

Version : July 2017

CENTURION

Reflow Soldering Systems

General Specification GS 361

Issue Date July, 2017



1 GENERAL INFORMATION

1.1 Area of application

The Centurion Soldering System is an in-line automatic machine, designed to solder printed circuit boards (PCB) in a reflow process.

PCB's are transported by a conveyor system over the preheat, solder and cooling stations.

1.2 Materials used

All customer-used chemicals must be compatible with the Vitronics Soltec used materials, such as: Fluorocarbon Elastomer, PVC (Polyvinyl chloride), PVDF (Polyvinylidene fluoride), steel, stain-less steel and aluminum.

1.3 Available Machines

DIM	Zones	Heating / Cooling Zones	Total heated length	Total cooled length	Overall system length Air ①	Overall system length Nitrogen ①	Overall system width	Overall system height②	On and off load lengths	Net system weight Air③	Net system weight Nitrogen③
			mm/inch	mm/inch	mm/inch	mm/inch	mm/inch	mm/inch		kg/lb approx	kg/lb approx
CT820	10	8 / 2	2840 / 111.8	710 / 28.0	4150 / 163.4	4860 / 191.3	1600 / 63.0	1420 / 55.9	80 / 3.1	2100 / 953	2300 / 1043
CT930	12	9 / 3	3195 / 125.8	1065 / 41.9	4860 / 191.3	5570 / 219.3	1600 / 63.0	1420 / 55.9	80 / 3.1	2300 / 1043	2500 / 1134
CT1040	14	10 / 4	3550 / 139.8	1420 / 55.9	5570 / 219.3	6280 / 247.2	1600 / 63.0	1420 / 55.9	80 / 3.1	2500 / 1134	2700 / 1225
CT1240	16	12 / 4	4260 / 167.7	1420 / 55.9	6280 / 247.2	6990 / 275.2	1600 / 63.0	1420 / 55.9	80 / 3.1	2700 / 1225	2900 / 1315

① = In cold condition. Length increases with approximately 3 to 4 mm/ 0.12 to 0.16 inch in hot condition.

② = System height at conveyor height of 952 mm / 37.5 inch.

③ = Depending on configuration

1.4 General System

Description	Standard/ Optional
Hinged clamshell design with power lifts, provides full access to oven interior	Standard
Total access to width adjust units, motor drive and chain return loops	Standard
CE	Optional
Integrated on-screen manual	Standard
Colour grey white (RAL 9002)	Standard
Individual Zone Exhaust TM (patented)	Standard
UL approved components used in control box	Optional
Quick exchange heaters and motor/fan combinations	Standard
MCA (Machine Capability Analysis) report	Optional

2 Conveyor System

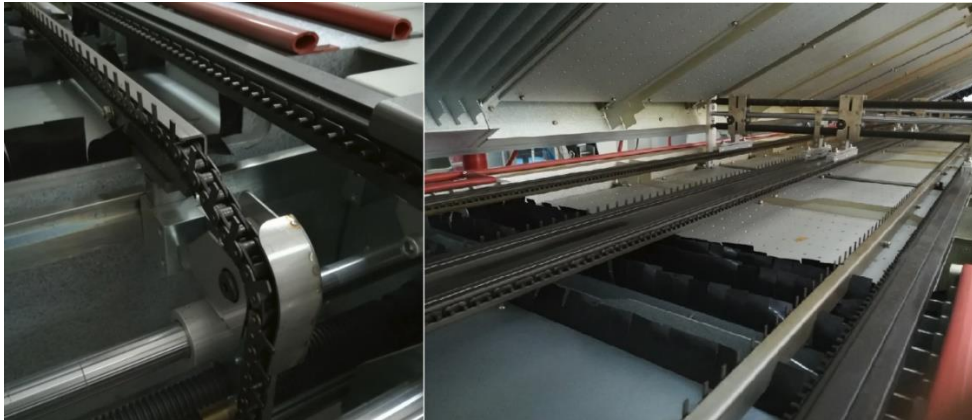
2.1 Edge Rail

Description	Standard	Optional
L to R	●	
R to L		●
Pinchain conveyor pinlength	5.0 mm / 0.20 inch	3.0 mm / 0.12 inch
Distance between pins	9.5 mm / 0.38 inch	
Rail parallelism	1.0 mm / 0.04 inch	
Minimum board width	50 mm / 2.0 inch	
Maximum board width	508 mm / 20.0 inch	610 mm / 24 inch
Top side max component height	40 mm / 1.57 inch	
Bottom side clearance	30 mm / 1.18 inch	25 mm / 1 inch (belt/rail combo)
Pinchain conveyor height adjustable	898-978 mm 35.4-38.5 inch	
Conveyor speed range	250-2000 mm/min 10-78 ipm	21-165 mm/min 0.8-6.5 ipm
Conveyor speed accuracy	+/-1%	
PCB drop detection by tracking sensors	●	
Computer controlled chain lubrication	●	
Conveyor speed measured value read-out	●	
Motorised width adjust via switch	●	
Motorised width adjust via PC		●

2.2 Belt System

DESCRIPTION	STANDARD	OPTIONAL
Mesh belt: stainless steel flat flex belt	508 mm / 20.0 inch	610 mm / 24.0 inch
Mesh type pitch	12.7mm / 0.50 inch	7.3mm / 0.286 inch

2.3 Board Support System: FOR EDGE RAIL ONLY (NO MESHBELT)



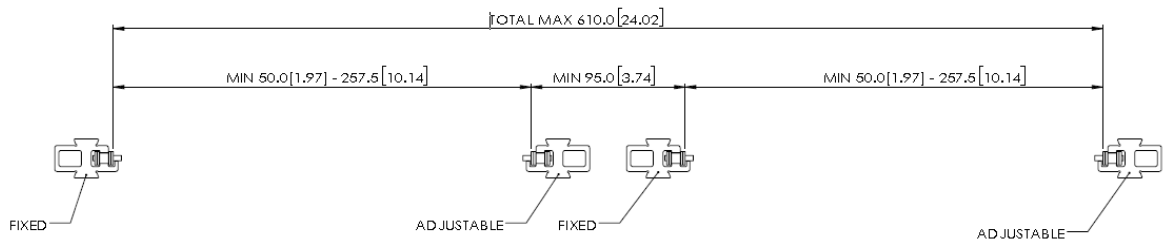
Description	Dimensions	Standard/ Optional
Required non-populated track clearance on board bottom side	5.0 mm/0.20 inch	Standard
Board support system adjustable in width via switch		Standard
Board support system adjustable in width via PC		Optional
Park position underneath conveyor chain of fixed rail in case support not required		Standard
Minimum distance to pin chain conveyor for one and two support systems	5.0 mm/0.20 inch	Standard
Pin height support system	8.5 mm/0.33 inch	Standard

2.4 Dual Lane^①

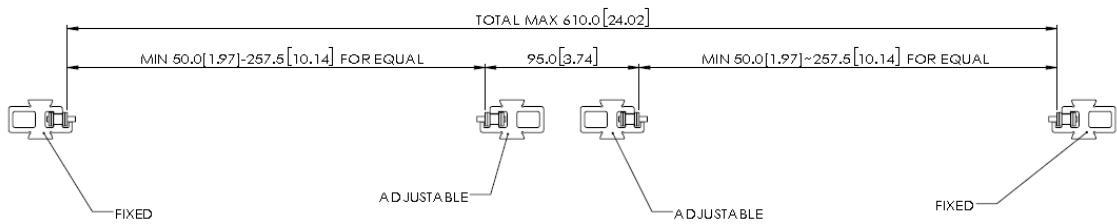
Description	Standard	Optional
Dual lane		●
Single conveyor speed for both lanes	●	
Dual Speed		●
Minimum board width	50 mm/2.0 inch ^②	
Maximum board width (equal)	257 mm/10.1 inch	285mm / 11.2 inch
Distance between rail 2 and 3	95 mm/3.74 inch	40mm/1.57 inch 35mm/1.38 inch man adj.
Rail 1 and 3 fixed position, rail 2 and 4 adjustable	●	On Request

① Consult factory for details

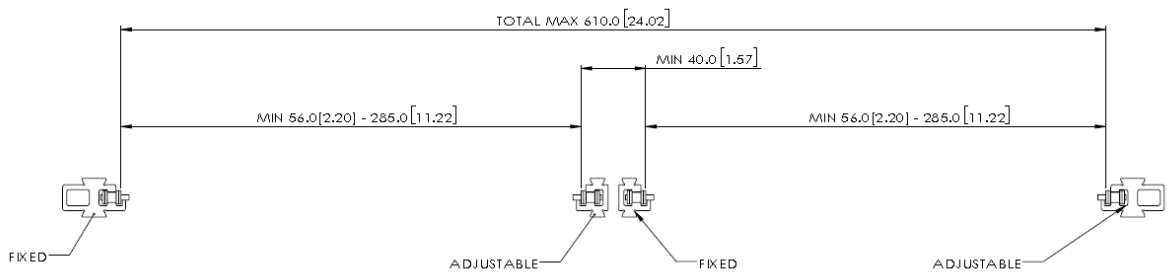
② Minimum board width is 56mm with 2*285mm dual lane



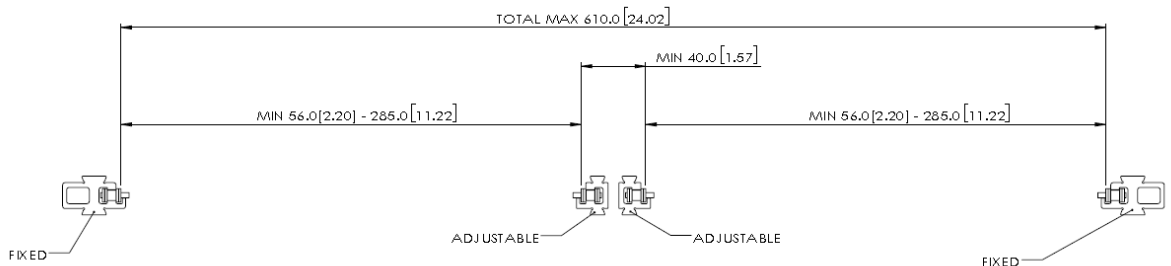
13 FIXED



14 FIXED



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14 FIXED

3 Heating Modules

Description	Dimension	Standard/ Optional
Length of one heating zone	355 mm / 14 inch	Standard
Heating type	heater Cr-Ni-steel	Standard
Gas temperature control accuracy at steady state	+/-1 °C	Standard
Gas temperature measurement type	PT100	Standard
Max heating power per preheat zone (top + bottom)	9 kW	Standard
Cold start warm-up	20 to 30 minutes ^①	Standard
Maximum gas temperature setpoint	350 °C	Standard
Max allowed temp difference between last soak zone and first peak zone	80 °C	Standard
Enhanced zone definition between last soak and first peak	140 °C	Optional
Max allowed temp difference between two adjust soak zones	50 °C	Standard

①=Depending on temperature setting and configuration

4 Cooling Modules

Fan cooling	Standard	
Smart air to air (waterless cooling)		Optional
Water Cooling at top side		Optional
Advanced controlled water cooling at topside ^①		Optional
Setpoint 1st zone - 70-90°C		
Setpoint 2nd zone - 50-80°C		
Setpoint 3th zone - 40-60°C		
Bottom side cooling ^②		Optional
External cooling supply connection for the plant water (Plant water cooling or chiller connection)		Optional
• Maximum water pressure supply	<800kPa / 8 bar	
• Pressure differential ΔP	10kPa/0.1 bar	
• Minimal water supply (process zones only)	20L/min7 °C	
External Chiller		Optional

①= Max 3 controls (in case of more cooling zones controls will be in serial).

②= Only in combination with water cooling and advanced controlled water cooling

5 Nitrogen Atmosphere

Description	Dimensions	Standard/ Optional
Nitrogen performance (Depending on oven configuration, board dimensions, throughput rate, cell fan speed, nitrogen consumption)	< 200 PPM in reflow	Optional
Nitrogen consumption With CATHOX / Without CATHOX (Depending on oven configuration, board dimensions, throughput rate, cell fan speed, etc)	20/40 m ³ /h / 11.8/23 cfm	Optional
Integrated oxygen analyser		Optional
Closed loop PPM control	200-3000ppm (max of +/- 100ppm or +/-20%)	Optional

6 Flux Management System

Description	Dimension	Standard/ Optional
Patented individual zone exhaust, reduces maintenance		Standard
CATHOX cathalyst filtration system for 4 locations Zone 2/3, last 2 reflow zones, slot exhaust, and first cooling zone		Optional
CATHOX additional per 2 zones		Optional

7 Requirements

7.1 Power Supply Requirement

Select one voltage configuration below. Consult Site Preparation & Installation Manual for facility requirements.

- Voltage - 200V 3 Ph (optional)
- Voltage - 208V 3 Ph (optional)
- Voltage - 220V 3 Ph (optional)
- Voltage - 240V 3 Ph (optional)
- Voltage - 380V 3 Ph (standard)
- Voltage - 400V 3 Ph (optional)
- Voltage - 415V 3 Ph (optional)
- Voltage - 440V 3 Ph (optional)
- Voltage - 480V 3 Ph (optional)

7.2 Nitrogen Supply Requirement

Description	Dimensions
Nitrogen supply minimum pressure	483 kPa / 70 psi
Nitrogen supply, maximum rate	50 m ³ /h / 29.5 cfm
Nitrogen connection type	Pipe ID 12 mm/0.473inch

7.3 Exhaust

Description	Dimension	Static Pressure
Without CATHOX - Exhaust volume at single connection point (max)①	450m ³ /hr/265 cfm	300 Pa
With CATHOX - Exhaust volume at single connection point (max)	200m ³ /hr/118 cfm	100 Pa
With Smart Air-to-Air cooling - Exhaust volume at single connection point (max)①	450m ³ /hr/265 cfm	300 Pa
With Fast Cooldown - Exhaust volume at single connection point (max)①	450m ³ /hr/265 cfm	300 Pa
Exhaust connection	165mm/6.50 inch	

① = Total two connection points for one machine


7.4 Controls

Description	Dimension	Standard/ Optional
PC	Microsoft Windows® based, wide touch screen	Standard
E-stop circuit	4 Emergency stop buttons	Standard
Main circuit breaker disconnect		Standard
Light tower	Blue, red, yellow, green and audible alarm	Standard
Working hours counter	Based on conveyor status	Standard

7.5 Communication Protocols

Item	Standard/ Optional
SMEMA electrical interface, for single and dual lane	Optional

7.6 General Controls and Software Option

Item	Standard/Optional
UPS power backup (10 minutes for conveyor, hood lift, PC)	Optional
Recipe management	Standard
Password protection	Standard
Maintenance Scheduler	Standard
Auto start-stop function through 7 day timer and year calendar	Standard
Selectable main screen lay-out	Standard
Alarm, event and Process Data Logging	Standard
Trend Analysis	Standard
On screen I/O map	Standard
Help function	Standard
Digital wiring diagrams	Standard
KIC/ECD Profiling Software Pre-installed	Standard
OpenApps	Standard
CAMX	Optional
Management Information System	Optional
Ability to export event log, data log and alarm log for better analysis	Optional
 Simple fast and easy to use integrated software that calculates heater set-points and conveyor speed, to reduce initial recipe setup time	Optional
QRC (Quick Recipe Change)	Optional

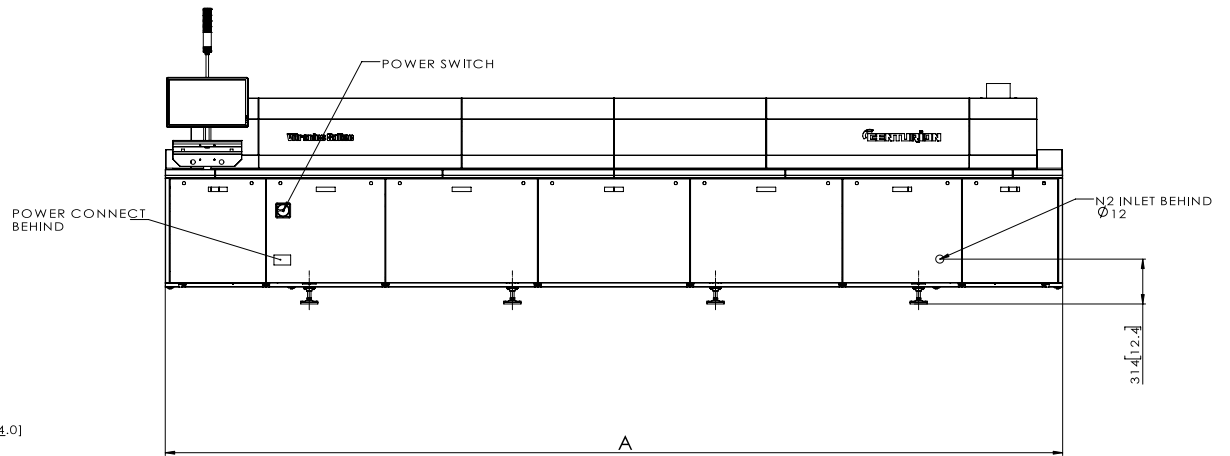
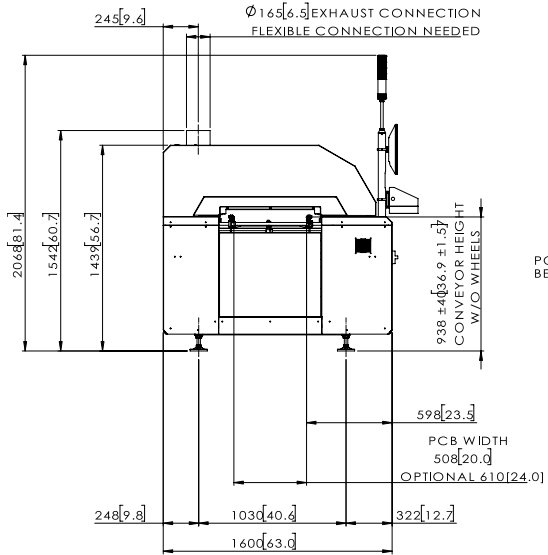
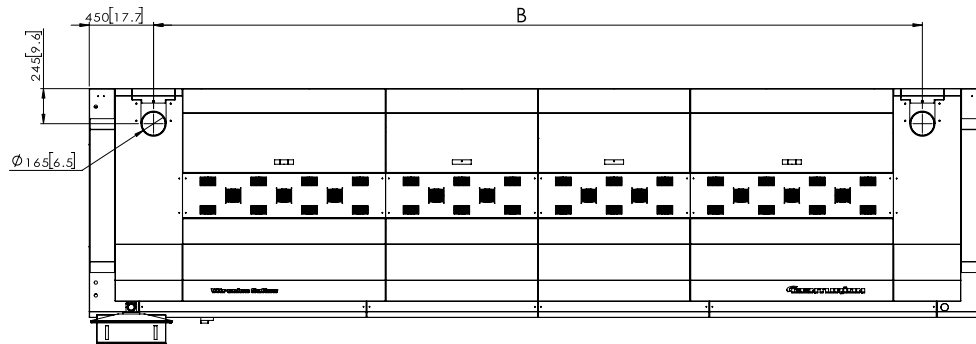
7.7 Operating Conditions

Description	
Ambient Temperature	18 to 40°C (64 to 104°F)
Relative humidity	30% - 70%
Atmospheric pressure	950 mbar - 1030 mbar

8 Machine dimensions

TYPE	A	B	C
DIM	mm / inch	mm / inch	mm / inch
CT720A	4150 / 163.4	3245 / 127.8	1542 / 60.7
CT820A	4150 / 163.4	3245 / 127.8	
CT930A	4860 / 191.3	3955 / 155.7	
CT1040A	5570 / 219.3	4665 / 183.7	
CT1240A	6280 / 247.2	5375 / 211.6	
CT720N	4860 / 191.3	3955 / 155.7	
CT820N	4860 / 191.3	3955 / 155.7	
CT930N	5570 / 219.3	4665 / 183.7	
CT1040N	6280 / 247.2	5375 / 211.6	
CT1240N	6990 / 275.2	6085 / 239.6	

For detailed dimensions and connections, see Installation sheet.



** All specifications are subject to periodic review and may be changed without notice.
Vitronics Soltec assumes no obligation for specifications contained herein.
All customer-used chemicals must be compatible with materials used by Vitronics Soltec.