The C-Tack Desktop System developed by Nordson DIMA 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. 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.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>Compact and robust construction</td>
<td>High performance processing</td>
</tr>
<tr>
<td>Multi-language userfriendly touchscreen UI</td>
<td>To easily transfer proven process globally, easy set up</td>
</tr>
<tr>
<td>Integrated Constant Heat process control</td>
<td>Guaranteed Process quality</td>
</tr>
<tr>
<td>Two distinct force ranges</td>
<td>Accurate forces for all applications</td>
</tr>
<tr>
<td>Options: camera and interposer</td>
<td>All possible process requirements controlled by one controller.</td>
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ACF tape laminated on the tracks
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.

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.

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 has now been pre-bonded to the surface.

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

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
For ACF Laminating (Pre-Tacking) applications

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-1200  Interposer Manual for ACF applications
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 reeels for Heat Seal Bonding processes only
UO-4150-20  Silicone tape/set of 20 reeels for Heat Seal Bonding processes only
UO-4150-50  Silicone tape/set of 50 reeels for Heat Seal Bonding processes only

Product Jigs
Spec-Jig Level 1  Level 1 product fixture, where products are put into nests and positioned over two reference pins, no alignment adjustment
Spec-Jig Level 2  Level 2 product fixture, where products are put into nests and aligned by one manual adjusted linear slide
Spec-Eng+Jig  Custom specific product fixture with multiple alignment, product clamping, complex products etc.

Calibration Tools
UO-5233  Coplanarity check paper, A4 format, Super Low Pressure (LLW)
UO-5230  Flat thermocouple type K up to 500 degrees C.
UO-5231  Handheld Temperature read out unit (no data logging)
UO-5240  Force measuring sensor up to 100N, incl. holder and top plate
UO-5241  Force measuring sensor up to 1.000N, incl. holder and top plate
UO-5242  Force measuring read-out device
UO-5243  Force measuring read-out device with RS232 interface
## C-Tack Desktop System Specifications

### C-Tack Desktop Systems

**Standard configuration**
- Base Frame, Slide Module, User Interface, Constant Heat Control, Manual Force Control

<table>
<thead>
<tr>
<th>Model</th>
<th>Configuration</th>
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<tbody>
<tr>
<td>CA-200</td>
<td>Two position pneumatic Slide, Force range 8 - 125 N</td>
</tr>
<tr>
<td>CA-210</td>
<td>Two position pneumatic Slide, Force range 75 - 600 N</td>
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</tbody>
</table>

**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**
- 25 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 air

**System Dimension (HxWxD)**
- 720/760 x 600 x 780 mm

**System weight**
- 96 kg