Quality Assurance Companion

QUACO

QUACO Pro - S - Product Features & Engineering Specifications

For illustration only

SASTRA ROBOTICS

Document Number: SDC/M/010/2020

Features & Specifications:

No	Features	QUACO Pro - S
1	Type of test rig	Standard single arm manipulator model/Extra wide dual arm manipulator model
2	Type of manipulator inside the rig	Advanced 6th Generation SCARA manipulator.
3	Manipulator height adjustment	GUI based automated height adjustment
4	Manipulator Working Plane	Horizontal
5	Type of finger module on manipulator (stylus)	Force-controlled STM (Single Touch Module)
6	Type of stylus tips (standard offering*)	Bubble Crown (7 mm) / Flat(2-12 mm) / Pen type
7	Touch indicator on the manipulator	Yes, LED indication
8	Standard single finger gestures supported	Tap, Double tap, Swipe, Scroll, Flick, Touch & hold.
9	Standard two finger gestures supported	N.A
10	Teach function compatibility	Yes, On robot button/UI click and mouse drag
11	Slanted DUT supported	Upto 10° inclination in 200 mm.
12	Curved display support	Supports curved display with continuous force control / monitoring
13	DUT Persona memory	Yes (upto 5 devices)
14	Type of DUT interface supported	Flat & Curved Touch screens and Tactile buttons
15	DUT Power controllability	ON-OFF control via Telnet API & Soft push button switch Standard offering: fixed DC 5V(3A), 12V(1A) Optional: Inbuilt 0-30V(1A), External bench power supply
16	Camera mounting capabilities/position	Global - top of the rig with manual position control Local - on end effector for closer view
17	Camera options	60fps/90fps/120fps(global position) Standard webcam(end effector position) Thermal Camera (for surface thermal mapping)
18	Compatibility to front-end software	Yes
19	Primary safety control	1 X Emergency Stop switch on rig 1X Auxiliary emergency switch Smart Doors
20	Secondary safety	User GPIO configruable system halt Light curtain compatibility(Optional)

No	Features	QUACO Pro - S
21	Smart Error indications	1. On the test rig 2. Manipulator base (API Controllable) 3. Over End effector (API Controllable)
22	User communication Interfaces	Ethernet
23	Programming APIs	Telnet API commands
24	Event/Error Logging and troubleshooting capabilities	Yes
25	User SOP violation tracking	Yes
26	Servicability of the equipment	Diagnostic console port, Modular design for easy service
27	Service Alerts	Yes
28	Accessory Expansion Connector	Yes
29	User Interface on the rig	Front panel with 3.5" TFT display and 8 Switches
30	Rig Cabin light	Cool White LED (API Controllable)

*   - standard offering comes with Bubble Crown (7 mm) & Flat(2-12 mm), different custom models sizes are possible on an order basis.

Engineering Specifications:

No	Engineering Specifications		QUACO Pro - S
1	Power Supply requirements[a]		110V AC/60 Hz
			240V AC/50Hz
2	Power consumption (maximum)		330 Watts
3	User GPIOs		5V/3V compatible.
4	Connectivity		Ethernet
5	Controllability		Software front end with Telnet based API compatibility
6	Gross Weight (Including standard Rig & SCARA manipulator)		125 Kg
7	Operating Temperature Range		10°C to 50°C
8	Humidity		Upto 60RH
9	Degree of Freedom (DOF) of the manipulator		3 DOF
10	Weight of the Manipulator		6 Kg
11	Arm Length		350 mm
12	Accuracy		±0.01 mm
13	Working Envelop	Axis 1	±90°
		Axis 2	±150°
		Z - axis (Stylus stroke length)	0 - 40 mm
14	Maximum speed[b]	Axis 1	300 deg/s
		Axis 2	300 deg/s
		Z - axis (Stylus speed with force sensing)	72 mm/s (Standard) 0 - 72 mm/s (Configurable)
15	Total work area (Manipulator)		1,65,000 mm²
16	Rectangular Workspace compatibility[c]		343 X 214 (16:10) Diagonal: 15.93 inch
			368 X 207 (16:9) Diagonal: 16.63 inch
			396 X 198 (18:9) Diagonal: 17.43 inch
			432 X 185 (21:9) Diagonal: 18.49 inch

No	Engineering Specifications		QUACO Pro - S
17	Single finger (STM)	Stroke range of the stylus	40 mm
		Force ranges	0.3 N to 3.6 N (Standard) Tolerance: 0.01 N
			0 N to 10 N Tolerance: 0.1 N
		Force tolerance (tap accuracy)	Fast mode: ± 25 g Precision mode: ± 10 g
		Force controlled clicks/min[d]	Fast mode: 240 Nos Precision mode: 120 Nos
		Max no of clicks/min (without F)[e]	480 Nos
		Duration of touch action	0.05 sec to 5.0 sec (API controllable)
18	Maximum Interpolated motion speed (max flick speed)[f]		750 mm/s
19	CMM plate Dimension	Overall dimension	780 (W) X 480 (L) mm
		Hole Dimension	M8 through hole
		Pitch	Standard - 50 mm Optional - 25mm
20	Rig Dimension (Size inclusive of foot print)		850(W) X 600(D) X 900(H)
21	Manipulator height adjustment	Stroke Length	200 mm
		Speed of operation	10 mm/s
22	Manipulator position callibration method		Homing
23	Recommended continuous operation hours[g]		8640 hr (360 days)

a - Factory Configurable
b - Acceleration/deceleration rates may be limited according to the motion pattern, load mass and amount of offset.
c - See Annexure for more details.
d - Test Conditions: Retract Stroke: 8 mm, Test Force: 150 gm.
e - Recommended speed of operation with precision, the hardware is able to achieve 360+ clicks without force control which can be implemented with a software upgrade if needed.
f - The manipulator speed capability of 750 mm/s is set to 375 mm/s for smooth operation. This value is customisable upon request.
g - Consumables/accessories need to be changed regularly as per user manual guidance to ensure the maximum performance.
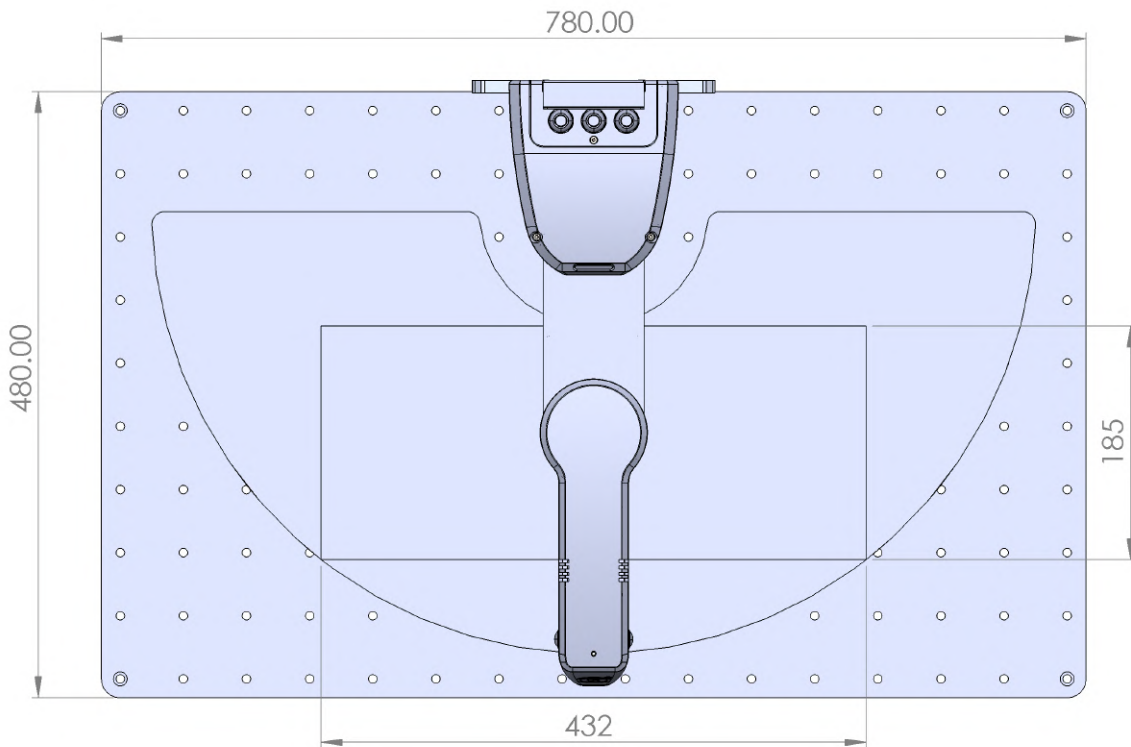
Annexure

900mm

850mm

600mm

Sastra Robotics India Pvt Ltd

The work area of Quaco Pro with Scara Robotic Arm is shown below with maximum rectangular Device Under Test (DUT) size mentioned. Note that the two different screen size of DUT's are represented below.
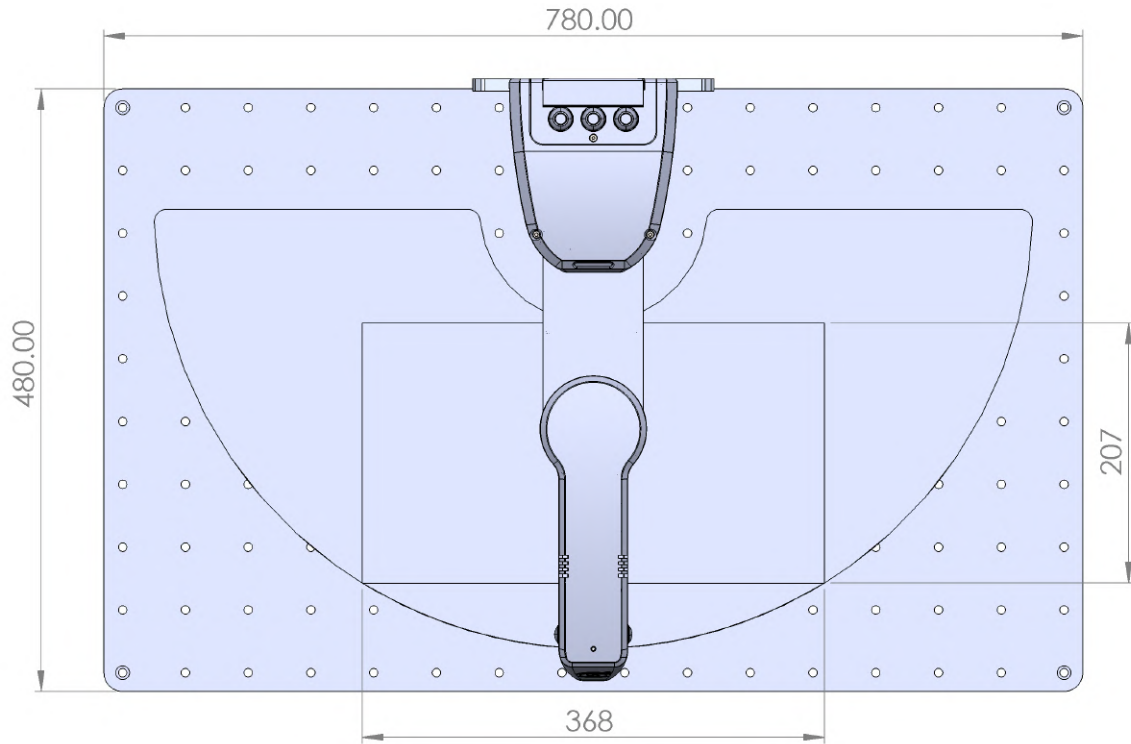
FIG 1: WORK AREA REPRESENTATION OF QUACO PRO - SCARA WITH 16:9 SCREEN

FIG 2: WORK AREA REPRESENTATION OF QUACO PRO - SCARA WITH 21:9 SCREEN