

# X-Reflow306 LF Full Convection, Bench Top, Batch oven with Nitrogen Connections

**Especially designed for LEAD FREE  
Soldering**

CE



High performance, low-cost inexpensive reflow batch oven for use in small lot production and laboratory simulation tests.

The X-Reflow306 is a high performance batch oven designed for prototyping, laboratory testing, heat-resistance testing and low volume production.

With its large backlit LCD display the setting of the temperature and time or the operation, can be easily checked by numerical value or graph.

## FEATURES

The unit has several unique features, which enhance operation.

- Full convection heating with independent control of the front and rear heaters, which enables hot air temperature and time settings in 5 zones and pre-setting of various profiles for different PCB's.
- The large inspection window allows for monitoring the soldering process during operation (inspection can be done, if needed, using a microscope or camera system). Microprocessor-based control uses closed-loop monitoring to ensure absolute repeatability of the temperature profiles and has the memory to store 250 profiles.
- The large backlit display shows either the specific temperatures and times, or a graph of temperature versus time in real time. The Nitrogen Gas inlet is standard and the oven can be used for soldering in a nitrogen environment without requirement for any additional hardware.
- The unit was redesigned in 2008 to implement computer interface for downloading the firmware upgrades. This also will enable future custom settings to be downloaded from a PC via the X485-USB Converter.
- The minimum temperature setting was lowered to 50°C to accommodate soldering of the PCB's using either low temperature solders or curing conductive adhesives and other materials needing lower temperatures.
- Interface to a PC will allow use of our Windows-based PC Control Program for programming and operating the oven as well as recording the executed profiles in a PC. The schedule for the release of this program is Nov 2009.
- At present two external thermocouple inputs located on the back panel in conjunction with optional **X-306 Oven Monitor** program allow operator to monitor (see in real time on a PC, save and print) the board temperature through-out the entire reflow process.
- **HIGH OPERATING TEMPERATURE for LEAD FREE SOLDERING**  
Higher than other ovens max. operating temperature 350 °C (662 °F) and better, stronger materials to assure good performance when soldering with lead free alloys
- **HIGH PERFORMANCE**  
The **X-Reflow306 LF** is a low-cost, high performance production reflow batch oven. This unit has several unique features, which enhance operation.
- **SMALL DESKTOP SIZE**  
It has a small foot print and weighs only 43kg. Conventional ovens are large in size, but the X-Reflow306 LF can fit on top of a desk in a small room.
- **LARGE GLASS VIEWING WINDOW**  
The large glass viewing window (280x280 mm) allows the inside reflow condition to be checked easily. Users can see the oven's inside, and check or photograph the detail soldering conditions by using a microscope, or a small CCD camera.
- **LARGE BACKLIT LCD DISPLAY WITH DIGITAL PROGRAM AND GRAPHIC PROFILE INFORMATION**  
The large backlit LCD display allows easy program entry and verification. Pressing one key can change the temperature numeric profile into a graph display to allow an easy check of the operating conditions at a glance. Depending on the working area, the LCD display brightness can be adjusted by the contrast adjustment in the settings menu making it easy to see details on the display.

- **CAPACITY TO STORE UP TO 250 PROGRAMS**  
The five operation processes- preheat 1, preheat 2, Soak, Reflow and Cooling are called zones of the Program. Each zone has defined desired temperature and time in which to reach and maintain this temperature. Up to 250 such programs can be stored in the unit's memory and re-called when needed. Each Program can be specific to the PCB size and construction (number of layers), type of solder paste used for the process, mounting density, component size and mass etc.
- **INDEPENDENT CONTROL OF THEFRONT AND REAR HEATERS**  
If the thermal load on the board is not distributed symmetrically, the operator can use independent temperature control of the front and back heaters.
- **TIME ZONE LED (Operation LED's)**  
Profile drawing and current zone different color LED's on the front panel allow operation to be checked at a glance.
- **N2 PORT**  
To decrease the oxidation of leads and pads during soldering, a compressed N2 gas source can be connected to the oven to replace air (oxygen).
- **MANAGEMENT CONTROL OF THE PRE\_PROGRAMMED PROFILES**  
This oven has a password protection. This allows for enabling/disabling programming of the profiles and entering changes to the user menu.
- **SEQUENCER MODE (Another UNIQUE Feature)**  
For manufacturers of laminates to make PCB's who from this year have to temperature cycle samples of the material ( means have to bring the material to a required temperature following recommended profile and cool it to room temperature) several times the X-Reflow306 LF-AC has a special mode of operation called SEQUENCER. In this mode, the operator can pre-program the sequence of up to eight Programs and the low end temperature to which the board which is cycled needs to be cooled to, and the oven will execute such sequence semi-automatically. Will run the first program, vent the oven from fumes, prompt the operator to lift the top clam shell, cool heated specimen to pre-programmed temperature and prompt the Operator to close the top clam shell and press ENTER to start the next cycle.
- **INTERFACE with a PC**  
The unit is equipped with an interface to a PC (connection to a PC via an XKAR X485-USB converter) to enable firmware upgrades, use the X-KAR Oven Monitor program to see and document the real temperature on the processed PCB, and in the future (from Nov 2009), control the oven from a PC.
- **ACCELERATED, ADVANCED COOLING SYSTEM**  
(Model X-Reflow306 LF-AC only) The Advanced Cooling System in the model X-Reflow306 LF-AC, when connected to a pressurized air line (known as shop air) cools the soldered PCB's at a much quicker rate than is possible in regular ovens. This provides better reliability of soldering connections, and better safety for the Operators handling the boards.
- **INTELLIGENT AND UNIQUE FUME EXTRACTION MANAGEMENT**  
Proprietary and probably the most important innovation in batch oven design. Each X-Reflow306 LF, like no other oven in the industry, is equipped with the Proprietary Fumes Cooling System and program controlled power outlet for the fume extractor. This makes it possible to connect and start the Fume

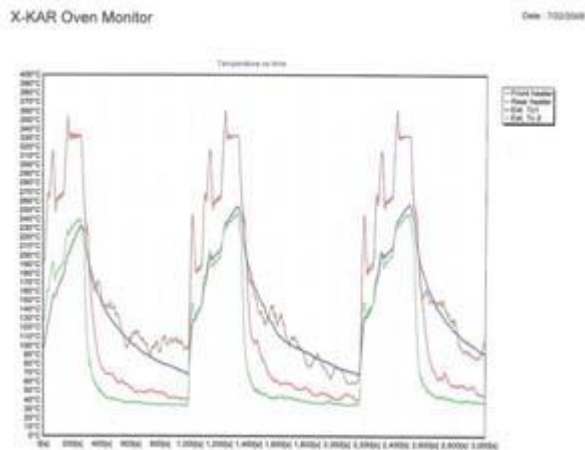
Extractor at the end of Reflow Zone when the oven is still closed and extract the fumes before the oven is opened to speed-up the cooling of the processed PCB. The timing when, and how long the fume extractor will work is controlled by the oven administrator who can set this in the settings MENU. This way the fumes do not mix with room air and can be extracted through HEPA type high vacuum fume extractor. (X-KAR Brand engineers designed **X-306 FumeExtract** to complete safe, user friendly, simple and efficient use of X-Reflow306-LF Batch Oven.

### Technical Specyfication

	<b>X-Reflow306 LF and X-Reflow306 LF-AC</b>
<b>Reflow area</b>	12"x12"x1.75" (305x305x45 mm)
<b>Temperature range</b>	70°C to 350°C
<b>Temperature Zones</b>	Preheat1, Preheat2, Soak, Reflow, Cooling – Total of 5 (five) zones
<b>Heaters</b>	2 Heaters (Front and Rear) 2,4kW programmed independently
<b>Max. PCB size</b>	12"x12" (305x305 mm)
<b>Supply Requirements</b>	21 amps, 230V 50/60 Hz (Max power consumption: 5 kW)
<b>Cooling Cycle</b>	Last (Fifth) Zone
<b>Monitoring Window Size</b>	9.84"x9.84" (280x280 mm)
<b>Nitrogen Connection</b>	Standard Connector. Nitrogen pressure:1/2-1bar (7-14.5 psi)
<b>Size</b>	L=30"xW=20"xH=12" (L=480mm x W=711mm x H=200mm)
<b>Weight (unpacked)</b>	88 lbs. (40 kg)
<b>Computer profile control</b>	Allows pre-programming, storage and recall of up to 250 programs
<b>Communication with PC</b>	RS485 port (XKAR X485-USB converter required to connect to PC USB port)
<b>Advanced Features</b>	Display of the actual temperature/time numerically or as a graph, Independent off-set for the heaters, RS-485 port for downloading firmware upgrades from a PC, Ready to solder in Nitrogen environment, Variety of ways to monitor process in progress.

### Additional Features:

X-306 Oven Monitor



Process Monitoring Software that displays the graphs of temperature versus time on a PC or laptop. It reads front and rear thermocouples in the oven and two additional thermocouples connected by the oven operator. To see, record and save or print the profile of the soldered PCB one or two external "K" thermocouples can be connected to the board, or one to the board and another placed inside the oven above the board to see actual board and air temperatures during the program cycle.

#### Advanced Cooling Hardware

The complete set of hardware and instructions to install on X-Reflow306 LF to change this oven to X-Reflow LF-AC and be able to cool the PCB's after reflow to close to room temperatures in approx. 300 to 400 sec.

#### X306 Fume Extract

High Vacuum Fume Extraction Unit with HEPA Filtration for Batch Oven X-Reflow306. Powered from the back panel of the X-Reflow306 LF and X-Reflow306 LF-AC units. Because Batch ovens are usually used in smaller rooms it is a must, to extract and clean the fumes. generated during soldering.