

548.10

IR-Force-Convection-Soldering-System

Operating manual



南亞電子産業.株

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You should keep this operation manual
for a later using.

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1.0 Preface

Introduction

Dear User

This operating and maintenance manual (further just referred to as operating manual) has been written for the authorized user. Basic knowledge in SMD soldering methods are assumed. This operating manual contains important information on how to operate your Reflow-System properly and safely.

The Reflow-System has been developed and constructed according to the latest technology. It was tested for proper functioning prior to delivery. Nevertheless, if not used properly, users or third parties or the Reflow-System itself and other tangible assets might be damaged.

It is absolutely necessary that you read this operating manual prior to transporting, mounting or operating the Reflow-System. Therefore, use the Reflow-System only in proper condition, according to the rules, being aware of possible safety problems and hazards, and under consideration of all information provided in this operating manual.

This operating manual contains rules and guidelines regarding the specific use of the Reflow-System. Only the absolute compliance with these instructions is considered to be the agreed use. The user is liable for any risks arising from other utilization or application of the system than the one it is intended for.

For further questions regarding the Reflow-System or to order spare parts, please contact us.

You can reach us under

Phone: 0049 - 4136 / 909-0

Fax: 0049 - 4136 / 909-22

1.0 Preface

Proper use

The Reflow-System is intended and designed **only** for gluing chips and for soldering circuit boards with SMD components. Any other use is considered to be not according to the intention and therefore improper. All consequences arising from improper use are the responsibility of the user.

Please pay attention to the following:

- ◆ The proper use includes the compliance with the mounting, dis- and reassembling, starting operation, operating, and maintenance conditions as predetermined by us the EMV-notes as well as with the disposal measures.
- ◆ Only qualified, authorized, and trained persons are allowed to operate at and with the Reflow-System. Each person, conducting the transportation or any work at or with the Reflow-System has to have read and understood the appropriate parts of this operating manual and especially the chapter 2 "Safety instructions".
- ◆ In addition, the owner has to assure himself that all persons working with the Reflow-System understood this operating manual.
- ◆ One copy of this operating manual has to be kept permanently and easily accessible at the place of operation of the Reflow-System.

1.0 Preface

Utilization rights

SEF GmbH hereby guarants the customer the right to non-exclusive, non-transferable utilization of the hardware and software (hereinafter referred to as the "product") supplied to the customer in accordance with the following provisions:

- ◆ The utilization rights entitle the customer to use the product and the documents necessary for its use.
- ◆ SEF GmbH owns all rights to the product. The customer may produce a backup copy for data protection purposes. SEF GmbH reserves in particular all publication, processing and exploitation rights related to the product and the documentation.
- ◆ The warranty applies **ex-works SEF GmbH**, 21379 Scharnebeck and is valid subject to the provisions of our "General terms and conditions".
We will carry out repairs free of charge within a period of 12 months after free return of the product. The warranty commences on the day of delivery, which must be verified to us with the enclosed warranty certificate.
Within the warranty period, we will remedy all product malfunctions which are the result of defective workmanship free of charge.
The warranty does not include consumables and wearing parts or defects or malfunctions resulting from incorrect handling or improper operation.
The warranty claim will be rendered void if the device/PC board assembly has been opened or modified by an unauthorized person, if the product type sticker has been removed/changed or if the entries on the warranty paper have been changed or made illegible.
- ◆ Return the device/PC board assembly to us insured and postage paid together with a completed warranty paper and detailed fault description in the original box or equivalent packaging. For greater systems you can order a service from SEF. Please use the fax page in the chapter "9.0 Trouble Shooting".

Subject of the agreement

Protection of the product

Warranty

Warranty claim processing

1.0 Preface

Liability

- ◆ SEF GmbH does not assume any liability for fault-free functioning of the product or the accuracy of the measuring data.

Product modifications or improvements

- ◆ SEF GmbH reserves the right to make modifications or improvements to the product at its discretion. SEF GmbH is not, however, obliged to make these modifications or improvements available unrequested and free of charge. SEF cultivates the software every time. You can order an update subject to a nominal charge within the warranty period.

Particular restrictions

- ◆ It is prohibited to copy or otherwise reproduce the product and the written documents either in whole or in part in their original or modified form.
It is prohibited to modify the product and, in particular, to translate, back-develop, decompile or deassemble the software contained in the product.

General provisions

- ◆ By giving away, rental and loan of the product the SEF GmbH must be informed, if not the warranty expires.

Assignment of utilization rights

- ◆ The general terms and conditions of SEF GmbH apply. These utilization rights are subject to the law of the Federal Republic of Germany.
The place of jurisdiction and place of fulfilment is Lüneburg.

1.0 Preface



Informations about this operating manual

This operating manual should explain the erecting, programming, using and maintenance of the system. It should be useful in your work with the system. The manual is divided into different chapters:

- ◆ **Chapter 1: Introduction**
This chapter informs you on intended use and utilization rights and technical data.
- ◆ **Chapter 2: Safety Instructions**
Safety is a must. In this chapter you will find important information on safe handling of the system and what you should observe in the system's environment. You will also find information on disposal of the system.
- ◆ **Chapter 3, Quick Reference Guide**
This chapter is for the well known user. Here you will get in a short information how to erect, adjust, connect, program, use and produce with the system.
- ◆ **Chapter 3: Prior to Operation**
This chapter informs on general rules for functioning of the system. We explain how to erect and adjust the system and how to set up the system ready to start.
- ◆ **Chapter 5, Operation of System**
In this chapter you will find all information how to start with the system, the description of the function and the programming of the system.
- ◆ **Chapter 6, Production**
In this chapter you will find all information how to start or change the production.

1.0 Preface

- ◆ **Chapter 7: Measurement**
How to connect the sensors to the circuit board and how to analysis, store, load and print a process curve.
- ◆ **Chapter 8, System Settings**
In this chapter we explain how to change the basic setting.
- ◆ **Chapter 9, Maintenance**
This chapter gives answers for possible problems by the work and mainteance informations of the system.
- ◆ **Chapter 10: Technical appendix**
This chapter provides a survey on the system.
- ◆ **Chapter 11: Accessories**
All accessories at a glance.
- ◆ **Chapter 12: Notes**
This chapter is for your personal notes.

1.0 Preface

Important symbols contained in the operating manual

For an easy reading and finding in this operating manual we have identified some important text parts for you.



To be found before explanations, information regarding better handling of the system, or before cross-references referring to other text passages in this operating manual.



Listing following this rhombus:
General listing.



Listings following this rectangle:
Working or operating steps to be conducted in the described order.

<Text>

These texts are entry texts for operating and programming the system.

For an easy reading and finding of special themes, you will find at the beginning of this operating manual and each chapter a table of contents.

1.0 Preface

Technical Data

Lenght:	approx. 1400 mm
Width:	approx. 680 mm
Height:	approx. 550 mm
Intake height:	approx. 40 mm
Active chamber lenght	800 mm
Useful width:	250 mm
Speed:	10 - 100 cm/min
Weight:	approx. 90 kg
Connection:	3 Phases 230 VAC 50 Hz with 16 A CEECON plug
Operation capacity:	approx. 6,8 KW
Air circulation capacity:	approx. 900 m³/ h
Air extraction capacity:	approx. 180 m³/ h
Controler:	SEF 68070 µP-controler
Memory:	battery buffered RAM
Capacity:	120 Soldering/Gluing programs
Output:	LCD display or serial printer

Emmissions

The emmissions in the air extraction depends from the used soldering paste or gluing paste

Sound compression

The sound compression of this system is under 65 dB(A).

2.0 Safety Instructions

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2.0 Safety Instructions

General

This system has been designed and constructed according to the latest technology. However, there is a risk of danger if the system is used improperly or not according to the instructions. The operation manual serves to ensure proper and secure operation with and at the system.

Each person, working with this system, should have read and understood the complete operation manual and especially this chapter.

Safety instructions are for maintenance of industrial health and safety standards as well as for accident prevention.

Always follow the safety instructions!

Therefore, keep this operation manual near the system easily accessible.

To protect you and your colleagues from possible damage your attentive cooperation is required.

Operate this system judiciously and safety-consciously.

2.0 Safety Instructions

Important symbols contained in the operation manual

The section „Pictograms at the system“ in this chapter deals with the explanation of warning signs fixed at the system. The following warning and information symbols shall draw your attention to the safety instruction texts.

Memorize these symbols and their meaning.

Prohibition sign



Prohibitory sign: Safety symbol meaning that a certain behavior or activity which may cause danger is prohibited. Non-compliance with these instructions may result in injury and/or death.

Warning sign



Warning sign: Safety symbol warning of a certain danger. Non-compliance with these instructions may result in injury, death and/or damage of the system.

Mandatory sign



Mandatory sign: Stipulating a certain behavior. Non-compliance with these instructions may result in serious injuries.

Text symbols



To be found before explanations, information regarding better handling of the system or before cross-references referring to other text passages in this operation manual.

2.0 Safety Instructions

Definitions

Remaining risks are not obvious risks caused by the system . Even though the system has been designed and constructed according to the latest technology and the generally recognized rules regarding technical safety, remaining risks can not be completely excluded, even if the system is used properly. Therefore, operate the system only in perfect technical condition, with awareness to your safety and possible health hazards as well as in compliance with the accident prevention regulations, the corresponding technical safety regulations, the relevant environmental directives, and the instructions regarding mounting, operation, maintenance and repair.

The operators must be informed, qualified and trained, possessing sufficient knowledge due to their education and experience in this special field and are familiar with the corresponding relevant regulations on industrial health and safety standards as well as on accident prevention. They are also familiar with the generally recognized technical rules. Only such persons are allowed to mount, dismount, start operation, do maintenance work and operate the system.

Protective clothing is a personal protection equipment protecting the body against remaining risks resulting from the working process. The owner is responsible for the use of personal protection equipment complying with the law of unit safety. The relevant accident prevention provisions stipulate for each activity respectively each working place, resp., under which circumstances personal protection equipment has to be worn.

For example: **Heat-resistant gloves** when working at the **hot** heating chamber.

Remaining risks

Operators

Protective clothing

2.0 Safety Instructions

Accident Prevention Rules

Accident prevention rules are to be followed.

Familiarize yourself with the accident prevention rules and other international safety regulations valid in your country. Especially follow the safety instructions regarding first aid, handling of electrical equipment, soldering methods and handling nitrogen.

You have to protect yourself and other persons from damage.

Please note the following instructions:

- safety instructions CENELEC
- safety instructions IEC,
- safety instructions from the chip adhesive and soldering paste manufacturer.

2.0 Safety Instructions

Operation of system

The system has to be operated by authorized and trained personnel only. The personnel must be healthy and must not have taken any medication or other agents decreasing the reaction time.

The owner is obliged to initiate measures to ensure that the system is operated in safe and functioning condition only. This includes that all protective functions such as the mains switch is present and working.

All safety and protection instructions located at the system have to be followed. The owner has to familiarize the personnel with the relevant accident prevention regulations and the instructions of the insurance associations providing by way of pension for the long-term consequences of accidents at work. He has to ensure that the regulations are complied with. The operators are also responsible that only authorized persons work at and with the system.

Any mode of operation which impairs the system's safety has to be refrained from. All protection and warning equipment has to be tested for proper functioning in regular intervals. Prior to turning the system on, the operators have to convince themselves that no persons or objects are within the working range of the system. In case of failure constituting a risk for persons, the system, and/or the environment, the system has to be shut off immediately.

Operation of the system must only be restarted if the failure responsible for the interruption has been eliminated and persons, system and environment are no longer in danger. The operators are obliged to inform the owner or his representative about any changes at the system that might influence the safety negatively.

General safety instructions



For your own protection, use the recommended or required personal protection equipment at your working place.



Don't eat and drink at the working place, if you are working with the chip adhesive or soldering paste..

2.0 Safety Instructions

Operator position

Regarding the safety distances and working areas, the system corresponds to the relevant German accident prevention regulations.

The working areas of the system are defined as follows:

- 1 Feeding zone
- 2 Opening and closing the hood
- 3 Turning on the system, programming area
- 4 Discharge zone



Attention, risk of injury

Make sure that there are no “stumbling-blocks” such as cables near the operator positions and working area.

2.0 Safety Instructions

Symbols at the system

When handling and operating this system always keep your own safety in mind. Note and follow the information and instructions in this operation manual and especially those in these chapter.

Inform all other operators about the safety instructions and other relevant instructions. Always use this operating manual as reference. This increases your own confidence in handling and operating the system and prevents injuries and accidents. Simultaneously, you will contribute to a stable and trouble-free production.

The following safety symbols are fixed at the system. They are warning signs and have to be followed. **Familiarize yourself with these symbols and pay attention to the following information:**



Danger: High voltage!

Safety symbol at front and rear covers and inside switching box. Non-observance of this warning can result in injury and/or death.



Danger of burns!

Safety symbol in the heating chamber area. Non-compliance with these instructions may result in injury.



Accident hazard!

Safety symbol in the feeding and discharging zone. Non-compliance with these instructions may result in injury and/or death.

General

Warning sign for high voltage

Warning sign for danger of burns

Warning sign for accident hazard

2.0 Safety Instructions

Mounting, dismantling, and maintenance

Mounting, dismantling and maintenance of the system is only allowed to be conducted by qualified, authorized, and trained personnel. For any work regarding mounting, dismantling, remounting, starting operation, changeover and adjustment, the instructions as provided in this operation manual are to be followed.

Only electrically trained specialists are allowed to work at the control system. Only original spare parts and original fuses designed for the specified strength of current are to be used. Never jump fuses or change their characteristics.

If working at the system or additional equipment for inspection, maintenance or repair, make sure that the system or other units do not carry any current. For that secure the main switch against unauthorized operation (for example secure by a special lock). After electrical mounting or maintenance work check all EMC securities and the corresponding applied protective measures.

In general, no safety device must be dismantled or put out of action. If for certain works the dismantling of safety equipment is necessary for installation, starting or maintenance procedure, replace the safety equipment immediately after completing the work.

Changing or dismantling of safety devices is grossly negligent and against the guidelines of the insurance associations for the long-term consequences of accident at work. Neither the manufacturer nor the insurance associations will assume liability in case of damage to persons or equipment. Extension or integration of additional equipment is permitted only after written approval of the manufacturer.

2.0 Safety Instructions

You should know and observe the following

In case of emergency the soldering system will be shut off immediately with the mains switch.

Additional for indication of a fault function an acoustic indication sounds:

- machines hood opened

Due to the very high radiator temperature, the heating chamber can be as high as 525 °C (980 °F). In case of burns contact a physician immediately.

During operation never put your hand into the heating chamber. In case your hand gets stuck in the conveying system or if you are working inside the system, turn the system off via main switch. In case of burns contact a physician immediately.

Soldering vapors are dangerous to your health. Connect your system to an internal exhaust air system or to an airwasher system. Never let soldering vapors escape into the production area.

Follow always the safety and production instructions of the manufacturers of the soldering paste.

For the security of your other equipment should read the EMC instructions.

EMERGENCY SHUT-OFF

Acoustically indications

Danger of burns

Accident hazard

Hazardous soldering vapors

Instructions from other suppliers

EMC instructions

2.0 Safety Instructions

Disposal instructions



General remarks

The system contains and processes materials and operating supplies that might harm the environment when disposed of. The owner is responsible that these materials and substances are disposed of in compliance with the relevant legal regulations.



Please consult your environmental protection agency for further information on proper disposal of these substances.

- ◆ Keep the original packaging for later use, e.g. sending it back to the manufacturer.
- ◆ Ensure proper disposal of electronic componentries.
- ◆ The heating chamber and the transfer system can normally be disposed within the common metal salvaging. Refer your soldering pastes manufacturer before sticking the metal sheets, a special disposal method is required.

3.0 Quick Reference Guide

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3.0 Quick Reference Guide

Installation

This quick reference guide is for the skilled user and shows in very short steps how to erect, install and operate the system. You will find the detailed description in the respect chapters of this operating manual. Please read for cleaning and maintenance in the chapter "9.0 Maintenance".



Attention, accident hazard

The system weights is approx. 250 kg. Remove the system from the packaging with 2 people. Otherwise there is danger of accidents.

- Unpacking the system securely.
- Place the system on a table which has been designed for the right weight.
- Adjust the soldering system horizontal on the table with the 4 feet.



Attention, Danger

Before switching on the system, take care that the electrically power and fuses are agreeing with the connection values. If not there is damage for the life and system.



For changing the power supply refer to chapter "4.0 Prior to Operation".

- Connect the connection cable with the plug of your internal 16A power supply.

Unpacking

Erecting

Aligning

**Electrical
Connection**

3.0 Quick Reference Guide

Exhaust Air Connection



Attention, danger

Soldering vapors are hazardous to your health. Therefore, observance of the safety and processing instructions of the soldering paste manufacturer is required.

Connect your system to your internal exhaust air system or to an airwasher station. Never let soldering vapors escape into the production area.

For discharging the soldering vapors there is a discharge nozzle (diameter 60 mm) at the rear side of the machine.

- Connect the hose to your internal exhaust air system to this nozzle.
- Secure the hose with the hose clip.



With a tube length of more than 4 m you should increase the cross section of your tube from 60 mm to 120 mm.

3.0 Quick Reference Guide

The system is designed with a serial and an parallel interface.



Please note,

that you are using an correct ESD-cable and that you are only connecting the interface plug while the system is turned off. In the chapter "10.0 Technical Appendix, Pin connection" you will find the connection and the protocol of the interface.

- Connect the parallel cable for a printer with the interface.
- Connect the serial cable for a PC with the interface.
- Secure the plugs with the screws.

The system will be turned on and off via mains switch at the operating panel.

- To turn the system on, set the mains switch to **“ON”** and to turn the system off, set the mains switch to **“OFF”**.

Interface

Mains Switch

3.0 Quick Reference Guide

Final checkup

Prior to turning the system on and to start operation, you should conduct all following final checkups and to answer all questions with **“yes”**:

- ◆ Did you read and understand the chapter "2.0 Safety instructions" in this operating manual?
- ◆ Did you remove the packaging material from the system completely?
- ◆ Did you place the system on a table to carry the system's weight?
- ◆ Are the dimensions of the table the same as the system?
- ◆ Did you connect the exhaust air nozzle of the system to your internal exhaust air system and did you check whether this connection is tight?
- ◆ Does the power supply correspond to the requirements as stated on the type plate?
- ◆ Did you have the electrical connection made by a specialist?
- ◆ Do the fuses in your production plant correspond to the system's requirements?

After having answered all questions with "Yes", please continue to read the chapter "4.0 Operation of System".



If you were not able to answer all questions with "Yes", please read this chapter as well as the chapter "2.0 Safety instructions" again and recheck the operating instructions.

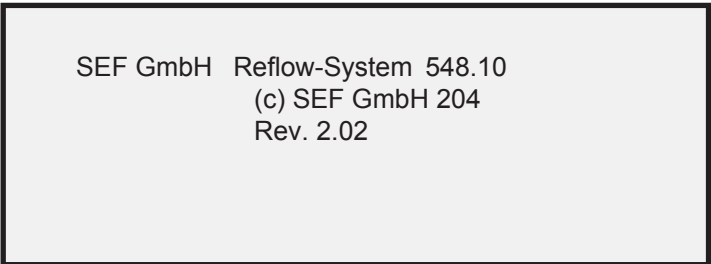
3.0 Quick Reference Guide

Turn the System on and off

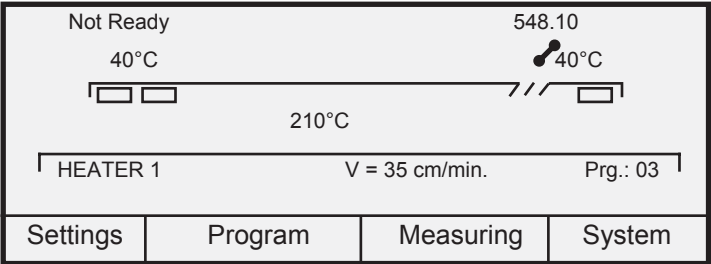
The system will be central switched on and off with the main switch beside the operating panel.

Turn the main switch to **<ON>**.

On the LCD-Display you will get the system information.

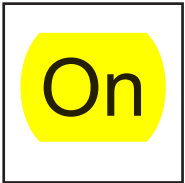


The system screen appears.



The system starts with the last stored program. You will reach the submenus with the functions keys displayed in the foot line.

Turn the System on



The System Screen

3.0 Quick Reference Guide

Enter new Process Parameters

Create a Soldering or Gluing Profile

The setting of the parameters is realized in the menu for the settings.

- Press **<Settings>** for parameter setting in the system screen.



Since the program last used is stored in the battery buffered RAM, there will always be values displayed for all for temperature.

Enter the Temperature Value

- Press the function key **<Temp>**.
The cursor jumps to the field of the air temperature.
- You accept the value displayed by pressing **<Enter>**.
- Alternately, you enter a new value with the **<▲>** and **<▼>** keys. **Your entry must be between 0 and 250.**
- Confirm you entry with **<Enter>**.
The cursor jumps to the field for the value of the radiator IR1.
- Confirm you entry with **<Enter>** or enter a new value with the **<s>** and **<t>** keys. **Your entry must be between 40 and 450°C.** If you enter a value of 40°C the radiator is switched off.
- Confirm you entry with **<Enter>**.
The cursor jumps to the field for the value of the radiator IR2.
- Confirm you entry with **<Enter>** or enter a new value with the **<s>** and **<t>** keys. **Your entry must be between 40 and 450°C.** If you enter a value of 40°C the radiator is switched off.
- Confirm you entry with **<Enter>**.
You get back to the screen for setting parameters.
- Abort with **<Esc>**. All made entries are lost.
You get back to the screen for setting parameters.

3.0 Quick Reference Guide

The soldering system offers the possibility to change the blower speed. You can adjust the value of the blower between 50 and 100%.

- Press the function-key **<Blower>**.
The cursor jumps to the field for the value of the blower.
- Confirm the value with **<Enter>** or enter a new value with the **<▲>** and **<▼>** keys. **Your entry must be between 50 and 100.**
- Confirm your entry with **<Enter>**.
You get back to the screen for setting parameters.
- Abort with **<Esc>**. All made entries are lost.
You get back to the screen for setting parameters.

You can change the conveyor speed. In the following table you will find the recommended speeds for the different process times:

Process time:	speed:
approx. 3 min.	40 cm/min.
approx. 3,5 min.	35 cm/min.
approx. 4 min.	30 cm/min.
approx. 4,5 min.	25 cm/min.
approx. 5 min.	23 cm/min.
approx. 5,5 min.	21 cm/min.
approx. 6 min.	20 cm/min.

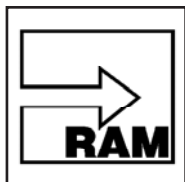
- Press the function key **<Conveyor>**.
The cursor jumps to the field of the conveyor speed.
- You accept the value displayed by pressing **<Enter>**.
- Alternately, you enter a new value with the **<▲>** and **<▼>** keys. **Your entry must be between 5 and 100.**
- Confirm your entry with **<Enter>**. You get back to the screen for setting parameters.
- Abort with **<Esc>**. All made entries are lost. You get back to the screen for setting parameters.

Enter blower value

Enter the Speed

3.0 Quick Reference Guide

Save a Program



The program can be stored in the battery buffered RAM and loaded every time back. The places 1 and 2 are examples for programs which can be used and overwritten.

- You can scroll the directory with **<▲>** and **<▼>**.
- Select the right place. The arrows **>>** **<<** are marking the place.
- Confirm the place with **<Save>**.
The name will be displayed on the LCD if a program is saved on this place.
- With **<Enter>** you overwrite the program on this place. With **<Esc>** you abort this function. You get back to the program screen.

or

- Enter the name of the program. Characters or numbers are possible. By every pressing of **<▼>** the next character of the alphabet or number follows and by every pressing of **<▲>** the previous character or number follows.
- Confirm the character with the **<Enter>**-key. You can enter a name with 8 characters.
- Confirm the new name with **<Enter>**. You get back to the program screen.
- Abort with **<Esc>**.
You get back to the program screen.

3.0 Quick Reference Guide

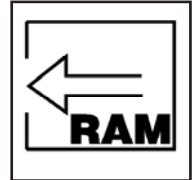
The parameters for a soldering or glueing process can be loaded.

- Press in the system screen **<Program>** for program handling.
- You can scroll the directory with **<▲>** and **<▼>**.
- Select the program.
- Confirm the program with **<Load>** or abort with **<Esc>**. You get back to the program screen.

Any saved program can be deleted, if no longer needed.

- Press in the system screen **<Program>** for program handling.
- You can scroll the directory with **<▲>** and **<▼>**.
- Select the program.
- Delete the program with **<Delete>**.
- Confirm the delete function with **<Enter>** or abort with **<Esc>**. You get back to the program screen.

Load a Program



Delete a Program



3.0 Quick Reference Guide

Program Printout



The current parameters could be printed out for documentation.



Please note,

that you are using an *ESD capable cable* and that you are only connecting the interface plug while the system is turned off. In the chapter "10.0 Technical Appendix, Pin connection" you will find the connection and the protocol of the interface.

- Press in the system screen **<Program>** for program handling.
- You can scroll the directory with **<▲>** and **<▼>**. Select the program.
- For the printout of the program press the function key **<Print>**. The program parameters will be printed. You will proceed back to the program screen.
- Abort with **<Esc>**. You will proceed back to the program screen.

3.0 Quick Reference Guide

Recording a Process Curve

For finding optimal temperature profiles and for documentation for quality assurance, the Reflow System offers you the possibility of recording process curves. The process curves can be printed out with a printer.

As standard the Reflow System is equipped with a thermo couple socket on the feeding side of the system.

- Mount the tip of the sensor on the PCB.
- Place the PCB and the measuring sensor adapter on the transport system.
- Connect the plug of the thermocouple with the socket on the feeding side of the system.
- Press in system screen the function key **<Measure>** for measurement. You can record, save, analyse and print out a process curve.
- After the PCB moved into the heating chamber press **<Measure>** to start the recording.



Attention

The transport system moves through the extremely hot heating chamber. Do not reach into the heating chamber during operation. Use heat-proof protective gloves.

- With **<Esc>** you can stop the recording. The process curve is saved on the place "0" with the name "Actual". You get back to the screen of process curves.



Please note, that the recorded process curve is saved on the place "0" with the name "Actual". If you want to use the process curve later, you must save it on another place before.

Mount the Sensor

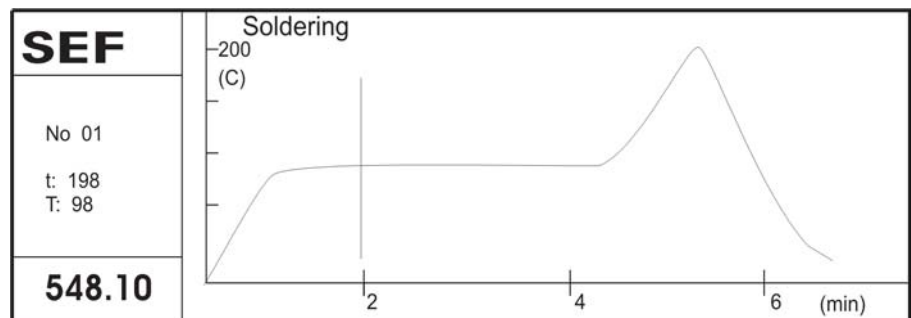
Record a Process Curve

3.0 Quick Reference Guide

Load a Process Curve

You can analyse a process curve with the function display. Before analysing the process curve you must load it.

- Press in system screen the function key **<Measure>** for measurement.
- Select the right process curve with **<s>** and **<t>**.
- Confirm the process curve with **<Display>**. The process curve will be displayed.



- Abort with **<Esc>**.
You get back to the process curve menu.

Analyze a Process Curve

A recorded process curve can be analyzed. The software will add a vertical line additionally to the process curve. You can move this vertical line in the recorded process curve. In the Infofield you will see the temperature and the time value according to the position of the vertical line.

- With **<▼>** and **<▲>** you can move the vertical line in the process curve.
- Abort with **<Esc>**.

3.0 Quick Reference Guide

The last recorded process curve is saved on the place "0" with the name "Actual". For a later analysing or using you must save the process curve on another place.

- | You can scroll the directory with <▲> and <▼>.
 - | Select the request place. The arrows >> << are marking the place.
 - | Confirm the place with the function key <Save>.
 - | With <Enter> you overwrite the process curve on this place and with <Esc> you abort this function. You will proceed back to the proccess curve menu.
 - | Enter the name of the process curve. By every pressing of <▼> you scroll to the following character and by pressing of <▲> you scroll to the previous character before of the alphabet. By pressing of <▼> or <▲> you will get an "1".
 - | Confirm each character with <Enter>. You can enter a name with max. 8 characters.
 - | Confirm the new name with <Enter>.
- or
- | Abort with <Esc>. You will proceed back to the proccess curve menu.

Save a Process Curve

3.0 Quick Reference Guide

Print a Process Curve



Just recorded or loaded process curves can be printed out.



Take care that the printer is ready and supplied with paper. The pin-connection of the plug and the interface protocol you will find in the chapter "10.0 Technical Appendix, Pin Connection".

- Connect the serial printer on the interface plug on the side of the System.
- Press in system screen the function key **<Measure>** for measurement.
- You can select the right process curve with **<▲>** and **<▼>**.
- Press **<Print>**. The process curve will be printed out. You get back to the process curve menu.

3.0 Quick Reference Guide

System settings

The System is available with a German and your special language text version. You have the possibility to read the text in your special language.

- | Press in the system screen **<System>** for system setting.
- | Press the function key **<Language>**.
- | Select your language.
- | Move the arrows with **<▲>** und **<▼>** on the favour lanuage.
- | Confirm the language with **<Enter>**.
The screen will be changed automatically.
You get back to the screen of systems setting.
- | Abort with **<Esc>**.
You will proceed back to the screen of systems setting.

Select Language

The contrast of the system display can be changed. By different angles of view it is useful to change the contrast of the display

- | Press in the system screen **<System>** for system setting.
- | Press in the system screen **<Service>** for service setting.
- | Select the contrast with **<▲>** and **<▼>** for the display.
- | Confirm your entry with **<Esc>**.
You will proceed back in the service menu.

Select contrast

3.0 Quick Reference Guide

Protocol printout

The current machine conditions and parameters could be printed out for documentation on a printer.

You have the following possibilities for printing out:

- ◆ Immediate print
- ◆ Interval print
The interval time could be entered.



Please note, that you are using an correct ESD-cable and that you are only connecting the interface plug while the system is turned off. In the chapter "10.0 Technical Appendix, Pin connection" you will find the connection and the protocol of the interface.

Immediate printout

- Press **<Print>** in the systemscreen or the parameter menu for print now. The status of the machine will be printed out. You get back to the menu for protocol printing.

Interval printing

- Press in the system screen **<System>** for system setting.
- Press **<Report>** for setting the intervall time. The cursor jumps into the field of the time.
- Enter the interval time with the **<▲>** and **<▼>**-keys. The intervall printout is turned off if your enter a intervall time of "0" minutes.
- Confirm your entry with **<Enter>**.
You will proceed back to the screen of system setting.
- Abort with **<Esc>**.
You will proceed back to the screen of system setting.

3.0 Quick Reference Guide

The print out of process parameters, process curves and program data can be printed on different printers via the parallel port. You can select the following printers in the system:

- HP colour printer
- Epson Printer (FX-80 compatible)

- Press in the main menu **<System>** for system setting.
- Press in the system menu **<Service>** for service setting.
- Select the printer with **<▲>** und **<▼>**.
- Confirm the printer with **<Enter>**.
You get back to the screen of system setting.
- Abort with **<Esc>**.
You get back to the screen of system setting.

Select printer type

3.0 Quick Reference Guide

Set date and time

The microprocessor includes a real-time-system-clock. The time and the date can be set in this menu.

- Press in the main menu **<System>** for system setting.
- Press the function-key **<Service>**.
- Press the function-key **<Clock>**.
- Press the function key **<Set>**.
- The cursor blinks behind the input field of the date. Enter with the cursor keys **<s>** and **<t>** the request day, the month and the year.
- Confirm each entry with **<Enter>**. The cursor jumps to the field of the time.
- Enter with the cursor keys **<s>** and **<t>** the request hours, minutes and seconds.
- Confirm each entry with **<Enter>**.
- With **<Esc>** you will proceed back to the system setting menu.
- With **<Esc>** you will proceed back to the main menu.

4.0 Prior to Operation

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4.0 Prior to Operation

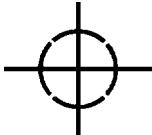
Transportation

The system is delivered by a forwarding agent in partly assembled conditions in a special packaging.

Please note the instructions at the packaging.



Point to fix a chain or a rope at the packaging



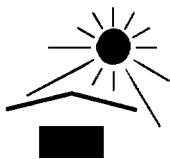
Indication of center of gravity of packaging



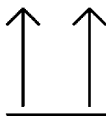
Caution, fragile. This side up.



Attention, do not use hand hooks



Protect from direct sunlight

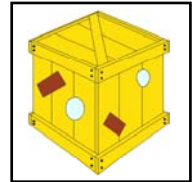


This side up. Transport only with this side up (arrows point upwards).



For transportation or service please keep the packaging.

Transportation instructions at the packaging

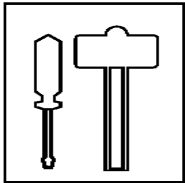


4.0 Prior to Operation

Unpacking and controlling the parts of delivery

Parts of delivery

Unpacking the system



What to do in case of damage



Checking parts of delivery

You have received a soldering system. For all additional deliveries please refer to the delivery note.

- Unpacking the system securely.



Attention, accident hazard

The system weights is approx. 250 kg. Remove the system from the packaging with 2 people. Otherwise there is danger of accidents.

- Check the packaging immediately together with the forwarding agent for possible transportation damage.
- If there is any transportation damage, document the extent of damage on the delivery note of the forwarding agent and sign this note only under protest.
- Contact us and the transportation insurance company immediately.



Attention, danger

Do not assemble the system and do not connect it to the power supply if any damages are recognizable. Due to the damage there is a danger to your life.

- Make sure the contents correspond to the statements made on the note of delivery. If delivery and delivery note do not agree, please contact us immediately.



Keep the packaging for transportation and service.

- After having unpacked the system and ensured yourself about the perfect conditions as well as about the correct and complete delivery, you can start transporting the system to the designated place of operation.

4.0 Prior to Operation

Connecting the System

The soldering system is designed as a table system. The table must be designed for the weight. We recommend to take a longer table for a filling area next to the soldering system.



Attention, risk of breakage

The system weight is approx. 250 kg. The table must have the dimension of the soldering system and must be designed for the weight.



Attention, accident hazard

The system weight is approx. 250 kg. Remove the system from the packaging with 2 people on the desk. Take care that the desk is secure and not wobbly.

The soldering system is delivered ready mounted. There is only a short installation and connection work to do.

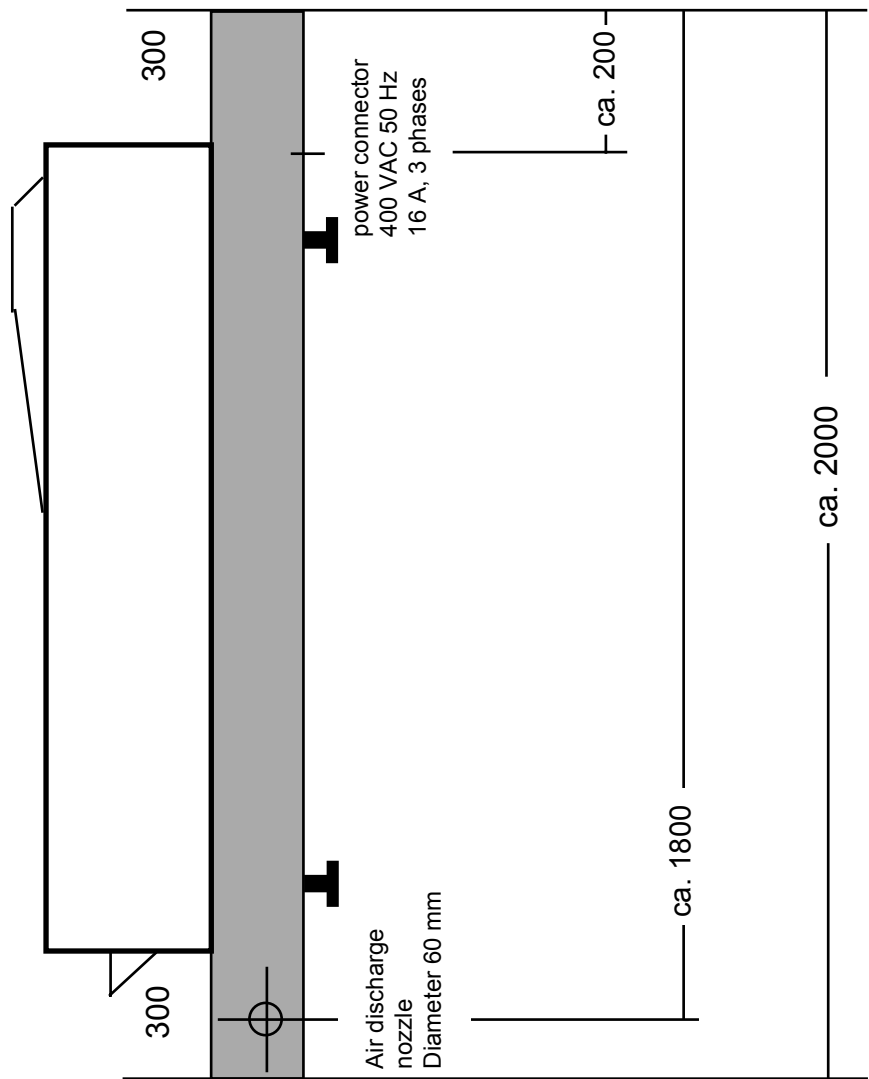
All connectors are placed on the rear side of the soldering system.

- ◆ Electrical connection 230/400VAC or 120/230VAC each 3 phases
- ◆ Scale the system to a horizontal level
- ◆ Connection of exhaust air
- ◆ Connection of interface/PC

The installation and connection work will be explained on the following pages.

4.0 Prior to Operation

Dimensions of the Soldering-System



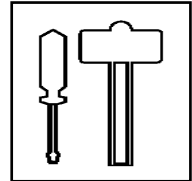
All dimensions in millimeter (mm)

4.0 Prior to Operation

The soldering system must be organized horizontally on the desk for an error free work. You can adjust the system with the four feet.

- Unscrew the nuts with a 14er mouth-code.
- Contort the feet with a 10er mouth-code.
- Organize the system with a level horizontally.
- Tighten the nuts and control the solid seat in each case.

Scale the system to a horizontally level



4.0 Prior to Operation

Connections at the System

Electrical Connection



The System has a 400V/16A CEECON-plug. This connection cable has a length of 2 m.

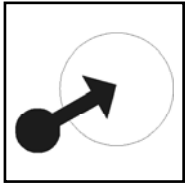


Attention, Danger

Before switching on the system, take care that the electrically power and fuses are agreeing with the connection values. If not there is damage for the life and system.

- Connect the connection cable with the plug of your internal 16A power supply.

Exhaust Air Connection



Attention, danger

Soldering vapors are hazardous to your health. Therefore, observance of the safety and processing instructions of the soldering paste manufacturer is required.

Connect your system to your internal exhaust air system or to an airwasher station. Never let soldering vapors escape into the production area.

For discharging the soldering vapors there is a discharge nozzle (diameter 60 mm) at the rear side of the machine.

- Connect the hose to your internal exhaust air system to this nozzle.
- Secure all hoses with the hose clip.



With a tube length of more than 4 m you should increase the cross section of your tube from 60 mm to 120 mm.

4.0 Prior to Operation

The system is designed with a serial and a parallel interface.



Please note,
that you are using an ESD capable cable and that you are only connecting the interface plug while the system is turned off. In the chapter "10.0 Technical Appendix, Pin connection" you will find the connection and the protocol of the interface.

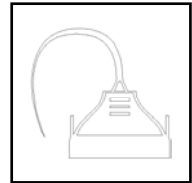
- Connect the parallel cable for a printer with the interface.
- Secure the plug with the locking screws.

- Connect the serial cable for a PC with the interface.
- Secure the plug with the screws.

The system will be turned on and off via mains switch at the operating panel.

- To turn the system on, set the mains switch to **"ON"** and to turn the system off, set the mains switch to **"OFF"**.

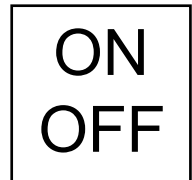
Interface



Printer Interface

PC Interface

Mains Switch



4.0 Prior to Operation

Final checkup

Prior to turning the system on and to start operation, you should conduct all following final checkups and to answer all questions with **“yes”**:

- ◆ Did you read and understand the chapter 2 “Safety instructions” in this operating manual?
- ◆ Did you remove the packaging material from the system completely?
- ◆ Did you place the system on a table to carry the system’s weight?
- ◆ Are the dimensions of the table the same as the system?
- ◆ Did you connect the exhaust air nozzle of the system to your internal exhaust air system and did you check whether this connection is tight?
- ◆ Does the power supply correspond to the requirements as stated on the type plate?
- ◆ Did you have the electrical connection made by a specialist?
- ◆ Do the fuses in your production plant correspond to the system’s requirements?



After having answered all questions with “Yes”, please continue to read the chapter “4.0 Operation of System”.

If you were not able to answer all questions with “Yes”, please read this chapter as well as the chapter “2.0 Safety instructions” again and recheck the operating instructions.

4.0 Prior to Operation

Dismounting the System

For a possible dismounting of the system, e.g. if it has to be moved to another location or prepared for disposal, please note and observe the following steps.

- Turn the main switch to “OFF”.
- Disconnect the power supply from the system.
- Loosen and remove the hose clip for the exhaust air connection of the system.
- Remove the hose from the exhaust air nozzle of the system.
- Remove all plugs from the interface plugs.



Attention, accident hazard

The system weights is approx. 250 kg. Remove the system from the desk with 2 people. Otherwise there is danger of accidents.

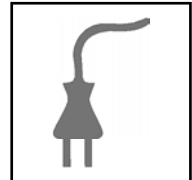
- Now, you can remove the system from the production location.



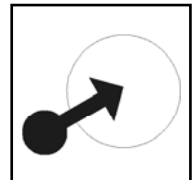
For erecting the system at another location, please read the section “Connecting the system” in this chapter.

For disposal of the system ,please refer to the section “Disposal” in chapter “2.0 Safety instructions”.

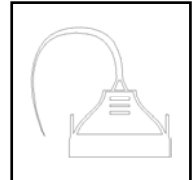
Electrical connection



Exhaust air connection



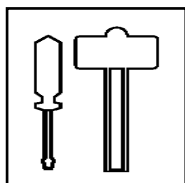
Interface



4.0 Prior to Operation

Preservation and storage of the system

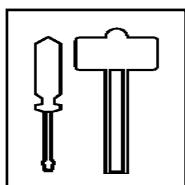
System preparation for vacation



To prepare the system for vacation time or for prolonged out-of-operation period please observe the following:

- Turn the system off with the main switch.
- Clean the system as described in the chapter "9.0 Maintenance".

Preserving the system



If you are not operating the system for a prolonged period, please note the following:

- Clean the system as described on chapter "9.0 Maintenance".
- Store the system at a dry and dustfree location.
- No other preservation methods are required for the storage.

5.0 Operation of System

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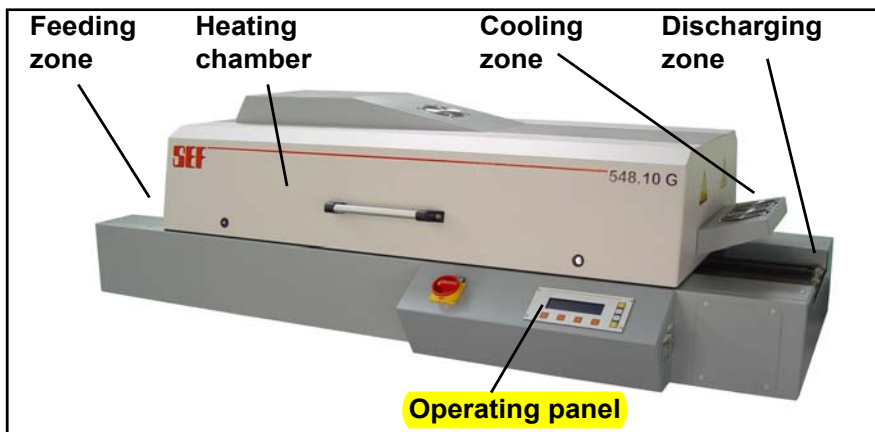
Technical description	5.3
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The Operating Panel	5.4
The Elements for Operating	5.4
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LCD Display	5.4
Function Keys	5.4
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5.0 Operation of System

Technical description

The soldering system is designed as an table system. Operation and programming are conducted centrally via the operating panel. The operating panel is including an function-key-block. All parameters are displayed on the LCD.

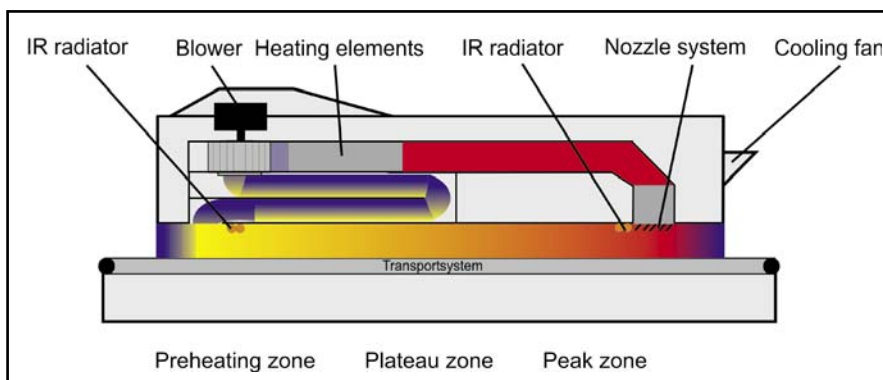
In case of emergency, the system can be shut off completely with the main switch. The system status is displayed at the LCD. If the systems cover will be opened during the operation an acoustical signal sounds, the heaters and the blower will be shut off. The complete system control is arranged on the rear side of the system.



The Soldering System

The heating chamber includes 3 zones. The preheating zone, the plateau zone and the peak zone.

The temperature of the air, the value of the IR radiator and the conveyor speed are free adjustable. Temperature sensors in the heating chamber is measuring the temperature for a continuously regulation. The regulation of the conveyor speed will be done depending on a variance comparison. After the heating chamber a cooling zone for a gently cooling down of the PCBs is mounted.



5.0 Operation of System

The Operating Panel

The Elements for Operating



Operating panel

Main Switch

LCD Display

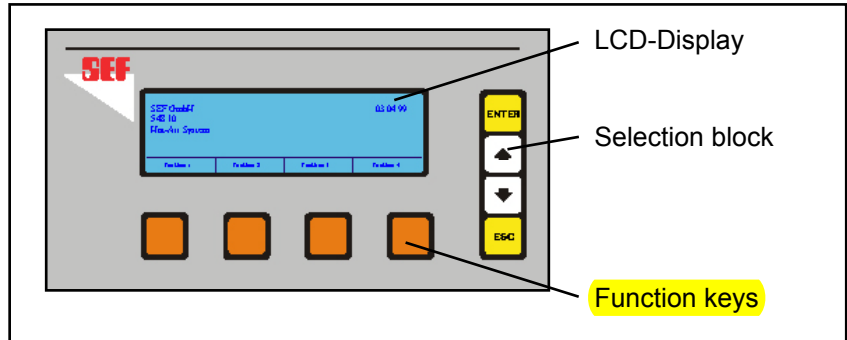
<▲> and <▼>-Keys

Function Keys

<Enter>-Key

<Esc>-Key

The operating panel is fitted into the systems front area.



On the operating panel you will find the LC-Display for the graphical display of the programming and the system parameters, function keys and cursor keys for the entry of the parameters.

The system is switched on and off with the main switch left to the operating panel.

The LCD displays the program and indicated system parameters, both graphically. It guides the user with menus.

With the <▲> and <▼> you can change the process parameters and you can scroll in some menus. For example in the directory for selecting a program.

For the selection of different operating function there are 4 function keys under the LCD. The function varies depending upon the menu being used. The actual functions are displayed in the LCD. For storing a program or a process curve characters or numbers are possible. With the <▲> and <▼> the changing between a character or a number is made.

Confirm entries and functions with <Enter>. They will then be accepted, respectively executed.

With the key <Esc> you generally abort a function prior to its execution. It has two functions, abort already entered digits and return to originating menus.

5.0 Operation of System

Menu Structure

The operation of the soldering system will be done with the operating panel. All operating-relevant information is displayed on the LC-display. In order to optimally utilize the display potential, without making operation unnecessarily difficult, this display field is subdivided into various informative pages.

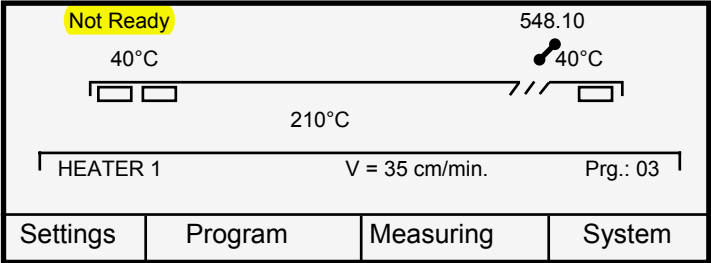
The different screens are differed in:

- ◆ The system screens, which shows informations about the status of the machine.
- ◆ The menu screens, in which you can operate the machine.

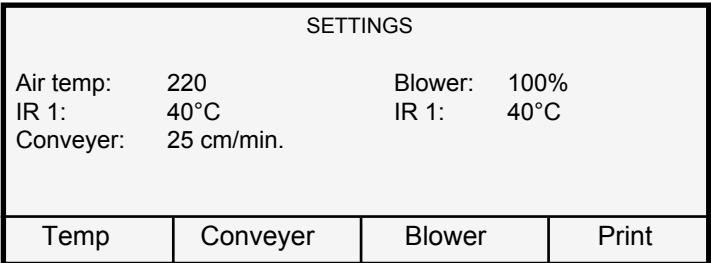
The calling of the single system and menu screens happens with the function keys only. An information about the used function keys, you will get in the system and menu screens.

5.0 Operation of System

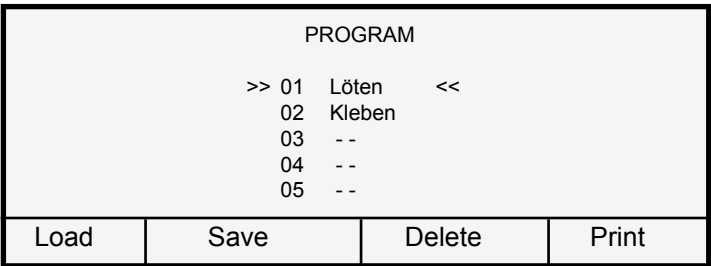
System Screen



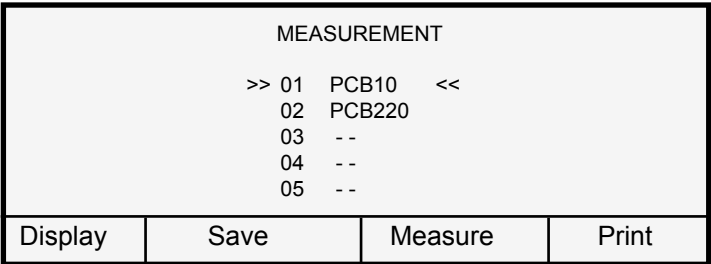
Parameter Screen



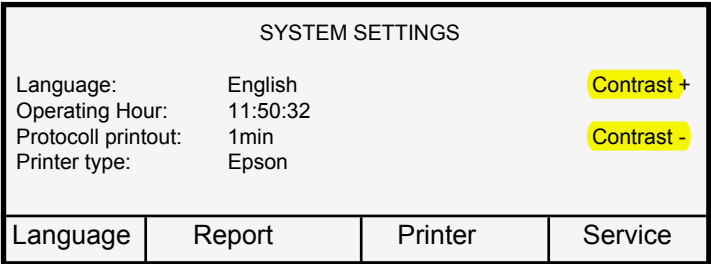
Program Screen



Measurement Screen



System Service Screen



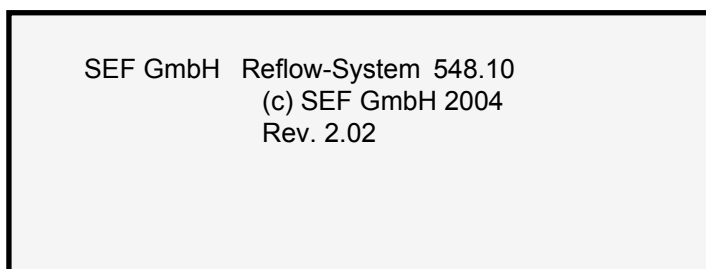
5.0 Operation of System

Turn the System on and off

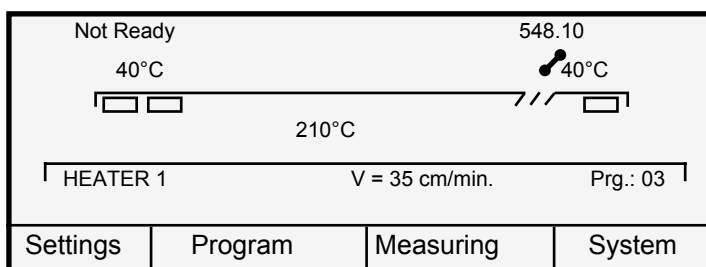
The System will be central switched on and off with the main switch beside the operating panel.

■ Turn the main switch to **<ON>**.

On the LCD-Display you will get the system information.

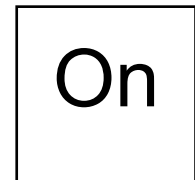


The system screen appears.



The System starts with the last stored program.

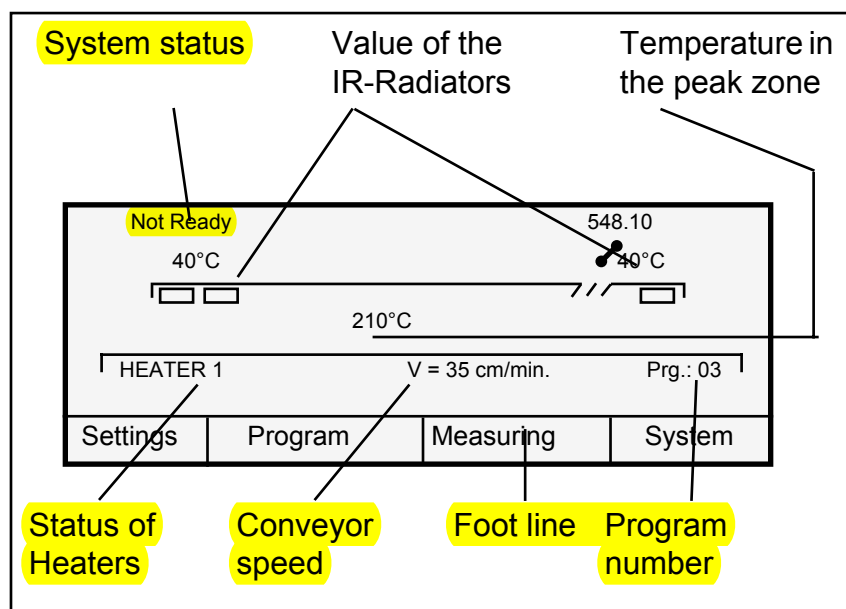
Turn the System on



The System Screen

5.0 Operation of System

Information of the System Screen



You will reach the submenus with the functions keys displayed in the foot line.

Heating Process On and Off

Turn the System off

Open the Cover

- With the **<Enter>**-key you turn on and off the heating process. The status is shown in the display.
- Turn the entire System off with the **<Mains switch>**.

The system cover is secured against a undeliberate open with a fastener. You can open the cover with the delivered square wrench. If you open the cover in operation an acoustical signal sounds, the heaters and the blower will be turned off and an fault message appears on the LCD.

- Close the cover.
- Confirm the error message and the acoustical signal with **<Enter>**.
- Turn on the heating process with the **<Enter>**-key.

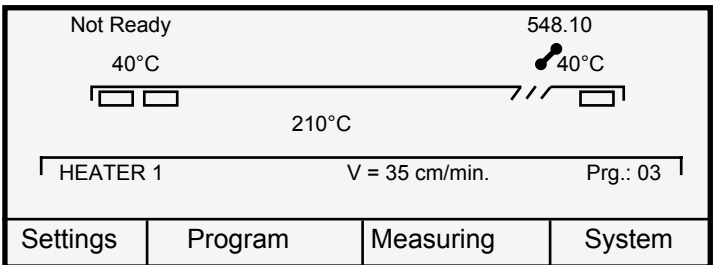
5.0 Operation of System

Parameter Setting

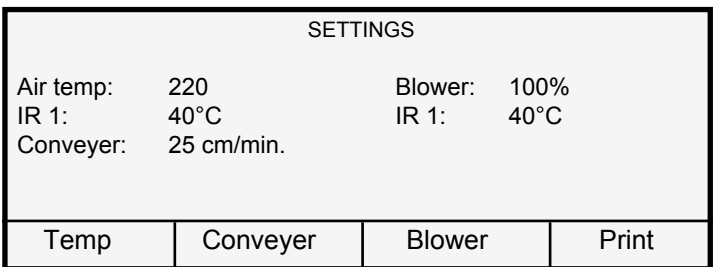
The system is delivered with glueing and soldering programs. You can load a program to create or modify a new program.

The setting of the parameters is realized in the menu for the settings.

- Press **<Settings>** for parameter setting in the system screen.

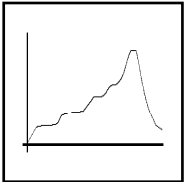


The following screen appears.



- !** Since the program last used is stored in the battery buffered RAM, there will always be values displayed for all for temperature.

Create a Soldering or Glueing Profil



5.0 Operation of System

Enter the Values



Confirm

Abort

You can change the temperature of the air, the value of the IR radiators, the blower value and the transport speed.

SETTINGS			
Air temp:	220	Blower:	100%
IR 1:	40°C	IR 1:	40°C
Conveyer:	25 cm/min.		
Temp	Conveyer	Blower	Print

- Press the function key **<Temp>**.
The cursor jumps to the field of the air temperature.
- You accept the value displayed by pressing **<Enter>**.
- Alternately, you enter a new value with the **<▲>** and **<▼>** keys. **Your entry must be between 0 and 250.**
- Confirm you entry with **<Enter>**.
The cursor jumps to the field for the value of the radiator IR1.
- Confirm you entry with **<Enter>** or enter a new value with the **<▲>** and **<▼>** keys. **Your entry must be between 40 and 450°C.** If you enter a value of 40°C the radiator is switched off.
- Confirm you entry with **<Enter>**.
The cursor jumps to the field for the value of the radiator IR2.
- Confirm you entry with **<Enter>** or enter a new value with the **<▲>** and **<▼>** keys. **Your entry must be between 40 and 450°C.** If you enter a value of 40°C the radiator is switched off.
- Confirm you entry with **<Enter>**.
You get back to the screen for setting parameters.
- Abort with **<Esc>**. All made entries are lost.
You get back to the screen for setting parameters.

5.0 Operation of System

The soldering system offers the possibility to change the blower speed. You can adjust the value of the blower between 50 and 100%.

SETTINGS			
Air temp:	220	Blower:	100%
IR 1:	40°C	IR 1:	40°C
Conveyer:	25 cm/min.		
Temp	Conveyer	Blower	Print

- I Press the function-key **<Blower>**.
The cursor jumps to the field for the value of the blower.
- I Confirm the value with **<Enter>** or enter a new value with the **<▲>** and **<▼>** keys. **Your entry must be between 50 and 100.**
- I Confirm your entry with **<Enter>**.
You get back to the screen for setting parameters.
- I Abort with **<Esc>**. All made entries are lost.
You get back to the screen for setting parameters.

Enter blower value

5.0 Operation of System

You can change the conveyor speed. In the following table you will find the recommended speeds for the different process times:

Process time:	speed:
approx. 3 min.	40 cm/min.
approx. 3,5 min.	35 cm/min.
approx. 4 min.	30 cm/min.
approx. 4,5 min.	25 cm/min.
approx. 5 min.	23 cm/min.
approx. 5,5 min.	21 cm/min.
approx. 6 min.	20 cm/min.

SETTINGS			
Air temp:	220	Blower:	100%
IR 1:	40°C	IR 1:	40°C
Conveyer:	25 cm/min.		
Temp	Conveyer	Blower	Print

Enter the Speed



Confirm

Abort

- Press the function key **<Conveyor>**.
The cursor jumps to the field of the conveyor speed.
- You accept the value displayed by pressing **<Enter>**.
- Alternately, you enter a new value with the **<▲>** and **<▼>** keys. **Your entry must be between 5 and 100.**
- Confirm you entry with **<Enter>**.
You get back to the screen for setting parameters.
- Abort with **<Esc>**. All made entries are lost.
You get back to the screen for setting parameters.

5.0 Operation of System

Parameter Printout

The current parameters could be printed out for documentation via a parallel printer.

SETTINGS			
Air temp:	220	Blower:	100%
IR 1:	40°C	IR 1:	40°C
Conveyer:	25 cm/min.		
Temp	Conveyer	Blower	Print

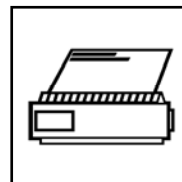


Please note,

that you are using an correct ESD-cable and that you are only connecting the interface plug while the system is turned off. In the chapter "10.0 Technical Appendix, Pin connection" you will find the connection and the protocol of the interface.

- Connect the serial printer with the interface of the system.
- Press in the setting screen **<Print>** for printing. The parameters will be printed.
- Abort with **<Esc>**.
You get back to the screen for setting parameters.

Parameter Printout



5.0 Operation of System

Save a Program



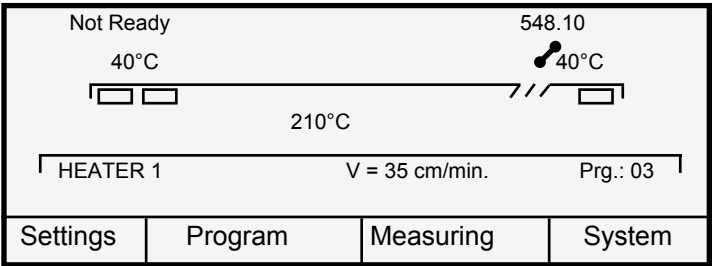
The topical reflow parameters can be stored in a program in the battery buffered RAM and loaded back every time. You can store up to 16 different programs.

A program includes:

- ◆ temperature of the air
- ◆ temperatures of the IR-radiators
- ◆ value of the blower
- ◆ transport speed

The current parameters of the systems could be saved as a complete program.

Press in the system screen **<Program>** for program handling.



On the display the program screen appears. You can load, save, delete and print a program.

PROGRAM			
>>	01	CO001a	<<
	02	CO001	
	03	--	
	04	--	
	05	--	
Load	Save	Delete	Print

5.0 Operation of System

The program can be stored in the battery buffered RAM and loaded back every time. The places 1 and 2 are examples for programs which can be used and overwritten.

PROGRAM			
>>	01	CO001a	<<
	02	CO001	
	03	--	
	04	--	
	05	--	
Load	Save	Delete	Print

- I You can scroll in the directory with <▲> and <▼>.
- I Select a place. The arrows >> << are marking the place.
- I Confirm the place with <Save>.
The name will be displayed on the LCD if a program is already saved on this place.
- I With <Enter> you overwrite the program on this place. With <Esc> you abort this function. You proceed back to the program screen.

or

- I Enter the name of the program. Characters or numbers are possible. By each pressing of <▼> the next character of the alphabet or number follows and by each pressing of <▲> the previous character or number follows.
- I Confirm the character with the <Enter>-key. You can enter a name with 8 characters.
- I Confirm the new name with <Enter>. You will proceed back to the program screen.
- I Abort with <Esc>.
You will proceed back to the program screen.

Select a Place

Overwrite a Program

Identification

Save

Abort

5.0 Operation of System

Load a Program



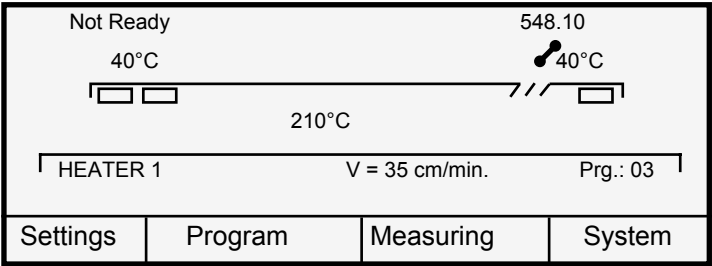
Program Selection

Load

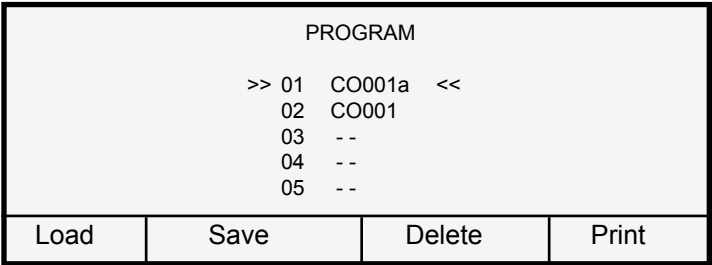
Abort

The parameters for a soldering or glueing process can be loaded as an complete program from the battery buffered RAM. 8 Programs can be loaded.

- Press in the system screen **<Program>** for program handling.



On the display the program screen appears. You can load, save, delete and print out a program.

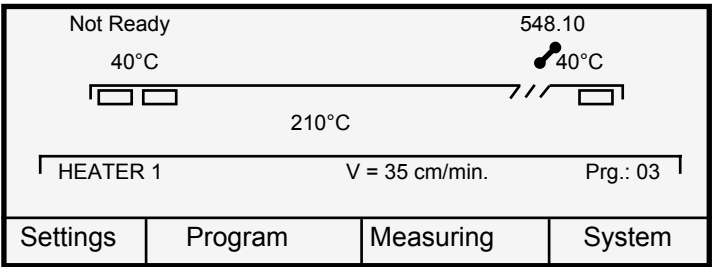


- You can scroll the directory with **<▲>** and **<▼>**.
- Select the program.
- Confirm the program with **<Load>**.
You get back to the program screen.
- Abort with **<Esc>**.
You get back to the program screen.

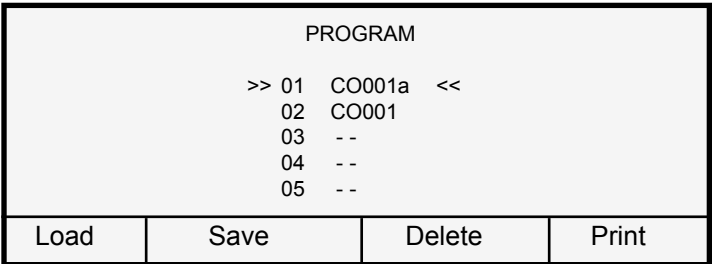
5.0 Operation of System

Any program stored can be deleted, if no longer needed.

- Press in the system screen **<Program>** for program handling.



On the display the program screen appears. You can load, save, delete and print a program.



- You can scroll the directory with **<▲>** and **<▼>**.
- Select the program.
- Delete the program with **<Delete>**.
- Confirm the delete function with **<Enter>**.
You get back to the program screen.
- Or abort with **<Esc>**.
You get back to the program screen.

Delete a Program

DEL

Confirm

Abort

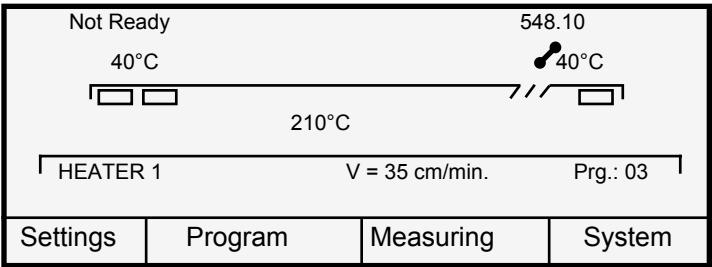
5.0 Operation of System

Program Printout

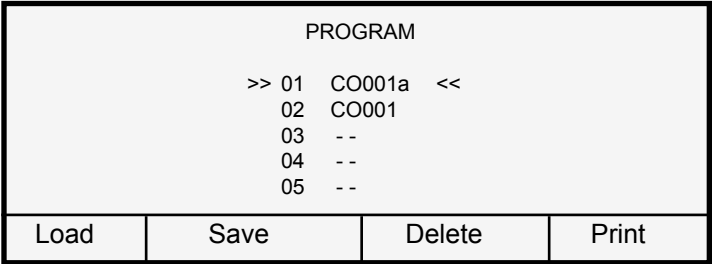


All programs could be printed out for documentation on a parallel printer.

- Press in the system screen **<Program>** for program handling.



On the display the program screen appears. You can load, save, delete and print a program.



! **Please note,**
that you are using an ESD capable cable and that you are only connecting the interface plug while the system is turned off. In the chapter "10.0 Technical Appendix, Pin connection" you will find the connection and the protocol of the interface.

- You can scroll the directory with **<▲>** and **<▼>**. Select the program.
- For the printout of the program press the function key **<Print>**. The program will be printed. You will proceed back to the program screen.

6.0 Production

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6.0 Production

Start the Production

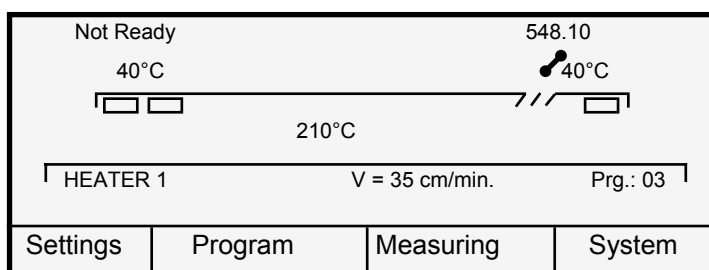
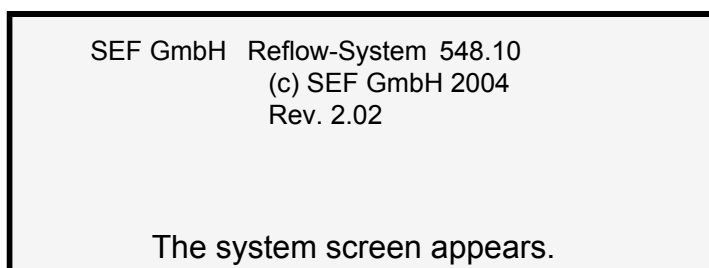
The system will be central switched on and off with the main switch beside the operation panel. The curing or soldering process will be central controlled via the operation panel.

Prerequisites for starting the machine are that

- ◆ a soldering or curing profile has been loaded
- ◆ the system has been heated up
- ◆ the system is ready.

■ Turn the main switch to **<ON>**.

On the LC-Display you will see the system information.



The system starts with the last loaded program automatically.

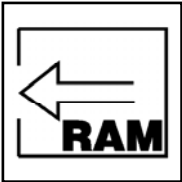
■ With the **<Enter>**-key you turn on the heating process. The status is shown in the display.

Turn the System on

On

6.0 Production

Load a Program



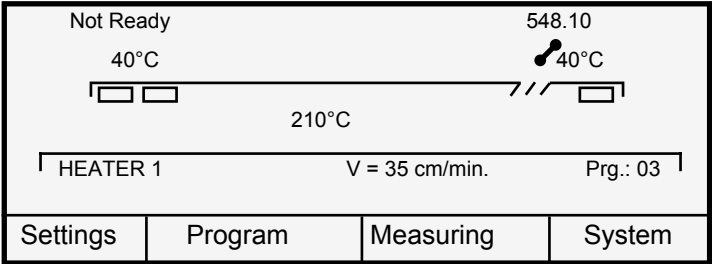
Program Selection

Load

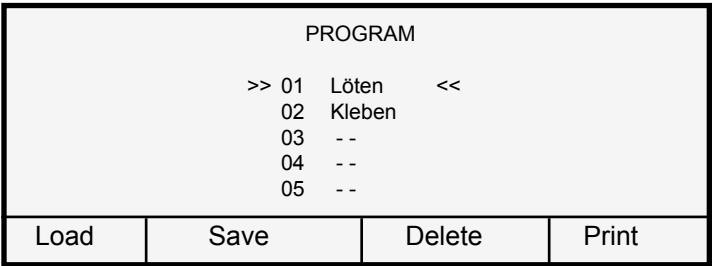
Abort

When the system is turned on, the last stored program will be loaded automatically. If you do not want to use that program you have to load another one. 8 programs can be loaded:

- Press in the system screen **<Program>** for program handling.



On the display the program screen appears.



- You can scroll in the directory with **<▲>** and **<▼>**.
- Select the program.
- Confirm the program with **<Load>**.
You will proceed back to the program screen.
- Abort with **<Esc>**.
You will proceed back to the program screen.

6.0 Production

Process Documentation

The process documentation can be done with this system on two different ways. You can printout the parameters and the process curves via a printer or you can download the actual parameters via the serial interface in your PC. The data can loaded into a normal calculation programm. The single data strings are cutted with a semicolon.



Please note,

that you are using an correct ESD-cable and that you are only connecting the interface plug while the system is turned off. In the chapter "10.0 Technical Appendix, Pin connection" you will find the connection and the protocol of the interface.

6.0 Production

Stop or change the Production

Turn the heating system on

Important informations for the production

Turn the System off

Off

After the circuit board have been soldered or glued in the system and the production run is completed, you can end the production either and turn the system off or you can load a new program and start producing again.

- If you had loaded a new program please wait until the system status is "Ready".
- With the **<Enter>**-key you turn the heating on and off process. The status is shown in the display.

If you open the cover in operation an acoustical signal sounds, the heaters and the blower will be turned off and an error message appears on the LCD.

- Close the cover and confirm the error message and the acoustical signal with **<Enter>**.
- Turn the heating process on with the **<Enter>**-key.
- Switch the entire system off with the **<Main switch>** (1).



6.0 Production

The circuit board remained inside the system

If a circuit board remained inside the system, e.g. got stuck in the conveying system, you can open and close the system cover and the cover of the heating chamber.



Attention, danger of burns

During the production process, the heating chamber is very hot due up to 525°C (980 °F). In case of burns contact a physician immediately.



Attention, danger of burns

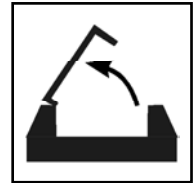
Before you remove a circuit board from inside the system, make sure you wear heat-resistant gloves. The circuit board may be very hot and cause burns.

- Turn the system off by the main switch.
- Let the system cool down.
- Unsecure the machine cover with the 4-key.
- Open the machine cover.
- Open the heating chamber.

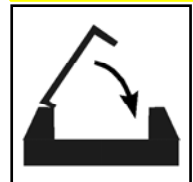
- Remove the circuit board carefully from the open heating chamber.

- Close the heating chamber.
- Close and secure the machine cover.

Open Covers



Close Covers



7.0 Measurement

Table of contents

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Record a Process Curve	7.4
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Overwrite a Process Curve	7.8
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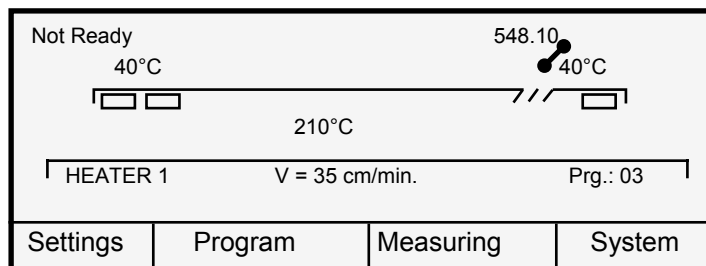
7.0 Measurement

Recording a Process Curve

High quality reflow soldering which is gentle to the material is only possible, if you measure the temperature which is effecting on the PCB. The real temperature curve of a PCB is defined by the heating capacity, the heating conduction, and the absorptions characteristic of the PCBs material and their components. For finding optimal temperature profiles and for documentation and quality assurance, the Reflow System offers you the possibility of recording process curves. The process curves can be printed out with a serial printer.

As standard the Reflow System is equipped with thermo couple socket on the feeding side of the system.

- Press in system screen the function key **<Measure>** for measurement.



The following screen appears.

MEASUREMENT			
>>	01	Löten	<<
	02	Kleben	
	03	--	
	04	--	
	05	--	
Display	Save	Measure	Print

You can record, save, analyse and print out a process curve.

7.0 Measurement

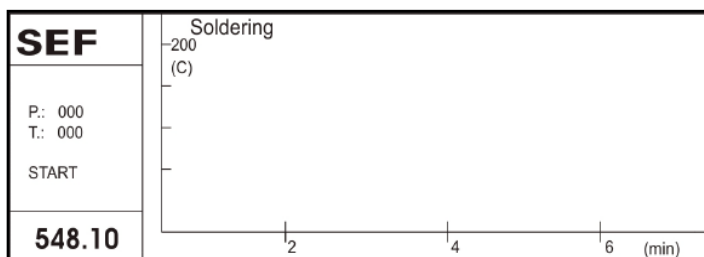
Record a Process Curve



- Mount the sensor on the PCB.
- Place the PCB and the measuring sensor adapter on the transport system.
- Connect the plug of the sensor with the socket **(3)** on the feeding side of the system.
- After the PCB moved into the heating chamber press **<Measure>**, to start the recording.

MEASUREMENT			
>>	01	Löten	<<
	02	Kleben	
	03	--	
	04	--	
	05	--	
Display		Save	Measure
			Print

The following screen appears.



Attention

The transport system moves through the extremely hot heating chamber. Do not reach into the heating chamber during operation. Use heat-proof protective gloves.

- With **<Enter>** you can stop the recording.
The process curve is saved on the place "0" with the name "Actual".
You will proceed back to the screen of process curves.

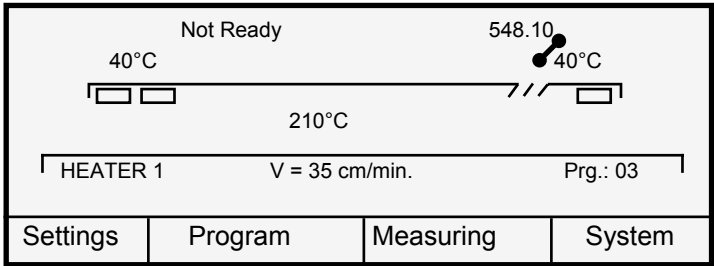


Please note, that the recorded process curve is saved on the place "0" with the name "Actual". If you want to keep the process curve you must save it on another place before.

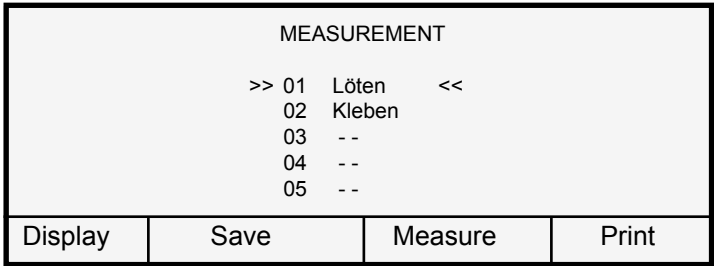
7.0 Measurement

With this function you can analyze a process curve. Before using the process curve you must load it.

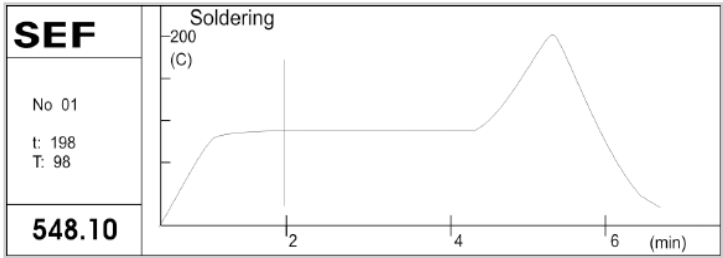
- Press in system screen the function key **<Measure>** for measurement.



The following screen appears.

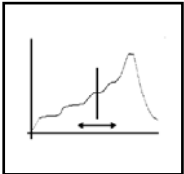


- Select the desired process curve with **<▲>** and **<▼>**.
- Confirm the process curve with **<Display>**. The process curve will be displayed.



- Abort with **<Esc>**. You will proceed back to the process curve menu.

Load a Process Curve



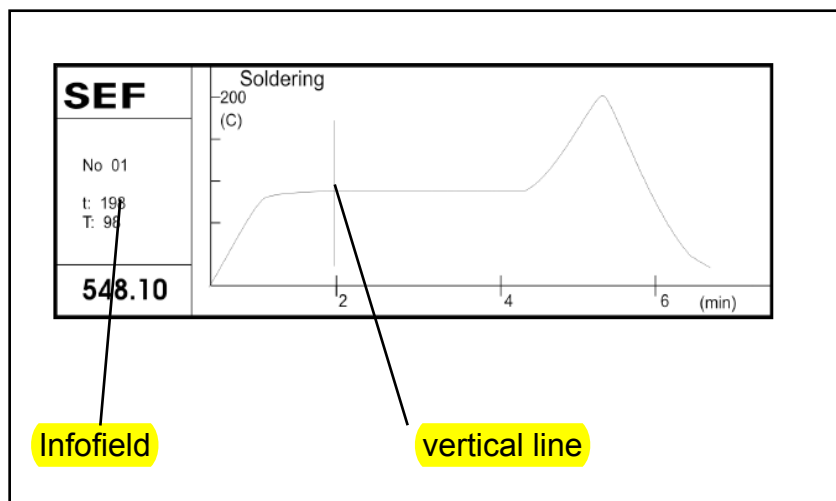
Select

Load

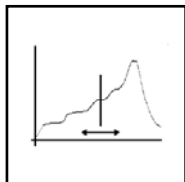
Abort

7.0 Measurement

A recorded process curve can be analyzed. The software will add a vertical line additionally to the process curve.



Analyze a Process Curve



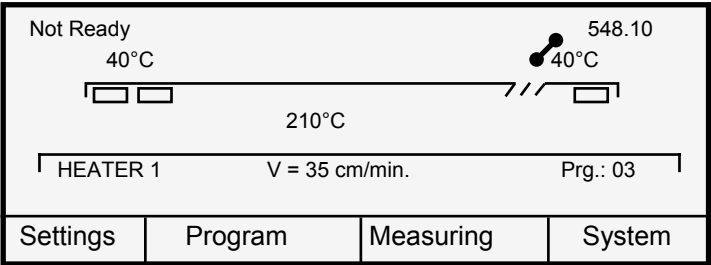
You can move this vertical line in the recorded process curve. In the Infofield you will see the temperature and the time value according to the position of the vertical line.

- With <▼> and <▲> you can move the vertical line in the process curve.
- Abort with <Esc>.

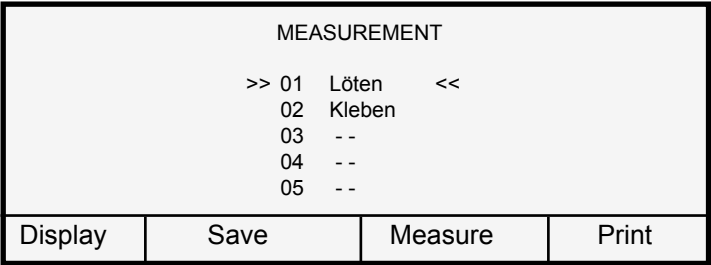
7.0 Measurement

The last recorded process curve is saved on the place "00" with the name "Backup". For a later analysing or using the process curve you must be saved on another place. Up to 6 process curves can be stored.

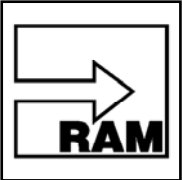
- Press in system screen the function key **<Measure>** for the measurement.



The following screen appears. You can load, save and print a process curve.



Save a Process Curve



7.0 Measurement

Select a Place

- You can scroll the directory with **<▲>** and **<▼>**.
- Select the desired place. The arrows **>>** **<<** are marking the place.
- Confirm the place with the function key **<Save>**.

Overwrite a Process Curve

- With **<Enter>** you overwrite the process curve on this place and with **<Esc>** you abort this function. You will proceed back to the process curve menu.

Identification

- Enter the name of the process curve. By every pressing of **<▼>** you scroll to the following character and by pressing of **<▲>** you scroll to the previous character before of the alphabet. With the first pressing of **<▼>** or **<▲>** you will get an "1".
- Confirm each character with **<Enter>**. You can enter a name with 8 characters.

Store

- Confirm the new name with **<Enter>**.

or

Abort

- Abort with **<Esc>**. You will proceed back to the process curve menu.

7.0 Measurement

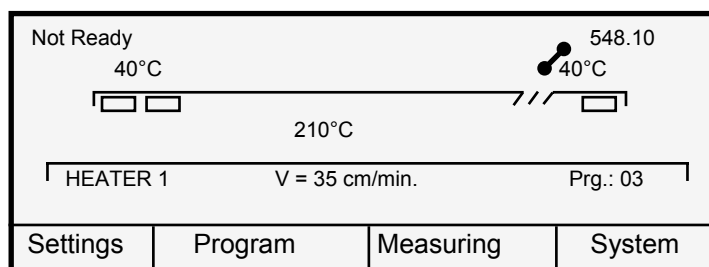
Just recorded or loaded process curves can be printed out.



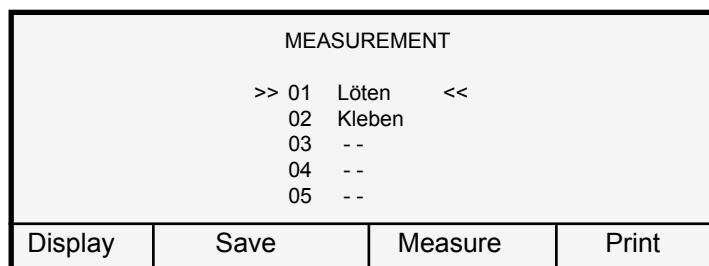
Please note,

that you are using an ESD capable cable and that you are only connecting the interface plug while the system is turned off. In the chapter "10.0 Technical Appendix, Pin connection" you will find the connection and the protocol of the interface. Take care that the printer is ready and supplied with paper inside of the printer.

- Connect the printer with the interface socket at the side of the system.
- Press in system screen the function key **<Measure>** for measurement.

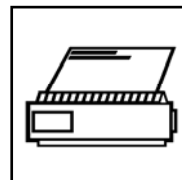


The following screen appears:



- You can select the desired process curve with **<▲>** and **<▼>**.
- Press **<Print>**. The process curve will be printed out. You will proceed back to the process curve menu.

Print a Process Curve



8.0 System Settings

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Language Selection	8.3
Protocol printout	8.4
Immediate Printout	8.4
Enter Interval time	8.5
Select Contrast	8.6
Select Printer Type	8.7
Set Date and Time	8.8
System Service	8.9

8.0 System Settings

Language Selection

The System is available with a German and your special language text version. You have the possibility to get the text in your special language.

- Press in the system screen **<System>** for system settings.

Not Ready		548.10	
40°C		40°C	
[] []		[] []	
210°C			
HEATER 1		V = 35 cm/min. Prg.: 03	
Settings	Program	Measuring	System

The following screen appears.

SYSTEM SETTINGS			
Language: English		Contrast +	
Operating Hour: 11:50:32		Contrast -	
Protocoll printout: 1min			
Printer type: Epson			
Language	Report	Printer	Service

- Press the function key **<Language>** (**<Sprache>**).
- Select your language.
- Move the arrows with **<▲>** und **<▼>** on the desired language.
- Confirm the language with **<Enter>**.
The screen will be changed automatically.
You will proceed back to the screen of systems setting.
- Abort with **<Esc>**.
You will proceed back to the screen of systems setting.

Select Language



8.0 System Settings

Protocol printout

The current machine conditions and parameters could be printed out for documentation on a serial printer.

You have the following possibilities for printing out:

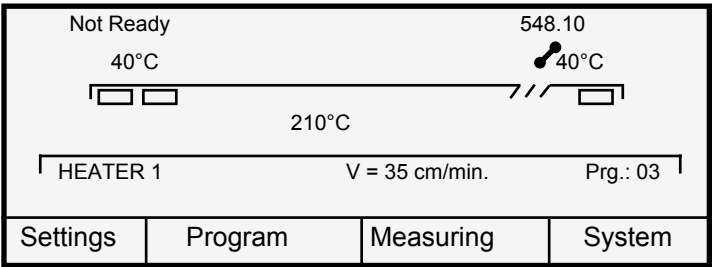
- ◆ Immediate print
- ◆ Interval print
The interval time could be entered.

! Please note,
that you are using an ESD capable cable and that you are only connecting the interface plug while the system is turned off. In the chapter "10.0 Technical Appendix, Pin connection" you will find the connection and the protocol of the interface.

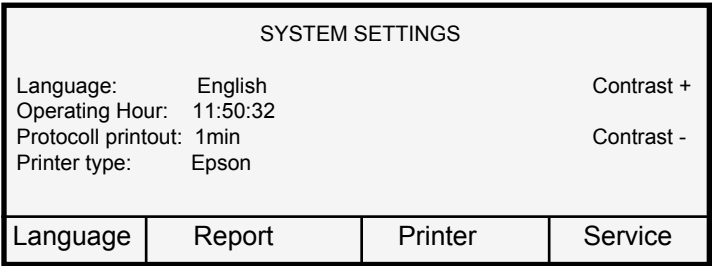
Immediate Printout



- ! Connect the printer with the interface socket of the system.
- ! Press in the system screen **<System>** for system setting.



The following screen appears.



- ! Press **<Report>** for protocol printout.

8.0 System Settings

In the protocol printout you can select an interval time between 0 and 999 minutes.

SYSTEM SETTINGS			
Language:	English	Contrast +	
Operating Hour:	11:50:32		
Protocoll printout:	1min	Contrast -	
Printer type:	Epson		
Language	Report	Printer	Service

- I Press **<Report>** for setting the interval time. The cursor jumps into the field of the time.
- I Enter the interval time with the **<▲>** and **<▼>**-keys. The interval printout is turned off if you enter a interval time of "0" minutes.
- I Confirm your entry with **<Enter>**. You will proceed back to the screen of systems setting.
- I Abort with **<Esc>**. You will proceed back to the screen of systems setting.

Enter Interval time

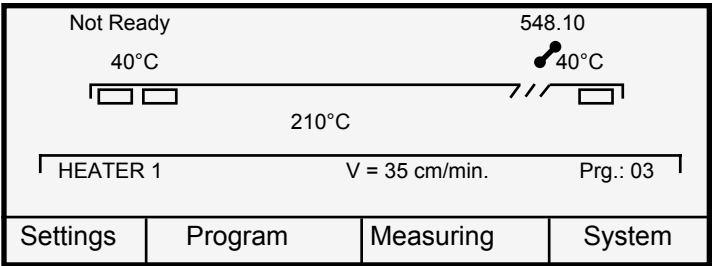
t=
? min

8.0 System Settings

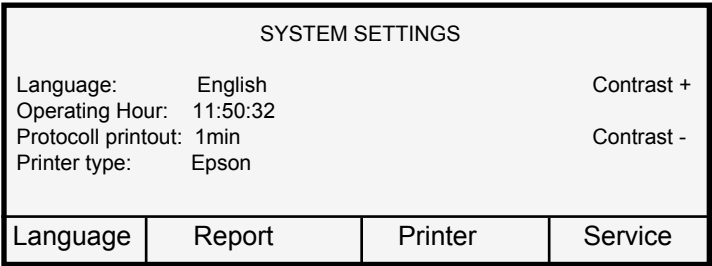
Select Contrast

The contrast of the system display can be changed. Depending on different viewing angles it is useful to change the contrast of the display

- Press in the main screen **<System>** for system setting.



The following screen appears.



Select contrast

- Select the contrast with **<s>** and **<t>** for the display.
- Confirm your entry with **<Esc>**.
You will proceed back to the service menu.

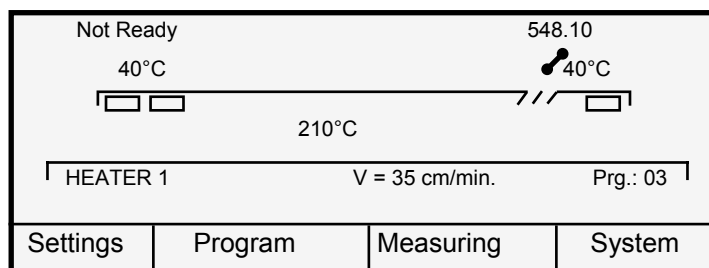
8.0 System Settings

Select Printer Type

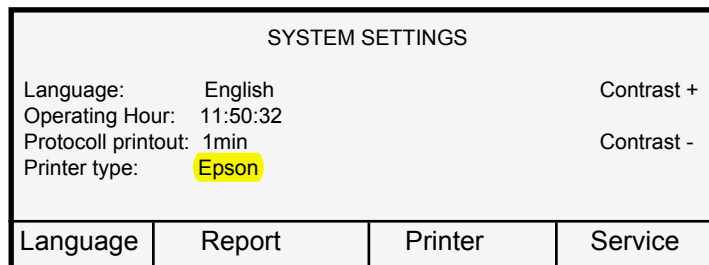
The print out of process parameters, process curves and program data can be printed on different printers via the parallel interface. You can select the following printers in the system:

- HP colour printer
- Epson Printer (FX-80 compatible)

Press in the main menu **<System>** for system setting.



The following screen appears.



Press in the system menu **<Service>** for service setting.

Select the printer with **<▲>** und **<▼>**.

Confirm the printer with **<Enter>**.
You will proceed back to the screen of system setting.

Abort with **<Esc>**.
You will proceed back to the screen of system setting.

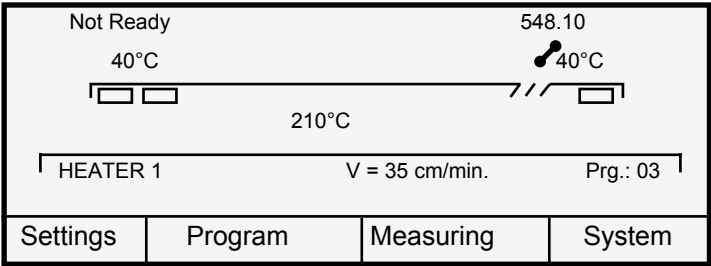
Select printer

8.0 System Settings

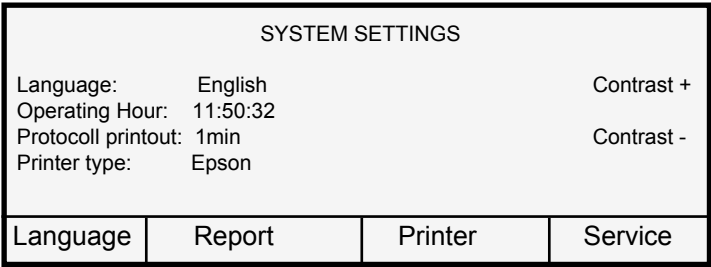
Set Date and Time

The microprocessor includes a real-time-system-clock. The time and the date can be set in in this menu.

- Press in the main menu **<System>** for system settings.



The following screen appears.



- Press the function-key **<Service>**.
- Press the function-key **<Clock>**.
- Press the function key **<Set>**.
- The cursor blinks behind the input field of the date. Enter with the cursor keys **<s>** and **<t>** the wished day, the month and the year.
- Confirm your entries with **<Enter>**. The cursor jumps to the field of the time.
- Enter with the cursor keys **<s>** and **<t>** the wished hours, minutes and seconds.
- Confirm your entries with **<Enter>**.
- With **<Esc>** you will proceed back to the system setting menu.
- With **<Esc>** you will proceed back to the main menu.

8.0 System Settings

System Service

In the system service menu special system settings could be changed. The changing of this settings can only be done through the SEF service. **This menu is secured with a password.**

- Press **<System>** for system setting.

Not Ready		548.10	
40°C		40°C	
[] []		[] []	
210°C			
HEATER 1		V = 35 cm/min. Prg.: 03	
Settings	Program	Measuring	System

- Press the function key **<Service>** for service.
- Enter the password and confirm with **<Enter>**.
- Abort with **<Esc>**.
You get back to the screen of systems setting.

9.0 Maintenance

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Cleaning intervals	9.3
Relieved cleaning work	9.4
Cleanings with water and washing up liquide or spirit	9.4
Plan of diagnosis	9.6
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Dismounting and mounting the grid belt transport	9.18
Change the power unit	9.19
Dismounting and mounting of the transport control	9.20
Dismounting and mounting of the mains filter	9.21
Change the power supply	9.22
Change the operation panel	9.23
Software update	9.24

9.0 Maintenance

Cleaning intervals

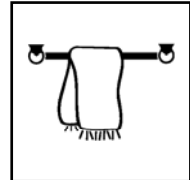
what	with what	when
operating panel	water and washing up liquide	if required
cover fans	brush	if required
maschine body	water and washing up liquide / spirit	if required
slide bars of the transport system	screwdriver / scraber 1x in a month	if required inspection min.

The grid-belt transport is maintenance-free. Lubrication of the running surfaces of the grid-belt is only necessary when extremely loud noises arise during operation. **For this, only use PTFE spray.** After a very high number of hours of operation, an elongation of the grid-belt is possible. In this case, the grid belt should be shortened by a service technician. The drive pinion gear should also be inspected for wear and, if necessary, replaced by a service technician.



On the following pages you will find the description, how to start the cleaning and greasing work.

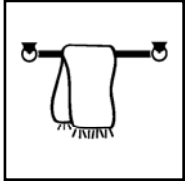
Cleaning



9.0 Maintenance

Relieved cleaning work

Cleanings with water and washing up liquide or spirit



For the following cleaning works do not use rough cleaning agents. Use only warm water with washing up liquide.

- Clean the operating panel with cloth and water with washing up liquide.
- Clean the machines body with cloth and water with washing up liquide or hard soiling additional.

For the following cleaning works use only a brush.



Attention, accident hazard

By cleaning the fans in the machines hood turn off the entire system by the mains switch. There is danger for you life through the rotating fans.

- Clean the fans in the machines hood with a small brush.

9.0 Maintenance

For cleaning works the machine hood and the heating chamber could be open and closed by hand.



Attention, danger of burns

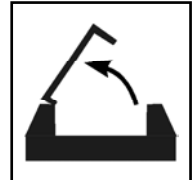
During the production process, the heating chamber is very hot due to the radiator temperatures of up to 525°C (980 °F). In case of burns contact a physician immediately.

- Turn off the system by the mains switch.
- Let the system cool down.
- Unsecure the machine cover with the 4-key
- Open the machine cover.
- Open the heating chamber.

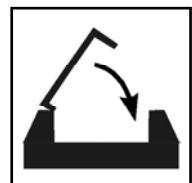
- Start your cleaning work in the heating chamber.

- Close the heating chamber.
- Close the machine cover.
- Secure the machine cover with the 4-key

Open covers



Close covers



9.0 Maintenance

Plan of diagnosis

Fault:	Possible cause:	Repairing:
Reflow system can't be switched on.	◆ No mains at the unit?	! Activate mains.
	◆ Is the mains switch off?	! Turn mains switch on.
	◆ Mains fuse okay?	! Check or ex- change the fuse.
	◆ Not repairable.	! Call SEF service.
System doesn't heat.	◆ Switched on "Stand by"?	! Press the <Enter>-key.
	◆ Fuses for the heating circuit 1 - 3 okay?	! Check or exchange the fuses.
	◆ Is the conveyor working ?	! Check or exchange the photocell.
	◆ Is an fault message "conveyor" on the LCD?	! Check or exchange the fuses.
	◆ Is an fault message "Covers opened" on the LCD?	! Close the cover and press the <Enter>-key.
	◆ Not repairable.	! Call SEF service.
Acoustic signal of the system.	◆ Cover is open?	! Close the covers and press the <Enter>-key.
	◆ Not repairable.	! Call SEF service.

Service station of the SEF Roboter GmbH:

Tel.: 0049 (0)4136/909-99

Fax: 0049 (0)4136/909-22

9.0 Maintenance

Fault:	Possible cause:	Repairing:
System does not get ready.	◆ Does the selected and current values coincide?	▮ Compare values.
	◆ Is the temperature sensor okay?	▮ Locate and change the sensor.
	◆ Is the radiator and heating element heating up?	▮ Change the IR heater or the heating element. ▮ Check and change the power board.
	◆ Not repairable.	▮ Call SEF-Service.
A measurement is not possible.	◆ Has any sensor a temperature about 0 or 558°C?	▮ Locate and change the sensor.
	◆ Not repairable.	▮ Call SEF-Service.
	◆ Temperature sensor connected?	▮ Connect the temperature sensor.
	◆ Temperature sensor defect?	▮ Check and change the temperature sensor.
	◆ Not repairable.	▮ Call SEF-Service.
The printer does not work.	◆ Printer connected and switched on?	▮ Connect and switch on the printer.
	◆ Not repairable.	▮ Call SEF-Service.

Service station of the SEF Roboter GmbH:

Tel.: 0049 (0)4136/909-99

Fax: 0049 (0)4136/909-22

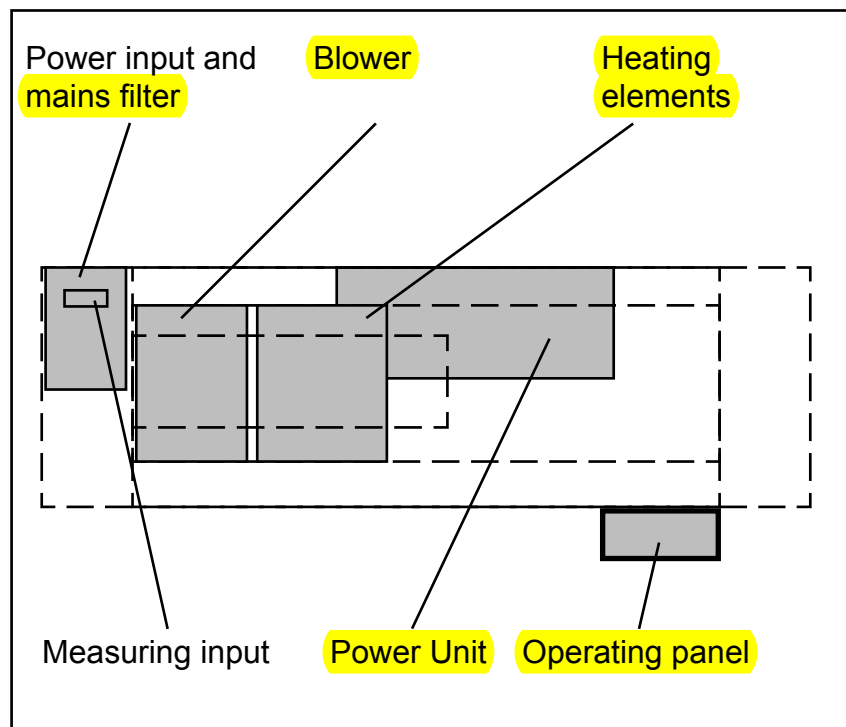
9.0 Maintenance

The electronic of the soldering system

The electronic of the system is mounted very serviceable and is separated as following:

- ◆ Mains filter
- ◆ Operating panel
- ◆ Power unit
- ◆ Measuring input

Th operating panel is mounted at the front side. All other parts are accessible at the rear side.



9.0 Maintenance



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.

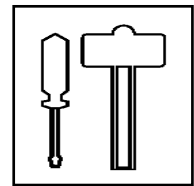


Danger of burns

Start working after the system is cooled down.

1. Turn the entire system off, shut off from mains by removing the mains plug.
2. First let the machine cool down before you start working in the machine.
3. Open the covers by hand.
4. Secure the covers against accidentally falling down.
5. Unscrew and open the electronic modul on the rear side of the system.
6. Disconnect the mounting clamp of the temperature sensor. **It is recommendable to firstly push down the clamp from the temperatur sensor.**
7. You can now remove careful the temperature sensor from the radiator.
8. The radiator is held in the module by means of a metal clasp. Loosen the screw of the clasp and remove the defective radiator from the module.
9. Disconnect the lustre terminal of the defective radiator form the power unit.

Change the defect radiator



9.0 Maintenance

10. Fasten and fix the radiator carefully again in the metal clasp. **Attention: Do not mechanically overload the radiator.**
11. Place the temperature sensor on the radiator.
12. Connect the sensor in the mounting clamp.
The sensor should be mounted with a distance of 3 cm to the end of the radiator. Take care that the sensor has a good contact to the radiator.
13. Connect the lustre terminal of the radiator in the plug on the power unit.
14. Remove and fix the electronic modul on the rear side of the system.
15. Close the covers by hand.
16. Connect the unit to the power supply again and switch it on.

9.0 Maintenance



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.



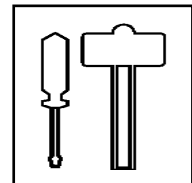
Danger of burns

Start working after the system is cooled down.

You recognize a defective heat sensor, when the displayed temperature shows either **0°C or 558°C.**

1. Locate the defective sensor in the heating chamber.
2. Turn the entire system off, shut off from mains by removing the mains plug.
3. First let the machine cool down before you start working in the machine.
4. Open the covers by hand.
5. Secure the covers against accidentally falling down.
6. Unscrew and open the electronic modul on the rear side of the system.
7. Disconnect the mounting clamp of the temperature sensor. **It is recommendable to firstly push down the clamp from the temperatur sensor.**
8. You can now remove careful the temperature sensor from the radiator.
9. Disconnect the lustre terminal of the defective sensor form the power unit.

Change the temperature sensor on a radiator



9.0 Maintenance

10. Place the temperature sensor on the radiator.
11. Connect the sensor in the mounting clamp.
The sensor should be mounted with a distance of 3 cm to the end of the radiator. Take care that the sensor has a good contact to the radiator.
12. Connect the lustre terminal of the sensor in the plug on the power unit.
13. Remove and fixe the electronic modul on the rear side of the system.
14. Close the covers by hand.
15. Connect the unit to the power supply again and switch it on.

9.0 Maintenance



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.

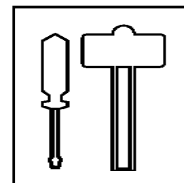


Danger of burns

Start working after the system is cooled down.

1. Turn the entire system off, shut off from mains by removing the mains plug.
2. First let the machine cool down before you start working in the machine.
3. Open the covers by hand.
4. Secure the covers against accidentally falling down.
5. Unscrew and open the electronic modul on the rear side of the system.
6. The heating elements are fixed with a plate in the heating chamber. Unscrew the 12 nuts of the plate.
7. Remove the plate.
8. Disconnect the lustre terminal of the heating elements form the power unit.
9. Remove the heating elements.

Change the heating elements



9.0 Maintenance

10. Place the new heating elements in the heating chamber.
11. Connect the lustre terminal of the heating elements in the plugs on the power unit.
12. Fixed the heating elements with a plate in the heating chamber. Screw the 12 nuts in the plate.
13. Close the covers by hand.
14. Remove and fixe the electronic modul on the rear side of the system.
15. Connect the unit to the power supply again and switch it on.

9.0 Maintenance



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.



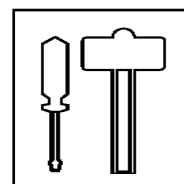
Danger of burns

Start working after the system is cooled down.

You recognize a defective heat sensor, when the displayed temperature shows either 0°C or 558°C.

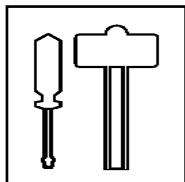
1. Turn the entire system off, shut off from mains by removing the mains plug.
2. First let the machine cool down before you start working in the machine.
3. Open the covers by hand.
4. Secure the covers against accidentally falling down.
5. Unscrew and open the electronic modul on the rear side of the system.
6. Disconnect the mounting clamp of the temperature sensor.
7. You can now remove careful the temperature sensor from the radiator.
8. Disconnect the lustre terminal of the defective sensor form the power unit.
9. Place the temperature sensor on the radiator
10. Connect the sensor in the mounting clamp.
11. Connect the lustre terminal of the sensor in the plug on the power unit.
12. Remove and fixe the electronic modul on the rear side of the system.
13. Close the covers by hand.
14. Connect the unit to the power supply again and switch it on..

Change the temperature sensor in the heating chamber



9.0 Maintenance

Change the blower



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.



Danger of burns

Start working after the system is cooled down.

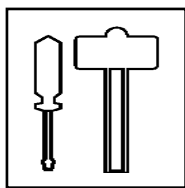
1. Turn the entire system off, shut off from mains by removing the mains plug.
2. First let the machine cool down before you start working in the machine.
3. Open the covers by hand.
4. Secure the covers against accidentally falling down.
5. Unscrew and open the electronic modul on the rear side of the system.
6. The blower is fixed with a plate in the heating chamber. Unscrew the 12 nuts of the plate.
7. Remove the plate.
8. Disconnect the lustre terminal of the blower form the power unit.
9. Remove the blower.
10. Remove the hexagonal screw in the ventilator wheel of the blower and remove the ventilator wheel.

9.0 Maintenance

11. Dismount the blower from the plate.
12. Fixe the new blower on the plate. Adjust the shaft of the blower to a free rotation.
13. Fixe the ventilator wheel in the blower with the hexagonal screw.
14. Place the new blower in the heating chamber.
15. Connect the lustre terminal of the blower in the plug on the power unit.
16. Close the covers by hand.
17. Remove and fixe the electronic modul on the rear side of the system.
18. Connect the unit to the power supply again and switch it on.

9.0 Maintenance

Dismounting and mounting the grid belt transport



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.



Danger of burns

Start working after the system is cooled down.

1. Turn the entire system off, shut off from mains by removing the mains plug.
2. First let the machine cool down before you start working in the machine.
3. Open the covers by hand.
4. Secure the covers against accidentally falling down.
5. Remove the four M4 hexagonal screw in the feeding and discharging zone.
6. Remove the connection plug from the motor and the transport control.
7. You can now replace the transport system with the assistance of a second person.
8. You can now place the transport system with the assistance of a second person.
9. Connect the connection plug to the motor and the transport control.
10. Fixe the transport system with the four M4 hexagonal screw in the feeding and discharging zone.
11. Close the covers by hand.
12. Connect the unit to the power supply again and switch it on.

9.0 Maintenance



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.

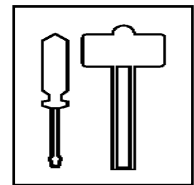


Danger of burns

Start working after the system is cooled down.

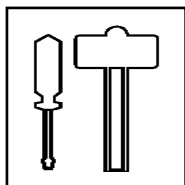
1. Turn the entire system off, shut off from mains by removing the mains plug.
2. Unscrew and open the electronic modul on the rear side of the system.
3. Disconnect the plugs of the power unit. **All plugs have numbers.**
4. Remove the board out of the guide-ways.
5. Place and fixe the board in the guide-ways.
6. Connect the plugs of the power unit. **All plugs have numbers. Take care of the right numbers by connecting the cables.**
7. Move the electronic modul back into the system and fix it with the two screws.
8. Connect the unit to the power supply again and switch on the unit.

Change the power unit



9.0 Maintenance

Dismounting and mounting of the transport control



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.



Danger of burns

Start working after the system is cooled down.

1. Turn the entire system off, shut off from mains by removing the mains plug.
2. First let the machine cool down before you start working in the machine.
3. Dismount the complete grid belt transport system described in the section "Dismounting and Mounting of the grid belt transport system".
4. At the transport system an angled bracket with a photocell is mounted. The leads of the photocell are connected to a plug. Do yet remove the connector.
5. Unscrew and remove the screws from the angled bracket of the photocell.
6. Remove the defective photocell.
7. Replace the new photocell in the bracket. Fasten with the screws.
8. Place the connector of the new photocell into the plug.
9. Mount the complete grid belt transport system described in the section "Dismounting and Mounting of the grid belt transport system".
10. Connect the unit to the power supply again and switch it on.

9.0 Maintenance



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.

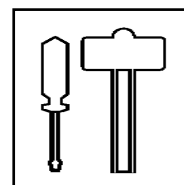


Danger of burns

Start working after the system is cooled down.

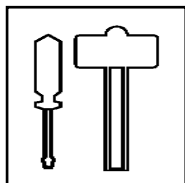
1. Turn the entire system off, shut off from mains by removing the mains plug.
2. Unscrew the two screws of the power input on the rear side of the system.
3. Remove the plate.
4. Dismount the complete grid belt transport system described in the section "Dismounting and Mounting of the grid belt transport system".
5. Unscrew and remove the four screws of the cover from the mains filter and take up the cover.
6. Unscrew and remove the power input and power output cable.
7. Unscrew and remove the four screws of the mains filter and take it up.
8. Change the mains filter against a new one.
9. Fixe the mains filter with the four screws.
10. Fixe the four screws of the mains filter.
11. Fix the cover of the mains filter with the four screws.
12. Mount the complete grid belt transport system described in the section "Dismounting and Mounting of the grid belt transport system".
13. Connect the unit to the power supply again and switch it on.

Dismounting and mounting of the mains filter



9.0 Maintenance

Change the power supply



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.



Danger of burns

Start working after the system is cooled down.

1. Turn the entire system off, shut off from mains by removing the mains plug.
2. Unscrew and open the electronic modul on the rear side of the system.
3. Disconnect the plugs of the board. **All plugs have numbers. Take care of the right numbers by connecting the cables.**
4. Remove the board out of the guide-ways.
5. Place and fixe the board in the guide-ways.
6. Connect the plugs to the board. **All plugs have numbers. Take care of the right numbers by connecting the cables.**
7. Move the electronic modul back into the system and fix it with the two screws.
8. Connect the unit to the power supply again and switch on the unit.

9.0 Maintenance



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.

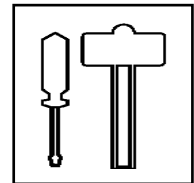


Danger of burns

Start working after the system is cooled down.

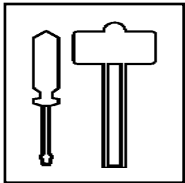
1. Turn the entire system off, shut off from mains by removing the mains plug.
2. Unscrew the four screws in the front panel.
3. Lift the front panel up and place it upside down on the cover area.
4. Remove all data cable of the power unit from the front panel.
5. Remove all data cable of the both interfaces from front panel.
6. Remove the data cable of the measuring module from front panel.
7. Remove the front panel.
8. Replace with a new front panel.
9. Replace the data cable from the power unit, the measuring module and the both interfaces to its socket.
10. Replace and fasten the four screws in the front panel.
11. Connect the unit to the power supply again and switch on the unit.

Change the operation panel



9.0 Maintenance

Software update



Caution, Danger for your life

In the system there are some parts with mains power. By maintenance and service procedures turn the entire system off, shut off from mains by removing the mains plug. There is danger for your life.



Danger of burns

Start working after the system is cooled down.

1. Turn the entire system off, shut off from mains by removing the mains plug.
2. Unscrew the four screws in the front panel.
3. Lift up the front panel.
4. Place it upside down on the cover area.
5. Replace the FlashProm against new one. Only use a special PLCC-tool. **Never use a screw driver or something like this!**
6. Replace and fasten the four screws in the front panel.
7. Connect the unit to the power supply again and switch it on.

Order for service or spare parts

Please complete it and send it back to the SEF Roboter GmbH by fax

to:
SEF Roboter GmbH
technical support
Fax-Nr. 0049-4136-909-22

We order:

☐ an action of the serviceengineer

date: _____ possible times: _____

☐ delivery of the following spare parts: _____

Informations about the defect machine:

type: **548.10** serialnumber: _____

description of the defect: _____

company:

contact person at the machine:

telefonnumber with direct dailing:

date and signature

10.0 Technical Appendix

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Over View of the Electronic	10.4
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10.0 Technical Appendix

The System has a parallel interface for a printer. The interface is located at the side of the operating panel. The interface plug is secured with a special ESD cap.

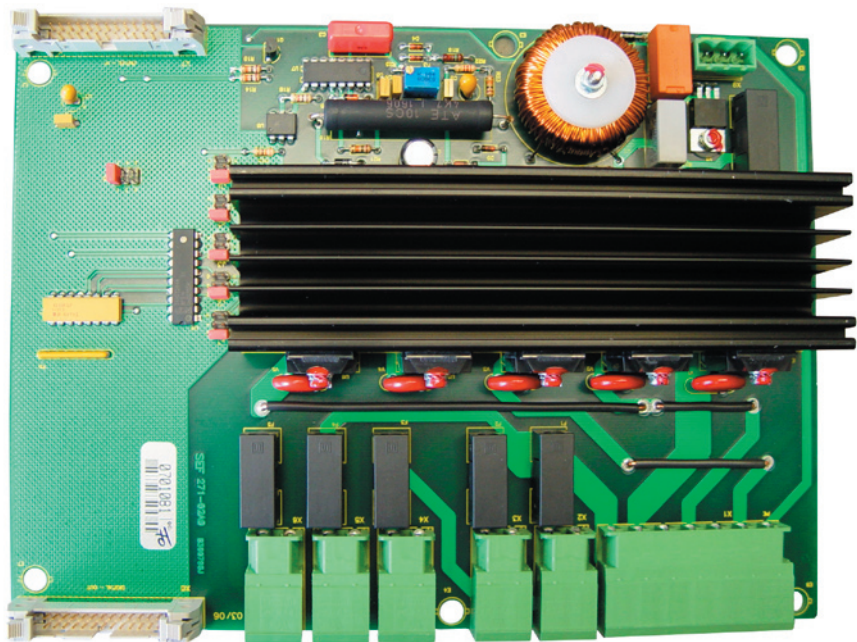


*Please note,
that you only use special ESD-cable. That the system is
switched off before connecting the interface plug.*

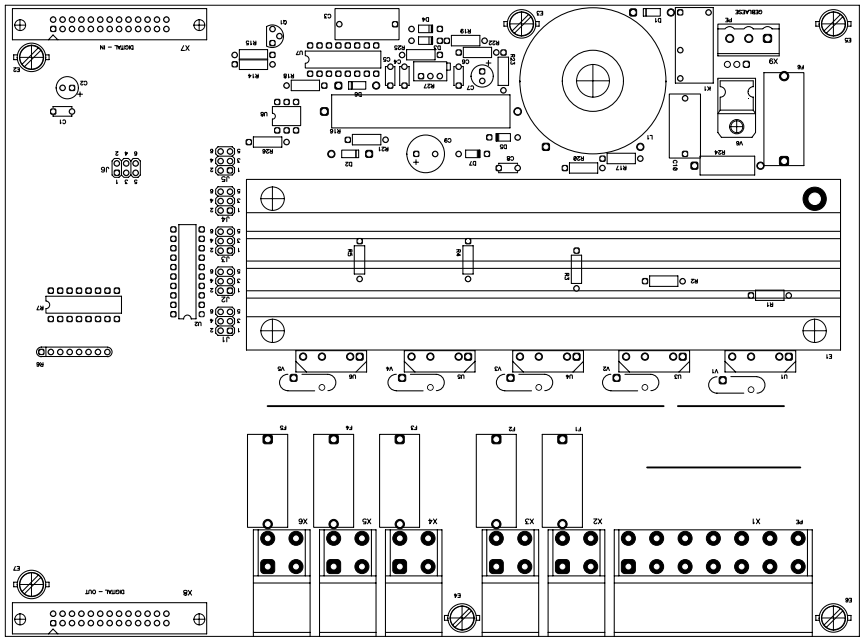
Pin 1	STROBE	Pin 13	SLCT
Pin 2	DATA 0	Pin 14	AUTO FEED
Pin 3	DATA 1	Pin 15	ERROR
Pin 4	DATA 2	Pin 16	INIT
Pin 5	DATA 3	Pin 17	SLCT IN
Pin 6	DATA 4	Pin 18	GND
Pin 7	DATA 5	Pin 19	GND
Pin 8	DATA 6	Pin 20	GND
Pin 9	DATA 7	Pin 21	GND
Pin 10	ACKNLG	Pin 22	GND
Pin 11	BUSY	Pin 23	GND
Pin 12	PE	Pin 24	GND
		Pin 25	GND

Pin Configuration Parallel Interface

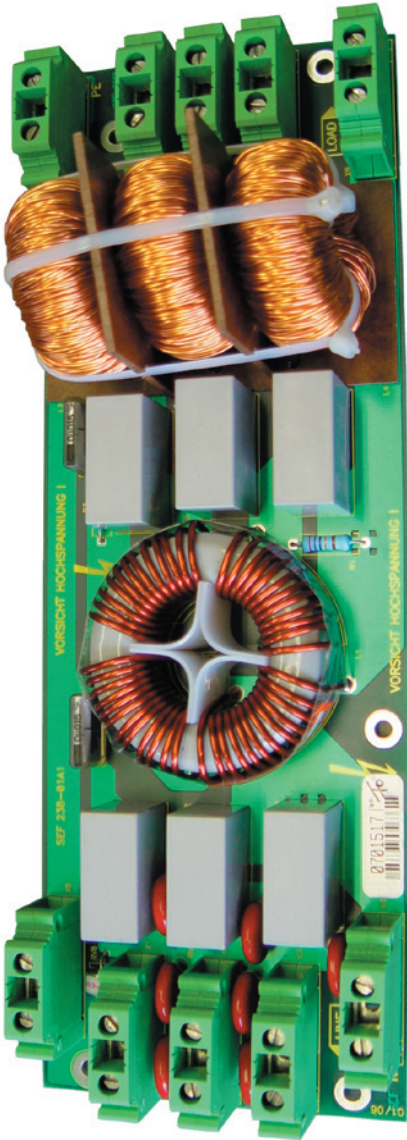
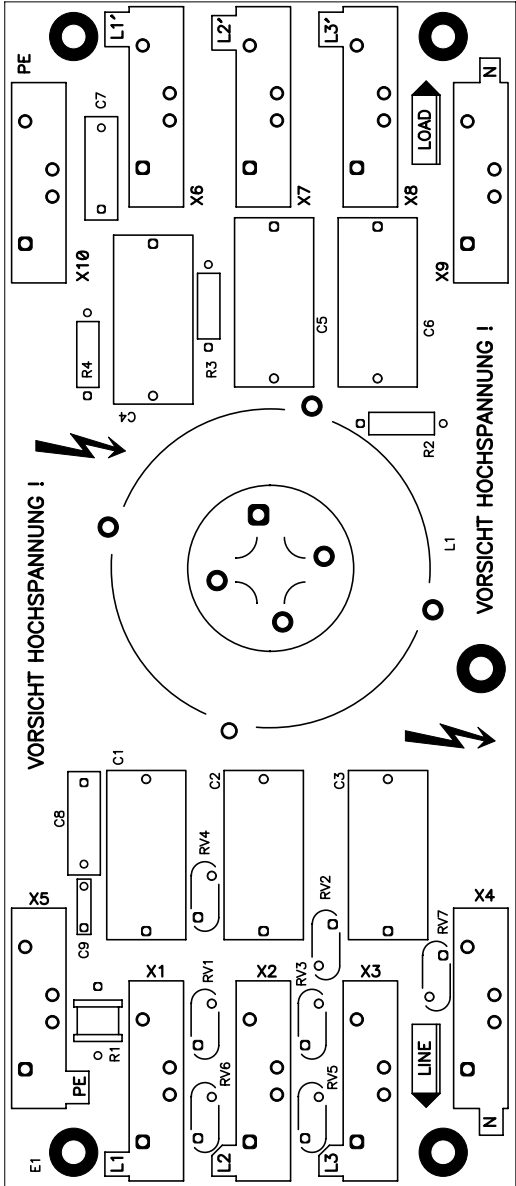
10.0 Technical Appendix



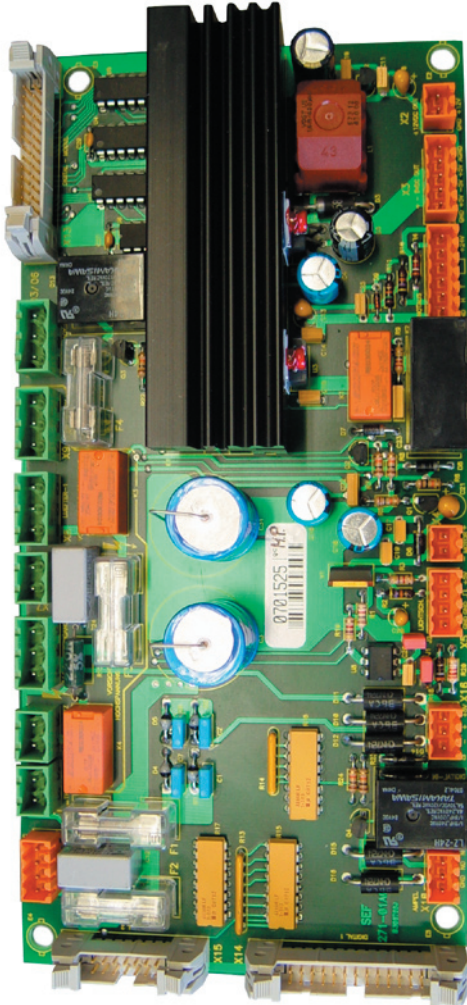
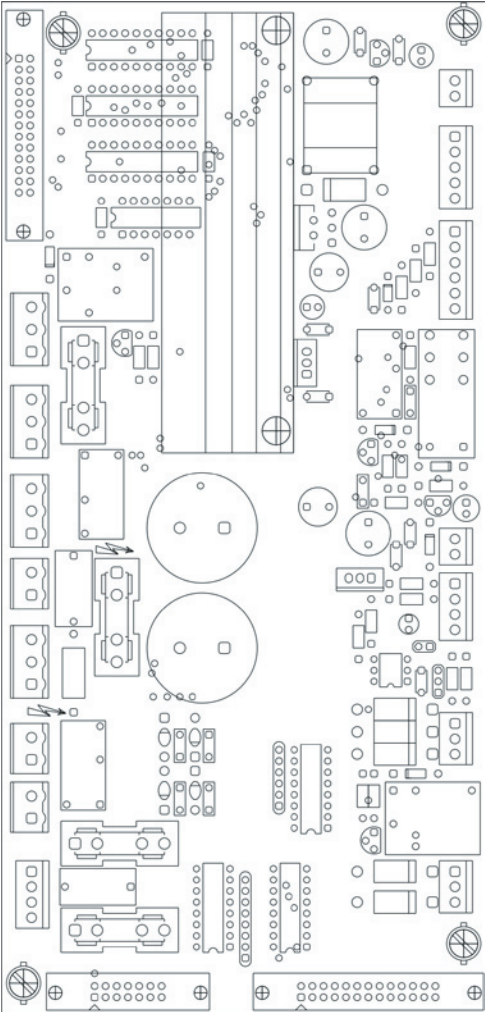
Power unit
271-02 A9



Mains filter



10.0 Technical Appendix



Power board
238-01 A1

11.0 Accessories

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MESY 570.80 Profiler Set	11.3
Thermocouple sensor	11.3

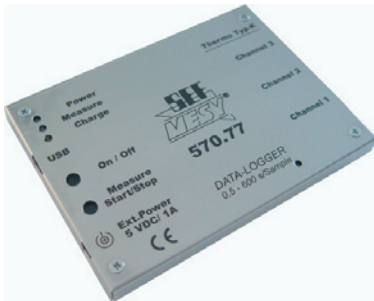
11.0 Accessories



570.70 Temperature measurement system
(MESY)
Save and real time temperature measurement system with 3 thermocouples and USB-interface.

**MESY 570.70
Measurement
System**

Article no. **95.170.070**



570.77 Temperature measurement system
(MESY)
A continuous further development of 570.70. The recording of the measurement values proceeds in storage mode.

**MESY 570.77
Measurement
System**

Article no. **95.170.077**



571.77 MESY Thermo insulating box
With the optional thermo insulating box the Mesy is capable for use inside reflow- and wave soldering systems.

**MESY 570.77
Insulating box**

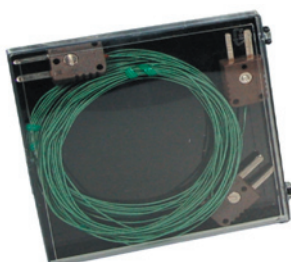
Article no. **95.170.078**



570.80 MESY Profiler Set
Thermo insulating box 571.77 and Mesy 570.77 is also available as set.

**MESY 570.80
Profiler Set**

Article no. **95.170.080**



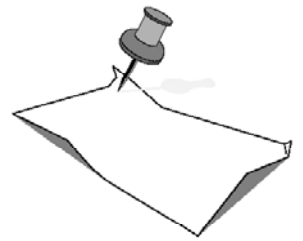
571.50 Thermocouple sensor length 50 cm
Article no. **95.171.050**

571.52 Thermocouple sensor length 200 cm
Article no. **95.171.052**

571.53 Thermocouple sensor length 300 cm
Article no. **95.171.053**

**Thermocouple
sensor**

12.0 Notes



12.0 Notes

