# Desktop System C-Turn

**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-Turn



C-Turn handles the product in a pneumatic turning unit for easy access and preparation of the application.

## 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
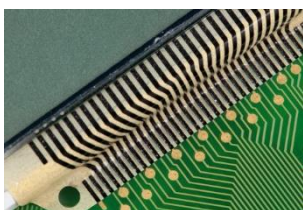


Heat Seal Bonding application
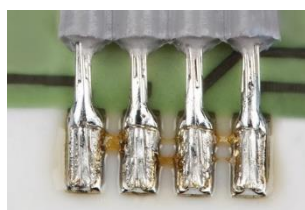


Reflow Soldering application



ACF Laminating application

# 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).
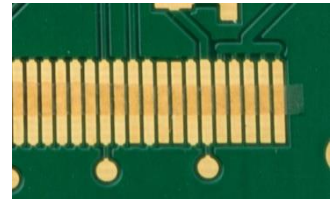


*ACF Laminating application*

## 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*
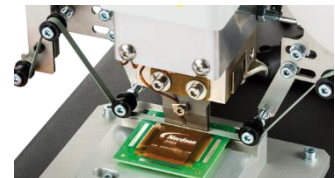


*Heat Seal Bonding Process*

## 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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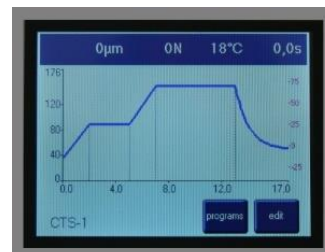




Bonding/Soldering Head

Interposer Module

Mounting block Thermode

Substrate
Fixture/jig



## 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*
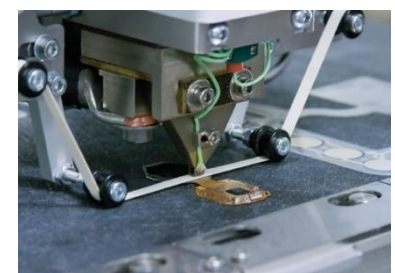


*Heat seal bonding proces with silicon tape*



*Fixture/Jig*

# Desktop System C-Turn

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## Specifications

| C-Turn Desktop system | |
|---|---|
| **Standard configuration** | |
| Base Frame, Turn Module, User Interface, Pulsed heat power supply, Manual force control, Data logging via USB-stick | |

| **Models** | |
|---|---|
| **CT-100** | C-Turn with low force Bonding/Soldering Head, 5 - 100 N |
| **CT-110** | C-Turn with mid force Bonding/Soldering Head, 20 - 250 N |
| **CT-120** | C-Turn with high force Bonding/Soldering Head, 50 - 700 N |

| | |
|---|---|
| Dimensions (HxWxD) | 450 x 700 x 800 mm |
| Max. Fixture dimension (optional) | 160 x 160 mm |
| Product handling | Pneumatic turning unit with diameter 410 mm |
| 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 |

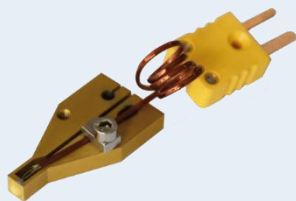| Contact block | | Thermode | |
|---|---|---|---|
| UO-3200 | 3D-Block, 50 mm (Small) | PT-xxxyy | 3D Heat Thermode 5 - 50 mm |
| UO-3202 | 3D-Block, 100 mm (Medium) | PT-xxxyy | 3D Heat Thermode 51 - 100 mm |
| UO-3203 | 3D-Block, 130 mm (Large) | PT-xxxyy | 3D Heat Thermode 101 - 130 mm |
| UO-3220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



*2D custom made thermode*
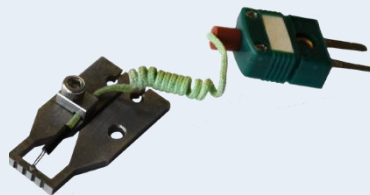
2D custom made thermode with thermocouple
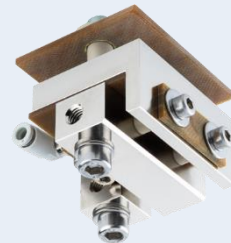
*Example contact block*

Heat Staking thermode with thermocouple
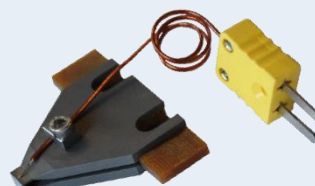
3D custom thermode with thermocouple