

Quality Tools For The Electronics Industry





# HAKKO brand is much loved in more than 50 countries worldwide.

HAKKO has grown into a global brand. Our soldering irons and related equipment are hard at work in more than 50 countries. We have local branches and sales representatives around the world, and continue to expand our global network.



# bal Network



As of Feb. 2015

### (((( WORLDWIDE NETWORK ))))))



# **Quality Tools for the**



HAKKO is certified under ISO 9001 (JIS Q 9001), the international standard for quality management systems. We are also certified under ISO 14001 (JIS Q 14001) and are actively involved in preserving the global environment.

# See the official HAKKO website for all necessary information regarding HAKKO products and services.



# **Electronics Industry**







() HAKO













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### **Soldering Pot**



### Soldering Related Equipment and Materials



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# **IH Soldering Station**







- Provides the heat to the tip effectively by an 'Induction heater' Unique "Power assist" feature that assists the thermal recovery performance of the soldering iron tip
- · No calibration is required
- · Wide variety of tips available
- Meets or exceeds IPC J-STD-001 and ANSI ESD S20.20.



Good Design Award has been a sole comprehensive design evaluation and commendation system in Japan since 1957. "G Mark", the symbol of the award has been recognized widely as a mark representing good design.

### **Packing List**

FX-100

Station, Handpiece (FX-1001), Heat resistant pad, Power cord, Sleeve (green), Sleeve (gray), Cleaning wire, Iron holder, Instruction manual

### Specifications

Model No.	FX-100		
Power consumption	28 W (85 W)		
Temperature range	T31-01 Series: 450°C, T31-02 Series: 400°C T31-03 Series: 350°C		
Temperature stability	±1.1°C		
Station			
Output power	50 W		
Output frequency	13.56 MHz		
Dimensions	127 (W) × 150 (H) × 167 (D) mm		
Weight	3 kg		
Soldering Iron			
Heating element	IH (Induction heating)		
Cord length	1.3 m		
Total length*	190 mm with 2.4D tip for 400°C and 350°C 193 mm with 2.4D tip for 450°C		
Weight*	31 g (with 2.4D tip for 400°C)		

\* Without cord

S

Unit: mm

### Features

#### IH technology delivers the ultimate soldering iron Excellent heat supply. Ideal for the most challenging soldering jobs.

The HAKKO FX-100 features IH (induction heater) that continuously powers the soldering iron and maintains the set temperature by automatically detecting even minute drops in temperature, plus HAKKO's proprietary "**Power Assist**" function. The FX-100 achieves powerful thermal recovery even with fine-shaped tips.



It provides excellent thermal responsiveness that conventional IH and sensor feedback systems cannot offer.

#### **Boost function**

To increase tip temperature by 5 to 10°C (depends on tip shape) for better working efficiency.



"03" for 350°C

### Optional Tips for the FX-1001



## **All-Round Soldering Station**

# SOLDERING STATION FX-888D

### All-Round Soldering Station Digital

Tip included







- Features Adjustment mode, Preset mode, and Password function
- Separable tip/heater design provides superior cost performance.

### **Packing List**

FX-888D

Station, Handpiece (FX-8801), Iron holder, Instruction manual

#### **Specifications** Power consumption 70 W Temperature range 50 to 480°C Temperature stability ±1°C at idle temperature Station Output voltage AC 26 V Dimensions 100 (W) $\times$ 120 (H) $\times$ 120 (D) mm Weight 1.2 kg Soldering Iron Power consumption 65 W (26 V) Tip to ground resistance <2 Ω Tip to ground potential <2 mV Heating element Ceramic heater Standard tip Shape-B (No.T18-B) Cord length 1.2 m Total length\* 217 mm (with B tip)

46 g (with B tip)

Weight\*
\* Without cord

### Features

### Strict temperature management

### Digital display

The FX-888D's digital display makes it easy to check the set temperature at a glance.

### Password function

Settings can be locked using a password to prevent them from being changed unexpectedly.

### Preset mode

Simply select the desired temperature from a selection of preset temperatures registered in advance. (Up to 5 preset temperatures can be registered.)



### Adjustment mode

With adjustment mode, what used to be a troublesome procedure is now as simple as entering the measured tip temperature in the FX-888D.





Measuring the tip temperature with a tip thermometer (HAKKO FG-100)

Test criteria				
Measurement method	Thermocouples are mounted on the tip and the soldered portion on the board, and the time until the soldered portion reaches 250°C is measured for 5 points.			
Board	Paper phenol copper board			
Component used	Connector			
Tip shape	Shape-1.2D			
Temperature setting	360°C			
Solder	Lead-free solder (Sn/Ag/Cu), diameter: 0.5 mm			

### Graph of a comparison of the performance of the HAKKO FX-888D and a conventional station



# Accessories for HAKKO FX-888D

### N<sub>2</sub> Soldering Iron Tip included HAK:0 FX-8802 ESO

# 

### **Soldering Gun**





# 

### **SMD Hot Tweezers**





Packing List				
FX-8802	Handpiece, Shield plate, Instruction manual			
FX-8803	Handpiece, Instruction manual			
FX-8804	Handpiece, Caution label, Heat resistant pad, Instruction manual			
NOTE: The soldering iro	n cannot l	be used as a standalone device.		
Specificatio	ns			
Model No.		FX-8802		
Power consumption		65 W (26 V)		
Temperature range		50 to 480°C		
Tip to ground registeres		-20		

	1	
Tip to ground resistance	<2 Ω	
Tip to ground potential	<2 mV	
Heating element	Ceramic heater	
Standard tip	Shape-B (No.T18-B)	
Cord length	1.2 m	
Total length*	190 mm (with B tip)	
Weight*	59 g (with B tip and nozzle assembly A)	
* Without cord and tube	-	
Model No.	FX-8803	
Power consumption	65 W (26 V)	
Temperature range	50 to 480°C	
Tip to ground resistance	<2 Ω	
Tip to ground potential	<2 mV	
Heating element	Ceramic heater	
Standard tip	Shape-3C pre-tinned surface 45° (No.T18-CF3)	
Standard guide nozzle	ø1.0 mm	
Usable solder diameter	0.6, 0.8, 1.0, 1.2, 1.6 mm	
Cord length	1.1 m	
Dimensions	170 (W) × 180 (H) × 23 (D) mm	
Weight*	177 g	
* Without cord		
Model No.	FX-8804	
Power consumption	65 W (26 V)	
Temperature range	200 to 400°C	
Tip to ground resistance	<2 Ω	
Tip to ground potential	<2 mV	
Heating element	Ceramic heater	
Standard tip	Shape-2L (No. A1378) 2 pcs/set	
Cord length	1.2 m	
Total length*	186 mm	
Weight*	93 g	

\* Without cord \* The recommended (process) temperature is from 200°C to 400°C while setting temperature range of FX-888D is from 50°C to 480°C.

### Option

FX-8803		
Part No.	Name	Specifications
C1437	Iron holder (with cleaning sponge)	-
FX-8804		
Part No.	Name	Specifications
FH800-04BY	Iron holder (with cleaning sponge)	Blue & yellow

Soldering Iron



### **Replacement Tips and Nozzles for the FX-8802**

Please see the replacement tips on P.29

### Replacement Tips for the FX-8804

For Chip Component				
Part No.	Name	Size of A (B)	Tip Shape	
A1577	Tip/CHIP 0.5L	0.5 mm		
A1379	Tip/CHIP 1L	1 mm		
A1378	Tip/CHIP 2L	2 mm		
A1388	Tip/CHIP 0.5C	1.5 (0.5) mm	A,B 45°	
A1389	Tip/CHIP 0.5I	R0.25 mm		
A1576	Tip/CHIP 2.6C	2.6 mm		

For SOP Com	ponent		
Part No.	Name	Size of A	Tip Shape
A1390	Tip/SOP 4L	4 mm	
A1391	Tip/SOP 6L	6 mm	
A1380	Tip/SOP 8L	8 mm	
A1381	Tip/SOP 10L	10 mm	
A1382	Tip/SOP 13L	13 mm	A THE
A1392	Tip/SOP 15L	15 mm	U  2 +
A1383	Tip/SOP 18L	18 mm	
A1384	Tip/SOP 20L	20 mm	
A1385	Tip/SOP 25L	25 mm	

# High Performance Soldering Station





### Features

### Thermal recovery graph (Comparison of HAKKO products)



### Test criteria

Measurement method	A thermocouple is mounted on the tip and the tip temperature is measured when soldering $Ø1.6 \text{ mm} \times 5 \text{ mm}$ solder to paper phenol copper board once every 3 seconds.	
Board	Paper phenol copper board.	
Temperature setting	350°C	
Solder	Lead-free solder (Sn/Ag/Cu), diameter: 1.6 mm x 5 mm	

### Composite tip



The composite tip with an integrated heating element and sensor offers superior thermal responsivity and thermal recovery.

### Variety of tips



 $\begin{array}{l} \mbox{Connectable with $N_2$ soldering iron} \\ \mbox{To improve solder wettability and spreadability} \end{array}$ 



### Packing List

FX-951	Station, Handpiece (FM-2028), Control card, Power cord, Connecting cable, Heat resistant pad, Iron holder, Instruction manual
FX-950	Station, Handpiece (FM-2028), Lock key, Heat resistant pad, Iron holder, Instruction manual

### Specifications

Model No.	FX-951	FX-950
Power consumption	75 W	
Temperature range	200 to	450°C
Temperature stability	±5°C at idle	temperature
Station		
Output voltage	AC	24 V
Dimensions	FX-951: 80 (W) x 130 (H) x 131 (D) mm FX-950: 80 (W) x 118 (H) x 138 (D) mm	
Weight	1.2 kg	
Soldering Iron		
Power consumption	70 W	(24 V)
Tip to ground resistance	stance <2 $\Omega$	
Tip to ground potential	<2	mV
Heating element	Composite heater	
Cord length	1.2	2 m
Total length*	188 mm (w	ith 2.4D tip)
Weight*	30 g (with	2.4D tip)
* Without cord		

|--|--|

Part No.	Name	Specifications
FH200-01	Iron holder	With power-save function and cleaning wire
FH200-02	Iron holder	With power-save function and cleaning sponge

\* In order to use the power-save function with the FX-950, the FH200-01 or FH200-02 iron holder is required.



\* These tips are tinned on the soldering surface only.

Soldering Iron T15-R27 Shape-2.7R T15-R34 Shape-3.4R T15-R48 Shape-4.8R 55 4 T15-SB08 Shape-0.8SB T15-SBS04 Shape-0.4BS 4.5 T15-1004\*\* T15-1005\*\* Tunnel 9.5 x 15.8 Tunnel 9.5 x 13.2 15.8 13.2 T15-1009\*\* T15-1010\*\* Tunnel 13.4 x 20.5 Tunnel 19.5 x 12 14.8 13.4 0 0 σ



These tips are tinned on the soldering surface only.

T15-R20 Shape-2.0R

R

T15-R23 Shape-2.3R

34.6 2.3

 $\bigcirc$ 

\*\* The iron tips marked with double asterisk (\*\*) have a temperature accuracy of 25°C. Others have a temperature accuracy of 15°C.

# Heavy Duty Soldering Iron

# SOLDERING STATION FX-838

Heavy Duty Soldering Iron Digital

Tip not included



# 



- High powered 150 W soldering iron
- Best suited for soldering of power-supply boards, heat sinks, and shield cases
- Applicable also to the soldering of multilayer boards with micro components



\* These tips are tinned on the soldering surface only.

### Features



### Graph of a comparison of the performance of the HAKKO FX-838 and a conventional station

Test	criteria

Measurement method       Thermocouples are mounted on the tip and the soldered portion on the board, and the time until the soldered portion reaches 250°C is measured for 5 points.         Board       Bakelite board         Component used       Terminal         Tip shape       Shape-1.6D         Temperature setting       340°C         Solder       Lead-free solder (Sn/Ag/Cu), diameter 0.5 mm		
Board         Bakelite board           Component used         Terminal           Tip shape         Shape-1.6D           Temperature setting         340°C           Solder         Lead-free solder (Sn/Ag/Cu), diameter 0.5 mm	Measurement method	Thermocouples are mounted on the tip and the soldered portion on the board, and the time until the soldered portion reaches 250°C is measured for 5 points.
Component used         Terminal           Tip shape         Shape-1.6D           Temperature setting         340°C           Solder         Lead-free solder (Sn/Ag/Cu), diameters 0.5 mm	Board	Bakelite board
Tip shape     Shape-1.6D       Temperature setting     340°C       Solder     Lead-free solder (Sn/Ag/Cu), diameter: 0.5 mm	Component used	Terminal
Temperature setting     340°C       Solder     Lead-free solder (Sn/Ag/Cu), diameter: 0.5 mm	Tip shape	Shape-1.6D
Solder Lead-free solder (Sn/Ag/Cu),	Temperature setting	340°C
ulameter. 0.5 min	Solder	Lead-free solder (Sn/Ag/Cu), diameter: 0.5 mm

### Temperature preset mode

The temperature preset mode allows you to input three frequently-used temperatures in advance and recall them with one push of a button.





### Connectable with N<sub>2</sub> soldering iron To improve solder wettability and spreadability



For further details, see the N<sub>2</sub> soldering system (P.26 & P.27).

Packing List	
FX-838	Station, Handpiece (FX-8301), Control card, Power cord, Heat resistant pad, Connecting cable, Iron holder, Instruction manual
FX-8302	Handpiece, Instruction manual

### **Specifications**

Model No.	FX-838
Power consumption	158 W
Temperature range	200 to 500°C
Temperature stability	±5°C at idle temperature
Station	×
Output voltage	AC 27 V
Dimensions	110 (W) × 110 (H) × 205 (D) mm
Weight	3.2 kg
Soldering Iron	
Power consumption	150 W (27 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Cord length	1.2 m
Total length*	175 mm (with 2.4D tip)
Weight*	31 g (with 2.4D tip)
* Without cord	
Model No.	FX-8302
Power consumption	150 W (27 V)
Temperature range	200 to 500°C
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Cord length	1.2 m
Total length*	195 mm (with 2.4D tip)
Weight*	41 g (with 2.4D tip and nozzle assembly D)

\* Without cord and tube

## High Performance Rework Station & Accessories



### Handpiece Combination Examples



Handpiece	Channel D	Channel S
	connector	connector
FM-2027	0	0
FM-2022 *1	0	×
FM-2023 *1	0	×
FM-2024 *2	0	0
FM-2026 *3	0	0
FM-2032	0	0

\*1 When the FM-2022 or FM-2023 is connected to the channel D connector, both channel connectors can't be used at the same time.

\*2 When two FM-2024s are connected to the channel connectors, each FM-2024 must be connected to the desolder control box.

\*3 For the FM-2026, each handpiece needs an N<sub>2</sub> generator (HAKKO FX-780), flow meter (HAKKO FX-791), compressor, regulator, etc. For further details, see the N<sub>2</sub> soldering system (P.26).



\*1 The FM-2024 can be connected to receptacle 2 and 3. However, only one FM-2024 can be used with the station.

\*2 For the FM-2031 and FM-2026, each handpiece needs an N<sub>2</sub> generator (HAKKO FX-780), flow meter (HAKKO FX-791), compressor, regulator, etc. For further details, see the N<sub>2</sub> soldering system (P.26).

NOTE: The FM-2024 and FM-2029 can't be used at the same time



### Specifications

Model No.	FM-203
Power consumption	140 W
Temperature range	FM-2026/2027: 200 to 450°C FM-2022/2023: 200 to 400°C FM-2032: 200 to 450°C FM-2024: 350 to 450°C
Temperature stability	±5°C at idle temperature
Station	
Output voltage	AC 24 V
Dimensions	120 (W) $\times$ 120 (H) $\times$ 190 (D) mm
Weight	2.7 kg
Soldering Iron (FM-2027	)
Power consumption	70 W (24 V)
Tip to ground resistance	<2Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	188 mm (with 2.4D tip)
Weight*	30 g (with 2.4D tip)
* Without cord	
Model No.	FM-206
Power consumption	410 W (max.)
Temperature range	FM-2026/2027: 200 to 450°C FM-2022/2023: 200 to 400°C FM-2024: 350 to 450°C FM-2029: 100 to 550°C FM-2030: 200 to 500°C FM-2031: 200 to 500°C FM-2032: 200 to 450°C
Temperature stability	±5°C at idle temperature
Station	
Output voltage	AC 24 V
Vacuum generator	Cylinder type vacuum pump
Vacuum pressure	80 kPa (600 mmHg. max.)
Suction flow	14 L/min.
Air flow	6 L/min. (max.)
Dimensions	162 (W) × 136 (H) × 245 (D) mm
Weight*	6.2 kg
Soldering Iron (EM-2027	)
Power consumption	70 W (24 V)
Tip to ground registance	<20
Tip to ground notential	<2 mV
Heating element	Composite heater
Cord length	12 m
Total length*	188 mm (with 2.4D tip)
Weight*	30 g (with 2.4D tip)
Desoldering Tool (EM-2)	)24)
Power concumption	70 W (24 V)
Negrale to ground registered	70 W (24 V)
Nozzle to ground resistance	<2 52
	Composite neater
Cord length	1.2 m
Woight**	
weight	oo y (wiiii øi.0 mm nozzie)
Hot Air Handpiece (FM-2	2029)
Power consumption	140 W (24 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length**	232 mm (with ø4.0 mm nozzle)
Weight***	50 g (with ø4.0 mm nozzle)

Model No.	FM-2022
Power consumption	140 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	148 mm (with SOP 25L tip)
Weight*	64 g (with SOP 25L tip)
Without cord	
Model No.	FM-2023
Power consumption	140 W (24 V)
Tip to ground resistance	<2Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Standard tip	Shape-I: 2 pcs/set (No.T9-I)
Cord length	1.2 m
Total length*	117 mm (with I tip)
Weight*	37 g (with I tip)
Without cord	
Model No.	FM-2024
Desoldering Tool	
Power consumption	70 W (24 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	180 mm (with ø1.0 mm nozzle)
Weight*	65 g (with ø1.0 mm nozzle)
Desolder Control Box	
Power consumption	12 W (24 V)
Vacuum generator	Ejector type
Vacuum pressure	Max. 93 kPa (700 mmHg)
Suction flow	28 L/min.
Nozzle to ground potential	<2 mV
Applied air pressure	490 kPa (5.0 kgf/cm <sup>2</sup> ) While trigger or button is pressed
Compressed air consumption	46 L/min.
Outer dimensions	119 (W) x 45 (H) x 172 (D) mm
Weight*	1.2 kg
Without cord	
Model No.	FM-2026
Power consumption	70 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	205 mm (with 2.4D tip)
Weight*	45 g (with 2.4D tip and nozzle assembly C)
Without cord and tube	
Model No.	FM-2027
Power consumption	70 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	188 mm (with 2.4D tip)
vveight	30 g (with 2.4D tip)
Without cord	

### **Specifications**

Model No.	FM-2030
Power consumption	140 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.3 m
Total length*	224 mm (with 2.4D tip)
Weight*	41 g (with 2.4D tip)
* Without cord	
Model No.	FM-2032
Power consumption	48 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.3 m
Total length*	170 mm (with 1D tip)
Weight*	14 g (with 1D tip)
* Without cord	

FM-2031
140 W (24 V)
<2 Ω
<2 mV
Composite heater
1.2 m
231 mm (with 2.4D tip)
47 g (with 2.4D tip and nozzle assembly E)

Without cord and tube

### Packing List

FM-203	Station, Handpiece (FM-2027), Sleeve assembly, Connecting cable, Power cord, Control card, Iron holder, Tip tray, Heat resistant pad, Instruction manual
FM-206	Station, Power cord, Tip tray, Desoldering tool (FM-2024), Handle (for gun configuration for FM-2024), Iron holder (for FM-2024), Ceramic paper filter (10 pcs; for FM-2024), Nozzle remover (for FM-2024), Cleaning drill for heating element (for FM-2024), Cleaning drill for heating element (for FM-2024), Connecting cable (for FM-2024), Handpiece (FM-2027), Iron holder (for FM-2027), Heat resistant pad (for FM-2027), Connecting cable (for FM-2027), Hot air handpiece (FM-2029), Iron holder (for FM-2029), Heat resistant pad (for FM-2029), Connecting cable (for FM-2029), Instruction manual
FM-2022 (Conversion kit)	Parallel remover, Heat resistant pad, Iron holder, Connecting cable, Instruction manual
FM-2023 (Conversion kit)	Mini parallel remover, Soldering tip (T9-I), Heat resistant pad, Iron holder, Component bed, Connecting cable, Instruction manual

### FM-2024 Features

Please see the features on P.46.

### FM-2029 Features

Securely and easily remove 10 x 10 (mm) chips.



### FM-2032 Size



FM-2024 (Conversion kit, with DCB)	Desoldering tool, Handle (for gun configuration), Desoldering control box, Filter pipe assembly, Iron holder, Cleaning drill for heating element, Nozzle remover, Ceramic paper filter (10 pcs), Connecting cable, Instruction manual
FM-2026 (Conversion kit)	Handpiece, Sleeve cover, Sleeve assembly (yellow), Heat resistant pad, Iron holder, Connecting cable, Instruction manual
FM-2027 (Conversion kit)	Handpiece, Sleeve assembly (yellow), Heat resistant pad, Iron holder, Connecting cable
FM-2029 (Conversion kit)	Handpiece (hot air), Handpiece holder, Heat resistant pad, Connecting cable, Instruction manual
FM-2030 (Conversion kit)	Handpiece (soldering), Heat resistant pad, Iron holder, Connecting cable, Instruction manual
FM-2031 (Conversion kit)	Handpiece (soldering), Heat resistance pad, Iron holder, Connecting cable, Instruction manual
FM-2032 (Conversion kit)	Handpiece, Heat resistant pad, Iron holder, Connecting cable, Instruction manual

### FM-2030 Features

### Graph of a comparison of the performance of FM-2027 (70 W) and FM-2030 (140 W)

Temperature (°C)



### Test criteria

l'oot officilia		
Test method	Solder at 5 points and measure the time until the temperature of the workpiece reaches 250°C.	
Board	Bakelite board	
Component used	Screw	
Tip shape	Shape-2.4D	
Temperature setting	350°C	
Solder	Lead-free solder (Sn/Ag/Cu), diameter: 1.0 mm	

21

# **High Performance Rework Station & Accessories**



\* These tips are tinned on the soldering surface only.



\* These tips are tinned on the soldering surface only.

The iron tips marked with double asterisk (\*\*) have a temperature accuracy of 25°C. Others have a temperature accuracy of 15°C.

# **High Performance Rework Station & Accessories**



### **Optional Tips for the FM-2030**

Unit: mm T22-BL Shape-BL T22-BC2 Shape-2BC T22-C5 Shape-5C T22-C6 Shape-6C T22-BL2 Shape-2BL T22-C3 Shape-3C 17 10 T22-D24 Shape-2.4D T22-D32 Shape-3.2D T22-D08 Shape-0.8D T22-D12 Shape-1.2D T22-D16 Shape-1.6D T22-D45 Shape-4.5D (()L 0.5 10 T22-D52 Shape-5.2D T22-J02 Shape-0.2J T22-JD08 Shape-0.8JD T22-K Shape-K 0.7 11

#### **Optional Nozzles for the FM-2024** Unit: mm N3-06 Nozzle ø0.6 N3-08 Nozzle ø0.8 N3-10 Nozzle ø1.0 N3-16 Nozzle ø1.6 N3-13 Nozzle ø1.3 ø1.9 ø0.6 ø0.8 ø2.2 ø2.6 ø1.3 82 ø3 10.7 10.7 10.7 10.7 10.7 N3-20 Nozzle ø2.0 N3-23 Nozzle ø2.3 N3-L10 Nozzle ø1.0 Long ø3.8 ø2.3 ø3.4 ø2.3 02 2 10.7 10.7

### **Optional Nozzles for the FM-2029** Unit: mm øВ ØÅ øΑ øΒ $\bigcirc$ N4-01 Nozzle ø2.0 2.0 2.5 N4-02 Nozzle ø4.0 4.0 5.0 N4-03 Nozzle ø6.0 6.0 7.0 N4-04 Nozzle ø8.0 8.0 9.0

### Optional Tips for the FM-2026

Please see the optional tips on P.28.

### **Optional Tips for the FM-2031**

Please see the optional tips on P.28.

# N<sub>2</sub> Soldering System



### HAKOFX-791

### N<sub>2</sub> Flowmeter



#### LEAD FREE ROHS

• Flowmeter for N<sub>2</sub> soldering iron with flow control valve and regulator

### Improved Solderability

· Wettability and spreadability comparisons



Approx. 50% up



 Less bridging occurs even for components susceptible to bridging.

0.2 MPa (2.0 kgf/cm<sup>2</sup>)

0.25 to 2.5 L/min.

70 (W)  $\times$  121 (H)  $\times$  134 (D) mm

600 g



Pressure of discharged gas

Gas flow

Weight

Dimensions

### **Specifications**

Model No.	FX-780	FX781	
Air supply pressure	0.3 to 0.7 MPa		
Concentration of generated $N_2$	99.9% (max.)		
Amount of generated N <sub>2</sub>	1.5 L/min. (When compressed air of 0.5 MPa is supplied at 25°C, the concentration of the generated nitrogen is 98%.)	2.4 L/min. (When compressed air of 0.5 MPa is supplied at 25°C, the concentration of the generated nitrogen is 98%.)	
Dimensions*	73 (W) × 282 (H) × 71 (L) mm	73 (W) $\times$ 407 (H) $\times$ 71 (L) mm	
Weight**	1.5 kg	2 kg	

\* Without sockets and valve

\*\* Without racks

### **Packing List**

FX-780	Unit, Rack for unit (2 pcs), Instruction manual	FX-781	Unit, Racks for unit (4 pcs), Instruction manual
FX-791	Unit, Instruction manual		

Soldering Iron





 $\pm$  It is capable to supply high concentration Nitrogen of 97% at the output rate approx. 1L/min. (at air supply pressure of 0.5MPa)



\*It is capable to supply high concentration Nitrogen of 99.9% at the output rate approx. 1L/min. (at air supply pressure of 0.7MPa)





Nozzle assembly C

Soldering Iron



### Replacement Tips and Nozzles Assemblies for the FX-8802 Tip and nozzle assembly are supplied separately. Please purchase a compatible nozzle assembly for your tip referring the chart below. Unit: mm

Nozzle assembly				
T18-B Shape-B	T18-C05 Shape-0.5C	T18-C1 Shape-1C T18-CF1*	T18-C2 Shape-2C T18-CF2*	T18-C3 Shape-3C T18-CF3*
(c) *0.5 14.5	52 A5 13.5	- - - - - - - - - - - - - - - - - - -	2 45	32 45 14.5
B3662 Nozzle assembly A	B3664 Nozzle assembly C	B3664 Nozzle assembly C	B3662 Nozzle assembly A	B3663 Nozzle assembly B
T18-D08 Shape-0.8D	T18-D12 Shape-1.2D	T18-D16 Shape-1.6D	T18-D24 Shape-2.4D	T18-K Shape-K
	0.7 14.5			
B3662	B3662	B3663	B3663	B3665
Nozzle assembly A	Nozzle assembly A	Nozzle assembly B	Nozzle assembly B	Nozzle assembly D
T18-I Shape-I				
14.5				
B3664		<i>.</i> .		

Nozzle assembly C

These tips are tinned on the soldering surface only.

# **Ceramic Heater Soldering Iron**



### **Ceramic Heater Soldering Iron**





# C E

- · An entry model of ceramic heater soldering iron
- · Ideal for electronic circuit assembly

### **Packing List**

FX-650

### **Features**

Slim handle improves your work efficiency!

Unit



### Simple and easy tip replacement



Quick change just loosing a screw

### **Replacement Tips for the DASH**

Model No.	FX-650		
Power consumption	16 W		
Heating element	Ceramic heater		
Standard tip	Shape-B (No.T34-B)		
Total length*	224 mm		
Weight*	60 g		
* Without cord			
<b>0</b>			

### Option

Specifications

Part No.	Name	Specifications
633-01	Iron holder	With 599B
633-02	Iron holder	With cleaning sponge

#### Unit: mm Т34-В T34-C08 80 0.9 T34-C2 T34-C3 T34-C4 T34-D32 T34-I . 8 $(\bigcirc$ $( \square$ 6.5 0.5

# **Battery-Powered Soldering Iron**

# HAKOFX-901

**Battery-Powered Soldering Iron** 





# 

- · Easy-to-carry soldering iron powered by AA alkaline batteries
- · Cordless design makes this iron very handy and usable virtually anywhere.

### Easy Replacement



### **Packing List**

FX-901	Unit, Cap
Pottorioo pot included	

### Specifications

Model No.	FX-901
Power supply	AA × 4 pcs
Power consumption	Alkaline batteries: 6 W (6 V) Nickel hydrogen batteries (2150 mAh): 5 W (4.8 V)
Standard tip	Shape-B (No.T11-B)
Battery life*	Alkaline batteries: 60 minutes Nickel hydrogen batteries (2150 mAh): 120 minutes
Total length**	212 mm
Weight***	76 g

Measurement conditions · When using new batteries, performance will vary depending on the batteries. The operating time was measured from the point that the soldering in was turned on to the point at which the temperature dropped below 300°C, which is the minimum temperature at which soldering can be performed.

When using batteries other than those specified above, the performance and the operating time will vary.

\*\*\* Without cap \*\*\* Without battery

### **Replacement Tips for the FX-901**



Unit: mm

# **Soldering Pot**

# SOLDERING POT

High Performance Soldering Pot Digital



# 



- Digital display ensures reliable temperature control and realizes precise temperature adjustment.
- Soldering pot is coated in a special long-life material, which is best suited for lead-free solder. This is provided as a standard feature.

# SOLDERING POT

High Performance Soldering Pot Analog





- Temperature can be adjusted just by turning a knob during operation.
- Adding an optional specially coated stainless-steel pot provides compatibility with lead-free solder.

### **Quick Heat Up**

### Time comparison to reach set temperature

HAKKO FX-301B vs. HAKKO 96 (conventional model)



### HAKKO FX-300 vs. HAKKO 96 (conventional model)



### Easy Pot Replacement





\* For your safety, be sure to replace the pot after the solder completely cools.

### Specially Coated Solder Pot (Durable type)

The special coating prevents the solder pot from corroding, which ensures that the solder pot has a long service life.



Standard solder pot



Specially coated solder pot

### **Packing List**

FX-301B	Unit (with solder pot, 50 × 50 durable type), Spatula, J-shaped waste collector, Hexagon wrench, Instruction manual
FX-300	Unit (with solder pot, 50 × 50), Spatula, J-shaped waste collector, Hexagon wrench, Instruction manual

### **Specifications**

Model No.	FX-301B	
Power consumption	260 W	
Dimensions	143 (W) × 100 (H) × 220 (D) mm	
Weight*	1.7 kg	
•Pot		
Temperature range	50 × 50 square: 200 to 450°C 75 × 75 square: 200 to 380°C	
Dimensions of solder pot	50 × 50 square durable type: 50 (W) × 43.5 (H) × 50 (D) mm 75 × 75 square durable type: 75 (W) × 52.5 (H) × 75 (D) mm	
Molten solder capacity**	50 × 50 square: 0.85 kg 75 × 75 square: 1.2 kg	
Model No.	FX-300	
Power consumption	205 W	
Dimensions	143 (W) $\times$ 100 (H) $\times$ 220 (D) mm	
	1.7 kg	
Weight*	1.7 kg	
Weight* •Pot	1.7 kg	
Weight* •Pot Temperature range	1.7 kg 50 × 50 square: 200 to 450°C 75 × 75 square: 200 to 380°C	
Weight* •Pot Temperature range Dimensions of solder pot	1.7 kg           50 × 50 square: 200 to 450°C           75 × 75 square: 200 to 380°C           50 × 50 square standard type:           50 (W) × 43.5 (H) × 50 (D) mm           75 × 75 square standard type:           75 (W) × 52.5 (H) × 75 (D) mm	
Weight*  Pot Temperature range Dimensions of solder pot Molten solder capacity**	$\begin{array}{c} 1.7 \ \text{kg} \\ \\ 50 \times 50 \ \text{square}: 200 \ \text{to} \ 450^\circ\text{C} \\ 75 \times 75 \ \text{square}: 200 \ \text{to} \ 380^\circ\text{C} \\ \\ 50 \times 50 \ \text{square}: 200 \ \text{to} \ 380^\circ\text{C} \\ \\ 50 \times 50 \ \text{square}: 50 \ \text{(H)} \times 50 \ \text{(D)} \ \text{mm} \\ \\ 75 \times 75 \ \text{square}: 50 \ \text{mm} \\ \\ \\ 75 \times 50 \ \text{square}: 0.85 \ \text{kg} \\ \\ 75 \times 75 \ \text{square}: 1.2 \ \text{kg} \\ \end{array}$	

\*\* The 50  $\times$  50 square solder pot is originally installed. The 75  $\times$  75 square solder pot is an optional part.

#### **Option / Replacements** A1539 Solder pot $50 \times 50$ durable type $75 \times 75$ durable type A1540 Solder pot $50 \times 50$ A1517 Solder pot 75 × 75 A1518 Solder pot For solder bath and A1310 Temperature probe pot

### **Dimensions of Solder Pot**







# Soldering Pot



**Soldering Pot** 



### **Features**

### **Dimensions of Solder Pot**





# 

• Temperature can be adjusted just by turning a knob during operation.

### **Packing List**

96, 96-1 Unit, Spatula, Instruction manual

Specifications				
B. J.M.	00	00.4		
Part No.	96	96-1		
Power consumption	200 W			
Dimensions	135 (W) × 105 (H) × 224 (D) mm	135 (W) × 120 (H) × 224 (D) mm		
Weight*	1.5 kg	1.6 kg		
Temperature range	100 to 450°C	100 to 380°C		
Dimensions of solder pot	50 (W) × 54 (H) × 50 (D) mm	70 (W) × 64 (H) × 70 (D) mm		
Molten solder capacity	0.85 kg	1.2 kg		
Mala and a such				

Without cord

### Operation


# HAKOFT-801

#### **Thermal Wire Stripper**

Blade not included



# 

- Thermal wire stripper that ensures clean-cut removal of wire insulation
- High stripping performance ensures clean cut through highly heat-resistant PTFE.

#### **Features**

Solves the problem of whiskers and scratches being left by conventional tools







#### **Replacement Blades**





G2-1601 Wire stripper blade Straight



AWG 18 to 24

#### Packing List

FT-801

Station, Handpiece (FT-8002), Power cord, Handpiece holder, Connecting cable, Lead adjuster, Blade removal tool, Instruction manual

)ption		
Part No.	Name	Specifications
FT8003-01	HAKKO FT-8003 conversion kit	Handpiece (FT-8003) Knife blade, Handpiece holder, Instruction manual
Blade included Eliabetic included Eliabetic included Eliabetic included		



For FT-8003 (option)



G3-1601 Knife type blade

#### Specifications

Model No.	FT-801
Power consumption	68 W/ 50 W*
•Station	

Output voltage	AC 24 V
Dimensions	80 (W) × 130 (H) × 131 (D) mm
Weight**	1.2 kg

#### Handpiece

•	
Power consumption	64 W (24 V)
Cord length	1.3 m
Total length***	96 mm
Weight***	48 g
* When compositing with FT 0000	

\* When connecting with FT-8003
 \*\* Without cord

\*\*\* Without cord and blade

**Soldering-Related Equipment and Materials** 

# 

#### Solder-Splash-Preventing Rotary Tip Cleaner



#### **Features**

Solder-Splash prevention



#### Controllable solder removal level

Brush	Cleaning brush A (standard accessory)	Cleaning brush B (optional)
Material	Resin	Metal
	Some solder remains.	Solder is completely removed.
Image after cleaning		
Benefit	Prevents tip oxidation and extends the service life of the tip	Suitable for soldering small sections that require control over the amount of solder.

# Minimizes decrease in temperature of the tip during cleaning



# 

- The solder removal level can be adjusted using two different types of brushes.
- Brushes can be replaced without using any tools, and safe design prevents solder waste from entering the drive part.

#### **Packing List**

Unit, AC adapter, Receptacle A, Receptacle B, Lock nut, Gauge, Instruction manual

#### **Specifications**

Model No.	FT-710	
Power consumption	5 W	
Standard receptacle	Receptacle A and B	
Dimensions	71 (W) × 77 (H) × 107 (D) mm	
Weight	450 g	
•AC adapter		
Motor rating	DC 24 V 130 mA	
Dimensions	45 (W) × 40 (H) × 65 (D) mm	
Weight	250 g	

#### ·Compatibility table

Tip	Receptacle A	Receptacle B	Receptacle C
T15, T11	$\checkmark$		
T18, 900M		~	
T20, T17, T22			~

\* This cleaner cannot be used with the T12-JL02, quad type, tunnel type, and spatula type soldering tips of the T12 series.

\* There are some tips with dimensions that cannot be adjusted with the standard receptacles. In this situation, consult your nearest HAKKO dealer or distributor.

Option		
Part No.	Name	Specifications
A1567	Cleaning brush B	Metal brushes, set of 2
B3519	Receptacle C	-

# TIP POLISHER FT-700

**Tip Polisher** 



#### Usage

Oxidized tip

Before

e After
Polished and retinned tip
Cedure

#### Cleaning procedure



3. Remove the 4. Fer

tip end.

Remove the chemical paste attached to the

\* Approximately 300°C is the most suitable temperature for cleaning the tips.

2. Quickly retin the

tip.



Use the brush to remove tough oxide.



#### **Chemical Paste**



#### Packing List

FS-100

Paste, Instruction manual

# 

- Soldering tip polisher best suited to the removal of oxidation on soldering tips
- Prevents the shortening of the service life of tips caused by oxidation.

#### Packing List

FT-700 Unit, Paste, Brush, Instruction manual

#### **Specifications**

Model No.	FT-700
Power consumption	4.5 W
Dimensions	70 (W) × 54 (H) × 101 (D) mm
Weight*	0.65 kg
* Without cord	
<b>.</b>	

#### ·Chemical paste

Amount	10 g	
Ingredients	Flux, tin (Sn) 50 wt% (each)	
The flow encount of the prior is the second state of all seconds and a body have been at a line batter		

The flux component of chemical paste consists of alicyclic amine hydrobromate, aliphatic amine hydrobromate, petrolatum, and wax.



- Chemical paste best suited to the removal of oxidation on soldering iron tips
- Also used for retinning of soldering tips

#### **Specifications**

#### ·Chemical paste

Amount	10 g
Ingredients	Flux, tin (Sn) 50 wt% (each)

\* The flux component of chemical paste consists of alicyclic amine hydrobromate, aliphatic amine hydrobromate, petrolatum, and wax.

# Self Feeder



#### **Self Feeder**



# 

- · Automatic solder feeder that enables a user to complete soldering work with just one hand
- The solder feed time and speed can be set.

#### Set-Up Example



373

Unit, Instruction manual

The accessories that are required for initial set-up, such as a tube unit, guide pipe assembly, and solder diameter adjustment ring, are not included. They must be ordered separately and adapted to use with the soldering iron and solder wire diameter.

#### **Specifications**

Model No.	373
Power consumption	6 W
Solder feed time	0 to 7 seconds (auto mode)
Solder feed speed	4.5 to 26 mm/sec.
Solder feed quantity	0 to 182 mm
Solder return quantity	0 to 5 mm (fixed speed)
Mode	Auto and manual
Usable solder diameter*	0.6, 0.65, 0.8, 1.0, 1.2, 1.6 mm
Usable solder quantity	1 kg or less
Dimensions	107 (W) × 110 (H) × 215 (D) mm
Weight**	1.5 kg

\* ø1.6 mm lead free solder can't be used.

\*\* Without cord

# Soldering-Related Equipment and Materials

#### Accessory Selection Guide

One-handed operation						
				Options		
Applicable soldering iron	Solder feed unit	Solder diameter	Solder diameter adjustment ring	Guide pipe assembly	Tube unit	
FM-2027		0.6, 0.65 mm	B1626	B3481		
FM-2028	070	0.8 mm	B1627	B3482	B3477	
3/3	373	1.0 mm	B1628	B3483		
		1.2 mm	B1629	B3484	B3478	
FM-2030		0.6, 0.65 mm	B1626	B3726		
	070	0.8 mm	B1627	B3727	B3477	
	373	1.0 mm	B1628	B3728		
/	/	1.2 mm	B1629	B3729	B3478	
FX-8301		0.6, 0.65 mm	B1626	B3566		
		0.8 mm	B1627	B3567	B3563	
	373	1.0 mm	n B1628 B3568	B3568		
		1.2 mm	B1629	B3569	R2564	
		1.6 mm	B1630	B3570	B3504	
FX-8801 907		0.6, 0.65 mm	B1626	B2146		
		0.8 mm	B1627	B2147	B2143	
	373	1.0 mm	B1628	B2148		
		1.2 mm	B1629	B2149	R0144	
		1.6 mm	B1630	B2150	D2 144	

#### Feeder pen

				Options	
Applicable soldering iron	Solder feed unit	Solder diameter	Solder diameter adjustment ring	Feeder pen	Switch
Compatible with all 373 soldering irons		0.6, 0.65 mm	B1626		
	0.8 mm	B1627	C1234	B2124 feeder switch or	
	1.0 mm	B1628			
		1.2 mm	B1629	C1235	B1649 foot switch
		1.6 mm	B1630		



#### V-Groove Maker



# 

Solder cross-section view

Flux

Solde

- Cutting a V-groove put on the solder surface reduces the splash of solder and flux.
- The solder feed amount can be controlled by turning the switch on and off.

V-grooved solder

· Compact, space-saving automatic solder feeder

#### **Features**

#### Minimize solder and flux splash

Cutting a V-groove on the solder surface enables the release of gas pressure generated by the flux, thereby suppressing splash. The HAKKO 375 can cut a groove in only the solder needed, then helps to reduce the level of defectiveness.

#### Advantages of V-grooved solder

#### -Examination of solder and flux splash

#### Test criteria

Measurement method	Measure the amount of solder and flux splashing after solder is fed to the soldering iron
Temperature setting for soldering iron	350°C and 400°C
Solder	Lead-free (Sn-3Ag-0.5Cu) Halogen-free flux ø0.3 mm and ø1.0 mm
Solder feed length	50 mm

\* The effect of solder and flux splashing prevention may differ under different operation conditions.

#### Amount of flux splashing (quantity of dots)



#### Packing List

375	Unit, AC Adapter, Instruction manual		
Option			
Part N		Name	
B164	19	Foot switch	
B276	63	Hand switch	
		*	



#### **Specifications**

Model No.	375
Rating	DC 24 V 75 mA
Solder feed speed	27 mm/sec.
Usable solder diameter	0.3, 0.5, 0.6, 0.8, 1.0 mm
Dimensions	78 (W) × 98 (H) × 56 (D) mm
Weight	0.59 kg
·AC Adapter	
Motor rating	DC 24 V 130 mA
Dimensions	45 (W) × 40 (H) × 65 (D) mm
Weight	0.25 kg

# HAKCO CUTTING TOOL

#### **Cutting Tool**



- · Designed for precision assembly of delicate, complex electronic work
- Soft-touch grip enables long tool usage for long periods at a time.
- · Recommend for use in cutting copper and soft lead wires

opcomoutons
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**C** RoHS



Part No.	Name	Max. copper wire cutting capability	Α	В	С	D	E
106-01	Cutting tool for flush cut with safety clip	1.3 mm	132	54	13.5	5	20
106-02	Cutting tool for flush cut with angled blade	1.3 mm	129	54	13.5	5	16
106-03	Cutting tool for flush cut with small blade	0.8 mm	130	54	9.5	4	18
106-04	Cutting tool for a front, flush cut	1.0 mm	138	54	14	6	27
106-05	Cutting tool for flush cut	1.3 mm	132	54	13.5	5	20
106-06	Short nose pliers	_	140	54	13	6	29
106-07	Long nose pliers	_	154	54	13	6	40
106-08	Bent nose pliers	_	146	54	13	4	35

(Unit: mm)

# SOLDER REEL STAND 611 ESP

#### **Reel Stand**



No.611-2



- Solder reel stand for coiled solder with a maximum load of 1 kg
- Smooth action when reeling out solder wire improves work efficiency
- A mounting screw for the grounding wire is attached on the baseplate.

#### **Specifications**

Part No.	611-1	611-2
Shaft diameter	ø15	mm
Usable solder	Roll solder 1 kg (max.) × 1	Roll solder 1 kg (max.) × 2
Dimensions	86 (W) × 78 (H) × 141 (D) mm	87 (W) × 200 (H) × 141 (D) mm
Weight	450 g	750 g

# HAKO 153-154

Lead Cutter and Former



#### Cutting and Forming





- Lead cutter and former for axial components
- Can be used for forming and cutting, forming only, or cutting only

#### **Packing List**

<b>153, 154</b> Unit, Parts tray, Clamp, Handle, 2.0 mm Hexagon wrench, 2.5 mm Hexagon wrench, 3.0 mm Hexagon wrench, 4.0 mm Hexagon wrench, Instruction manual	I
---	---

#### **Specifications**

Part No.	153-1 154-1		
Forming size	5.6 mm pitch	5 mm pitch	
Max. diameter of lead wire	ø0.8 mm (max.)	ø0.5 mm (max.)	
Lead wire*	For annealed cop	per lead wire only	
Outer width of tape	85 mm (max.)		
Taping pitch	5 mm		
Dimensions	125 (W) × 130 (H) × 110 (D) mm		
Weight**	2 kg		

\* These tools are not suited to work on components with lead frames (multiangular lead). \*\* Including handle and clamp







Cutting





#### Lead cutter for radial components

#### **Packing List**

155
-----

Unit, Parts tray, Clamp, Handle, 2.0 mm Hexagon
wrench, 2.5 mm Hexagon wrench, 3.0 mm Hexagon
wrench, 4.0 mm Hexagon wrench, Instruction manua

#### Specifications

Part No.	155-1	155-2	
Max. diameter of lead wire	ø0.8 mm (max.)		
Lead wire*	For annealed copper lead wire only		
Max. processing part size	ø12.5 × 25 mm (max.)		
Feed hole pitch	12.7 mm	15 mm	
Lead pitch**	5.0 mm, 2.5 mm	5.0 mm	
Min. processing size	1.5 mm from taping end, 2.0 mm from component end		
Dimensions	mensions 110 (W) × 140(H) × 125 (D) mm		
Weight***	1.7 kg		

<sup>\*</sup> These tools are not suited to work on components with lead frames (multiangular lead).
\*\* When shipped, the unit is set for components with a lead pitch of 5.0 mm.

\*\*\* Including handle and clamp

# HAKO DIPLINER

Lead Straightener





#### **C** RoHS

- IC lead liner for correcting variable lead pitches
- Simple mechanism enables the adjustments with just one screw.
- Simply insert the IC case into the chute.

#### Packing List

FT100, FT150, FT200, FT300

Unit, Instruction manual

#### Specifications

Part No.	FT100	FT150	FT200	FT300
Width of IC	7.5 mm	10 mm	15 mm	19 mm
Number of IC leads	8, 14, 16 18, 20	22	24, 28 40, 42	64

# Vacuum Pick-Up Tool



**Dropper Type** 



# RoHS

- Portable, easy-to-carry manual dropper-type vacuum pick-up
- Maximum pick-up capacity of 40 gf
- Uses antistatic material



#### **Battery-Powered Type**



# 

- Battery-powered suction pick-up tool with built-in vacuum pump
- Maximum pick-up capacity of 120 gf
- Uses antistatic material

#### Usage Example

#### **HAKKO 393**



#### **HAKKO 394**



With the bent nozzle accessory, 0603-size components can be picked up.



#### **Replacement Pads and Nozzles**

Part No.	Name	Specifications
A1164	Bent nozzle	0.4 mm
A1165	Bent nozzle	1.1 mm with stopper
A1198	Bent nozzle	0.26 mm
A1486	Straight nozzle	1.1 mm with stopper
A1166	Pad	3 mm
A1312	Pad	5 mm
A1167	Pad	7 mm
A1311	Pad	10 mm

#### Packing List

393	Unit, 1.1 mm diameter Bent nozzle with stopper, 3 mm diameter Pad, 7 mm diameter Pad, 10 mm diameter Pad, Instruction manual
394	Unit, 1.1 mm diameter Bent nozzle with stopper, 5 mm diameter Pad, 10 mm diameter Pad, two AAA Alkaline batteries (for trial), Instruction manual

#### Specifications

Model No.	393
Pad	Conductive silicone rubber
Dimensions	ø13 mm × 132 mm
Weight*	19.2 g
* Without nozzle and pad	
Model No.	394
Power supply	Two AAA batteries
Pad	Conductive silicone rubber
Battery life	Approx. 30,000 suctions (with alkaline batteries)
Suction capacity	120 gf (with a pad diameter of 10 mm)
Dimensions	130 (W) × 29 (H) × 22 (D) mm
Weight*	43 g

\* Without batteries, nozzle and pad

# **Desoldering Tool**

# HAKOFM-204

#### High-Power Desoldering Tool Digital

Nozzle not included



#### **Packing List**

FM-204	Station, Iron holder, Ceramic paper filter (10 pcs), Cleaning drill for heating element, Filter pipe assembly (1 pc), Control card, Power cord, Connecting cable, Nozzle remover, Desoldering tool (FM-2024), Handle for gun configuration, Instruction manual
--------	---

Option		
Part No.	Name	Specifications
FM2027-03	HAKKO FM-2027 conversion kit	70 W (24 V)
FM2026-06	HAKKO FM-2026 conversion kit	70 W (24 V)





- Vacuum pump built-in type desoldering tool
- Digital display ensures easy and reliable temperature control.
- Sleep function that works with iron holder prevents nozzle oxidation.

#### Specifications

Model No.	FM-204
Power consumption	120 W
Temperature range	FM-2024: 350 to 450°C FM-2026/2027: 200 to 450°C
Temperature stability	±5°C at idle temperature
•Station	
Output voltage	AC 24 V
Vacuum generator	Double cylinder type
Vacuum pressure	Max. 80 kPa (600 mmHg)
Suction flow*	15 L/min.
Dimensions	160 (W) × 120 (H) × 225 (D) mm
Weight	3.7 kg
•Desoldering Tool	
Power consumption	70 W (24 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length**	180 mm (with ø1.0 mm nozzle)
Weight**	65 g (with ø1.0 mm nozzle)
* Measured at the filter case sucti	ion port of the station

Measured at the filter case suction port of the statio

\*\* Without cord and hose



#### **Features**



Two way use of grip part



Test criteria

Measurement method	The time until the soldered portion reaches 200°C is measured for 20 points.
Nozzle used	ø1.0 mm
Solder	Lead-free solder



Straight configuration

#### Simple and safe nozzle replacement by the nozzle remover







#### **Sleep function and Auto Power** Shut-off function



Connect the FM-204 station and FH-200 iron holder using a connecting cable.





HAKKO FM-2027

Set-up example HAKKO FM-204 HAKKO FM-2026 HAKKO FX-780 HAKKO FX-791

# **Desoldering Tool**





HAKKO 815

HAKKO 816

#### Packing List

Packing List	
474 (with 809)	Station, 809 Desoldering gun, Filter pipe, Ceramic paper filter (S; 2 pcs), Ceramic paper filter (L; 4 pcs), Spring filter (3 pcs), Cleaning pin for 1.0 mm diameter nozzle, Cleaning drill for 1.0 mm diameter nozzle, Cleaning pin for heating element, Cleaning pin holder, Wrench, Silicone grease, Iron holder base, Cleaning sponge, Spring iron holder, Instruction manual
474 (with 815)	Station, 815 Desoldering tool, Filter pipe, Ceramic paper filter (S; 2 pcs), Ceramic paper filter (L; 4 pcs), Spring filter (3 pcs), Cleaning pin for 1.0 mm diameter nozzle, Cleaning drill for 1.0 mm diameter nozzle, Cleaning pin for heating element, Cleaning pin holder, Wrench, Silicone grease, Anti-seizure, Iron holder base, Cleaning sponge, Iron receptacle with holder, Instruction manual
474 (with 816)	Station, 816 Desoldering gun, Filter pipe, Ceramic paper filter (S; 2 pcs), Ceramic paper filter (L; 4 pcs), Spring filter (3 pcs), Cleaning pin for 1.0 mm diameter nozzle, Cleaning pin for heating element, Cleaning pin holder, Wrench, Silicone grease, Anti-seizure, Iron holder base, Cleaning sponge, Iron receptacle with holder, Instruction manual

#### Specifications

Model No.	474 (with 809)	474 (with 815)	474 (with 816)
Power consumption		100 W	
Temperature range		380 to 480°C	

#### Station

Station	
Output voltage	AC 24 V
Vacuum generator	Double cylinder type
Vacuum pressure	Max. 80 kPa (600 mmHg)
Suction flow*	15 L/min.
Dimensions	165 (W) × 135 (H) × 260 (D) mm
Weight**	3.8 kg

#### ·Desoldering Tool

Descrating room			
Туре	Gun Pen Gu		Gun
Power consumption	50 W (24 V)		
Nozzle to ground resistance	<2 Ω		
Nozzle to ground potential	<2 mV		
Heating element	Ceramic heater		
Standard nozzle	ø1.0 mm S type (No. A1003)	type ø1.0 mm S type 3) (No. A1499)	
Dimensions	135 (W) × 174 (H) mm	200 (W) × 80 (H) mm 180 (W) × 150 (H) mm	
Weight**	200 g	100 g	120 g

\* Measured at the filter case suction port of the station. \*\* Without cord and hose

#### **Replacement Nozzles**

For 809				
Dout No.			Size	
Part No.	Figure	А	В	
A1002		0.8	1.8	
A1003	BEE	1.0	2.0	
A1004	в	0.8	2.3	
A1005		1.0	2.5	
A1006		1.3	3.0	
A1007		1.6	3.0	

For 815 and 816			
Devt No.	Figure	Size	
Part No.	Figure	А	В
A1496	A	0.8	1.8
A1499	BFE	1.0	2.0
A1498	BE	0.8	2.3
A1500		1.0	2.5
A1501		1.3	3.0
A1502		1.6	3.0
A1503		2.0	3.6
A1497	BLE	0.8	2.2

Unit : mm

# **Desoldering Tool**

# HAKO FR-300



#### Packing List

Nozzle included

FR-300

Unit, Ceramic paper filter (L; 2 pcs), Nozzle changing tool, Protection cover, Pre-filter, Iron holder, Cleaning pin for 1.0 mm diameter nozzle, Cleaning pin for heating core, Instruction manual

#### **Specifications**

Model No.	FR-300
Power consumption	118 W
Temperature range	350 to 500°C
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Vacuum generator	Diaphragm pump
Vacuum pressure	81 kPa (610 mmHg)
Suction flow	11 L/min.
Standard nozzle	ø1.0 mm (No. N50-04)
Dimensions	210 (W) × 226 (H) mm
Weight	0.52 kg

Replacement Nozzles Unit : mm				
Dert Ne			Size	
Part No.	Figure	Α	В	
N50-01	øB ⊨ ↓ ↓ ↓	0.8	2.0	
N50-02		1.0	2.0	
N50-03	ØB	0.8	2.5	
N50-04		1.0	2.5	
N50-05		1.3	3.0	
N50-06		1.6	3.0	



New

- Power switch and adjustable temperature control built into the handle
- Ergonomic grip design provides superior operability



FR-300 is supplied in a carrying case with maintenance parts and simple iron holder.

OFF

#### **Features**

Quick-change nozzle replacement with special tools



#### Power switch at hand



Simplified iron holder as standard



# HAKO SPPON



Replacement Nozzles Unit : mm		
Part No.	Figure	Adaptation products
18-N		No.18, 18G
20-N		No.20, 20G
DS01-N	3.5 1 16.7	No.DS01P

# HAKO WICK

#### **Desoldering Wire**





**C** RoHS

**Specifications** 

18

20

18G

20G DS01P

• Handy for removing solder after dismounting surface-mounted components

· Light-weight and simplified desoldering tool

• Use a cleaning shaft that enables the nozzle

12 cm3 (12 cc)

12 cm<sup>3</sup> (12 cc) with guard

20 cm<sup>3</sup> (20 cc) 20 cm<sup>3</sup> (20 cc) with guard

28 cm3 (28 cc)

with high suction power

to be cleaned after each use • Nozzles can be easily replaced.

#### **Features**

#### Through-hole solder removal





#### Bridging solder removal





#### **Specifications**

#### Regular type (Flux)

Part No.	Description
FR100-00	1.5 m × 0.6 mm
FR100-01	1.5 m × 0.9 mm
FR100-02	1.5 m × 1.4 mm
FR100-03	1.5 m × 1.9 mm
FR100-04	1.5 m × 2.5 mm
FR100-05	1.5 m × 3.3 mm

Unflux type (Unflux)		
Description		
1.5 m × 0.6 mm		
1.5 m × 1.4 mm		
1.5 m × 1.9 mm		
1.5 m × 2.5 mm		
1.5 m × 3.3 mm		

#### No clean type (Low residue flux) ESD SAFE package

Part No.	Description
FR120-00	1.5 m × 0.6 mm
FR120-01	1.5 m × 0.9 mm
FR120-02	1.5 m × 1.4 mm
FR120-03	1.5 m × 1.9 mm
FR120-04	1.5 m × 2.5 mm
FR120-05	1.5 m × 3.3 mm

# SMD Rework Station

# MAKCO FR-810 SAFE



Hot-Air SMD Rework Station Digital





#### **Packing List**

FR-810

Station with handpiece, Handpiece holder, FP pick-up (with pick-up wire SS), Heat resistant pad, Power cord, Nozzle (ø4), Instruction manual







- Full digital control of temperature, airflow, and time.
- Simple nozzle removal and easy maintenance

#### **Specifications**

Model No.	
Power consumption	1,200 W
Temperature range	50 to 600°C

#### Station

Power consumption	30 W
Air flow	1 to 9 (5 to 115L/min.)
Dimensions*	160 (W) × 145 (H) × 220 (D) mm
Weight*	1.5 kg

#### Handpiece

•	
Power consumption	1,170 W
Standard nozzle	ø4 mm (No. N51-02)
Total length*	250 mm
Weight*	180 g
* Total langth and weight do not include could	

\* Total length and weight do not include cord.

\* Values for airflow are approximate. Actual volume of airflow may be affected by the size and shape of the nozzle used.

Option		
Part No.	Name	Specifications
B5058	Conversion adapter	_

When using the FR-810 with a nozzle for the FR-803B, attach a conversion adapter No.B5058 (option).



#### Features

#### **Timer function**

A new timer function allows for repeatably consistent work times. This can help to prevent parts from overheating and can improve the overall quality of your work.

#### Preset mode

Preset mode allows you to change the settings easily to suit a variety of boards and workpieces. (You can program temperature, time and airflow settings for up to five presets) Simply switch to the desired setting for variety of jobs.



#### **Chain Presets function**

The Chain Presets function allows you to create a simple temperature profile by combining settings registered in preset mode. (Up to five steps can be created).

It also supports sophisticated removal work, and significantly improves efficiency.



	Temperature (°C)	Time (s)	Airflow
Preset 1	250	100	6
Preset 2	300	40	6
Preset 3	350	50	6
Preset 4	100	000	6
Preset 5	100	000	6

\*Presets 4 and 5 have been set to "000",

#### Auto sleep and auto shutoff features

To ensure safety and conserve power, when the handpiece is placed in the handpiece holder, the auto sleep function is activated and it starts cooling automatically.

If the handpiece has not been removed from the handpiece holder (Ex. Using it in a rework fixture) and after it has been idle for 30 minutes, auto shutoff function is activated. It is automatically powered off.

Access to settings can be restricted via the password function for easy management.



#### **Efficiency improvement**

The FR-810's high volume airflow and high output make it possible to perform the same work in only one-third of the time required when using a conventional model. This reduces the thermal impact on boards and components.



\*Examination of time taken for connector sections soldered onto a ceramic board to be heated to 200°C with maximum temperature and airflow settings selected.

Single nozzles with an approximately 4 mm diameter were used.

#### Quick-change N51 nozzles



Simple, tool-free removal and attachment.

#### Simple heater replacement



Simply remove four screws to replace heater.

# SMD Rework Station

# HAKO FR-803B

#### Hot-Air SMD Rework Station Digital





#### **Packing List**

FR-803B

Station with handpiece, Power cord, Control card, Handpiece holder, Connecting cable, Pad (3 mm, 5 mm, 7.6 mm x 2 pcs each), Instruction manual

NOTE: This product does not come with a nozzle. When purchasing this product, be sure to order a nozzle suitable for the work to be done.

#### **Specifications**

	FR-803B
Power consumption	650 W
Temperature range	100 to 500°C (sensor)

Station

Power consumption	50 W (stand-by power consumption: 4 W)
Air flow	5 to 20 L/min. (max.)
Operation mode	Auto or manual
Timer	50 files, 3 steps each
Dimensions*	160 (W) × 145 (H) × 230 (D) mm
Weight*	5 kg
•Handpiece	

Power consumption	600 W
Total length*	200 mm
Weight*	200 g

\* Without cord

# 



- 3-step temperature profile (preheating, heating, and cooling down) is available.
- Vacuum function makes it possible to pick up workpieces.

#### **Features**

#### Settable 3-step temperature profile



#### Built-in vacuum pickup



#### Option

C1541	Temperature probe

Controlling the temperatures of the hot air rework system and the workpiece using a temperature probe



#### Set-up example 1

Set-up example 2 Set-up example 3







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### **Accessories for SMD-BGA Repair System**

#### Set-up example; Rework fixture, Omnivise, FR-803B, FR-830, FG-100



#### ESD SAFE Rohs

• Combination with HAKKO FR-810 and FR-803B allows the SMD and BGA rework equipment to set up at low cost.

#### Features

#### REWORK FIXTURE 歸 No.C1392B



- Smooth vertical motion
- •The handpiece may be easily installed or
- removed from the clamp.
- Easy to position

#### OMNIVISE 歸 No.C1390C



- The height can be adjusted to 72.5 mm, 78.0 mm, 84.5 mm,
- 91.0 mm and 97.5 mm.The jaws are padded
- to preclude damage to delicate objects.
- Full rotations of 360° are available without interference.

#### NOZZLE TRAY 疑 No.C1391B



- •Holds nozzles in neat rows
- Aids in nozzle
- installation and removal

Specifications			
Madal Na	C1202B	C1200C	C1201B
Model No.	01352D	013500	CISSID
Dimensions	-	ø57 × 88 mm	305 (W) × 64 (H) × 140 (D) mm
Weight	4.6 kg	1.2  kg (1  pc)	0.87 kg

#### Dimensional drawing for C1392B



#### **Fixture adapter**



No.B5059

When using the FR-810 handpiece with a rework fixture No.C1392B, attach a fixture adapter No.B5059 (option).





PLCC				
A1188B PLCC 9 × 9	A1140B PLCC 11.5 × 11.5	A1141B PLCC 11.5 × 14	A1139B PLCC 12.5 × 7.3	A1135B PLCC 17.5 × 17.5
(20 pins)	(28 pins)	(32 pins)	(18 pins)	(44 pins)
A: 11 B: 11	[]●]] []●] []● [] [] [] [] [] [] [] [] [] []	A: 15 B: 13	(ⓐ) ∎ 6.9 6.9 A: 9 B: 14	۲. 18.5 ۲5 Δ. 18.5
A1136B PLCC 20 × 20	A1137B PLCC 25 × 25	A1138B PLCC 30 × 30	A1189B PLCC 34 × 34	
(52 pins)	(68 pins)	(84 pins)	(100 pins)	
A: 21	A: 26	29 A: 31	A: 36.5	
B: 21	B: 26	B: 31	33.5	





#### SIP

A1191\* SIP 25L A1192\* SIP 50L 26

\* The vacuum function does not operate with these nozzles. The vacuum function is not available on the FR-810.



Single nozzle set (N51-01, N51-03, N51-04, and N51-05) is also available.

\*N51-02 included with station

No. N51-50



When using the FR-810 with a nozzle for the FR-803B, attach a conversion adapter No.B5058 (option).



**Desoldering and Rework** 

# **Rework System**



Rework System Analog

Tip included

Nozzle included



#### **Packing List**

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02B	Station, Soldering iron (907 × 1 pc, 900S × 1 pc), Desoldering gun (809), Handpiece (hot air), Nozzle tray, Filter pipe, Cleaning pin for 1.0 mm diameter nozzle, Cleaning pin for heating element, Cleaning drill for 1.0 mm diameter nozzle, Ceramic paper filter (S; 2 pcs), Ceramic paper filter (L; 4 pcs), Spring filter (3 pcs), Silicone grease, Wrench, Iron holder for soldering iron (2 pcs), Iron holder for desoldering gun, Handpiece holder, FP pick-up with S and L wires, Nozzle for handpiece (hot air; A1124B × 1 pc, A1128B × 1 pc), Power cord, Instruction manual, Troubleshooting guide
-----	---

#### **Replacement Tips and Nozzles**

For information on replacement tips and nozzles, see our website (http://www. hakko.com).

# 





 Multi-station that enables soldering, desoldering, and SMD rework all with a single unit

Specifications		
Model No.	702B	
Power consumption	500 W	
Temperature range	Soldering: 200 to 480°C Desoldering: 380 to 480°C SMD Rework: 100 to 420°C (use No. A1126B)	
•Station		
Output voltage	AC 24 V	
Vacuum generator	Double cylinder type	
Vacuum pressure	Max. 80 kPa (600 mmHg)	
Suction flow	15 L/min.	
Air flow	23 L/min. (max.)	
Dimensions	360 (W) × 150 (H) × 266 (D) mm	
Weight*	10 kg	
·Soldering Iron		
Power consumption	50 W (24 V) × 2 pcs	
Tip to ground resistance	<2 Ω	
Tip to ground potential	<2 mV	
Heating element	Ceramic heater	
Standard tip	Shape-B (No. 900M-T-B), Shape-I (No. 900S-T-I)	
Cord length	1.2 m	
Total length*	907-ESD: 222 mm (with B tip) 900S-ESD: 215 mm (with B tip)	
Weight*	907-ESD: 44 g (with B tip) 900S-ESD: 29 g (with B tip)	
·Desoldering Gun		
Power consumption	50 W (24 V)	
Nozzle to ground resistance	<2 Ω	
Nozzle to ground potential	<2 mV	
Heating element	Ceramic heater	
Standard nozzle	ø1.0 mm S type (No. A1003)	
Cord length	1.2 m	
Dimensions**	135 (W) × 174 (H) mm	
Weight**	200 g	
·Handpiece (Hot Air)		
Power consumption	250 W	
Standard nozzle	No. A1124B and A1128B	
Total length*	196 mm	
Weight*	120 g	
* Without cord ** Without cord and hose		

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# 

Preheater Analo



#### Features

#### Preheating in a short time



#### Test criteria

Measurement method	Temperature measured using sensors mounted on both the top and bottom surfaces of the P.W.B.
Distance between air outlet and P.W.B.	10 mm
Temperature setting	300°C

#### Set-up example



HAKKO FR-830 HAKKO FR-810 REWORK FIXTURE OMNIVISE HAKKO FG-100

# 

- Compact pre-heater best suited for heat processing on localized areas
- Featuring quick heatup and less variations in temperature

#### Packing List

FR-830

Unit, Power cord, Instruction manual

#### **Specifications**

Model No.	FR-830
Power consumption	250 W
Air flow	0.15 m³/min. (fan capability)
Temperature range	150 to 300°C (above the blow exit)
Dimensions*	140 (W) × 75 (H) × 185 (D) mm
Weight**	0.75 kg

\* The height (H) is the distance from the bottom of the feet to the top of the exhaust outlet. \*\* Without cord

#### Option

Part No.	Name	Specifications
B3263	Extension pipe	with lid
B2763	Hand switch	-
B1649	Foot switch	-

# 

#### **Air-Purifying Smoke Absorber**



# 

- · Powerful yet quiet suction
- Freestanding flexible ducts facilitate production changeovers
- Three airflow levels are selectable according to working environments.



Duct set

Duct set

#### **Packing List**

FA-430

Main unit, Power cord, Main filter, Pre-filter (10 pcs), Instruction manual

\*Ducts are optional parts.

#### **Specifications**

Model No.	FA-430
Power consumption	120 W
Noise level*	50 dB
Max. suction capacity	With single duct: Max. 4.1 m <sup>3</sup> /min. (145 cFm) With two ducts: Max. 4.7 m <sup>3</sup> /min. (167 cFm)
Filtering efficiency**	99.97% 0.3 μm (LOW or MEDIUM mode) 99.96% 0.3 μm (HIGH mode)
Static pressure	1500 Pa
Duct set (sold separately)***	Duct length: ø55 mm × 1.2 m (ESD safe)
Dimensions	330 (W) × 366 (H) × 343 (D) mm
Weight****	7.5 kg

Measured at a distance of 1 m from the face of the unit in an anechoic room.
 An initial value of the collection efficiency based on a counting method for airborne dust collected by a single plate of filter (unfolded)

\*\*\* Nets in duct sets are not protected against electrostatic discharge. \*\*\*\* Without cord



Option

C1571

C1572



With rectangular type

nozzle

With round type

nozzle

No.C1571

No.C1572

#### Features



#### Filter replacement notification function

Flexible ducts and compact body for perfect placement





#### Aerosol particle diameter range

\* During LOW and MIDDLE modes



# HAKO FA-400 SAFE

#### **Desktop Type Smoke Absorber**



# 

- Desktop solder smoke absorber that can be mounted horizontally or vertically
- An optional arm stand makes a third mounting position available.

#### 2 Way Plus Placement

Vertically mounted:



Using a stand:



#### Horizontally mounted:



#### **Packing List**

FA-400 Unit

Unit, Filter, Instruction manual

Specifications				
Model No.	FA-400			
	50 Hz: 22 W			
Power consumption	60 Hz: 18 W			
Noise level*	50 Hz; 48 dB			
	60 Hz: 51 dB			
	Vertically: 1.0 m <sup>3</sup> /min. (50 Hz), 1.1 m <sup>3</sup> /min. (60 Hz)			
Max. suction capacity**	Horizontally: 0.4 m <sup>3</sup> /min. (50 Hz), 0.5 m <sup>3</sup> /min. (60 Hz)			
	Vertically: 1.0 m/s (50 Hz), 1.1 m/s (60 Hz)			
Air velocity	Horizontally: 2.6 m/s (50 Hz), 2.9 m/s (60 Hz)			
Filter size	130 (W) × 130 (H) × 10 (D) mm			
Dimensions	166 (W) × 212 (H) × 113 (D) mm			
Weight***	0.91 kg			
5				

Measured at a distance of 1 m from the face of the unit

\*\* Measured with a filter present \*\*\* Without cord

#### Option

,		
Part No.	Name	Specifications
C1568	Arm stand	With knobs

# **Smoke Absorber**

# Smoke Absorber



#### **External Air Compressor Type Smoke Absorber**



## **C** RoHS

- · External air compressor type soldering smoke absorber
- · Three inner filters attached on different levels absorb soldering smoke.
- Up to 2 soldering irons can be connected to one unit.

**Compatible Soldering Station for HAKKO 490** 



HAKKO FX-888D



HAKKO FX-951



HAKKO FX-950



HAKKO FX-838



HAKKO FM-203



HAKKO FM-206

#### **Specifications**

Model No.	490
Noise level	39 dB
Working pressure	392 to 686 kPa (4 to 7 kgf/cm <sup>2</sup> )
Air consumption	40 L/min. (490 kPa)
Suction flow	23 L/min. (490 kPa)
Dimensions	ø120 × 200 (H) mm
Weight*	1.5 kg
* Linit only	

Packing	List	

490	Unit, Absorption pipe set, Instruction manual
* • • • • • • • • • • • • • • • • • • •	

A second soldering iron can be attached to HAKKO 490 by purchasing an additional absorption pipe set.

\*\* Unit only \*\* Use compressed air; no power supply is necessary.

# WRIST STRAP

Wrist Strap





Packing	List		

manual	442B Wrist band, Grounding wire, Cord helper, Instruct manual	tion
--------	--	------

#### **C** RoHS

- This antistatic wrist strap prevents the human body from becoming charged with static electricity.
- The stretchable band is easy to adjust.
- A conductive thread is used for the band lining.

#### **Cord Helper**



- 1.Insert the grounding wire into the ring of the cord helper.
- 2.Clip the cord helper to clothing as shown here.

#### **Specifications**

Part No.	442B-01	442B-02	
Color	Blue		
Grounding wire	1.5 m	2.5 m	





**Wrist Strap Tester** 



C E

• Easy-to-use, quick-response tester for wrist straps

#### Features

Can be used anywhere to quickly and easily check a variety of grounding systems.



#### **Packing List**

Unit, 006P 9 V Manganese dry battery (for trial), Grounding wire, Instruction manual

#### **Specifications**

Model No.	498
Power supply	006P 9 V dry battery
Indication: LOW	R < 800 kΩ
Indication: GOOD	800 k $\Omega \le R \le 9 M\Omega$
Indication: HIGH	R > 9 MΩ
Battery life	Approx. 50,000 times
Grounding wire	2.5 m
Operating environment	0 to 40°C, 20 to 90%RH (without condensation)
Dimensions	80 (W) × 40 (H) × 117 (D) mm
Weight*	150 g

\* Including battery



#### **Soldering Iron Thermometer**





- Tip thermometer that provides reliable temperature control of soldering iron tips
- Compact design minimizes your workspace and enables you to easily carry it around.
- Incorporating an extremely fine sensor that has high temperature reactivity.

# SOLDERING TESTER FG-101

**Soldering Iron Tester** 





- Tip temperature, leak voltage, and tip-toground resistance can be easily measured with high accuracy.
- Soldering iron tester useful for daily
   maintenance of station-type soldering irons

#### What is leak voltage and tip-to-ground resistance?

#### Leak voltage

Leak current is the current that leaks from the tip to a board or device. Leak voltage is a specific measurement of the level of this current. The leakage can adversely affect delicate



devices, so it is necessary to check leak voltage on a daily basis.

#### Tip-to-ground resistance

Most leak current flows from the tip via the ground wire to the outlet ground terminal, and is prevented from affecting the device. Because of this, tip-to-ground resistance is another important issue that must be checked daily.



#### Common Features of FG-100 and FG-101

#### **Dimensional measurement**



#### MAX HOLD function

When the "MAX HOLD" button is pressed, "MAX HOLD" is displayed and the highest tip temperature is held on the display.



#### **Procedure for Measuring the Soldering Tip Temperature**



• Typical measuring point for Shape B, I and D (Measure at the center of the tin coated area)



 Typical measuring point for Shape BC and C which are tinned flat only.

#### **Option / Replacements**

Part No.	Name	Specifications
A1310	Temperature probe	For solder bath and pot
C1541	Temperature probe	For hot air
A1556	Sensor A	-
A1557	Sensor B	-
191-212	Sensor/10 pcs	-

#### Packing List

FG-100	Unit, 006P 9 V Manganese dry battery (for trial), Instruction manual, Sensor (10 pcs)
FG-101	Unit, Fuse, Conduction wire, Sensor (10 pcs), Multi-adapter, European adapter, Ground clip, Power cord, Instruction manual

#### **Specifications**

Model No.	FG-100	
Power supply	006P 9 V dry battery	
Temperature resolution	1°C	
Temperature measurement range	0 to 700°C	
Temperature precision	$\pm 3^{\circ}$ C (300 to 600°C) $\pm 5^{\circ}$ C (other than above)	
Temperature sensor	K (CA) type thermocouple	
Display*	Besides measured temperatures, display indications include the following: Battery low alarm "MAX HOLD" is displayed in the lower right of the LCD.	
Operating environment	0 to 40°C, 20 to 90%RH (without condensation)	
Environmental conditions	Applicable rated pollution degree 2 (according to IEC/UL 61010-1)	
Dimensions**	68 (W) × 140 (H) × 38 (D) mm	
Weight***	115 g	

\* When the battery low alarm appears, be sure to replace the battery. Failure to do so will result in incorrect temperature measurements.
\*\* Evelopide protucione

\*\* Excluding protrusions \*\*\* Excluding battery

Model No.	FG-101
Power consumption	2.8 W
Temperature resolution	1°C
Temperature measurement range	0 to 700°C
Temperature precision	$\pm 3^{\circ}$ C (300 to 600°C) $\pm 5^{\circ}$ C (other than above)
Temperature sensor*	K (CA) type thermocouple
Voltage resolution	0.1 mV
Voltage measurement range	0 to 40 mV (CA)
Voltage precision	± (5% of reading + 1 digit)
Resistance resolution	0.1 Ω
Resistance measurement range	0 to 40 Ω
Resistance precision	± (5% of reading + 1 digit)
Display**	LCD: 3 1/2 digits Burnout: -1 MAX HOLD: "MAX HOLD" is displayed in the lower right of the LCD.
Operating environment	0 to 40°C, 20 to 90%RH (without condensation)
Environmental conditions	Applicable rated pollution degree 2 (according to IEC/UL 61010-1)
Dimensions	200 (W) × 50 (H) × 120 (D) mm
Weight***	1 kg
* The temperature sensor (No.19	11-212 or No.191-212C) can only be used to measure

 The temperature sensor (No.191-212 or No.191-212C) can only be used to measure temperatures below 500°C. To measure higher temperatures, use an applicable temperature probe.
 \*\* When a sensor is not attached or it burns out, the Burnout (-1) alarm symbol is

\* When a sensor is not attached or it burns out, the Burnout (-1) alarm symbol is displayed. The same symbol is also displayed when a temperature outside the measurement range is detected.

\*\*\* With power cord

Memo



#### **HEAD OFFICE**

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