

Model MFRS500USB Rework/Repair System for SMD Chips & ICs

Just needs mains input power supply only • Hot Air Pencil has **in-built** Vacuum Pick-up for SMD ICs

All 3 functions of Hot Air Reflow, Desoldering & Soldering work independent of each other
No external Compressor required



RS232 to USB Cable for connection to USB Port of external Computer



Software CD

Single System suffices for SMD soldering, Thru-hole desoldering & SMD ICs reworking



Fine pitch SMD Soldering



Thru-hole Soldering



Large SMD IC Reworking



Thru-hole Desoldering

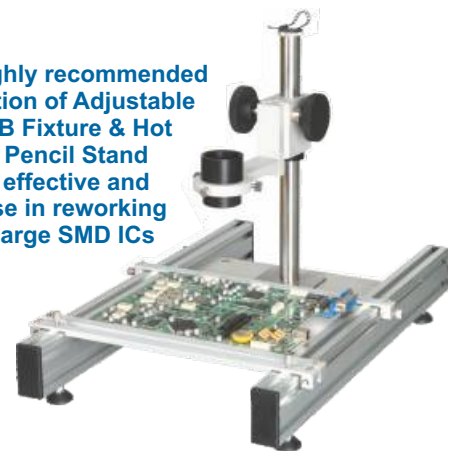
Scope of Supply:

- MFRS-500SUSB Main Control Unit
- High Power Hot Air Pencil with in-built Vacuum Pick-up
- Hot Air Pencil Holder
- Soldering Pencil fitted with 2.4mm Chisel Soldering Tip
- Support Rack with Cleaning Sponge and Dry Cleaner
- Desoldering Gun fitted with Desoldering Tip
- Support Rack with Cleaning Sponge for Desoldering Gun

Specifications

- Power : 1180 Watt
- Temperature Range
 - Soldering/Desoldering : 200°C ~ 480°C
 - Hot Air Pencil : 100°C ~ 500°C
- Airflow Range : upto 120 litre/minute
- Vacuum Suction : 600mmHg

Highly recommended option of Adjustable PCB Fixture & Hot Air Pencil Stand for effective and ease in reworking of large SMD ICs



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OPTIONAL Hot Air Pencil Holder Stand with fine UP/DOWN movement combined with Adjustable type PCB Fixture, also has provision to keep IR Pre-Heating Plate IRPH-4

The PCB Fixture retains and secures the PCB under repair and allows positioning of the PCB in X and Y directions. It permits PCBs upto a maximum size of 350mm x 280mm, both single and double sided types remain in a perfectly flat condition.

It also incorporates a Pivoting Stand to mount the Hot Air Pencil. This Stand provides fine Up & Down movement of Hot Air Pencil for raising and lowering it onto the component under repair. The Pre-heating Plate IRPH-4 can be kept under the PCB Fixture to provide gentle bottom pre-heating which is necessary for multilayer PCBs

Features

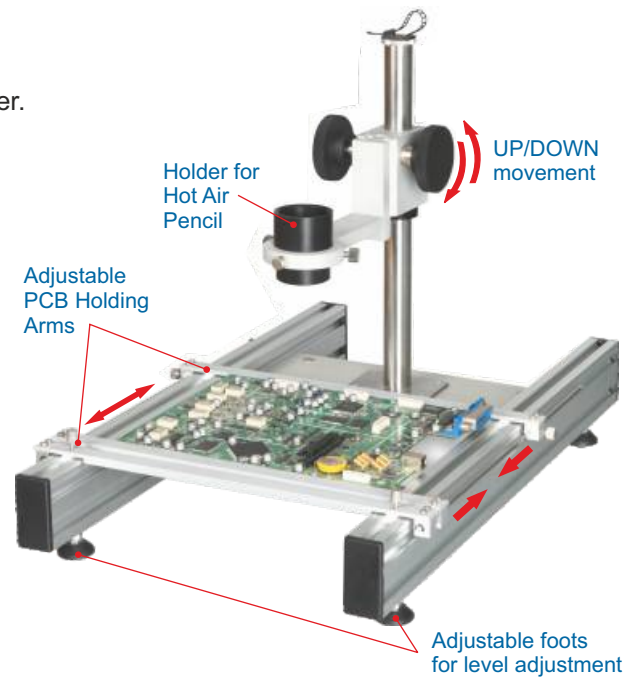
- Maximum PCB size: 350 x 280 mm
- PCB can be positioned in X & Y directions
- Pre-Heating Plate can be positioned under the PCB
- It has 4 adjustable foot to adjust the level of PCB Holder.

Specifications

Coarse height range : 0 ~ 230mm
 Fine height adjustment : 0 ~ 60mm
 Maximum width of PCB : 280mm

How to remove large SMD ICs ?

- Choose an appropriate Hot Air Nozzle and fix the PCB on PCB Fixture and position the SMD IC exactly under the Hot Air Pencil.
- Adjust airflow and temperature between 400°C ~ 500°C depending upon the size of SMD IC.
- Adjust the temperature of bottom Pre-heater so that the temperature on the top side of PCB reaches around 120°C. Check the temperature on the component using Thermocouple supplied with Pre-heat Plate.
- Switch-on the hot air and blow hot air from small distance to pre-heat the SMD IC to avoid any thermal shock to it.
- Lower the Hot Air Pencil on SMD IC and wait for solder to melt.
- Once the solder melts, switch-on the vacuum and lift the Hot Air Pencil, the SMD IC will come with the Nozzle due to its integrated vacuum pick-up.



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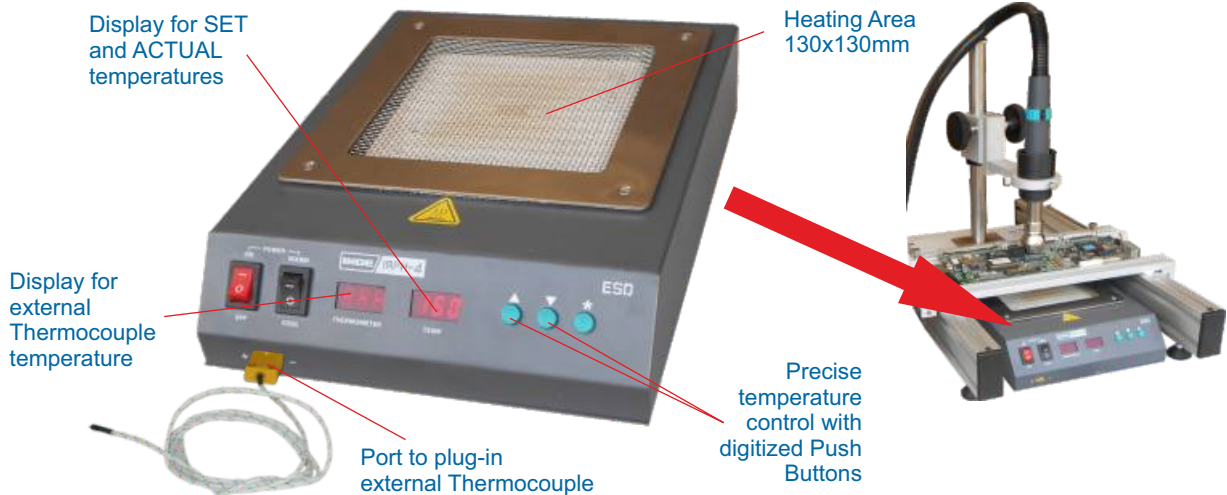
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OPTIONAL Programmable Hi-Power (600W) infrared Pre-heating Plate Model IRPH-4

The IRPH-4 Pre-heating Plate enhances the effectiveness of the MFRS500USB systems. It provides bottom pre-heating to the PCB under repair, therefore minimizing the risk of thermal damage to expensive SMD ICs and warping of expensive multilayer PCBs. Additionally it also speeds up the rework/repair process.



Features:

- High quality, long life IR Ceramic Heating Elements ensure fast and even pre-heating with high efficiency
- in-built temperature measurement with thermocouple, allows continuous monitoring of PCB temperature
- Pre-set temperature is achieved accurately and remains stable due to closed loop PID control design.

Specifications:

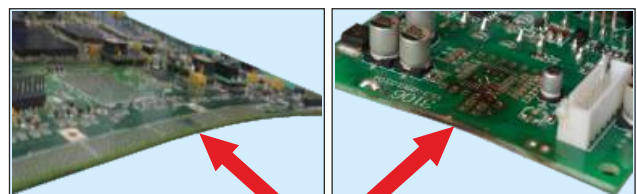
- | | | | |
|------------------|---------------------|----------------------|-----------------------|
| • Heating Power | : 600 Watt | • Temperature Sensor | : K-type Thermocouple |
| • Plate Area | : 130 x 130mm | • Temperature Range | : 50°C ~ 350°C |
| • Heating Source | : IR Ceramic Heater | • Measurement Range | : 0 ~ 600°C |

Why bottom Preheating is recommended ?

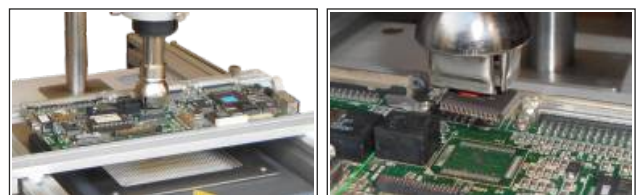
Today's electronics design has higher density of expensive devices on the multilayer PCBs which inherently require gentle pre-heating of PCBs to avoid the damage to SMD Pads of such expensive PCBs. Additionally it also avoids thermal damaging of expensive SMD ICs, and warping of PCBs.

If pre-heating is not used, it can lead to SMD pads lifting, delamination/warping and burning of expensive PCBs as well thermal damaging of large expensive SMD ICs during rework/repair. Beside these visible defects, the invisible defects like internal layer cracking etc. will also result if pre-heating is not used.

To avoid above failures, PCBs will normally need even pre-heating around 120°C on top side while reworking. The Pre-heater model IRPH-4 serves this purpose. PCBs are heated evenly and gently from bottom side for safe reworking of expensive multilayer SMD PCBs.



PCB warping/burning possibility without pre-heating



Safe reworking of large SMD ICs using bottom Pre-heating

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1000 Watt high heat power and very powerful **upto 120 litre/minute** Hot Air Pencil also has **in-built** Vacuum Pick-up provision for safe desoldering of large SMD ICs. Gentle lifting by Vacuum Pick-up does not damage SMD Pads of expensive PCBs.

The ergonomic and powerful Hot Air Pencil (1000 Watt) together with the extensive range of Hot Air Nozzles make this tool very versatile. Hot Air Nozzles are secured to the tool by press fitting. It has in-built integrated powerful Vacuum Pick-up for gentle lifting of large SMD ICs during desoldering without any damage to SMD pads of expensive PCBs. Temperature controlled Hot Air Pencil provides adjustable high volume of airflow. Different Hot Air Nozzles are available for different SMD ICs.


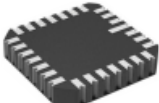
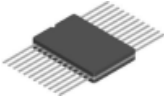

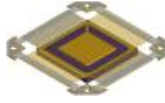




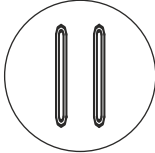
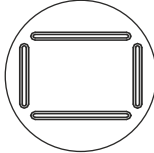
in-built Vacuum Pick-up lifts large SMD ICs gently during reworking/repairing

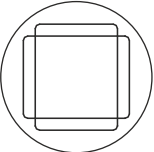
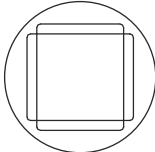
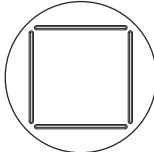
Specifications of Hot Air Pencil

- Power: 1000 Watt
- Temperature Range: 100°C ~ 500°C
- Airflow Volume: upto 120 litre/minute

Wide range of Hot Air Nozzles available to desolder/solder miniature chip components and even as large as 50 x 50 mm size Fine-Pitch SMD ICs like: QFPs, PLCCs, TSOPs

 Large PLCCs like PLCC 84	 LCC leadless Chip Carrier	 Flat Packs	 Large QFPs as 208 & 304 Pins	 Ceramic Quad Flat Packs	 Thin SOP ICs
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NK2064 6.4mm dia Suitable for SMD Chips 	NK3131 Size: 4x10mm Suitable for SOP 4.4x10 	NK3128 Size: 15x21mm Suitable for QFP 14x20 
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NK3136 Size: 19x19mm Suitable for PLCC 20x20 	NK3137 Size: 24x24mm Suitable for PLCC 25x25 	NK3264 Size: 39x39mm Suitable for QFP 40x40 
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Hot Air Nozzles of other sizes also available as per customer's requirement, please tell details of IC.

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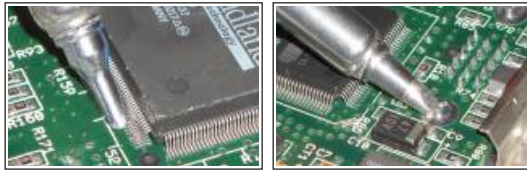
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Unique design of Soldering Pencil for SMD and PTH soldering

The Soldering Pencil uses unbreakable heating element in coiled form encased in metal tube with sensor placed very close to the Soldering Tip for precise control of temperature. Push-fit design allows quick and easy change of Soldering Tips.

Specifications

- Heating Power : 90 Watt
- Temperature Range : 100°C ~ 500°C
- Tip to ground Potential : <2mV
- Tip to ground Resistance : <2Ω



Fine pitch SMD Soldering Thru-hole Soldering



Unique SMD Soldering Tip for soldering fine pitch SMD ICs without bridging

Specially designed 200G-CM SMD Soldering Tip has concave cavity to hold the molten solder. It helps to solder one side of IC completely in a single shot by dragging the Soldering Tip on the PCB tracks without any bridging between adjoining SMD pads.



Wide range of Soldering Tips are available for different soldering applications

Description	Diagram	Width A (mm)	Thickness B (mm)	Part Number
Chisel Tip		1.2	0.5	200G-1.2D
		2.4	0.5	200G-2.4D
		3.2	0.5	200G-3.2D
Long Chisel Tip		5.0	0.5	200G-5LD
Pointed Tip		Ø0.5	-	200G-B
Sloped Tip		Ø3	-	200G-3C
SMD Tip		2	-	200G-2CM

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Power & Control Unit of 3-in-1 Large SMD ICs & Thru-Hole Rework System



Power & Control Unit of Model MFRS500USB regulates temperature and flow of Hot Air Pencil. It also regulates temperatures of Soldering Pencil and Desoldering Pencil precisely. It also regulates vacuum suction for the Desoldering Pencil. Set and Actual Temperatures and Air Flow rate, all are displayed on its LCD Display.

Salient Features

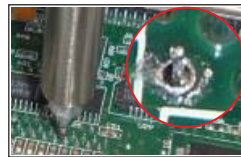
- Provides **3 simultaneous functions** of Hot Air Pencil, Soldering Pencil and Desoldering Pencil.
- Digitized controls provides precise settings for control of temperatures and air flow volume.
- Closed-loop temperature control ensures stability of set temperatures.
- ON/OFF switching of heating is designed during zero voltage cross-over to avoid any electrical transients to the circuits.
- Password protection for menu functions to avoid changing of set parameters by the operators.
- Auto Sleep function for Hot Air Pencil, Soldering Pencil and Desoldering Pencil prolongs the life of Heating Elements and Soldering/Desoldering Tips. Auto sleep parameters are programmable.
- Built-in temperature offset programming for calibration to meet ISO 9000 requirements.
- It provides powerful vacuum suction for Desoldering Pencil without any external compressor.
- In-built Computer Interface for interconnection to external PC of customer
- Set parameters can be monitored on PC thru Monitoring Software

Easy-to-hold Desoldering Pencil for Desoldering Thru-Hole Components

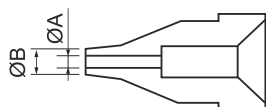
Desoldering Pencil, with internal solder reservoir, desolders thru-hole components. Finger Switch controls quick starts in-built fast action type vacuum pump.

Specifications

- Heating Power : 90 Watt
- Temperature Range : 200°C ~ 480°C
- Vacuum Pressure : 600mmHg
- Tip to ground Potential : <2mV
- Tip to ground Resistance : <2Ω



Desoldering Nozzles available to desolder different PTH components



P/N	Ø A mm	Ø B mm
A1005	1.0	2.5
A1006	1.3	3.0

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Few Supply References for Model MFRS400 & MFRS500SUB

S.No.	Customer Name	Date of Sale	Qty
1	Artek Systems, Panjim, Goa	13.09.2012	1
2	Alere Medical Pvt. Ltd. Delhi	24.08.2015	1
3	Analytical Electronics Services Pvt. Ltd.-Gandhinagar	07.10.2014	1
4	Ardee Hi Tech Pvt. Ltd. -Vishakapatnam	17.05.2014	1
5	Bharat Electronics Ltd., Ghaziabad	24.11.2012	1
6	Bharat Electronics Ltd., Jalahalli, Bangalore	06.06.2013	1
7	Bharat Heavy Electricals Ltd., Trichy	19.03.2013	1
8	Comfax Systems India- Ambala Cantt	25.04.2014	2
9	Communication Electronics-Star Antenna, New Delhi	08.09.2014	1
10	Defence Electronics Applications Lab- Dehradun	03.02.2014	1
11	Degree Controls Inc, Trivandrum	27.11.2012	1
12	Deluxe Enterprises, Jalandhar	19.03.2014	1
13	Deluxe Enterprises, Jalandhar	09.09.2013	1
14	DIG-New Delhi	17.07.2014	1
15	Electronics Corp. of India Ltd., Hyderabad	28.04.2011	1
16	Harish Electricals & Electronics, Chennai	27.04.2015	1
17	Hindustan Areonautics Ltd., Hyderabad	14.03.2015	3
18	Hindustan Areonautics Ltd., Hyderabad	04.05.2015	10
19	Hindustan Areonautics Ltd., Korwa	24.09.2011	8
20	Hindustan Areonautics Ltd., Korwa	31.01.2014	4
21	Hindustan Areonautics Ltd., Lucknow	28.02.2011	2
22	Horiba India Pvt. Ltd., New Delhi	30.07.2014	1
23	IND Micro Devices, Kolkata	21.02.2011	1
24	Indian Institute of Astrophysics, Ooty	10.01.2013	1
25	Indian Institute of Technology, New Delhi	21.03.2013	1
26	Indira Gandhi Centre for Atomic Research, Kalpakkam	03.01.2015	1
27	ISRO Inertial System Unit, Trivandrum	01.10.2014	1



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28	ISRO Inertial Systems Unit, Trivandrum	08.10.2012	1
29	Kaynes Technology, Mysore	08.01.2013	1
30	Mediatek India Technologies Pvt. Ltd.	07.05.2015	1
31	National Aerospace Laboratories, Bangalore	25.03.2013	1
32	NTPC Ltd., Dadri	20.10.2014	1
33	Om Agencies, Kanpur	01.03.2012	1
34	P Statclean Solutions Pvt. Ltd, Delhi	31.01.2013	1
35	Raja Ramana Centre of Advanced Tech, Indore	19.09.2012	2
36	Rajshree Electro Systems, Thane	02.11.2013	1
37	Rajshree Electro Systems, Thane	24.03.2014	1
38	Rajshree Electro Systems, Thane	17.04.2015	1
39	Rajshree Electro Systems, Thane	20.08.2014	1
40	Rajshree Electro Systems, Thane	11.10.2014	5
41	Satish Dhawan Space Centre Shar AP, Saroharikota	22.11.2014	1
42	SEL Manufacturing Co. Ltd., Nawashahr	21.03.2013	1
43	Special Protection Group, New Delhi	16.04.2015	1
44	Suraj Enterprises, Bikaner	21.06.2013	1
45	SVP Laser Technologies Pvt. Ltd.	30.05.2015	1
46	Terminal Ballstics Research Lab, Chandigarh	18.12.2014	3
47	TM Controls, Kota	27.05.2014	1
48	Vardhaman Polytax Ltd., Nalagarh	11.01.2014	1
49	Vikram Sarabhai Space Centre, Trivendrum	24.07.2015	1
50	Vikram Sarabhai Space Centre, Thiruvanthpuram	08.12.2010	1
51	Vikram Sarabhai Space Centre, Thiruvanthpuram	15.05.2012	1
52	Volvo India Pvt. Ltd., Bangalore	30.08.2014	1
53	Yong India Power Systems Pvt. Ltd., Kolkata	29.05.2014	1