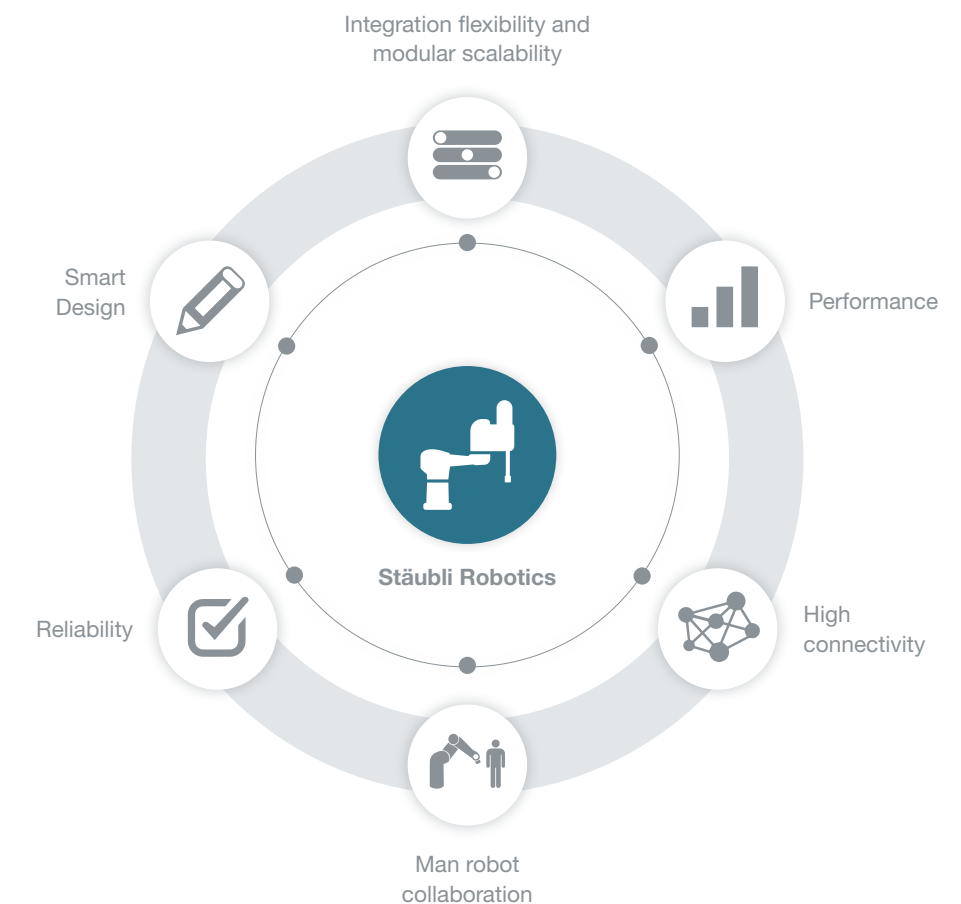
# Design, performance and connectivity redefined

Stäubli is entering a new performance class with its TS2 SCARA series. The completely redesigned 4-axis machine with proprietary JCS drive technology facilitates ultra-short cycle times and high repeatability. It also

has a revolutionary encapsulated design which opens up new possibilities for use in sensitive environments. The new TS2 SCARA series share the same structural segments as the 6-axis TX2 robots, offering

an identical footprint for high modularity and optimized development times, as well as the same CS9 controller.

# TS2 robots and CS9 controller main benefits



## CONCEPTION

# Smart design

### TS2 Robotic arm

- Encapsulated 4-axis arm enabled by hollow shaft gearbox, no external cables
- IP65 for the entire arm with optional ball screw cover and bellows
- Versions available even for sensitive environments, from harsh and dirty to sterile
- Protection and additional installation options available
- Elegant and innovative design
- Custom colors possible for your CI requirements
- Easy service access to components
- No external cable interference with cell walls or other peripherals for increased reliability and lifetime
- Designed for hygienic operations

### CS9 controller

- Standard 19 inch rack mount
- Light and compact size
- All user connections on the front
- Generic rackable design for simple systems integration
- Status display available on front panel
- Easy drawers access due to smart design
- Integrated web server technology

### SP2 control pendant

- Web technology based
- Light, compact and robust
- Portrait or landscape mode
- Fits right or left handed
- Touch screen color display

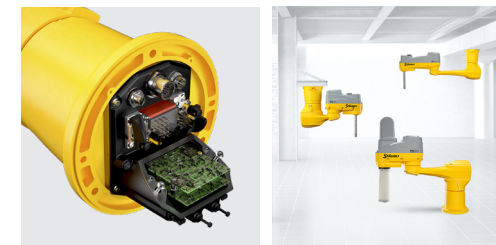


## INTEGRATION

# Integration flexibility, modular and scalable

### TS2 Robotic arm

- Unique cylindrical envelope and small footprint
- Axis 1 working range:  $\pm 180^\circ$
- High dexterity in small workspaces due to compact integration of motors
- Floor and ceiling mounting for flexible and scalable integration, wall mounting possible via mechanical interface (3D drawings supplied upon request)
- Integrated electrical and pneumatic user circuit including Cat5e available until end of arm (flange or tool changer)
- Different pneumatics valve types available
- Sealed vertical cable option for smarter integration
- 400 mm stroke available (optional)



### Tool changer

- Allows instant production changeovers
- Brings time savings, increased flexibility to ensure a rapid return on investment
- Includes pneumatic, power and signal (Cat5e) contacts
- Ultra-compact integrated tool changer available (optional), allows automatic - manual usage of various tools





PERFORMANCE

# High performance kinematics

TS2 robotic arm kinematics



- Over 125 years of experience in fast moving technology
- Light and rigid structure
- Modular: same components as TX2 6-axis robots
- Patented JCS smart gearbox on axis 1 and 2 designed for compact robots:
  - high dynamics, agility and path precision also due to higher drive frequency
  - encapsulated in oil bath, perfect lubrication allows extremely high dynamics
- Unique, 19-bit safe digital multi-turn absolute encoders, ready to operate with no initiation
- Outstanding precision for robot guided by camera and path precision
- Dynamic absolute calibration as a standard option for all Stäubli robots



TS2 - CS9

PERFORMANCE

# Even in the sensitive environments

Perfectly adapted to sensitive environments

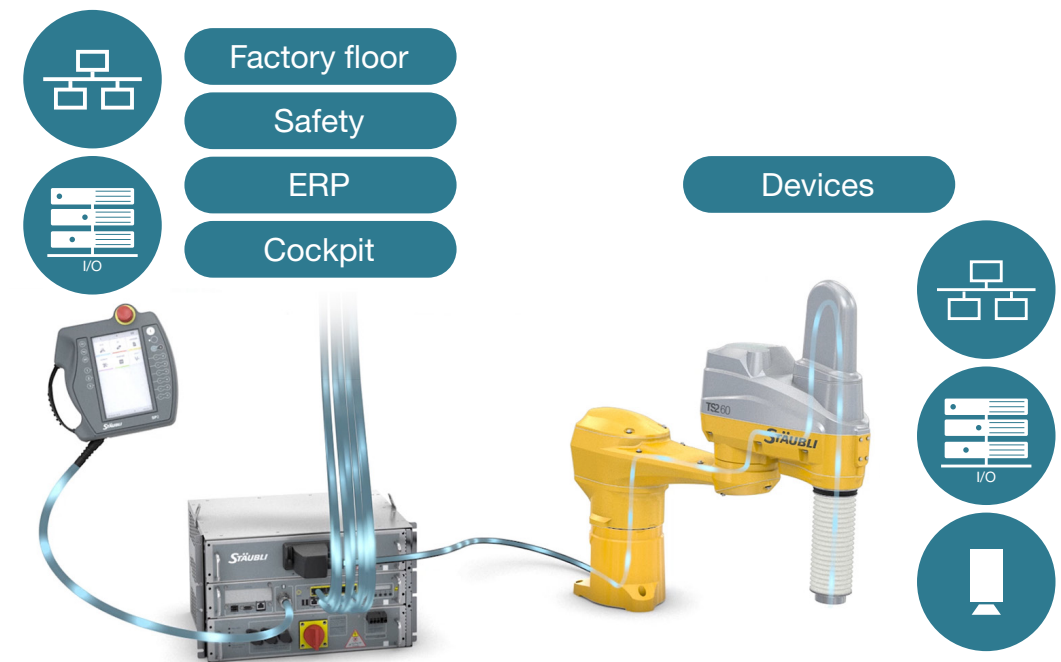
Pioneer with over 30 years of experience in sensitive environments.

- Standard version designed for harsh operations
- HE: hygienic and humid environments
- Stericlean: aseptic
- SCR: Super Cleanroom
- ESD: electronics compliant

	TS2-40	TS2-60	TS2-80	TS2-100
HARSH				
HYGIENIC HUMID				
ASEPTIC GMP Class A				
ESD Compliant				

## CONNECTIVITY

# Fully connected to the production world



### Connectivity to the smart production

- Compatibility with production devices and ERP
- Main standardized communication protocols supported, including real time Ethernet, available and configurable via a unique software suite
- Web server embedded in CS9 controller
- Smart data for digital production and cockpit
- Any system data accessible and linkable to all interfaces, including OPC UA

### Connectivity to gripper and parts to be manufactured

- Integrated tool changer available (optional) allows automatic - manual usage of various tools
- Encapsulated Ethernet Cat5e for multi-gripper, camera and sensors
- Direct tubing for additional valves or devices available
- Different types of valves:
  - 2x 5/2 for pressure
  - 2x 5/3 for pressure
  - 2x 3/2 for vacuum
  - 1x 3/2 for pressure and 1x 3/2 for vacuum



RELIABILITY

Consistent reliability for secured payback

Lowest startup and maintenance requirements

- Lower total cost of ownership and faster return on investment
- Ready to move concept
- No battery in the arm or in the controller for a minimum of needed required maintenance as well as no position recovery effort
- All subcomponents easily accessible and exchangeable
- Patented components, such as the JCS smart gearbox, with higher lifetime and lower maintenance issues



CS9 controller energy efficiency



- Energy recuperation during each joint deceleration
- Different power saving/sleep modes bring up to 40% consumption savings
- High lifetime and low maintenance, all subcomponents easily accessible and exchangeable

CS9 controller maintenance


- Minimal maintenance
- Universal power supply for all voltages
- Easy drawer access due to smart design



TS2 ROBOT RANGE AND CONTROL UNIT

Main characteristics



MODEL	TS2-40	TS2-60	TS2-80	TS2-100
Load capacity	8.4 kg			
Reach (between axis 1 and 4)	460 mm	620 mm	800 mm	1000 mm
Number of degrees of freedom	4	4	4	4
Stroke	200 mm or 400 mm (option)			
Repeatability X - Y	± 0.01 mm		± 0.015 mm	± 0.02 mm
Repeatability Z	± 0.004 mm			
Repeatability R-Z	± 0.002°		± 0.003°	
Protection class	IP34 standard / IP54 with ball screw cover / IP65 with ball screw cover and bellows			
Cycles per minute*	240 (0.25s)	220 (0.27s)	200 (0.30s)	170 (0.35s)
Weight	38 kg	39 kg	40 kg	41 kg
Multiple mounting attachment				



CONTROLLER	CS9
Dimensions (H x W x D)	270 x 445 x 365 mm
Weight	38 kg
	1 GB RAM / USB ports / 2 GB CFAST / Serial link RS232, 2 Ethernet ports (Socket, FTP Server/Client) / Web server / EtherCAT Master / Modbus TCP/IP Server & Client, Sercos III Slave, Ethernet IP Adapter, ProfiNet IO-Device, EtherCAT Slave, PowerLink Controlled Node, FSoE Slave
Options	PCIe card: <b>ASI</b> Master, <b>CCLink</b> Client, <b>Profibus DP</b> Master & Slave, <b>Ethernet IP</b> Scanner & Adapter, <b>ProfiNet</b> IO-Controller & Device, <b>EtherCAT</b> Master & Slave, <b>Sercos III</b> Master & Slave, <b>PowerLink</b> Controlled Node
	Remote I/O
	Industrial chassis with air-air heat exchanger
	<b>OPC UA server</b>

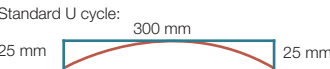


SP2 MANUAL CONTROL UNIT: the power at your fingertips

This unique terminal combines a lightweight design, ergonomics (for left or right-handed user) and robustness to deliver advantages in all environments:

- built-in programming, maintenance and supervision,
- safety functions (3-position dead-man control, emergency stop).

\* Our programing and simulation software Stäubli Robotics Suite 2019 enables an easy and precise definition of your specific application cycle time. Cycle time for 25mm - 300 mm - 25 mm motion pattern with 2 kg payload.





● Stäubli Units    ○ Representatives/Agents

# Global presence of the Stäubli Group

[www.staubli.com](http://www.staubli.com)