

# C-Tack desktop system for ACF Laminating

For ACF Laminating (pre-tacking) applications

The C-Tack Desktop System developed by C-Tech Systems for ACF Laminating (Pre-Tacking) applications. It uses pneumatic bonding head technology and offers reliable process control, with an integrated Constant Heat power supply. ACF (Anisotropic Conductive Film) Laminating is a Hot Bar bonding technique to make electrical bonds between flexible and rigid circuit boards, glass panel displays and flex foils. ACFs are widely used to perform LCD-to-flex, flex-to-board or flex-to-flex connections. The ACF Laminating/Pre-Tacking process forms the first part of the total bonding process: applying the adhesive material to the substrate. After that the final Heat Seal Bonding process can take place. Before the ACF is applied to the substrate, the ACF tape is half-cut at the required length from a reel of ACF.

C-Tack



Half-cut means that only the actual ACF material is cut, not the cover layer, which is used for tape transport. By use of a customized thermode with Constant Heat technology (Hot Bar) the ACF is applied to the bond surface. The integrated control system monitors and regulates the temperature, process time and force applied for the pre-tacking process. All process parameters are embedded into the system ensuring consistent process quality and operator independence.

The product parts are positioned in a customized product fixture, which is mounted to the pneumatic linear slide (front-rear stroke). The C-Tack system enables full automatic process control, with manually loading and unloading of parts.

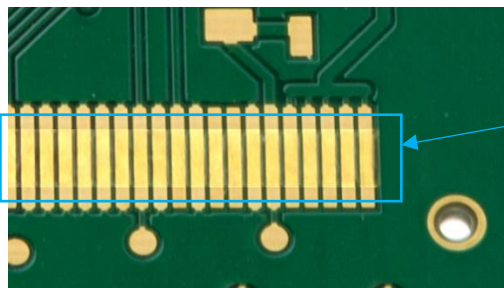
The C-Tack is standard compatible with almost all ACF tape available in the market.

## Features

- Compact and robust construction
- Multi-language userfriendly touchscreen UI
- Integrated Constant Heat process control
- Two distinct force ranges
- Options: camera and interposer

## → Benefits

- High performance processing
- To easily transfer proven process globally, easy set up
- Guaranteed Process quality
- Accurate forces for all applications
- All possible process requirements controlled by one controller.



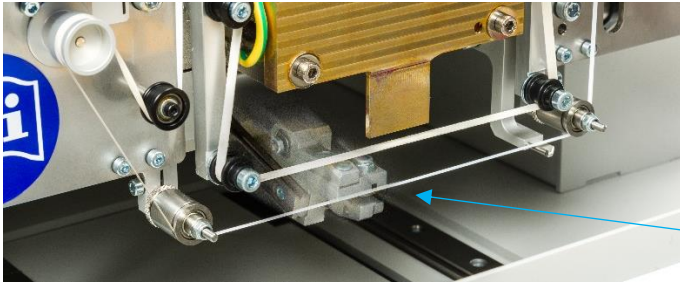
ACF tape laminated on the tracks

# Application processes

For ACF Laminating (pre-tacking) applications

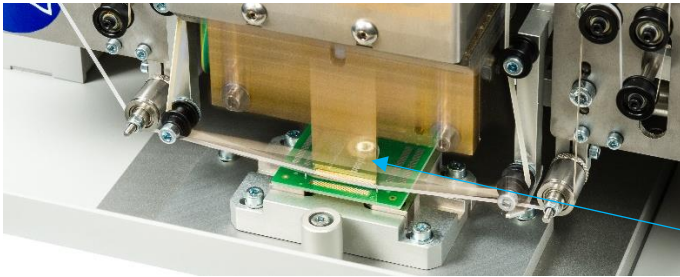
## ACF Laminating / Pre-Tacking

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, which are separated by an isolating adhesive material. Anisotropic Conductive Film (ACF), is a lead-free and environmentally friendly interconnect material to make electrical and mechanical connections between two parts. ACFs are widely used to perform LCD-to-flex, flex-to-board or flex-to-flex connections.



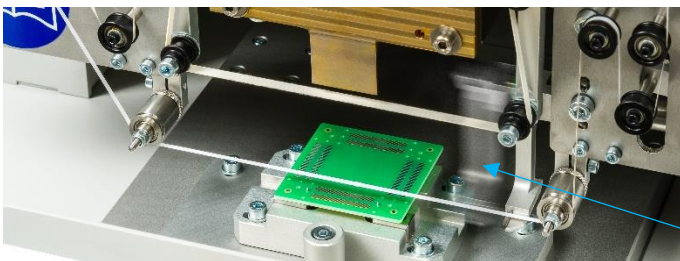
Prior to laminating the ACF to the substrate, the ACF tape is pre-cut at the required length from a reel of ACF. The tape is half-cut; only the actual ACF material is cut. The cover layer (carrier) is used for tape transport.

*Cutter movement*



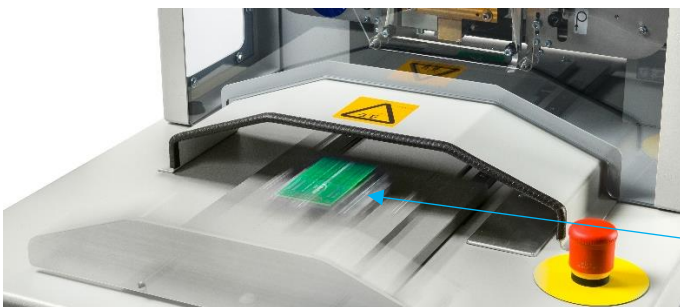
The ACF can now be applied to the substrate by using the Constant Heat Thermode (Hot Bar). Time and temperature can be programmed, force can be adjusted.

*Thermode movement*



After the pre-bond is made the peeler shifts from right to left and back again, to peel the ACF tape from the carrier tape. The ACF is now pre-bonded to the surface.

*Peeler movement*



Now the laminating process is finished, the slide comes out again. The C-Tack system is now ready to receive the next substrate.

*Slide movement*

## Next process: Heat Seal Bonding

After laminating, the parts to be joined are brought together in a fixture. This fixture (or jig) makes certain that the bonding parts fit perfectly together and ensures 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 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.

# C-Tack Desktop System

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## Standard configuration C-Tack:

Base Frame, 2-positions Pneumatic Slide Module, Touch screen User Interface, Constant Heat Control, Adjustable Force Control

- CA-200** C-Tack with **low force** Bonding Head, 8 - 125 N
- CA-210** C-Tack with **high force** Bonding Head, 75 - 600 N

## Options

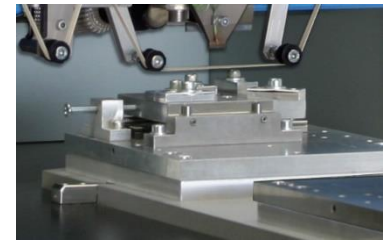
- PT-8xxxx Constant Heat Thermode 5-50mm
- PT-8xxxx Constant Heat Thermode 51-100mm
  
- CA-1210 Interposer Automated for ACF applications
- UO-4150 Silicon tape/1 reel for Heat Seal Bonding processes only
- UO-4150-10 Silicon tape/set of 10 reels for Heat Seal Bonding processes only
- UO-4150-20 Silicone tape/set of 20 reels for Heat Seal Bonding processes only
- UO-4150-50 Silicone tape/set of 50 reels for Heat Seal Bonding processes only

Product fixture / Jigs On request, product specific designs.

- 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



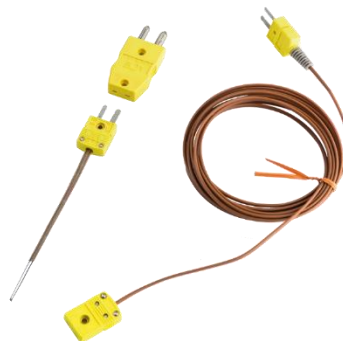
Constant heat thermode



Fixture /Jig



Co-planarity check paper



Flat thermocouple



Force measuring sensor

# C-Tack Desktop System

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## Specifications

<b>C-Tack Desktop System</b>	
Standard configuration Base Frame, Slide Module, User Interface, Constant Heat Control, Manual Force Control	
<b>CA-200</b>	C-Tack with <b>low force</b> Bonding Head, 8 - 125 N
<b>CA-210</b>	C-Tack with <b>high force</b> Bonding Head, 75 - 600 N
Force range	CA-200: 8 - 125 N @ 6 bar CA-210: 75 - 600 N @ 6 bar
Bond head stroke (max)	50 mm (of which 25 mm free z space for components)
Bond level height (nominal)	30 mm
Free z space for components	5 mm
Temperature range	40 - 175 °C Constant Heat, programmable
Temperature control accuracy	± 2% of Full Scale
ACF tape configuration	2-layer, 3-layer on request
ACF tape width	0.8 - 5 mm
ACF tape feeding indexing	Min 3 mm - Max 100 mm
ACF tape placement accuracy	X and Y direction: ± 0,25 mm (3 sigma)
ACF tape cutting method	Half-cut
Peeler mechanism	Pneumatic
Laminating area (LxW)	Min 3 x 0.8 - Max 100 x 5 mm
Fixture assembly baseplate dimensions	140 x 140 mm
Fixture weight	≤ 1.0 kg (product specific)
Operation	Two hand control
Start-up time	< 5 min
Tape feeding	Stepper motor (encoder controlled)
Tension control	Sensor controlled (closed loop)
Environment temperature	15 - 40 °C
Environment humidity	Max 93% @ 40 °C
Certification	CE Approved
Power requirements	220-240 VAC Single phase, 50 / 60Hz, 16 A
Air supply	6 bar, clean dry & filtered
System Dimension (HxWxD)	720/760 x 600 x 780 mm
System weight	96 kg