The C-Base Bonding/Soldering system is a combination of a C-Flow and a C-Drive module and stands alone from other pulsed heat controllers with its unique integration of responsive temperature control and useful tools such as displacement monitoring and force control, all packaged into an easy to use, multi-language, touch screen interface. Whether you require a system for Heat-Seal Bonding, Reflow soldering, ACF Laminating, Heat-Staking, or other demanding application, the C-Flow can get the job done.

The C-Flow was designed for easy stand-alone applications and complete factory integration with RS-485, compact size, and external I/O. The C-Flow is a revolutionary concept in intelligent pulsed heat controllers. It is an industry first, by combining precision temperature control with micron level displacement monitoring and real time control of thermode pressure, providing its users with capabilities usually requiring multiple pieces of equipment.

The C-Drive is designed to deliver quality solder joints and Heat Seal bonds consistently. When coupled with a C-Flow Controller, the C-Drive shows its true colors. Temperature, Force, and Displacement Monitoring give instant feedback on what’s occurring at the joint on a full color touch screen display, alarming the operators instantly if the temperature and displacement are out of specifications. The C-Drive series was engineered to deliver repeatable and accurate force for a wide 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.

### Features
- Displacement monitoring
- Multi-language user-friendly touchscreen UI
- Easy Thermode change overs and planarity
- Four distinct force ranges
- Integrated Force Control
- Data output to PC via RS-485
- Options: camera and interposer

### Benefits
- Control your joining connections
- To easily transfer proven process globally
- Saving set up time
- Accurate forces for all applications
- Easy force programming by touch screen
- For Quality Assurance and SPC collection
- All possible process requirements controlled by one controller.

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**Heat Seal Bonding application**

**Reflow Soldering application**

**ACF Laminating application**
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).

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.

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 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.
Process Equipment C-Base
For Heat-Seal Bonding, Reflow soldering, ACF Laminating and Heat-Staking applications

**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 1000 N
- UO-5242 Force measuring read-out module
- UO-5243 Force measuring read-out module with RS232 interface

**Mounting block**
**Thermode**
**Substrate**
**Fixture/jig**

**C-Drive**
Bonding/Soldering Head

**C-Flow**
Temperature and force control

**Spec-jig**
Custom specific product fixture

**Soldering process with Kapton tape**

**Heat Seal Bonding process with Silicone tape**

**Fixture / jig**

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Nordson
DIMA
# Process Equipment C-Base

## Specifications

### C-Base process equipment

<table>
<thead>
<tr>
<th>Models</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB-100</td>
<td>C-Base with low force Bonding/Soldering Head, 5 - 100 N</td>
</tr>
<tr>
<td>CB-110</td>
<td>C-Base with mid force Bonding/Soldering Head, 20 - 250 N</td>
</tr>
<tr>
<td>CB-120</td>
<td>C-Base with high force Bonding/Soldering Head, 50 - 700 N</td>
</tr>
</tbody>
</table>

### C-Flow

- **Dimensions (HxWxD):** 310 x 225 x 415 mm
- **Power requirements:** 220-240 VAC Single phase, 50 / 60Hz, 16 A
- **Air supply:** 6 bar, clean dry and filtered air
- **Transformer:** Integrated '4 step' 4.5 kVA Transformer
- **Heating profile:** 200 Heating profiles can be saved
- **Per heating profile:** 20 Programmable points for process time / temperature / force
- **Noise level:** <70 dB (A)
- **Weight:** 31 kg

### C-Drive

- **Dimensions (HxWxD):** 370 x 330 cm x 400 mm
- **Power Connection:** supplied by C-Flow
- **Forces ranges:** 5 - 100 N, 20 - 250 N, 50 - 700 N
- **Weight:** 12 kg

### Connect Block

<table>
<thead>
<tr>
<th>Connect Block</th>
<th>Thermode</th>
</tr>
</thead>
<tbody>
<tr>
<td>UO-3200 3D-Block, 50 mm (Small)</td>
<td>PT-xxxxy 3D Heat Thermode 5-50 mm (Small)</td>
</tr>
<tr>
<td>UO-3202 3D-Block, 100 mm (Medium)</td>
<td>PT-xxxxy 3D Heat Thermode 51-100 mm (Medium)</td>
</tr>
<tr>
<td>UO-3203 3D-Block, 150 mm (Large)</td>
<td>PT-xxxxy 3D Heat Thermode 101-130 mm (Large)</td>
</tr>
<tr>
<td>UO-3220 2D-Block, 50 mm (Small)</td>
<td>PT-xxxxy 2D Heat Thermode 5-50 mm (Small)</td>
</tr>
</tbody>
</table>

- **2D custom made thermodes**
- **2D custom made thermode with thermocouple**
- **Heat Staking Thermode with thermocouple**
- **3D thermode with thermocouple**
- **Connect block example (UO-32xx)**

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Nordson DIMA
Brekkebosch 2
5753 PA Deurne, The Netherlands

+31-493-352752
nordsondima.com