

Process Equipment C-Drive

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

The C-Tech Systems bond head series, called C-Drive, are unique concepts and includes the smartest connect block and thermode change over designs, in matter of seconds!

The series consist of a range of bonding heads that can be used for used for Hot Bar Reflow Soldering, Heat-Seal Bonding, ACF laminating and Heat-Staking. C-Tech Systems developed these heads with key focus on process control and for most reliable production processes.

Using the C-Drive in combination with the C-Flow controller, you can easily program and measure temperature, force and time as well as reading simultaneously the displacement while making a joint.



In a full color display the monitoring of all these important parameters take place! Of course with alarm settings, process limits, data output etc. options.

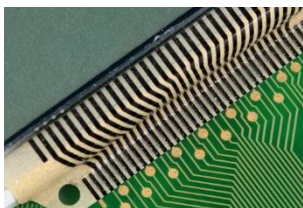
The C-Drive series was engineered to deliver repeatable and accurate forces for a wider range of applications. Four different models are available: extremely low forces for delicate applications to very high forces for the most challenging heat seal connectors. The provided features and precision can be used in the process equipment, desktop systems and for customized automation projects too! Interposer systems for Kapton, Silicone, Metal tapes can be easily integrated.

Features

- Easy Thermode change overs
- Integrated Force Control
- Height displacement sensor
- Multiple force ranges
- Rigid design, quality components
- Variety of options

→ Benefits

- Saving set up time and costs
- Controlled manufacturing process
- Monitoring the joint
- Most accurate force adjustment
- Highest reliability and repeatability
- Best fit for the application requirements



Heat Seal Bonding application



Reflow Soldering application



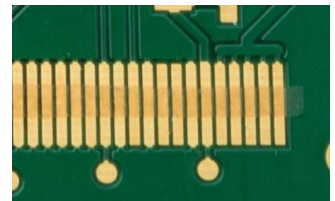
ACF Laminating application

Application processes

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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

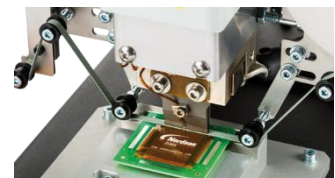
Two parts to be joined are brought together in a fixture. This fixture (or jig) makes sure that the bonding parts fit perfectly together and ensured the repeatability of the process. Temperature, time and pressure are applied and cause plastic deformation of the adhesive and compression of the particles. 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.



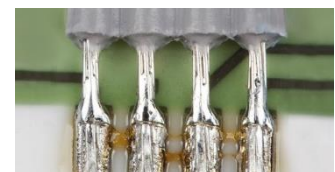
Heat Seal Bonding application

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.



Heat Seal Bonding Process



Reflow Soldering application

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.



Reflow Soldering Process

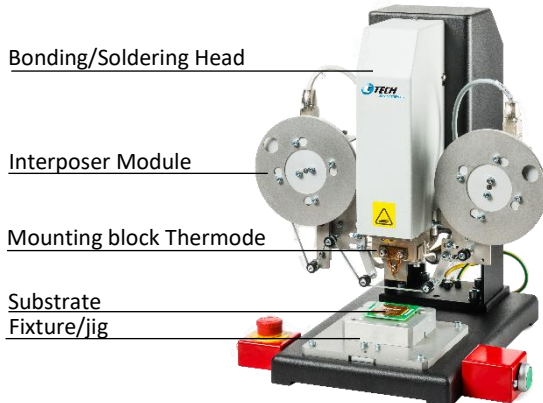


Heat Stake application

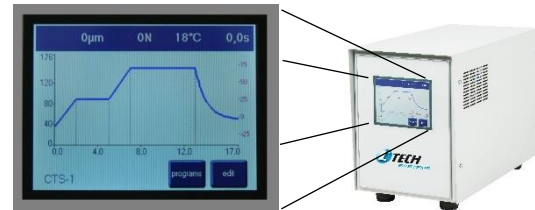
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C-Drive



C-Flow



Options

- CF-100 C-Flow
- 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

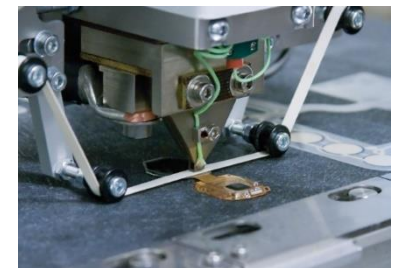
- UO-4010 Interposer Manual for Silicone tape
- UO-4060 Interposer Automated for Silicone tape
- UO-4150 Silicone tape for Heat Seal Bonding

- Spec-jig Custom specific productfixture

- UO-5233 Co-planarity check paper
- UO-5230 Flat thermocouple with measuringdevice
- 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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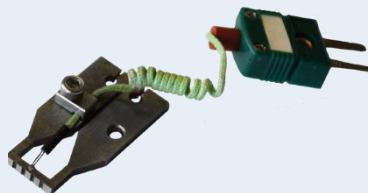
Specifications

C-Drive process equipment			
Models			
CD-100	C-Base with low force Bonding/Soldering Head, 5 - 100 N		
CD-110	C-Base with mid force Bonding/Soldering Head, 20 - 250 N		
CD-120	C-Base with high force Bonding/Soldering Head, 50 - 700 N		
C-Drive	Dimensions (HxWxD)	370 x 330 cm x 400 mm	
	Power Connection	supplied by C-Flow	
	Forces ranges (4)	5 - 100 N, 20 - 250 N, 50 - 700 N, 100 - 1750 N	
	Weight	12 kg	

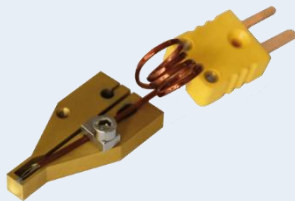
Contact block		Thermode	
UO-3200	3D-Block, 50 mm (Small)	PT-xxxxyy	3D Heat Thermode 5 - 50 mm
UO-3202	3D-Block, 100 mm (Medium)	PT-xxxxyy	3D Heat Thermode 51 - 100 mm
UO-3203	3D-Block, 130 mm (Large)	PT-xxxxyy	3D Heat Thermode 101 - 130 mm
UO-3220	2D-Block, 50 mm (Small)	PT-xxxxyy	2D Heat Thermode 5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



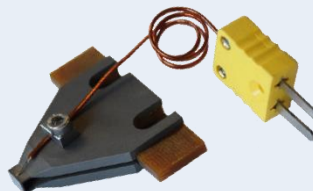
2D custom made thermode



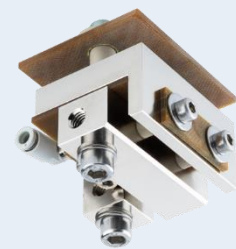
2D custom made thermode with thermocouple



Heat Staking thermode with thermocouple



3D custom thermode with thermocouple



Example contact block