Desktop System C-Prime

For Heat-Seal Bonding, Reflow soldering, ACF Laminating and Heat-Staking applications

The Desktop Series is a product range for Heat-Seal Bonding, ACF Laminating process applications and Reflow Soldering. All kind of LCD, Flex foil and PCB connections can be made using these systems. C-Tech Systems has the most intelligent system designs, very rigid base constructions with exchangeable soldering/bonding heads which minimizes your production down time when switching over to another head. But more revolutionary are the exchangeable product movement modules! They make it possible for you to up-grade your C-Prime to a C-Slide or C-Turn in minutes. You don't need to buy a complete new desktop, only a product movement module which will be a considerable cost benefit for you.

C-Prime

Options

- Automatic force control
- Soldering/Bonding Head Modules in different force ranges for optimal process adjustment
- Interposer Module for soldering and bonding processes
- Product Alignment for fine pitch applications
- Quality control modules, e.g. automatic force control, joint penetration depth measurement, multiple thermocouples.

Features

- Most rigid frame construction
- Smartest Hot Bar exchange design
- Exchangeable product handling and process modules
- User-friendly touchscreen, easy programmable
- Controller for time, temperature, force and joint

→ Benefits

- High performance processing
- Untighten the screws in seconds
- Maximum flexibility for upgrades and new products
- Set up is easy and takes seconds
- Process quality control is guaranteed as never before penetration

Heat Seal Bonding application

Reflow Soldering application

ACF Laminating application

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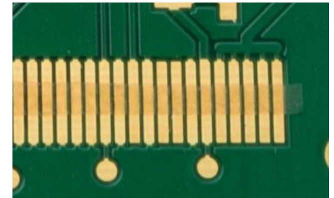
Application processes

For Heat-Seal Bonding, Reflow soldering, ACF Laminating and Heat-Staking applications

ACF Laminating / Pre-Bonding

Electrical conductive adhesive bonds can be made between flexible and rigid circuit boards, glass panel displays and flex foils. Conductive adhesive contains small conductive particles or spheres, which are separated by an isolating adhesive material. Anisotropic Conductive Film (ACF), is a lead-free and environmentally friendly interconnect system to make electrical and mechanical connections between two parts. ACFs are widely used to perform flex-to-board or flex-to-flex connections. Prior to Pre-Bonding the ACF to the substrate, the ACF tape is pre-cut at the required length from a reel of ACF. The tape is half-cut; only the actual ACF material is cut. The cover layer is used for tape transport. The ACF can now be applied to the bond surface, by using the thermode (Hot bar).

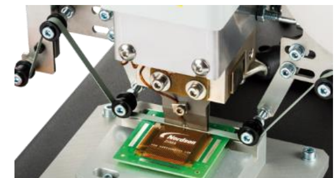


ACF Laminating application

Heat Seal Bonding

Two parts to be joined are brought together in a fixture. This fixture (or jig) makes sure that the bonding parts fit perfectly together and ensured the repeatability of the process. Temperature, time and pressure are applied and cause plastic deformation of the adhesive and compression of the particles. The particles that are trapped between the conductors form a conductive interface between the pads on the two mating surfaces and conduct only in the Z axis. Subsequent cooling and full curing of the adhesive while still in the compressed condition stabilize the joint.

Heat Seal Bonding application



Heat Seal Bonding Process

Hot Bar Reflow Soldering

Mobile electronics such as telecom equipment and electronics in motor vehicles require increasing packing density and thus arrangement of the circuits in multiple layers. The connection of the layers are favorably produced with flexible circuit carriers and/or foil connectors, ideally for Hot Bar Reflow Soldering. Also for equipping electronic devices with digital displays, display drivers on flexible carriers can be used, as connection to the rigid circuit board. Another application is to join flat cable and foil cable with rigid components like plug connectors and PCBs. HBR Soldering is a selective soldering process where two parts, pre-fluxed and solder coated, are heated with a thermode (hot bar) to a sufficient temperature to melt the solder. After this the parts are cooled below the solidification temperature to form a permanent electro-mechanical bond.

Reflow Soldering application

Reflow Soldering Process

Heat Staking

Heat Staking is a pulsed heat process to join two or more parts, of which at least one is made out of plastic. The process is to deform the plastic material using heat and force at a set process time. The bond is made by partially de-forming the plastic part in order to fix the other. Heat Staking makes it easy to bond metal to plastic and is commonly used in high volume/low cost applications like automotive, IT and consumer appliances. De-forming the plastic is achieved by heating it to a temperature above the glass transition temperature via the use of super-heated air or a thermode and then applying pressure in order to create the stake. After the stake has been formed the plastic needs to cool down again below the glass transition temperature. This cooling is done under constant pressure to ensure good fixation of the parts.

Heat Stake application

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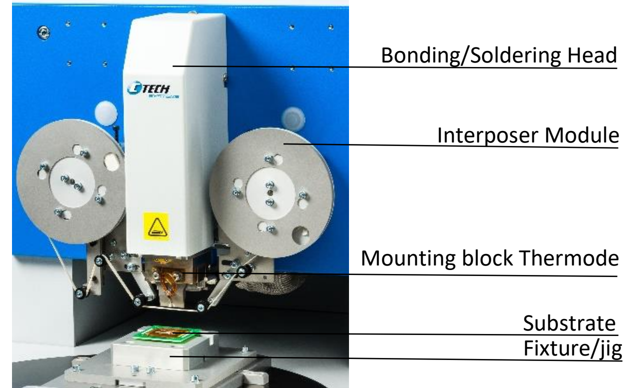
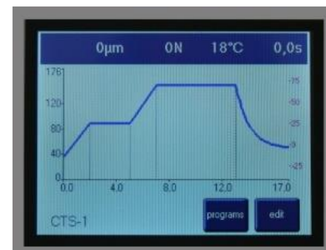
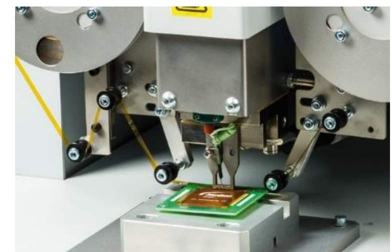


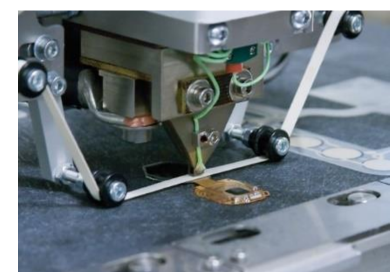


Options

UO-5000	Z-Displacement sensor
UO-5220	Programmable Automated Force Control
UO-5300	Optical Alignment, one camera
UO-5310	Optical Alignment, two cameras
UO-4000	Interposer Manual for Kapton tape
UO-4050	Interposer Automated for Kapton tape
UO-4100	Kapton tape for Reflow Soldering
UO-4010	Interposer Manual for Silicone tape
UO-4060	Interposer Automated for Silicone tape
UO-4150	Silicone tape for Heat Seal Bonding
Spec-jig	Custom specific product fixture
UO-5233	Co-planarity check paper
UO-5230	Flat thermocouple with measuring device
UO-5231	Read out unit for thermocouple
UO-5240	Force measuring sensor up to 100 N
UO-5241	Force measuring sensor up to 1000N
UO-5242	Force measuring read-out module
UO-5243	Force measuring read-out module with RS232 interface



Soldering process with Kapton tape



Heat seal bonding proces with silicon tape

Fixture/Jig

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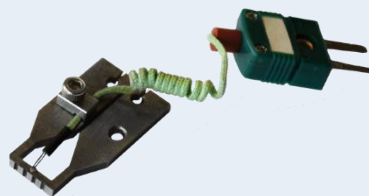
Specifications

C-Prime Desktop system	
Standard configuration Base Frame, User Interface, Pulsed heat power supply, Manual force control, Data logging via USB-stick	
Models	
CP-100	C-Turn with low force Bonding/Soldering Head, 5 - 100 N
CP-110	C-Turn with mid force Bonding/Soldering Head, 20 - 250 N
CP-120	C-Turn with high force Bonding/Soldering Head, 50 - 700 N

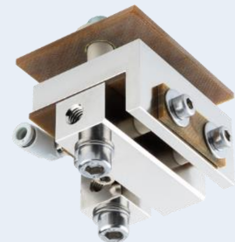
Dimensions (HxWxD)	450 x 700 x 800 mm
Max. Fixture dimension (optional)	300 x 200 mm
Product handling	Fixed position
Power Connection	Power 110/240 VAC, 50 / 60Hz, 6 bar, 16 A
Transformer	Integrated ‘4 step’ 4.5 kVA Transformer
Heating profiles	Up to 200 heating profiles can be saved
Per heating profile	20 Programmable Points for process time / temperature / force
Noise level	<70 dB (A)
Weight	75 kg
Easy exchangeable modules	Bonding/Soldering heads, Interposer, Thermodes, Motion and product handling

Contact block		**Thermode**	
UO-3200	3D-Block, 50 mm (Small)	PT-xxxyy	3D Heat Thermode 5 - 50 mm
UO-3202	3D-Block, 100 mm (Medium)	PT-xxxyy	3D Heat Thermode 51 - 100 mm
UO-3203	3D-Block, 130 mm (Large)	PT-xxxyy	3D Heat Thermode 101 - 130 mm
UO-3220	2D-Block, 50 mm (Small)	PT-xxxyy	2D Heat Thermode 5 - 50 mm

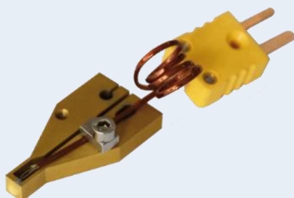
2D custom made thermode



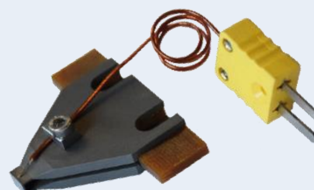
2D custom made thermode with thermocouple



Example contact block



Heat Staking thermode with thermocouple



3D custom thermode with thermocouple

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