

Hybrid-Rework-System HR 600

Rework-System



Operating instructions.: Serial No.:

Ersa GmbH
Leonhardt-Karl-Str. 24
D-97877 Wertheim/Germany
www.ersa.com

Phone +49 9342/800-136
Fax +49 9342/800-132
Mobile Phone +49 171 241 846 8
service-ersa@kurtzersa.de

 **kurtz ersa**

| 15/05/2013



Table of contents

1	Introduction	7
1.1	Product information	8
1.1.1	General information about the product	8
1.1.2	Intended use	8
1.1.3	Retrofitting, changes	8
1.1.4	Warranty	8
1.2	Information about this manual	8
1.2.1	Pictogram and symbol explanations	9
1.2.1.1	Prevailing term definitions in this instruction manual	10
1.2.1.2	Warnings	11
1.2.1.3	Rule notices	12
1.2.1.4	Prohibition notices	13
1.2.2	Target readers group	14
1.2.3	Copyright, liability	15
2	Technical data	17
2.1	General data	18
2.2	PC system requirements	18
2.3	Pneumatics	18
2.4	Connection data	18
2.5	Heating system	18
2.6	Printed circuit boards and components	19
2.7	Axis system	19
2.8	Cameras	20
2.9	Available options	20
3	For your safety	23
3.1	General safety instructions	24
3.1.1	Nationally valid safety and accident prevention regulations	24
3.1.2	Fire protection	24
3.2	Subject-related safety instructions	24
3.2.1	Dealing with electrical equipment	25
3.2.2	Dealing with process materials and substances	25
3.3	Safety instructions for certain operating phases	26
3.4	Safety instructions for maintenance, service, specific work, troubleshooting	26
3.5	Safety instructions for certain machine and system parts	26
3.5.1	Preheating in general	27
3.5.2	Laser equipment	27
3.6	Retrofitting and changes	27
4	Transport, installation, storage, disposal	29
4.1	Transport and storage of the machine	29
4.2	Unpacking the machine	29
4.3	Scope of delivery	29
4.4	Unpack, set up and connect the HR 600 unit	30
4.4.1	Unpacking	31
4.4.2	Set up	32
4.4.3	Connecting the machine	34
4.4.4	Assembling the Accu-TC holder and air deflector	35
4.4.5	Assembling an RPC camera	36
4.5	Disposal	37
5	Commissioning	41
5.1	Requirements	41



5.2	Starting HRSoft	41
6	Function description	45
6.1	Read this first!	46
6.1.1	Target readers group	46
6.1.2	Supplementary documents	46
6.2	Description of the user interface	47
6.2.1	Help	47
6.2.2	Menu bar	47
6.2.2.1	Activated tab [Start]	48
6.2.2.2	Activated tab [Camera and light]	49
6.2.2.3	Activated tab [Placement]	50
6.2.2.4	Activated tab [View]	52
6.2.2.5	Activated tab [Extras]	53
6.2.3	Work areas	54
6.2.3.1	The work area [Soldering]	56
6.2.3.2	The work area [Placement]	57
6.2.3.3	The work area [Profile library]	59
6.2.3.4	The [Archive] work area	61
6.2.4	The parameter windows	64
6.2.4.1	The parameter window [Actual parameters]	65
6.2.4.2	The parameter window [Data table]	66
6.2.4.3	The parameter window [System settings]	67
6.2.4.4	The parameter window [System info]	68
6.2.5	The window [Online HR 600]	70
6.3	Working with the HR 600 unit	71
6.3.1	Presets	72
6.3.1.1	Customizing the presentation of charts and windows	72
6.3.1.2	Creating a user	73
6.3.1.3	Setting the language and user control panel	76
6.3.1.4	Database assistant	78
6.3.1.5	Database administration and Maintenance manager	81
6.3.1.6	Firmware update and axis control	84
6.3.2	Profiles	87
6.3.2.1	Enabling a profile	88
6.3.2.2	Deleting a profile	90
6.3.2.3	Searching for a profile	91
6.3.2.4	Customizing a profile	92
6.3.3	Tutorial	103
6.3.3.1	Desoldering a component manually	104
6.3.3.2	Soldering a component	111
6.3.3.3	Recording, archiving, analyzing processes	116
7	Spare and wear parts	119
7.1	Read this first!	120
7.1.1	Nameplate and machine number	120
7.1.2	Target readers, permitted spare parts	120
7.2	Spare parts	121
8	Treatment of messages and malfunctions	123
8.1	Sluggish control of pick-and-place nozzle in Z-direction	124
8.2	Pin pad overlay incorrect	124
8.3	Contours are not correctly recognized	124
8.4	Positions are approached improperly	124
9	Service and maintenance	125
9.1	Clean the control of the pick-and-place nozzle	126



9.2	Cleaning the glass plate	126
-----	--------------------------------	-----





1 Introduction

1.1	Product information	8
1.1.1	General information about the product	8
1.1.2	Intended use	8
1.1.3	Retrofitting, changes	8
1.1.4	Warranty	8
1.2	Information about this manual	8
1.2.1	Pictogram and symbol explanations	9
1.2.1.1	Prevailing term definitions in this instruction manual	10
1.2.1.2	Warnings	11
1.2.1.3	Rule notices	12
1.2.1.4	Prohibition notices	13
1.2.2	Target readers group	14
1.2.3	Copyright, liability	15



1.1 Product information

1.1.1 General information about the product

These operating instructions are generally valid for ERSa Hybrid Rework Systems product range HR 600.

1.1.2 Intended use

The machine was built according to state-of-the-art technology and generally accepted technical safety rules. However, the machine may pose some residual risks, in particular if it is improperly operated by untrained staff or not used as intended. The machine is solely intended for desoldering and soldering electronic components on printed circuit boards. Any other use that is beyond the scope of such use shall be deemed as improper. The manufacturer/supplier will not be liable for any damage resulting thereof. Intended use also comprises the observance of the operating manual as well as the safety instructions.

1.1.3 Retrofitting, changes

Unauthorized modifications and / or changes that affect the security of the machine are not permitted and exclude any liability of the manufacturer / supplier for any resulting damage. The machine is only intended for commercial use. Private use is generally excluded.

1.1.4 Warranty

The warranty period shall be compliant with ERSa GmbH applicable terms of sale, delivery and payment. ERSa GmbH may only grant a warranty if the unit is returned in its original packaging.

Any inappropriate use and improper operation on the unit shall void all warranty and liability claims of the buyer against the manufacturer.

To the extent permitted by law, liability for direct, consequential and indirect damage resulting from the purchase of this product is ruled out.



1.2 Information about this manual

For your safety

ERSA products are developed, manufactured and tested in compliance with the basic safety requirements.

Nevertheless, residual risks still exist!

For this reason, please read these operating instructions before operating the machine for the first time. The instructions manual helps you master all the functions and use them optimally.



DANGER

Hazards caused by the improper operation of the machine!

- ✓ Observe the operating instructions!
- 1. Any person involved in the installation, commissioning, operation and/or maintenance of the machine must have read and understood the contents of chapter "Safety instructions", as well as the chapters which are relevant for the specific activity!
- 2. The operator is advised to have this confirmed in writing!
- 3. In addition, for the machine operation, local safety and accident prevention regulations must also be complied with!
- 4. Always keep these instructions near the machine, in a place accessible to all users at any time!



1.2.1 Pictogram and symbol explanations

Pictograms are used to identify dangers, both in this instruction manual and on the machine.

Specific information or requirements and prohibitions for the prevention of personal injury or property damage are shown in the manual with a pictogram, and are complemented in the text by **hierarchically graded, signal words in bold print**:

	 DANGER It describes an <i>immediately</i> threatening danger If not avoided, death, serious injury or material damage can result. 1. Measures are described in the following text to avert the danger.
	 WARNING It indicates a <i>potentially</i> threatening danger If not avoided, death, serious injury or material damage can result. 1. Measures are described in the following text to avert the danger.
	 CAUTION It indicates a <i>potentially</i> threatening danger If not avoided, death, serious injury or material damage can result. 1. Measures are described in the following text to avert a danger.
	NOTICE The hereinafter highlighted text passages contain explanations, further information or tips.



1.2.1.1 Prevailing term definitions in this instruction manual

In addition to the pictograms described above, we use the following symbols and notations:

Safety instructions

✓ This symbol means: **Prerequisite** to avert a danger.

1. This symbol means: **Measures** to avert a danger.

An example:

	NOTICE
	Machine malfunctions caused by improper maintenance!

✓ Shorten service intervals, if necessary!

1. Service intervals in this manual refer to single shift operation! They are to be shortened accordingly for multi-shift operation!

Operating instructions

The operating instructions contain:

- References to the measures to be adopted or
- instructions to be followed by all means.

The operating instructions are structured as follows:

✓ This symbol means: **Prerequisite** for the implementation of a measure.

1. This symbol means: **Description** of a measure.

⇒ This symbol means: Intermediate result.

⇒ This symbol means: Overall result.

An example:

Pressure adjustment

✓ Remove the cover panel.

1. Adjust the (A) regulator air pressure to 2.5 bar.

⇒ The symbol on the screen turns green.

1. Reinstall the cover panel.

⇒ The air pressure has been properly set.



1.2.1.2 Warnings

We use the following pictograms for warnings:

	 WARNING Dangerous electrical voltage! Danger of electrocution!
	 WARNING Hot surfaces, hot gases! Burn hazard!
	 WARNING Laser beam! Risk of retinal burns!
	 WARNING Danger of crushing! Risk of injury due to squeezing of body parts!

**1.2.1.3 Rule notices**

	<i>NOTICE</i> Read the operating instructions!
	<i>NOTICE</i> Wear protective goggles!
	<i>NOTICE</i> Disconnect power!



1.2.1.4 Prohibition notices

We use the following pictograms for prohibition notices:



Prohibition, in general!



Do not touch!



No fire and naked light!



Eating and drinking prohibited!



No smoking!!



1.2.2 Target readers group

These instructions are intended for people who use, adjust, operate or service the machine.

	 DANGER Personal injury or material damage due to inadequate maintenance and improper operation of the machine! ✓ Use only qualified personnel! 1. The machine transport, assembly, connection, commissioning, operation or maintainance by people who are not sufficiently qualified and informed can cause severe damage to the machine or damage to people. 2. Such work may therefore only be performed by properly trained personnel! This personnel must be able to recognize the hazards that can be caused by the system mechanical, electrical or electronic equipment. 3. The people who carry out such work must know and have understood the contents of these instructions. 4. Any person involved in the installation, commissioning, operation and/or maintenance of the machine must have read and understood the contents of the "Safety instructions" chapter, as well as the chapters which are relevant for the specific activity!
---	--

1.2.3 Copyright, liability

ERSA has created this instruction manual with great care. However, no guarantee can be given as to the content, completeness and quality of the information provided in this manual. The content is continually updated and adapted to current conditions.

All the data published in these operating instructions, including the information provided about products and procedures, was identified by us to the best of our knowledge and ability, and using the most modern technical aids. These specifications are non-binding and for information only; they do not relieve users from the responsibility to carry out their own checks before operating the equipment. We accept no liability for any infringement of third party rights for applications and procedures without prior express written confirmation. We reserve the right to make technical changes with the intention of improving the product.

To the extent permitted by law, liability for direct, consequential and indirect damage resulting from the purchase of this product is ruled out. All rights reserved.

This manual, or any parts thereof, may not be reproduced, modified, transferred or translated into another language without the written permission of ERSA GmbH.





2 Technical data

2.1	General data	18
2.2	PC system requirements	18
2.3	Pneumatics	18
2.4	Connection data	18
2.5	Heating system	18
2.6	Printed circuit boards and components	19
2.7	Axis system	19
2.8	Cameras	20
2.9	Available options	20



2.1 General data

Designation	
Depth (mm)	600
Width (mm)	850
Height (mm)	580
Weight (kg)	40

2.2 PC system requirements

Designation	
Operating system	Microsoft™ Windows XP (32Bit / 64Bit), Microsoft™ Windows 7 (32Bit / 64Bit) or Microsoft™ Windows 8 (32Bit / 64Bit)
CPU	Current processors 2 GHz or faster
Working memory	2 GB or more
Hard disk drive	At least 2 GB free disk space
CD / DVD drive	required
USB interface	USB 2.0
Network adapter	recommended
Display	Minimum 19 inches, recommended 24 inches with a resolution of 1920 x 1200 pixels
Operating software	Ersa HRSoft for Microsoft™ Windows

2.3 Pneumatics

Designation	
Maximum inlet pressure (bar, oil-free)	6
Minimum inlet pressure (bar, oil-free)	5
Required connector (quick coupling)	¼ inch

2.4 Connection data

Designation	
Mains voltage 3-wire system N / PE (V)	1 x 230 V
Voltage tolerance (%)	± 10
Mains frequency (Hz)	50
Fuse (A)	16
Power consumption (kW)	3.2
Connection	CEE plug connection



2.5 Heating system

Bottom heater

Designation	
Type of heating	Ceramic heating elements, medium wave, infrared, reactive
Dimensions of the heater cartridge (width x depth, mm)	380 x 250
Number of heating zones	3
Rated power (kW) at 230V	2.4 (3 x 0.8)

Top heater

Designation	
Type of heating	Hybrid heater, ceramic heating elements, medium wave, infrared, with convection
Component handling	Integrated, motorized pipette
Dimensions (width x depth, mm)	60 x 60
Number of heating zones	2
Rated power (kW) at 230V	0.8 (2 x 0.4)
Aperture (mm)	Up to 20 x 20

Temperature sensors

Designation	
Sensor type	Non-contact infrared sensor (pyrometer), digital
Additional inputs for K-type thermocouples*	2

*An AccuTC is included in delivery.

2.6 Printed circuit boards and components

Designation	
PCB top cooling	Hybrid fans
PCB bottom cooling	Compressed air with blow pipe (400 mm)
Max. PCB size (width x depth, mm)	390 x 285
Extended PCB size (width x depth, mm)*	390 x ca. 500
Max. PCB height (mm)	6
Minimum component dimensions (mm)	1 x 1
Max. component dimensions (mm)	50 x 50
Typ. Working distance above (mm)	40
Variable working distance below (mm)	30...60

*PCB's with extended size are not fully heated.



2.7 Axis system

Designation	
Type	Precision guide with stepper motors
Axes	X, Y, Z and rotation
Placement accuracy (µm)	± 25
Pick-and-place nozzles – Ø (mm)	10, 4, 2, 1, with magnet mounting

2.8 Cameras

Placer-camera, top side

Bezeichnung	
Type	Colour camera
Resolution (Mpixel)	1,3
Interface	USB 2.0
Illumination	LED, dimmable

Component-camera, bottom side

Bezeichnung	
Type	Monochrome camera
Resolution (Mpixel)	1,3
Interface	USB 2.0
Illumination	LED, dimmable

2.9 Available options

The following items are available as options (not included in delivery):

Designation	Order number
RPC camera	0HR610
Dip & Print station	0PR100
Board holder	0PH100
Placement nozzle, Ø 2 mm	3HR600-06-025
Placement nozzle, Ø 1 mm	3HR600-06-023
Micro suction device type 1020	0IR5500-41
Micro suction device type 0510	0IR5500-40
Adaptor for suction device, small	0IR5500-44
Vacuum cup, 8 mm, silicone	0IR4520-01
Vacuum cup, 5 mm, silicone	0IR4520-02
Vacuum cup, 2 mm, silicone	0IR4520-03
Vacuum cup, 8 mm, Viton	0IR4520-04
Vacuum cup, 5 mm, viton	0IR4520-05
Additional Board holder (complete assembly)	3HR600-08
Additional AccuTC Thermocouple	0IR6500-37
Additional Thermocouple holder	0HR640



The following devices can be connected to the HR 600 unit:

Designation	Order number
Easy arm extraction EA 55 i	0CA09-001
Easy arm extraction EA 110 plus i	0CA08-002





3 For your safety

3.1	General safety instructions	24
3.1.1	Nationally valid safety and accident prevention regulations	24
3.1.2	Fire protection	24
3.2	Subject-related safety instructions	24
3.2.1	Dealing with electrical equipment	25
3.2.2	Dealing with process materials and substances	25
3.3	Safety instructions for certain operating phases	26
3.4	Safety instructions for maintenance, service, specific work, troubleshooting	26
3.5	Safety instructions for certain machine and system parts	26
3.5.1	Preheating in general	27
3.5.2	Laser equipment	27
3.6	Retrofitting and changes	27



3.1 General safety instructions

3.1.1 Nationally valid safety and accident prevention regulations

For any work performed on the machine itself or on its electric or pneumatic equipment, the locally applicable accident prevention, safety and environmental protection regulations are to be observed.

3.1.2 Fire protection

1. The machine is to be assessed for fire protection requirements at the installation site.
2. Locally applicable fire protection regulations must be observed.



3.2 Subject-related safety instructions

3.2.1 Dealing with electrical equipment

	 DANGER Dangerous electrical voltage! Serious injury or death from electric shock! ✓ Work on the electrical system or the machine electrical devices must be undertaken only by a skilled electrician or by properly trained people under the supervision and guidance of a skilled electrician in accordance with the electro-technical rules. 1. Before opening any housing parts, remove plug from mains! 2. Use only original fuses with the specified current rating. 3. Use only insulated tools. 4. In case of faults in the power supply, switch off the system immediately.
---	--

3.2.2 Dealing with process materials and substances

	 CAUTION Irritating substances! Personal injury or property damage when dealing with oils, greases, chemicals! 1. Read the rules applicable to the product safety data sheets before use!
	 DANGER Hot supplies, hot excipients, liquid metal! Risk of burns when dealing with fuels, additives and liquid metal! 1. Be aware of the in-house provision for protective clothing! 2. Work on the hot machine must only be carried out by trained and qualified personnel!
	 DANGER Substances hazardous to health! Risk of poisoning by inhalation or ingestion! 1. Flux fumes are produced during soldering. These are harmful to health. Do not eat, drink or smoke in places where soldering is carried out! 2. Traces of lead from the soldering adhering to a person's hands may access the human organism via food or cigarettes (health hazard). After touching solder, clean your hands thoroughly!



 	⚠ CAUTION toxic fumes! Risk of poisoning by inhalation! 1. During soldering, gas emissions arise from the module or from the solder paste used. These gas emissions are harmful. 2. With respect to respiratory protection, the operator must observe the processing instructions specified in the safety data sheets of the solder pastes and fluxes used!
--	---

3.3 Safety instructions for certain operating phases

	⚠ WARNING Severe or fatal injuries from flammable substances! Fire and explosion hazard due to overheating! 1. Do not leave the machine running unattended! 2. The heating of highly flammable or explosive materials is prohibited!
---	---

3.4 Safety instructions for maintenance, service, specific work, troubleshooting

	⚠ WARNING The machine malfunctioning is possible! Personal injury or property damage due to improper commissioning or incorrect operation of the machine! ✓ Commissioning must be performed by trained and qualified staff only. 1. Inspect the machine for visible defects! 2. Check all safety devices for proper operation! 3. Wear suitable protective clothing for all types of work! 4. During commissioning, ensure switching on and off processes and monitoring directions are in accordance with the operating instruction manual!
	NOTICE Disposal 1. Provide safe and environmentally friendly disposal of packaging materials!



3.5 Safety instructions for certain machine and system parts

3.5.1 Preheating in general

	 DANGER
	Risk of burns from hot surfaces! 1. Touching the preheater during use is forbidden!

3.5.2 Laser equipment

	 DANGER
	Laser beam! Risk of injury due to retinal burns 1. Do not stare into the laser beam! 2. Do not point the laser beam at other people!

3.6 Retrofitting and changes

Unauthorized modifications and/or changes that affect the security of the machine are not permitted and exclude any liability of the manufacturer/supplier for any resulting damage.

	 WARNING
	Personal injury or property damage and environmental damage caused by the machine defective condition! ✓ So, please always make sure that retrofitting or modifying the machine does not pose any problem: 1. Prior to making any changes to the machine, or altering its parameters, contact the machine manufacturer!





4 Transport, installation, storage, disposal

4.1 Transport and storage of the machine

	 CAUTION Material damage is possible! ✓ The machine is supplied in a sturdy carton on a pallet. Damage caused by improper storage or improper transportation is not covered by warranty! 1. Always transport or store the machine in a box on a pallet! 2. During the machine transport, avoid any jerky movement, abrupt setting-down or bumping! 3. During storage, protect the machine from weather conditions (moisture, humidity, sea air, fog)! If required, provide the machine with dehumidifying agent and air tight packaging!
---	---

4.2 Unpacking the machine

	 CAUTION Risk of injury! 1. To unpack always use proper tools! 2. Use suitable protective clothing!
	NOTICE Disposal 1. Provide safe and environmentally friendly disposal of packaging materials!
	NOTICE Find out and ascertain any transport damage 1. Inspect the machine for any transport damage immediately after unpacking it. 2. Immediately notify the forwarder any transport damage.



4.3 Scope of delivery



NOTICE

Is delivery not complete or are there any damaged parts?

Check the delivery for completeness. If any items are missing or damaged, contact the supplier!

Quantity	Designation	Item number
1	HR 600	0HR600
1	Board holder (complete assembly)	3HR600-08
1	Air deflector	0HR620-001
1	Air deflector	0HR620-002
1	Air deflector	0HR620-003
1	Air deflector	0HR620-004
1	Board support	238568
1	AccuTC Thermocouple	0IR6500-37
1	Thermocouple holder	0HR640
1	Placement nozzle, Ø 10 mm	3HR600-06-021
1	Placement nozzle, Ø 4 mm	3HR600-06-022
1	Adaptor for suction device	0IR5500-45
1	Vacuum cup, 5 mm, silicone	0IR4520-02
1	Product CD HR 600	3BA00209
1	Operating instructions HR 600	3BA00207
1	Compressed air hose	-
1	USB cable	-

The following devices can be connected to the HR 600 unit. They can be controlled using the HR 600 unit:

Designation	Item number
Easy arm extraction EA 55 i	0CA09-001
Easy arm extraction EA 110 plus i	0CA08-002

Available options:

Please refer to section [Available options](#) [► 20].



4.4 Unpack, set up and connect the HR 600 unit

4.4.1 Unpacking

✓ To unpack the machine, two people are required:

1. Transport the machine to the installation site in its carton on a pallet.

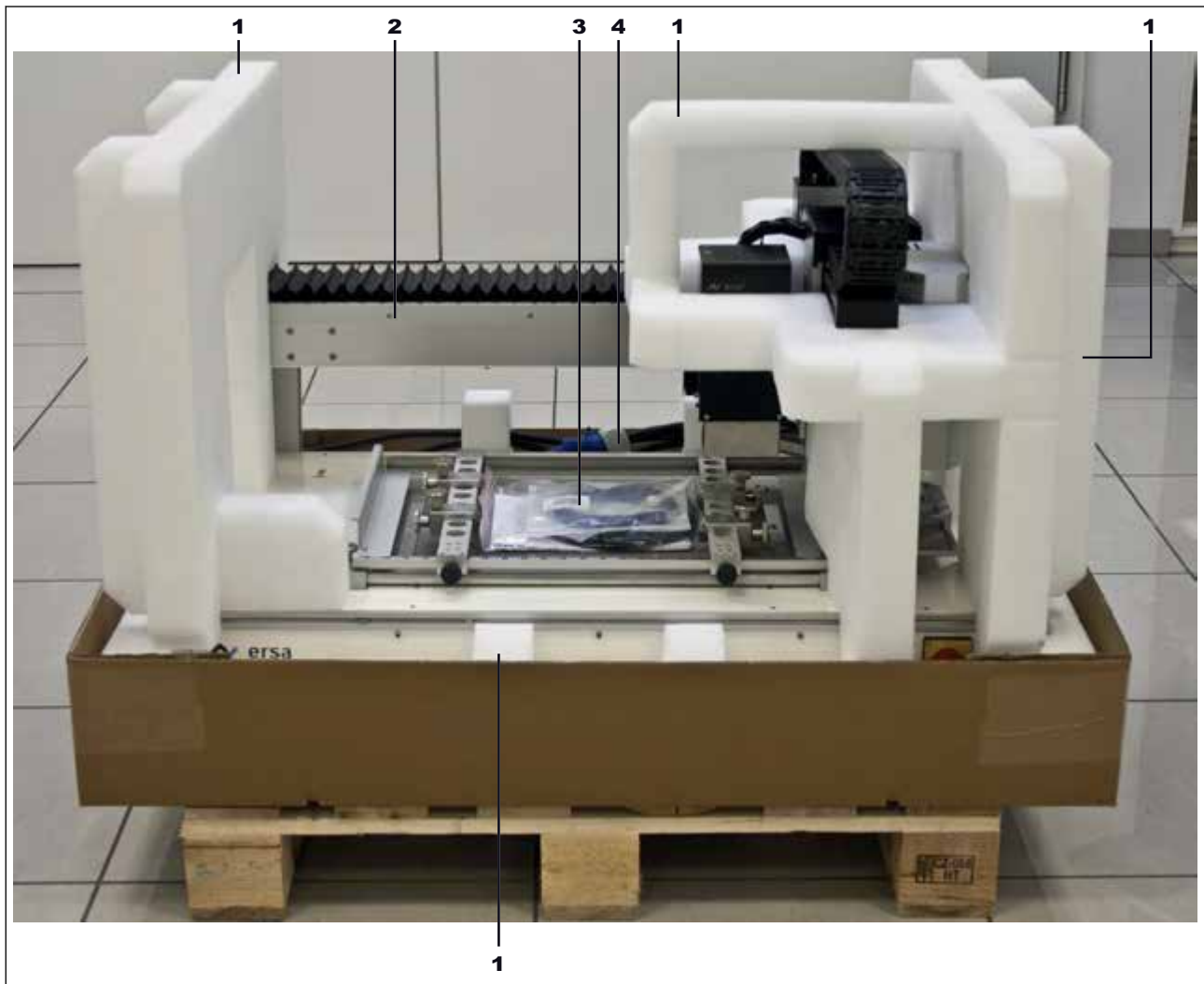


Fig. 1: Opened package

1	Padding material	3	Cables and accessories
2	HR 600	4	Power cable

2. Remove the holding straps with scissors.
3. Remove the carton top.
4. Remove the power cable (4) from its fixation and place it on the lower heating.
 - ⇒ The worktable must meet the following requirements:
 - ⇒ The table top must be at least 1500 mm wide and 750 mm deep.
 - ⇒ The table must be stable, level and designed for a load of at least 80 kg. A vibration-free installation of the machine improves working results!
 - ⇒ Install the machine in a place protected from draughts of air.
 - ⇒ If the workstation lighting is too bright, it can interfere with the proper function of the cameras!



- ✓ Should the packaging material be disposed of or stored for later use?
- 1. We recommend keeping the packaging materials for later use.
- ⇒ Only with this packaging material can the HR 600 unit be safely packed, stored and transported!



4.4.2 Set up



WARNING

Fire hazard, hazard due to heat accumulation!

Personal or material damage is possible!

1. Above, behind and next to the machine there must be no furniture (shelves, cabinets) or flammable products!
2. The distance to the walls must be at least 10 cm.

✓ Remove the machine from the carton box:

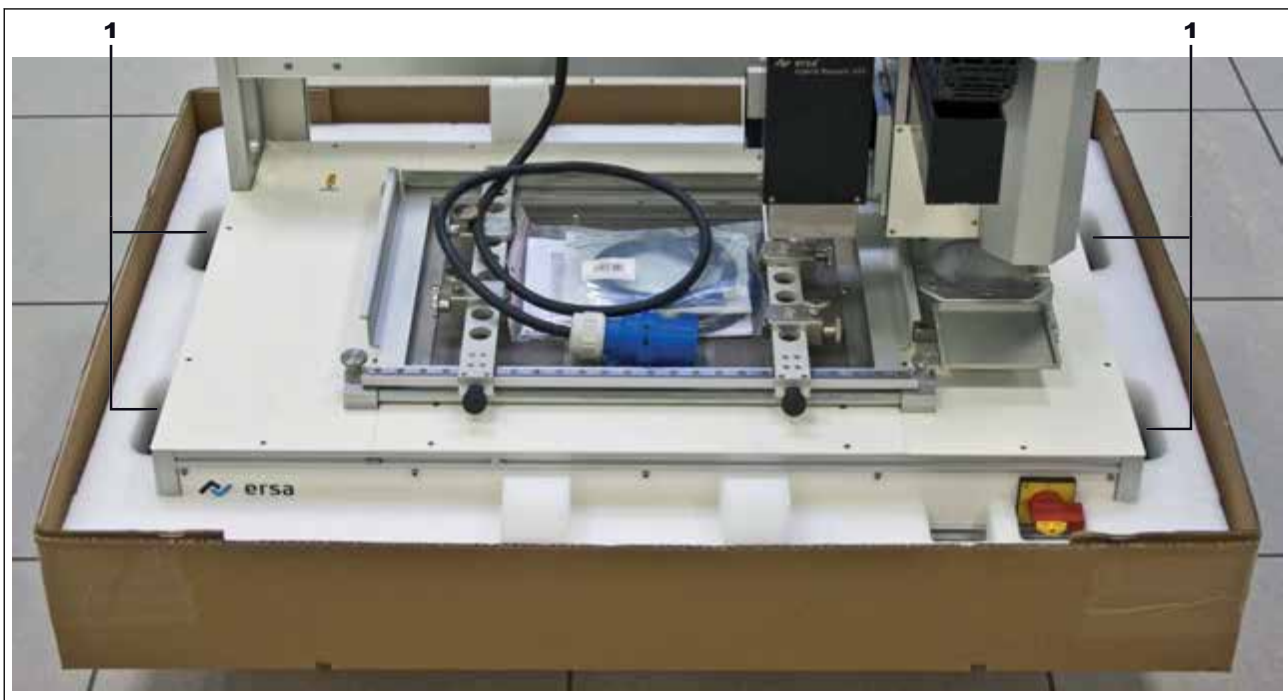


Fig. 2: Lifting points

1. The machine must be lifted by two people by holding it at the lifting points (1), and removed from its carton box.



2. Place the machine on the left side of the table.



Fig. 3: Set up the HR 600 unit

⇒ Before the front side, a working area of approximately 150 mm should be available.

✓ Align the machine:

1. To align, use a spirit level. With the leveling feet (2), align the machine horizontally.

⇒ Line up the machine without distortion!



4.4.3 Connecting the machine

✓ To connect the machine:

1. Remove all the accessories from the packaging, unwrap them and lay them out.

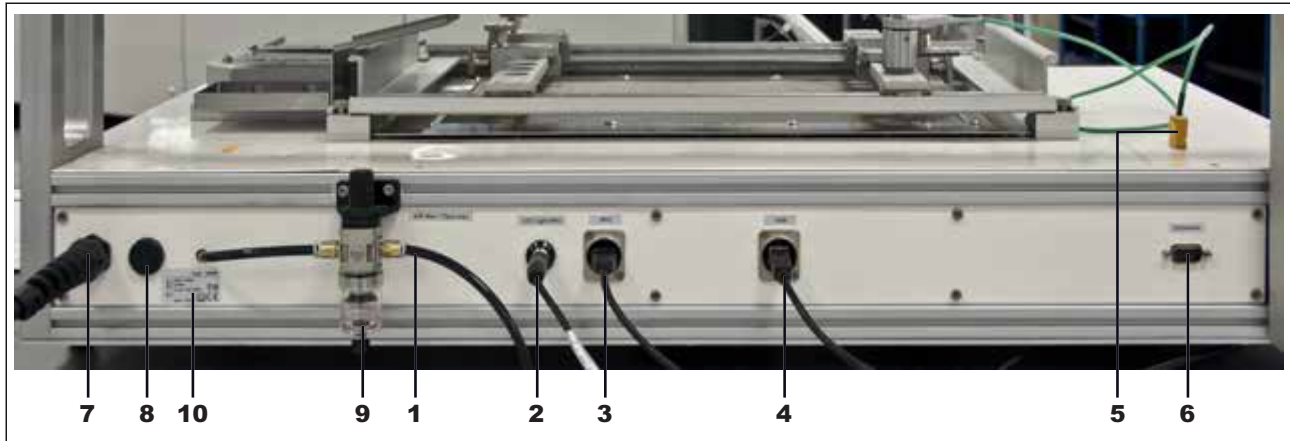


Fig. 4: The back side of the HR 600 unit

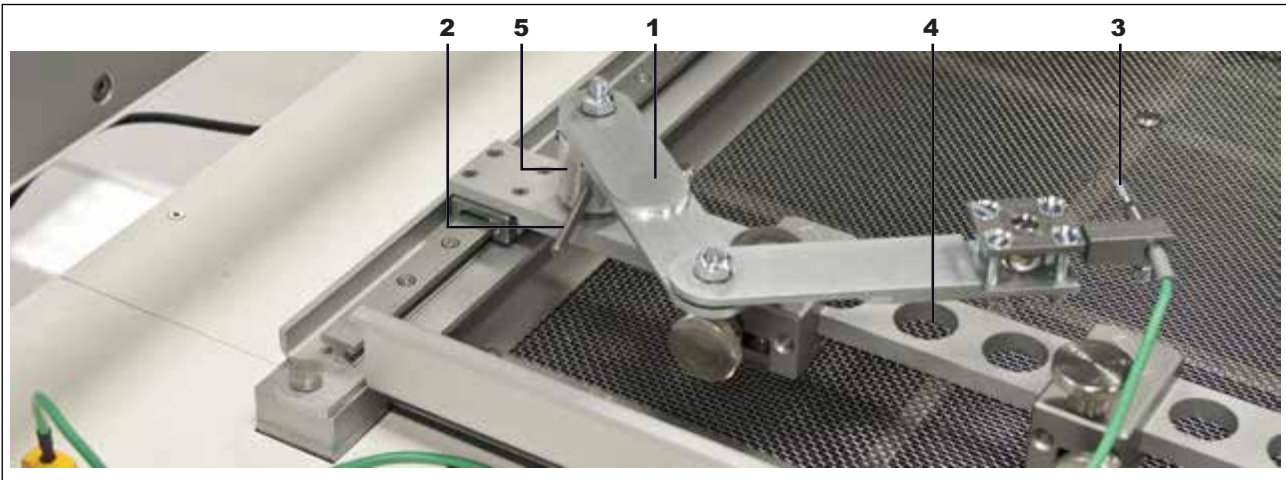
1	Compressed air hose	6	Connection for extraction
2	Connection for the LED lamp of the RPC camera	7	Power cable
3	Connection for the RPC camera	8	Fuse
4	USB port	9	Maintenance unit
5	Connection for AccuTC Thermo-couple	10	Type plate

2. Connect the compressed air hose (1) to the Maintenance unit (9), by inserting the compressed air hose all the way into the connector.
 3. Connect the air hose to the on-site compressed air supply. Please refer to section [Pneumatics](#) [► 18].
 4. Connect the USB cable to the USB port (4). It is not yet time to make a connection to the PC!
 5. Make sure that the main switch on the front of the machine is switched to position [OFF].
 6. Compare the local power supply and the mains frequency with the specifications on the type plate of the machine.
 7. Plug the power cord into the outlet.
- ⇒ The process has now been completed.



4.4.4 Assembling the Accu-TC holder and air deflector

✓ To assemble the Accu-TC holder:



1. You can fix the holder in any bore (4) of the PCB holder. To do this, insert the cylinder (5) into a bore and lock with a lever (2).
2. Connect the AccuTC Thermocouple (article 0IR6500-37) to the socket [TC1].
3. Install the thermocouple (3) as shown.

✓ If you must work with an air deflector: Fix the air deflector (5):

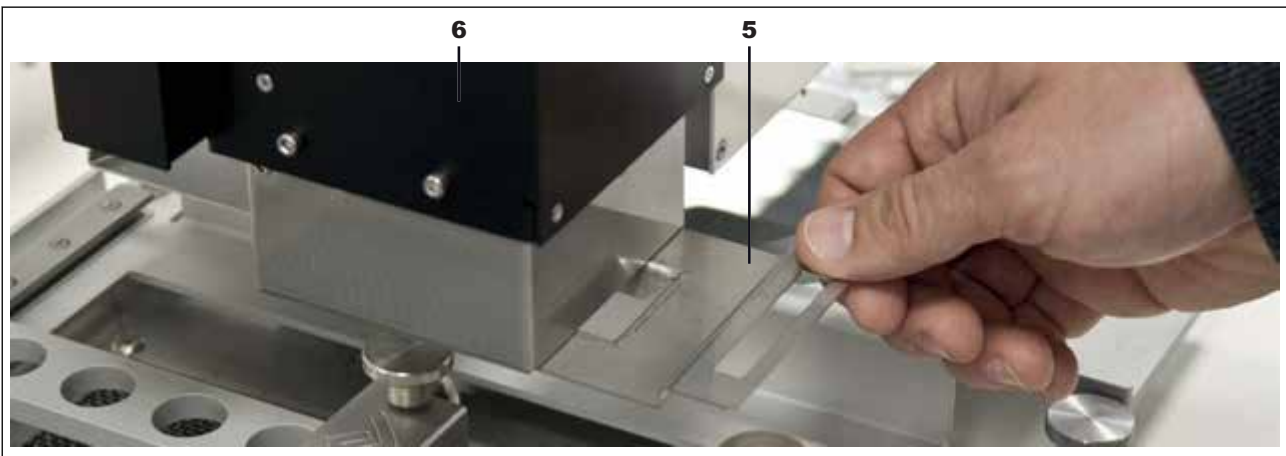


Fig. 5: Assembling an air baffle plate

1. Select an air deflector and insert it into the top heater (6) as shown.
- ⇒ The process has now been completed.



4.4.5 Assembling an RPC camera

✓ If you have acquired the option RPC camera:

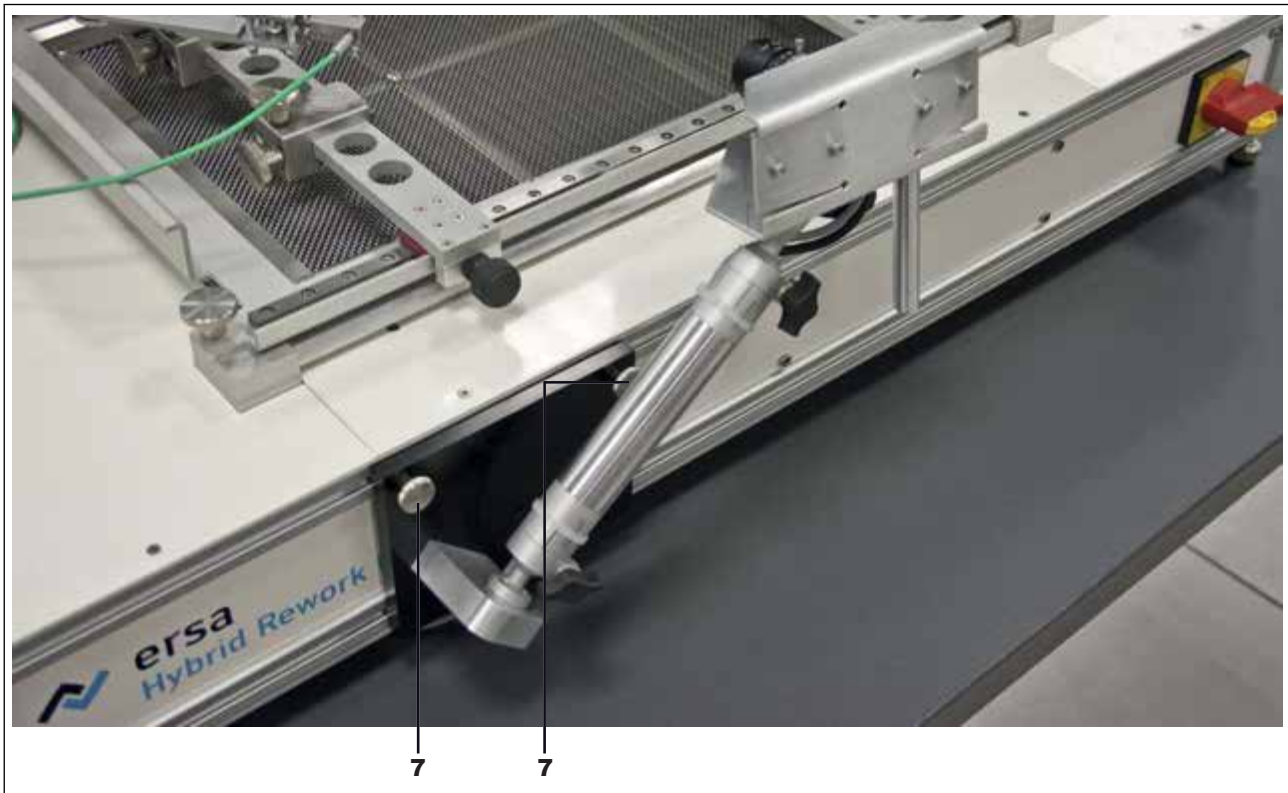


Fig. 6: Assembling an RPC camera

1. Assemble the RPC camera using two knurled screws (7). Please refer to the document 3BA00208 , Datasheet and assembling manual RPC 600.
 2. Connect the plug of the RPC camera to the back of the machine. Please refer to section [Connecting the machine](#) [► 34].
- ⇒ The process has now been completed.

4.5 Disposal

	CAUTION Disposal ✓ Solder waste is hazardous waste and must not be disposed of together with domestic waste. 1. Provide safe and environmentally friendly disposal of packaging materials! 2. Make sure that all process materials and replacement parts are disposed of in a safe and environmentally friendly way!
--	---

In accordance with Directive 2008/98/EC and Directive 2002/96/EC on waste electrical and electronic equipment, we recommend the following procedure:

- ✓ Prepare the machine for disposal:
1. All the machine supply equipment can be separated by a specialist:
 - ⇒ Power supply
 - ⇒ Pneumatics



⇒ Computer network

⇒ Only when all these operations have been carried out, can the disposal of the machine be started.

✓ If the user is not in a position to carry out proper scrapping:

1. Please contact a certified disposal company.



Waste prevention has priority over waste disposal!

Many parts of the machine can be used again. Only when reuse is not possible, should these parts be recycled.

The machine can contain the following substances or devices:

Electronic and electrical equipment	Computer, electronic controls, relays, monitors, cameras, sensors, meters, motors, preheater modules
Plastics	Cables and caterpillars, hoses, heat insulation, sensors
Metals	Steel, copper, aluminum, brass, gold, lead, tin, silver
Glass, ceramics	Preheater modules, screens



NOTICE

Disposal of electrical equipment

Waste Disposal in accordance with Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment:

Products marked with the symbol of a crossed out wheeled bin must not be disposed of with unsorted municipal waste. Local authorities have set up special collection points for their disposal. Please check with your city or district council authorities the options available for the separate collection of used equipment. This way, you can make your contribution to the reuse or other forms of use of waste to protect the environment and human health.





5 Commissioning

5.1 Requirements

For the PC - System requirements can be found in section [PC system requirements](#) [► 18].

Install HRSoft:

✓ Install HRSoft:

1. Switch on the PC and wait until the operating system has started.
 2. Login a user with administrator privileges.
 3. Insert the data carrier [Product CD HR 600] (article 3BA00209) into the CD drive
 4. Open the [HRSoft setup version xx] folder.
 5. Start the [setup.exe] program. Follow the instructions on the screen.
- ⇒ The process has now been completed.

Connecting the PC to the HR600 unit

✓ Connect the HR600 unit to the PC:

1. Connect the PC with the supplied USB cable to the HR 600 unit
- ⇒ The device drivers are automatically installed on the PC. The removable disk [HR600-0XXX] appears in Windows Explorer.

How to start the HR600 unit

✓ To transfer of switching and calibration data:

1. Use the main switch to turn on the HR 600 unit.
 2. Open the removable disk [HR600-0XXX] directory [HR Control].
 3. Copy the directory [Calibration Data] and the file [Specific Control Settings].
 4. Open the directory [C:/ProgramData/ERSA GmbH/HRControl].
- ⇒ If the directory is not displayed:
5. Change the folder options of the operating system and make hidden directories visible.
 6. Paste the files into the directory, overwriting existing files.
- ⇒ The process has now been completed.



5.2 Starting HRSoft

✓ Start HRSoft:

1. Double click the link [HRSoft] on the computer desktop.
 - ⇒ You may need to register as a user, so please read section [Creating a user](#) [► 73].
2. Enter user name and password.
 - ⇒ A message appears.
3. Confirm the message with OK.
 - ⇒ HRSoft has now been started, and [Database assistant] appears:

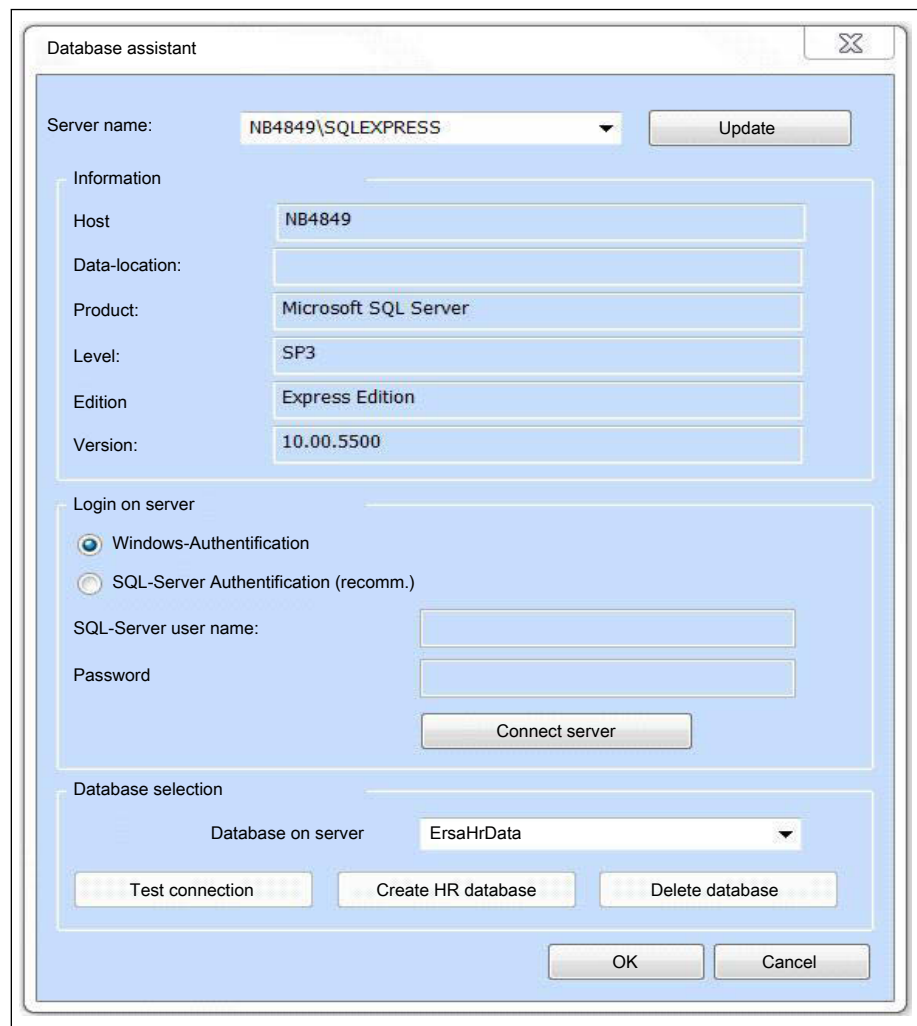
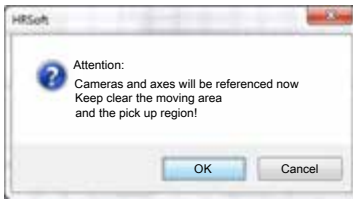


Fig. 7: Database Connection Manager This window appears only when you first start HRSoft. After operating the HR600 unit, this window will no longer appear.

✓ Make the following settings:

1. Select the item [Eigener PC\SQLEXPRESS] in the drop-down menu [Server name:].
2. Click on [Create HR database] in the [Database selection] frame.
3. Select the item [ErsaHrData] in the drop-down menu [Database on server].
4. Click on [Test connection].
 - ⇒ A query dialog is displayed.
5. Confirm with [OK].



6. Click on [OK] and exit [Database assistant].

⇒ The message [Cameras and axes will be referenced now] appears.

7. Click on [OK], if you want to reference.

⇒ Cameras and axes are referenced.

⇒ Wait until referencing starts. Referencing can take up to 30 seconds.

1. Click on [Cancel] if you wish to proceed without referencing.

⇒ HRSofT start screen appears. The process has now been completed.

You can change the database settings later. To do this, please read section [Database assistant](#) [► 78].





6 Function description

6.1	Read this first!	46
6.1.1	Target readers group	46
6.1.2	Supplementary documents	46
6.2	Description of the user interface	47
6.2.1	Help	47
6.2.2	Menu bar	47
6.2.2.1	Activated tab [Start]	48
6.2.2.2	Activated tab [Camera and light]	49
6.2.2.3	Activated tab [Placement]	50
6.2.2.4	Activated tab [View]	52
6.2.2.5	Activated tab [Extras]	53
6.2.3	Work areas	54
6.2.3.1	The work area [Soldering]	56
6.2.3.2	The work area [Placement]	57
6.2.3.3	The work area [Profile library]	59
6.2.3.4	The [Archive] work area	61
6.2.4	The parameter windows	64
6.2.4.1	The parameter window [Actual parameters]	65
6.2.4.2	The parameter window [Data table]	66
6.2.4.3	The parameter window [System settings]	67
6.2.4.4	The parameter window [System info]	68
6.2.5	The window [Online HR 600]	70
6.3	Working with the HR 600 unit	71
6.3.1	Presets	72
6.3.1.1	Customizing the presentation of charts and windows	72
6.3.1.2	Creating a user	73
6.3.1.3	Setting the language and user control panel	76
6.3.1.4	Database assistant	78
6.3.1.5	Database administration and Maintenance manager	81
6.3.1.6	Firmware update and axis control	84
6.3.2	Profiles	87
6.3.2.1	Enabling a profile	88
6.3.2.2	Deleting a profile	90
6.3.2.3	Searching for a profile	91
6.3.2.4	Customizing a profile	92
6.3.3	Tutorial	103
6.3.3.1	Desoldering a component manually	104
6.3.3.2	Soldering a component	111
6.3.3.3	Recording, archiving, analyzing processes	116



6.1 Read this first!

6.1.1 Target readers group

These instructions are intended for people who use, adjust, operate or service the machine.

	 DANGER Personal injury or material damage due to inadequate maintenance and improper operation of the machine! ✓ Use only qualified personnel! 1. The machine transport, assembly, connection, commissioning, operation or maintenance by people who are not sufficiently qualified and informed can cause severe damage to the machine or damage to people. 2. Such work may therefore only be performed by properly trained personnel! This personnel must be able to recognize the hazards that can be caused by the system mechanical, electrical or electronic equipment. 3. The people who carry out such work must know and have understood the contents of these instructions. 4. Any person involved in the installation, commissioning, operation and/or maintenance of the machine must have read and understood the contents of the "Safety instructions" chapter, as well as the chapters which are relevant for the specific activity!
---	--

6.1.2 Supplementary documents

	NOTICE Supplementary documents Supplementary documentation and service instructions are available for the machine single modules. These documents can be found on the data carrier [3BA00209_HR600], which is included in the delivery. Please refer to these documents if this instruction manual does not provide sufficient information on a certain subject.
---	--



6.2 Description of the user interface

After starting HRSoft, the startup dialog appears. This dialog enables you to control the HR 600 unit. The startup dialog is divided into the following areas:

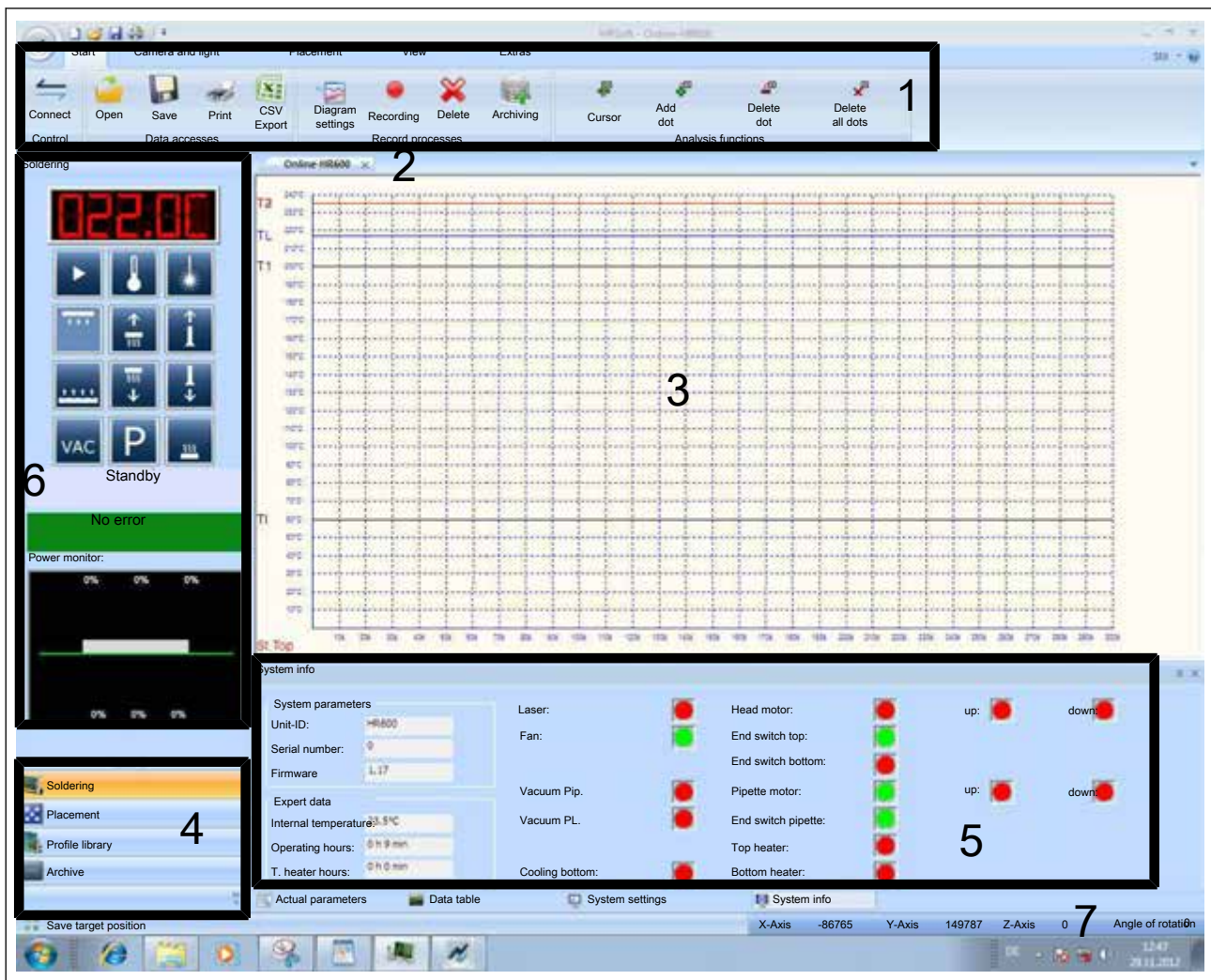


Fig. 8: Startup dialog

1	Menu bar	4	Function selection
2	Tab	5	Parameter window
3	Display window	6	Work area
		7	Status line: Current axis positions, rotation angles

6.2.1 Help

HRSoft has a convenient online help. You can get context-sensitive help by pressing the [F1] key on your keyboard. Alternatively, in some dialogues, [Help] is also available.



6.2.2 Menu bar

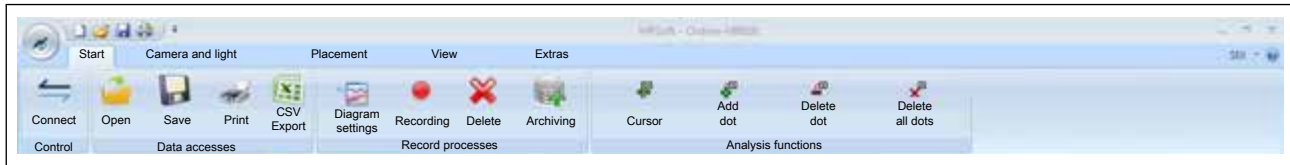
The menu bar (1) provides many functions. Depending on the activated tab, the menu bar changes its appearance. The following menus can be displayed in the menu bar:

6.2.2.1 Activated tab [Start]

✓ Display the menu [Start]:

1. Activate the tab [Start] in the menu bar.

⇒ The menu [Start] appears:



In the menu area [Control]:

Manual connection of the HR 600 unit with the axis control.

- [Connect]: Normally HRSOFT connects automatically with the axis control when the HR600 unit is on and HRSOFT starts. By clicking this button, you can manually start a connection attempt in case of failure.
- The icon  (top left of the window) connects HR600 control board with HRSOFT. By clicking on the icon, you can manually start a connection attempt.

In the menu area [Data accesses]:

You can record the processes occurring when working with the HR 600 unit. You can display, save and export this process data.

- [Open]: It opens a saved recording process. The file must be available in the file format [.hrs].
- [Save]: It saves the current recording process in the file format [.hrs].
- [Print]: It prints the current recording process.
- [CSV Export]: It exports the current recording process in the file format [.csv].

In the menu area [Record processes]:

To represent, record, delete and archive processes.

- [Diagram settings]: Change of default settings to graphically display processes. You can adjust the graphic display to your requirements. To do this, please read section [Recording, archiving, analyzing processes](#) [► 116].
- [Record]: Starting and stopping of a process recording.
- [Delete]: Deletion of the current recording process.
- [Archiving]: Manual archive of the recording process. If in the menu [Extras]/[Options] the function [Activate auto-archiving] is enabled, the data is automatically archived. Manual archiving is not possible in this case, and the related button is grayed out. With regard to this, please read section [Setting the language and user control panel](#) [► 76].

**In the menu area [Analysis functions]:**

Analysis of the recorded processes. This function is only possible during the recording process, or after calling an already archived process. With regard to this, please read section [Recording, archiving, analyzing processes](#) [► 116].

- [Cursor]: It enables an analysis cursor in window [Online-HR 600].
- [Add dot]: It adds an analysis point.
- [Delete dot]: It deletes the last analysis point.
- [Delete all dots]: It deletes all analysis points.

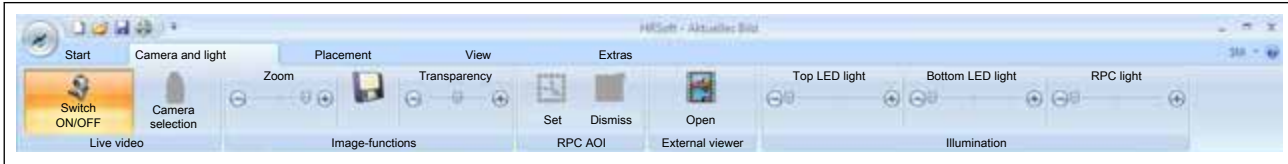


6.2.2.2 Activated tab [Camera and light]

✓ Display the menu [Camera and light]:

1. In the menu bar, enable the tab [Camera and light].

⇒ The menu [Camera and light] appears:



In the menu area [Live video]:

- [Switch ON/OFF]: It switches on the camera function. When the camera function is disabled, you cannot select a camera. The button [Camera selection] is then displayed in gray.
- [Camera selection]: In the drop-down menu you can select a camera, [Top camera], [Bottom camera] or [RPC-camera]. The image captured by the selected camera image is then displayed in window [Current image].

In the menu area [Image-functions]:

- [Zoom]: Move the slider to zoom the image.
- [Save]: It saves the current image in format [.bmp] into directory C:\TEMP.
- [Transparency]: If the images are overlaid by lower and upper camera (overlay), you can move the slider to change transparency.

In the menu area [RPC AOI]:

- [Set]: After clicking, you can set the image size of the RPC camera with the mouse.
- [Dismiss]: It deletes a specified image.

In the menu area [External viewer]:

By clicking the button you can open the external viewer. The images are then displayed in a separate window. You can view this window for better clarity on a second screen.

In the menu area [Illumination]:

In this menu section you can adjust the brightness of the lighting.

- [Top LED light]
- [Bottom LED light]
- [RPC light]

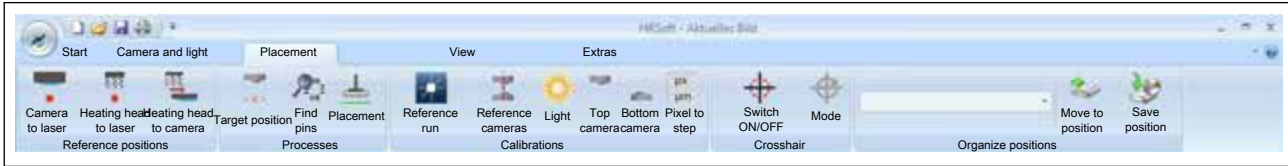


6.2.2.3 Activated tab [Placement]

✓ Display the menu [Placement]:

1. In the menu bar, enable the tab [Placement].

⇒ The menu [Placement] appears:



In the menu area [Reference positions]:

When the laser is turned on, you can use the laser beam to manually locate a component. When the laser beam reaches the center of the component, stop the movement. Then, the following functions are available:

- [Camera to laser]: It moves the upper camera to the position of the laser.
- [Heating head to laser]: It moves the heater head to the position of the laser.
- [Heating head to camera]: It moves the heater head to the position of the component.

In the menu area [Processes]:

The last position reached within a process is always saved. The following functions are available:

- [Target position]: The upper camera moves to the target position which was last saved.
- [Find pins]: The upper camera moves to the glass plate and detects the connections (pins) of a component stored there. Once the pins have been recognized, the result is displayed in window [Current image].
- [Placement]: The head moves to the glass plate and picks up a component stored there. The component is driven to [Target position] and positioned there.

In the menu area [Calibrations]:

In this menu you can calibrate axes, cameras and lighting. The following functions are available:

- [Reference run]: It performs a reference movement of the axes [X/Y/Z].
- [Reference cameras]: It moves the upper camera to the glass plate and references the upper and lower cameras. After referencing, the fiducials are to be shown in green in window [Current image]. If this is not the case, it may have the following causes:
 - If the workstation lighting is too bright, it can interfere with the proper function of the cameras
 - The glass plate is very dirty
 - The positions of the cameras are not set up correctly. With regard to this, please refer to the document [Setting instructions].
- [Light]: It performs lighting calibration.
- [Top camera]: It performs the calibration of the upper camera.
- [Bottom camera]: It performs the calibration of the lower camera.
- [Pixel to step]: It recalculates the factor [Pixel to step].

**In the menu area [Crosshair]:**

When the crosshair is on, you can use it to manually locate a component. When the crosshair reaches the centre of the component, stop the movement.

- [Switch ON/OFF]: It switches on the crosshair. It is then displayed in window [Current image].
- [Mode]: It displays the crosshair normally (+) or diagonally (x).

In the menu area [Organize positions]:

- The drop-down menu: When setting up the HR600 unit, several axial positions were saved. You can select an entry. The following functions are available:
- [Move to position]: The selected position is approached.
- [Save position]: If the approached position is not correct, you can adjust it manually and save it if you have the necessary rights. With regard to this, please read section Creating a user [► 73].



6.2.2.4 Activated tab [View]

In this menu you can set various preferences. With regard to this, please read section [Customizing the presentation of charts and windows](#) [▶ 72].

✓ Display the menu [View]:

1. In the menu bar, enable the tab [View].

⇒ The menu [View] appears:



In the menu area [View]:

- [Library]: It can hide and show the window [Library].
- [Actual parameters]: It can hide and show the tabs in the lower section of the parameter window.
- [Status bar]: It can hide and show the status bar at the bottom of the screen.

In the menu area [Window]:

- [Window]: It can hide and show the tabs in the lower section of the parameter window.



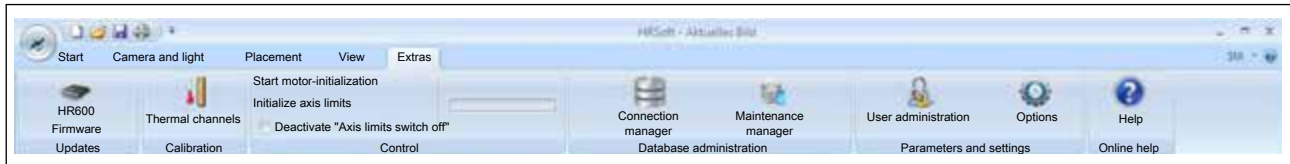
6.2.2.5 Activated tab [Extras]

This menu is only visible if you have logged in at startup as [Administrator]. All adjustments have been carried out when commissioning the HR600 unit. Adjustments must only be changed by trained and qualified staff!

✓ Display the menu [Extras]:

1. In the menu bar, enable the tab [Extras].

⇒ The menu [Extras] appears:



In the menu area [Updates]:

- [HR600 Firmware]: Performing a firmware update. With regard to this, please read section [Firmware update and axis control](#) [► 84].

In the menu area [Control]:

With regard to this, please read section [Firmware update and axis control](#) [► 84].

- [Start motor-initialization]: It performs a motor initialization.
- [Initialize axis limits]: It initializes the axis limits.
- [Deactivate "Axis limits switch off"]]: It disables the axis shutdown.

In the menu area [Calibration]:

- [Thermal channels]: It performs a calibration of the thermal channels.

In the menu area [Database administration]:

- [Connection manager]: With regard to this, please read section [Database assistant](#) [► 78].
- [Maintenance manager]: With regard to this, please read section [Database administration and Maintenance manager](#) [► 81].

In the menu area [Parameters and settings]:

- [User administration]: It opens the [User administration] dialog. With regard to this, please read section [Creating a user](#) [► 73].
- [Options]: It opens the [HRSoft options] dialog. With regard to this, please read section [Setting the language and user control panel](#) [► 76].

In the menu area [Online help]:

- [Help]: It opens [Online help].



6.2.3 Work areas

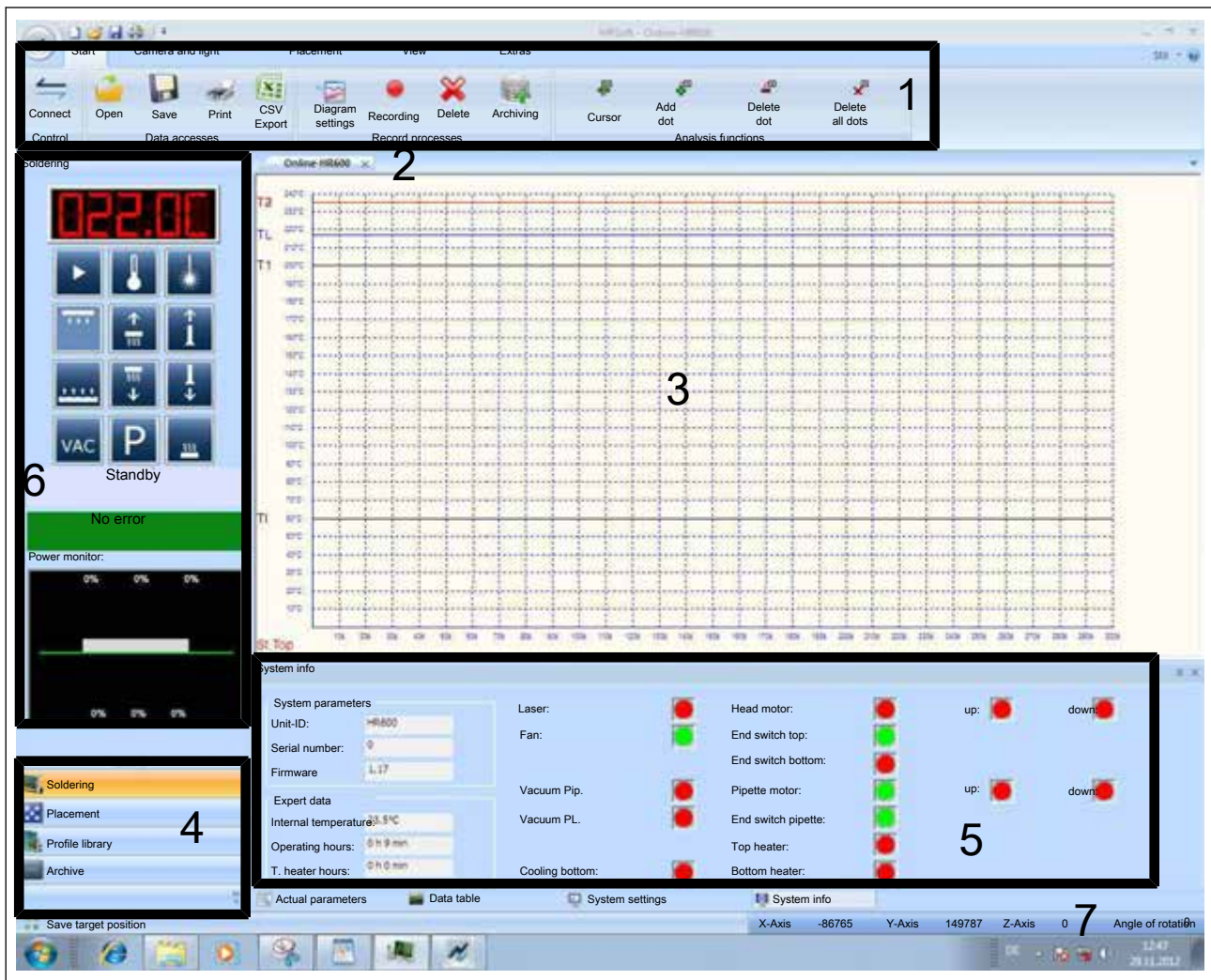


Fig. 9: Work area (6) and function selection (4)

Depending on the selected function in the function selection section (4), it changes the work area appearance.



6.2.3.1 The work area [Soldering]

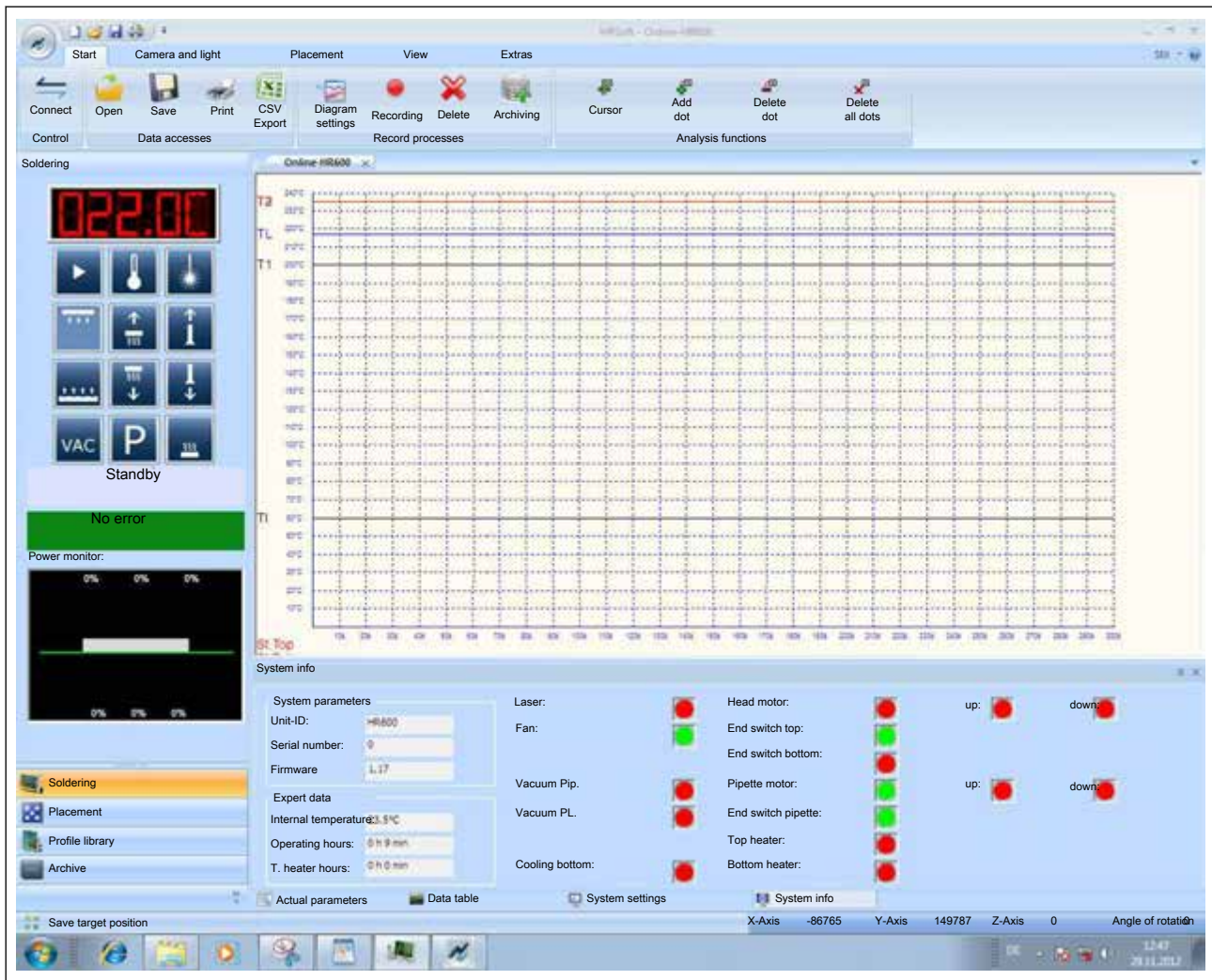


Fig. 10: The work area [soldering]

If [Soldering] is enabled in the tools section, the visual displays and buttons for the soldering process appear in the workspace. In the display window, the [online HR600] window automatically appears.



It displays either the temperature measured by the thermocouple or the temperature of the sensor in the placement head in [°C]. You can select the thermocouples and sensors in the soldering profile (default = TE1). If the value [0.0 °C] is displayed, there is no thermocouple connected to TC1 or TC2 sockets. With regard to this, please read section [Profiles](#) [▶ 87].



[Start and end a process]: It starts the currently activated profile or interrupts a running profile. With regard to this, please read section [Profiles](#) [▶ 87].



[Calibrate process at melting temperature]: It calibrates a connected thermocouple (or the sensor [IRS] on the heating head) on the basis of a solder having a higher or lower melting point than specified in the profile. As soon as the solder melts, the button is to be clicked. This way calibration is performed. A query dialog is displayed. If you confirm with [OK], the value will be stored in the current profile.

Note: You can delete this value again and restore the original setting. With regard to this, please read section [The work area \[Profile library\]](#) [▶ 59].



[Switch laserpointer on/off]: It turns the laser beam on or off. When the laser is on, this button is highlighted. The laser can be used to manually locate (without soldering profile) a component.



[Switch top cooling fan on/off]: It can switch the upper cooling on or off in manual mode (without soldering profile). With regard to this, please read section [Profiles](#) [► 87]. When cooling is on, this button is highlighted.



[Move heating head up]: It moves the heating head to its upper end position.



[Move pipette up]: It moves the pipette to its upper end position.



[Switch bottom cooling on/off]: It switches the lower cooling on or off in manual mode. With regard to this, please read section [The parameter window \[System settings\]](#) [► 67]. When cooling is on, the button is highlighted. You can use this function also for cooling down an assembly. After clicking this button, the assembly is cooled down for another 90 seconds.



[Move heating head down]: By clicking with the left mouse button, you can move the heating head to a working height of approximately 60 mm. With regard to this, please read section [Profiles](#) [► 87]. By clicking with the right mouse button, a context menu appears. You can move the heating head to a working height to be selected among 7 levels.



[Move pipette down]: It moves the pipette to its lower end position. When the drive comes into contact with a component, the former stops automatically.



[Switch pipette vacuum on/off]: It activates and deactivates the vacuum of the pipette. When vacuum is active, the button is highlighted. With regard to this, please read section [Profiles](#) [► 87].



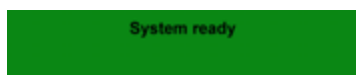
[Parking position]: By clicking this button you can move the heads to the park position. Heating head, placement nozzle and pipette are first moved to non-critical positions.



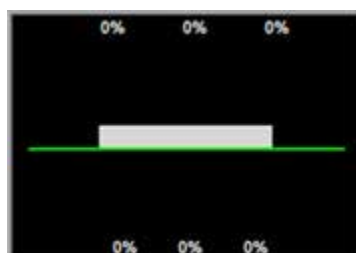
[Switch bottom heater on/off]: The bottom heater is operated in standby mode with a 15% basic load. In this condition, the button is highlighted. By clicking this button, you can turn off the bottom heater; the button will be dimmed.



First status indication: In this display field you can see which functions the system is performing.



Second status indication: In this display field you can see whether any errors occurred during processing. If the display field is shown in green, there are no errors. If the display field is shown in red, you can see the current error message.



Display field [Power monitor]: It displays the current control level of the top and bottom heaters in [%]. You can adjust the individual heating elements of the top and bottom heaters in the profile. With regard to this, please read section [Customizing the radiator configuration in the \[Configuration\] tab.](#) [► 96].



6.2.3.2 The work area [Placement]

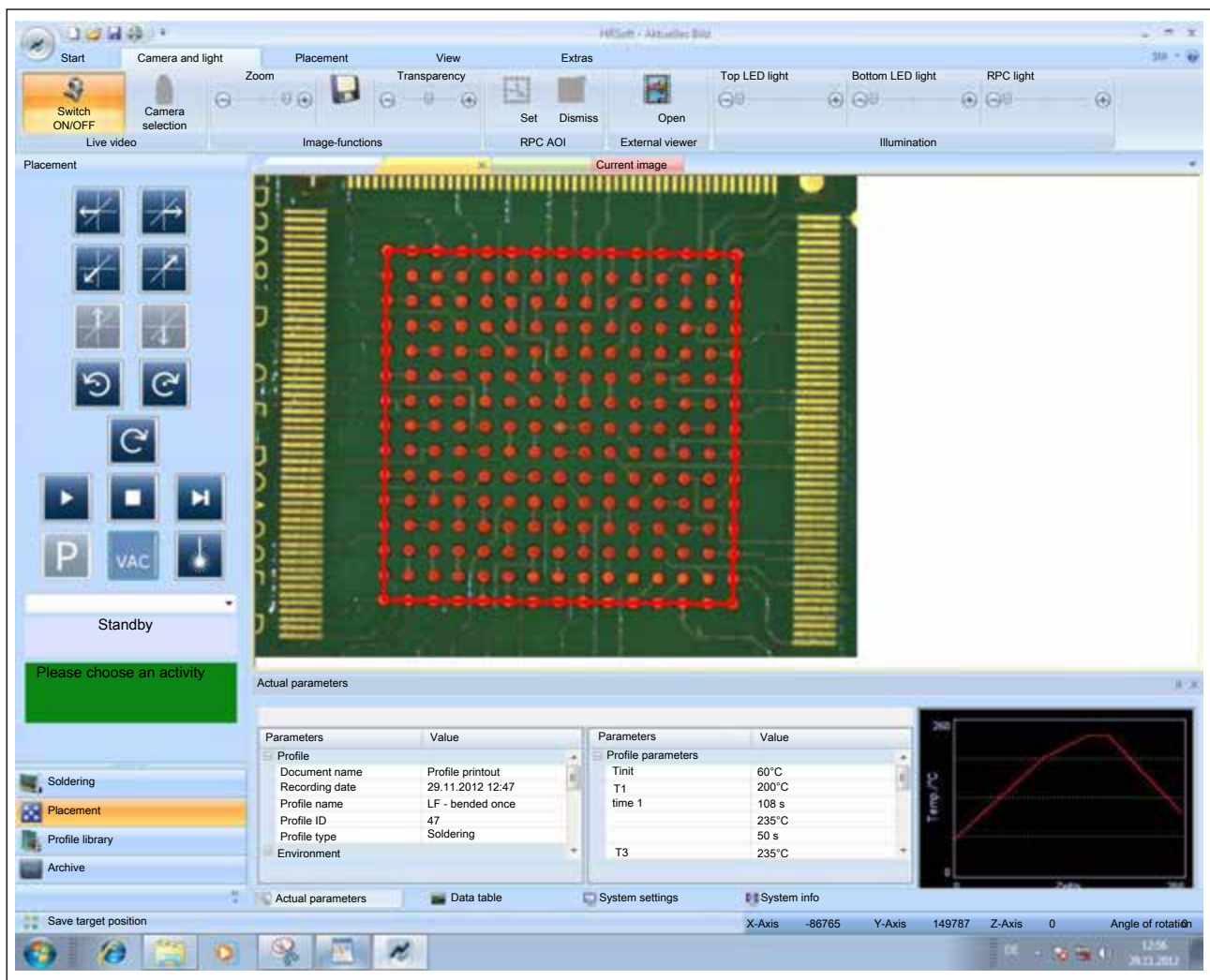


Fig. 11: The work area [placement]

If [Placement] is enabled in the tools section, the displays and buttons for the placement process appear in the workspace. In the display window, the [Current image] window automatically appears



[Move axis left]: It allows moving the heads manually to the left. If you press the scroll wheel while holding down the mouse button, you can speed up or slow down the movement. If an overlay is displayed in the display window, you can move this overlay to the left with this function.



[Move axis right]: It allows moving the heads manually to the right. If you press the scroll wheel while holding down the mouse button, you can speed up or slow down the movement. If an overlay is displayed in the display window, you can move this overlay to the right with this function.



[Move axis forward]: It allows moving the heads manually forward. If you press the scroll wheel while holding down the mouse button, you can speed up or slow down the movement. If an overlay is displayed in the display window, you can move this overlay downward with this function.



[Move axis backward]: It allows moving the heads manually backward. If you press the scroll wheel while holding down the mouse button, you can speed up or slow down the movement. If an overlay is displayed in the display window, you can move this overlay upward with this function.



[Move axis up]: It allows moving the pick-and-place nozzle manually upward.



[Move axis down]: It allows moving the pick-and-place nozzle manually downward.



[Rotate counter clockwise]: It rotates the pick-and-place nozzle counterclockwise. If an overlay is displayed in the display window, you can rotate this overlay counter-clockwise with this function.



[Rotate clockwise]: It rotates the pick-and-place nozzle clockwise. If an overlay is displayed in the display window, you can rotate this overlay clockwise with this function.



[Profil wiederholen]: It applies the part filter which you can select in the drop-down menu [Part Filter]. The camera then re-detects the connection of the part.



[Start placement]: It starts the placement process. The individual steps are then run automatically, and finally the soldering process starts.



[Stop process (terminate)]: It interrupts the process.



[Proceed next step]: It starts the process in single-step mode. In this mode, the process is always stopped when an input is expected from the user. With regard to this, please read section [Starting the placement process](#) ► 114].



[Parking position]: By clicking this button you can move the heads to the park position. Heating head, placement nozzle and pipette are first moved to non-critical positions.



[Switch placer vacuum]: It activates or deactivates the vacuum of the pick-and-place nozzle. When vacuum is active, the button is highlighted.



[Switch laserpointer on/off]: It turns the laser beam on or off. When the laser is on, this button is highlighted. The laser can be used to manually locate (without soldering profile) a component.

Part filter: In this drop-down menu, you can select a filter and apply it by clicking on the  button. Possible filters are [undefined] [BGA], [QFP], [PLCC], [MLF], [SOIC], [CSP].

Standby

First status indication: In this display field you can see which functions the system is performing.

System ready

Second status indication: In this display field you can see whether any errors occurred during processing. If the display field is shown in green, there are no errors. If the display field is shown in red, you can see the current error message.



6.2.3.3 The work area [Profile library]



Fig. 12: The window [Profile table]. Left the workspace [Library], right the window [Profile table].

If [Profile library] is enabled in the tools section, the displays and buttons for profile processing appear in the workspace. In the display window, the [Profile] and [Library] windows appear automatically.

In the frame [Search for profiles]:

It allows searching for a profile. With regard to this, please read section [Searching for a profile](#) [► 91].

In the frame [Template profiles]:

[Show template profiles]: It displays factory supplied profiles.

In the frame [Profile parameters]:

[Add]: It adds a factory-supplied template to your own profile table. You can then customize the template according to your requirements and save it under a new name. With regard to this, please read section [Enabling a profile](#) [► 88].

[Delete]: It deletes a profile from your own [Profile library]. With regard to this, please read section [Deleting a profile](#) [► 90].

[Overwrite]: If you have made any changes to a profile, changes can be saved by clicking on the button in the profile.

[Reset calibration value]: If the [Calibrate process at melting temperature] function has been enabled in the [Soldering] work area, profile calibration was changed. By clicking on the [Reset calibration value] button you can restore the original calibration value. With regard to this, please read section [The work area \[Soldering\]](#) [► 56].



[Activate]: If you have selected a profile in your profile table, the profile is activated by clicking the corresponding button. You can then work with the profile.

[Search term]: It displays a comment belonging to the profile, if there is one stored.

[Image]: It displays a picture belonging to the profile, if there is one stored.

[Show process instructions]: It displays a document belonging to the profile, if there is one stored.

With regard to this, please read section [Entering information into the \[Image and document\] tab](#) [► 102].

The [Profile] window:

In this window you can process profiles. The window contains the [Common settings], [Profile settings], [Configuration], [Placement] and [Image and document] tabs. Depending on the enabled tabs, the corresponding windows are opened.

With regard to this, please read section [Select a profile and save it under a new name](#) [► 93].

The [Library] window:

If this window is not visible, you can display it. With regard to this, please read section [Customizing the presentation of charts and windows](#) [► 72].



6.2.3.4 The [Archive] work area

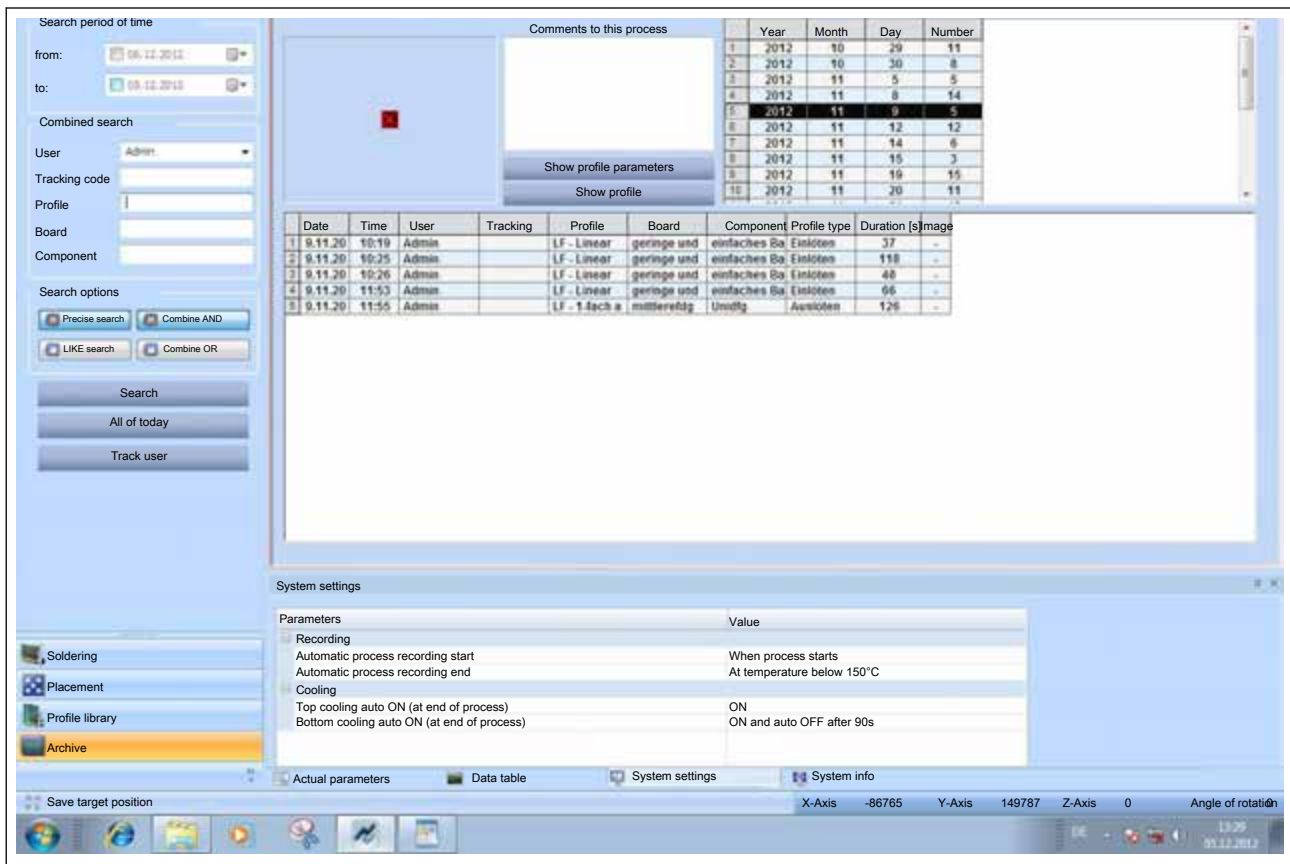


Fig. 13: The [Archive] window

If [Archive] is enabled in the tools section, the displays and buttons to search for recorded processes appear in the workspace. In the display window, the [Archive] window automatically appears.

All recorded processes are stored in the archive. You can search for process records and display them. In addition, you can view the profiles belonging to the process.

In the frame [Search period of time]:

It allows you to search within a time period. By clicking on the input fields [from:], [to:], you can specify the search time period.

In the frame [Combined search]:

[User]: Search for the process records of a specific user.

[Tracking code]: Search for files provided with a [Tracking code].



The next three search filters refer to the profiles which were activated during the recording of a process. You can search for the features [Profile name], [Board] or [Component] With regard to this, please read section Customizing a profile in the [Common settings] tab. [► 94].

[Profile]: Search for [Profile name], which has been specified in the profile.

[Board]: Search for [Board] properties which have been specified in the profile.

[Component]: Search for [Component] properties which have been specified in the profile.

In the frame [Search options]:

By clicking on [Precise search], [LIKE search], [Combine AND], [Combine OR] you can optimize the search function. If the square inside the button is shown in orange, the corresponding option is active.

[Precise search]: It searches for the exact term.

[LIKE search]: It also searches for similar terms.

[Combine AND]: It displays only the data records containing all search terms.

[Combine OR]: It displays all the data records containing at least a search term.

Buttons:

[Search]: It starts search.

[All of today]: It starts search. All current day recorded processes are displayed. Search filters are active.

[Track user]: It starts search. All recorded processes of [User] selected above are displayed in a separate table. The table contains the following columns [Year], [Month], [Day], and [Number]. If you select a line, it highlights with color. The accompanying notes are displayed in the table below as a search result. Search filters are active.

**The [Archive] window:**

The search results are displayed in this window. The window also contains the buttons to display the record.

At the bottom of the window, the search results are displayed in table form. The table contains the following columns: [Date], [Time], [User], [Tracking], [Profile], [Board], [Component], [Profile type], [Duration [s]], and [Image].

✓ To view a process recording:

1. Carry out a search
2. Select a search result in the table.
3. Click on [Show profile].

⇒ The process recording is displayed in a new window.

⇒ Note: You can customize the display in this window. With regard to this, please read section [The parameter window \[Data table\]](#) [▶ 66].

✓ View the profile parameters associated with a process recording:

1. Carry out a search.
2. Select a search result in the table.
3. Click on [Show profile parameters].

⇒ The [Profile parameters] window is opened. There you can see all the parameters.



6.2.4 The parameter windows

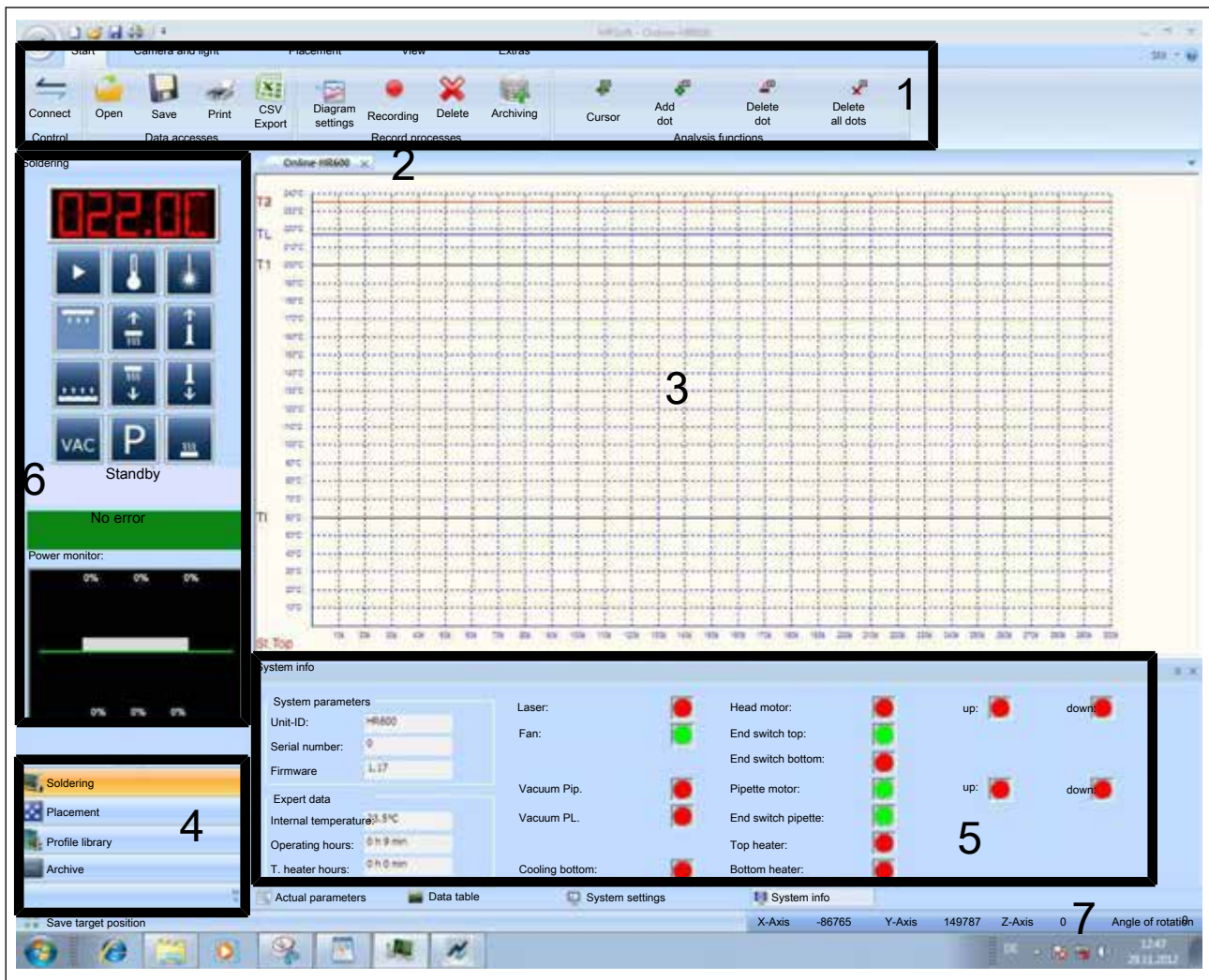


Fig. 14: The parameter window

Parameter windows are displayed in portion (5). The representation of parameter windows is independent of:

- the tabs selected in the menu bar (1)
- the tabs chosen when selecting the function (4)

The parameter window is therefore always visible.

In the lower section of the parameter window are the tabs for:

- [Actual parameters]
- [Data table]
- [System settings]
- [System info]

Depending on the tabs activated, the parameter window changes its appearance.

You can set the tabs to be displayed in the lower section of the parameter window. With regard to this, please read section [Customizing the presentation of charts and windows](#) [▶ 72].



6.2.4.1 The parameter window [Actual parameters]

The [Profile parameters] of the currently active profile are displayed in this window.

✓ To display the [Actual parameters] parameter window:

1. Enable the [Actual parameters] tab:

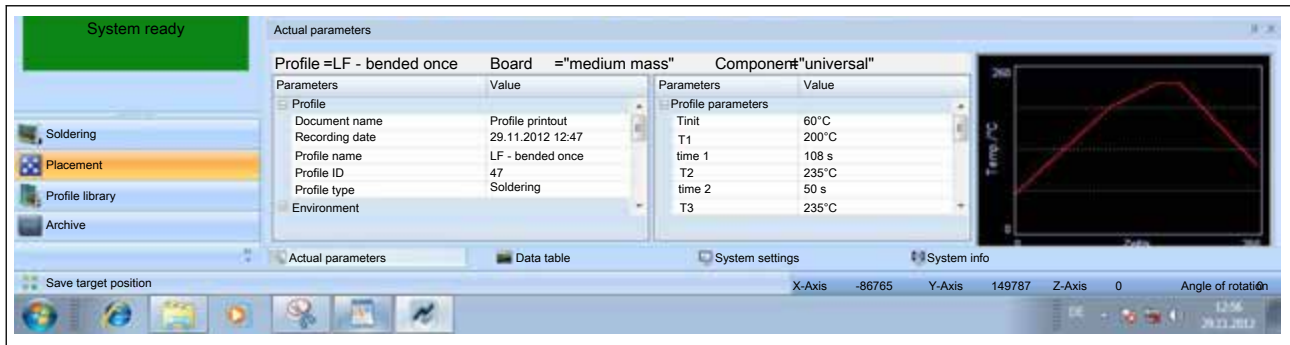


Fig. 15: The parameter window [Actual parameters]

- ⇒ If you have enabled a [Profile], you can display the selected parameters in the parameter window [Actual parameters]:
- Name of the currently active profile
 - Tabular representation of the profile parameters
 - Graphical representation of the gradient; please read section [Customizing gradients in the \[Profile Settings\] tab](#) [▶ 95].



6.2.4.2 The parameter window [Data table]

In the parameter window [Data table] you can specify which values to display in the window [Online-HR 600]. You can also set the properties of the graphical representation of these values. With regard to this, please read section [The window \[Online HR 600\]](#) [► 70].

✓ To display the parameter window [Data table]:

1. Enable the [Data table] tab:

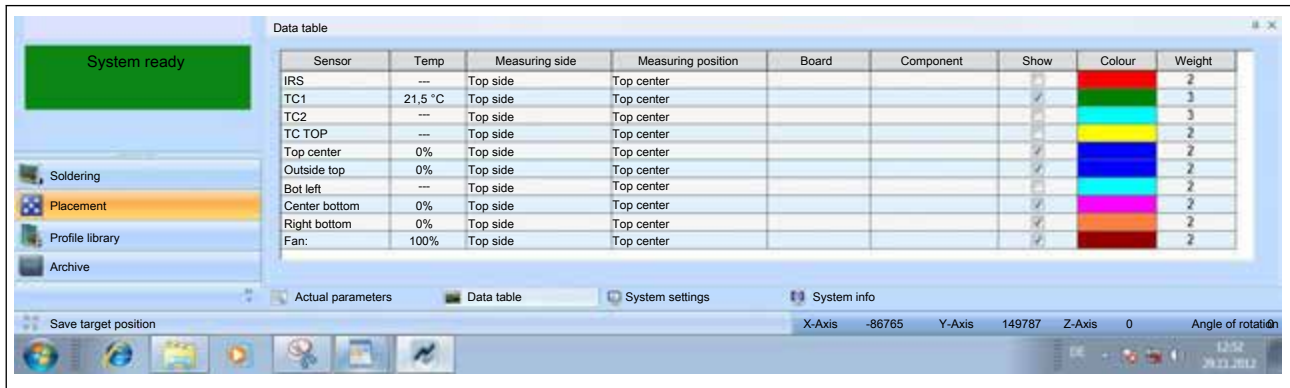


Fig. 16: The parameter window [Data table]

To display measured values:

✓ Select which measured values you want to display in the window [Online-HR 600]:

1. In the register [Show], enable the checkbox of a measured value.
 - ⇒ If the checkbox is enabled, a checkmark appears.
 - ⇒ The measured value is displayed in the [Online-HR 600] window.

To customize the graphical representation:

✓ To customize the graphical representation in the [Online-HR 600] window:

1. For the desired measured value, select a colour from the drop-down menu [Colour].
 2. For the desired measured value, select a line thickness from the drop-down menu [Weight].
- ⇒ The process has now been completed.



6.2.4.3 The parameter window [System settings]

In the parameter window [System settings] you can set the requirements for automatic soldering process recording and automatic cooling.

✓ To display the parameter window [System settings]:

1. Enable the [System settings] tab:

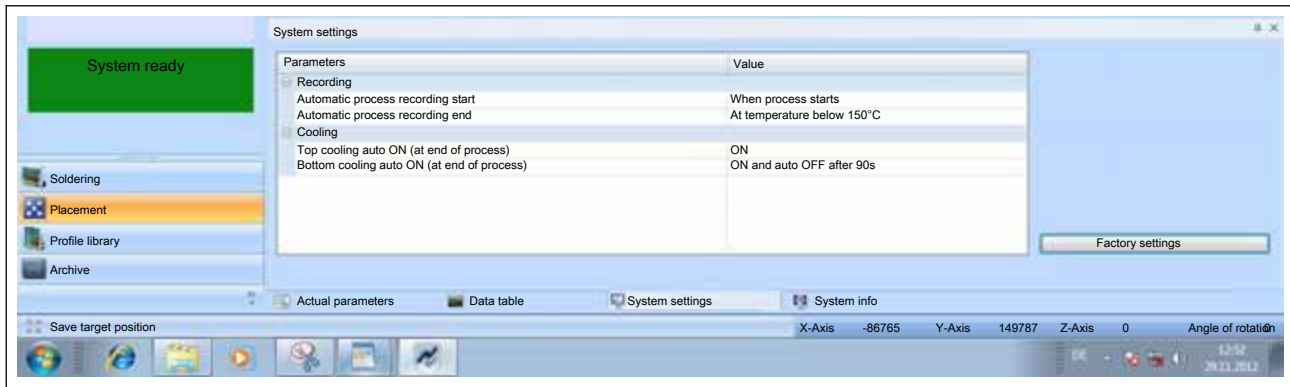


Fig. 17: The parameter window [System settings]

To record start/stop:

✓ To determine when to start and stop the recording:

1. In the register [Parameters], you can see a list of editable parameters.
2. In the register [Value], click on a line.
3. Select an entry from the drop-down menu.

⇒ The setting has been changed and is immediately active.

To automate cooling:

✓ Define when cooling is to be automatically switched on and off:

1. In the register [Parameters], you can see a list of editable parameters.
2. In the register [Value], click on a line.
3. Select an entry from the drop-down menu.

⇒ The setting has been changed and is immediately active.

To restore factory settings:

✓ To restore factory settings:

1. Click on [Factory settings].

⇒ The factory settings have been loaded and are immediately active.

The settings made here affect all soldering processes!



6.2.4.4 The parameter window [System info]

In the parameter window [System info], you can display information on the HR 600 unit as well as its status.

✓ To display the parameter window [System info]:

1. Enable the [System info] tab:

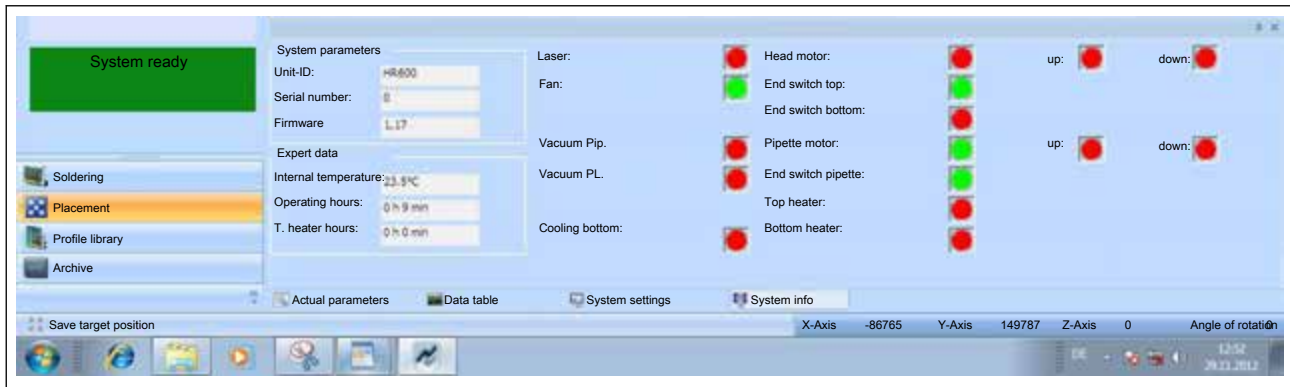


Fig. 18: The parameter window [System info]

Information

- [System parameters]: It shows information on the HR 600 unit.
- [Expert data]: It displays information on the operational data.



Status indications

The status indications are displayed in red or green:

- Red: The function is not active
- Green: The function is active

The following status indications are available:

- [Laser:]: Laser status
- [Fan:]: Status of cooling from above
- [Vacuum Pip.]: Status of the pipette in the heating head
- [Vacuum PL.]: Status of the positioning nozzle in the placement head.
- [Cooling bottom:]: Status of cooling from below
- [Head motor:]: Status of the Z-axis of the head motor
- [End switch top:]: Status of the upper limit switch in the heating head
- [End switch bottom:]: Status of the lower limit switch in the heating head
- [Pipette motor:]: Status of the pipette motor
- [End switch pipette:]: Status of the pipette end switch
- [Top heater:]: Status of cooling from above
- [Bottom heater:]: Status of cooling from below



6.2.5 The window [Online HR 600]

This window appears automatically when you enable the [Soldering] button in the tools section. The window graphically represents an active soldering process:

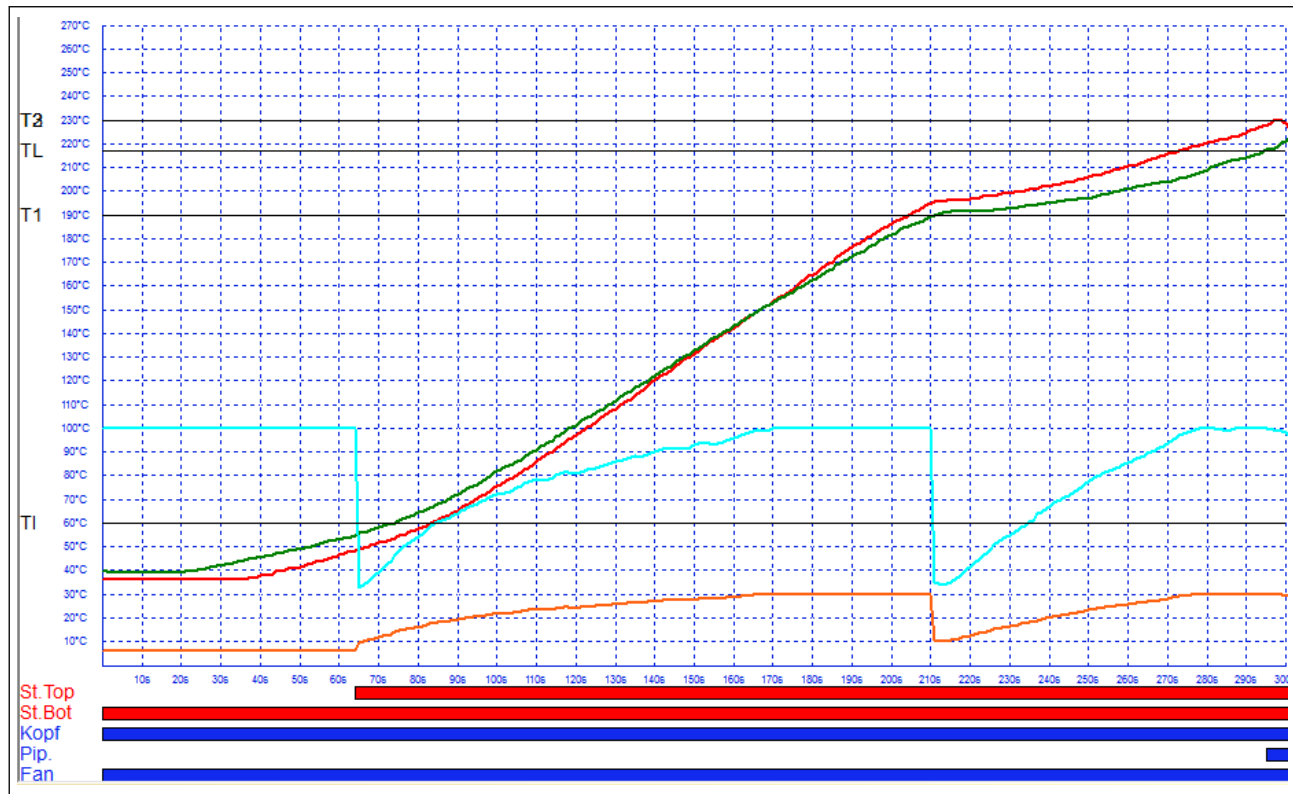


Fig. 19: Process recording

Note: You can customize the display in this window. With regard to this, please read section [The parameter window \[Data table\]](#) [66].



6.3 Working with the HR 600 unit

6.3.1 Presets

6.3.1.1 Customizing the presentation of charts and windows

You can customize the user interface according to your working method. You may want to hide some windows permanently, because you do not need them for your work. Also the presentation of charts can be changed.

✓ To open the menu [View]:

1. In the menu bar, enable the [View] tab.

⇒ The menu [View] appears:



Fig. 20: The menu [View]

To show and hide the library:

✓ To show and hide the [Library] window:

1. Click on [Library] in the [View] menu area.

⇒ The [Library] window is shown or hidden:



Fig. 21: The window [Library] is shown



Displaying tabs:

You can show and hide the tabs [Actual parameters], [Data table], [System settings] or [System info] in the lower section of the parameter window.

✓ To show and hide the tabs:

1. In the menu area [View], click the drop-down menu [Actual parameters] and select an entry.

⇒ The tabs are shown and hidden:

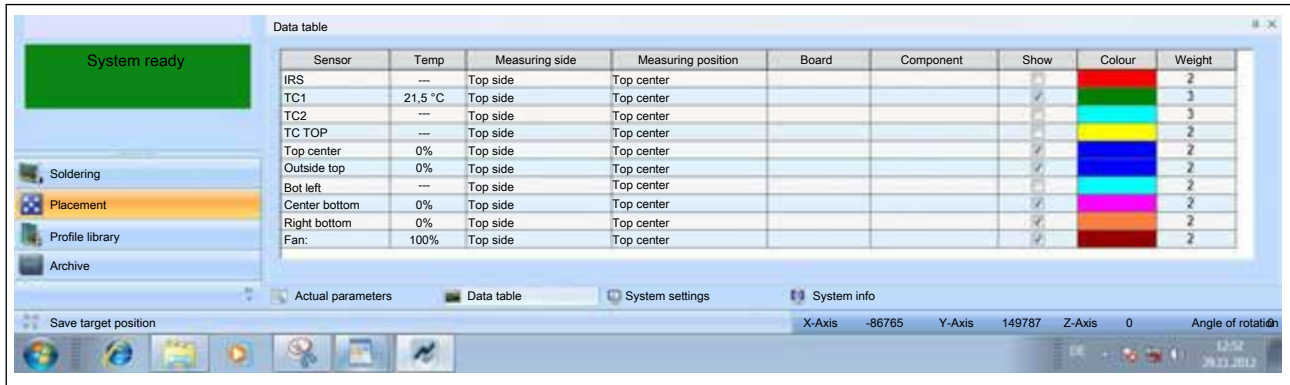


Fig. 22: The parameter window. All tabs are shown.

With regard to this, please read section [The parameter windows](#) [▶ 64].



6.3.1.2 Creating a user

You can lock or unlock individual sections of the machine control system for a certain group of people. To do this, the dialog box [User administration] is used. To use this feature, you must log in as [Administrator], and the [User administration] must be enabled. Otherwise, the user control panel is not visible at startup, and no log-in is required. With regard to this, please read section [Setting the language and user control panel](#) [► 76].

✓ To open the dialog box [User administration]:

1. In the menu bar, enable the tab [Extras].

⇒ The menu [Extras] appears:

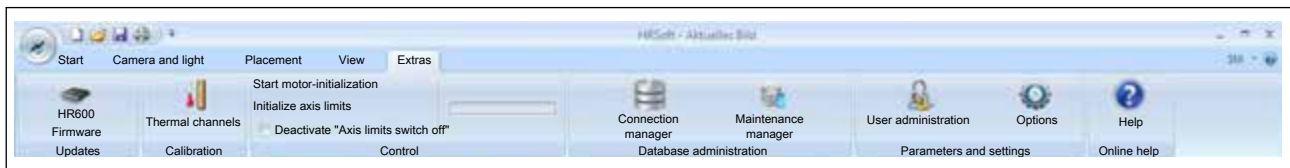


Fig. 23: The menu [Extras]

2. Click on [User administration] in the [Parameters and settings] menu area.

⇒ The [User administration] dialog box is displayed:

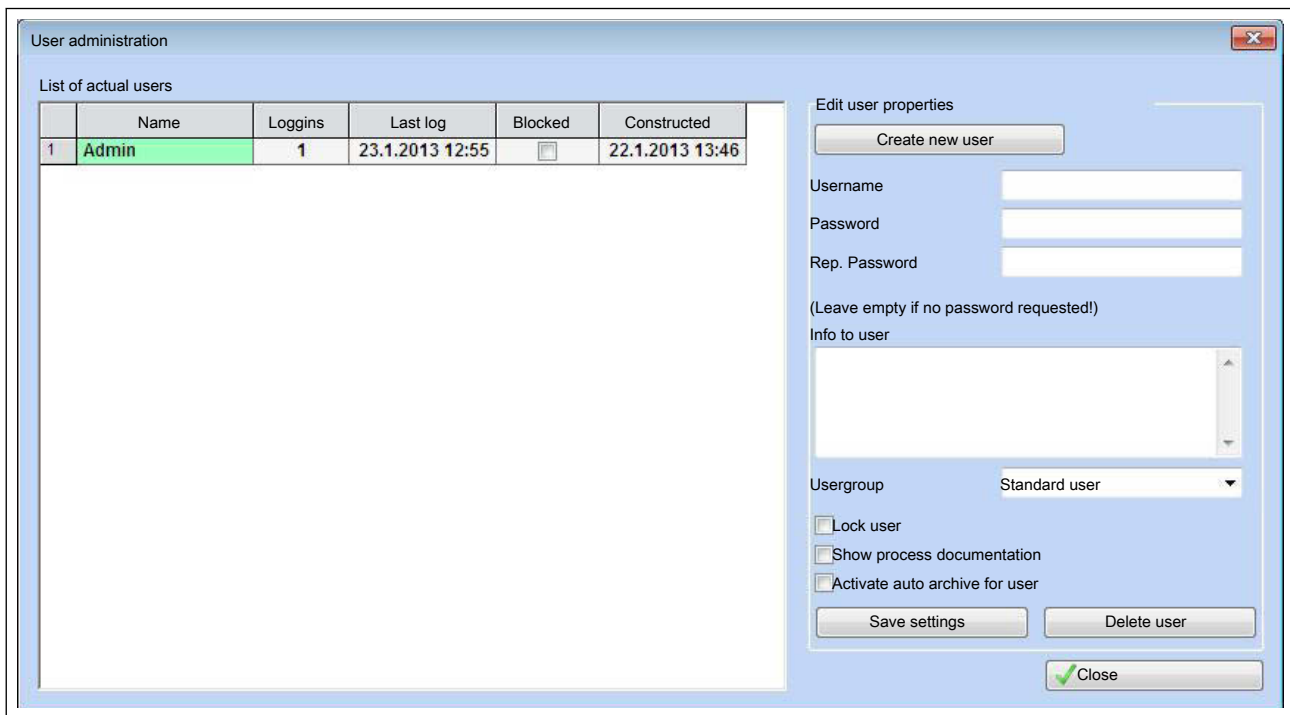


Fig. 24: The dialog box [User administration]

To add a user:

✓ To add a user:

1. Click on [Create new user].

2. Enter a name into the entry field [Username].

⇒ When typing, remember that commands are case-sensitive! If, for example, a user with the name [User1] was created, an error message is triggered if [user1] is entered!

3. Enter a password into the entry field [Password].



- ⇒ The password is not shown when it is entered but displayed in a coded way (*****). When typing, remember that commands are case-sensitive! If, for example, the password [Administrator] was created, an error message will be triggered if [administrator] is entered.
- 4. Enter an explanatory text into the entry field [Info to user].
- 5. Select a group in the drop-down menu [Usergroup]. You can choose among [Standard user], [Power user] and [Administrator].
 - ⇒ This selected group of users will be later integrated and provided with the appropriate rights.
- 6. Enable the checkbox [Lock user], when the user is to be blocked. In this case, the user will not be able to login any more.
- 7. Enable the checkbox [Show process documentation] when...
- 8. Enable the checkbox [Activate auto archive for user] when the processes recorded by the user are to be automatically archived.
- 9. Click on [Save settings].
 - ⇒ The user is created and appears in the [List of actual users] window.
- 10. Click on [Close].
 - ⇒ The process has now been completed.



User administration

List of actual users

	Name	Loggins	Last log	Blocked	Constructed
1	Admin	1	23.1.2013 12:55	☐	22.1.2013 13:46

Edit user properties

Create new user

Username

Password

Rep. Password

(Leave empty if no password requested!)

Info to user

Usergroup

☐ Lock user

☐ Show process documentation

☐ Activate auto archive for user

Save settings Delete user

Close

Fig. 25: The dialog box [User administration]

To delete users:

- ✓ Deleting a user. You can perform this task only if you have logged in at startup as [Administrator]:
- 1. Select a user in the window [List of actual users]. The selection highlights with colour.
- 2. Click on [Delete user].
- ⇒ The user is deleted.

To change user properties:

- ✓ Changing the user properties. You can perform this task only if you have logged in at startup as [Administrator]:
- 1. Select a user in the window [List of actual users]. The selection highlights with colour.
- 2. Change user properties in the frame [Edit user properties].
- 3. Click on [Save settings].
- 4. Click on [Close].
- ⇒ The process has now been completed.

To cancel a procedure:

- ✓ Closing the dialog box [User administration] without applying changes. If you want to cancel a procedure, use this function:
- 1. Click on [Close].
- ⇒ The dialog box is closed and changes are not applied. However, this works only if [Save settings] **was not** previously clicked.



6.3.1.3 Setting the language and user control panel

This menu is only visible if you have logged in at startup as [Administrator] or as [Power user]. You can enable [User administration] and [Auto-archiving] as well as change the user interface language in the [Options] menu.

[Auto-archiving] and [User administration]:

✓ Enable [Auto-archiving] and [User administration]:

1. In the menu bar, enable the tab [Extras].

⇒ The menu [Extras] appears:



Fig. 26: The menu [Extras]

2. Click on [Options] in the [Parameters and settings] menu area.

⇒ The [HRSOFT options] dialog box is displayed:

3. Click on [Common settings] in the left section of the frame:

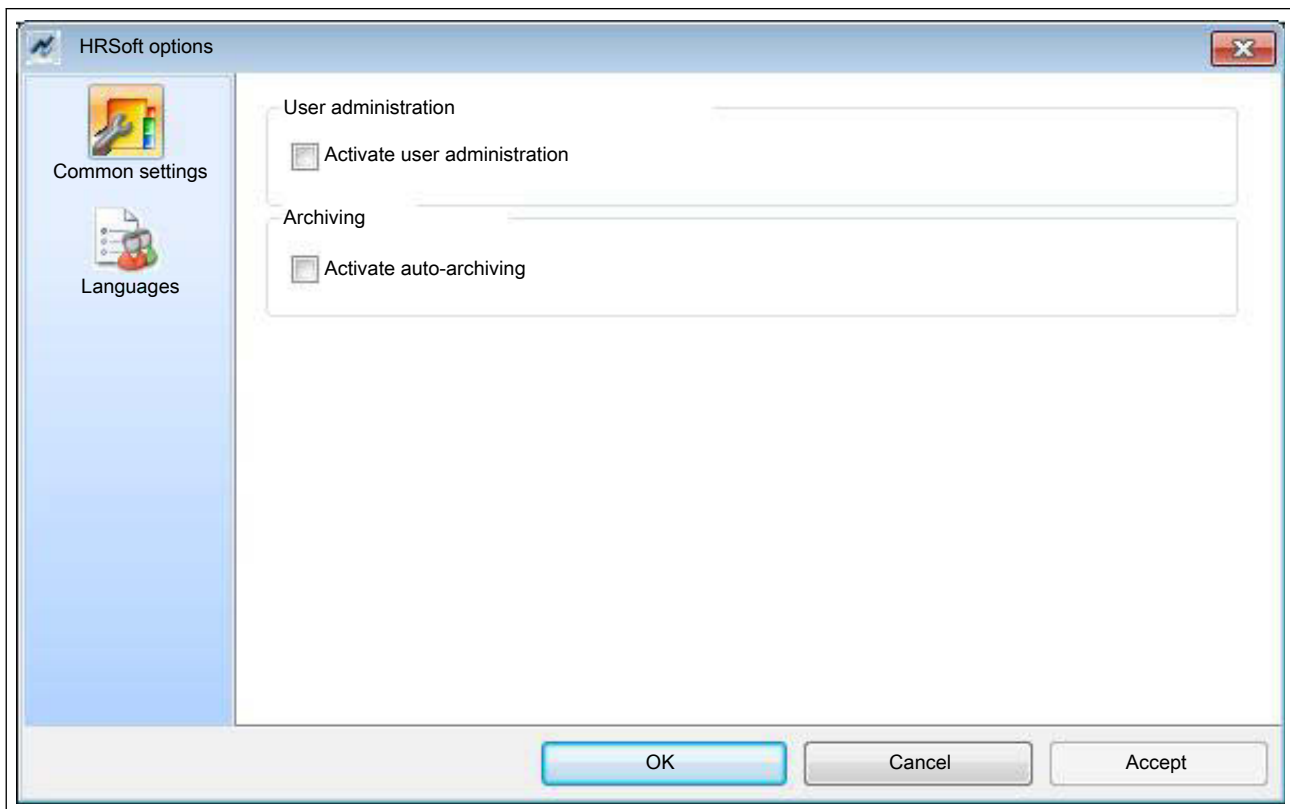


Fig. 27: The dialog box [HRSOFT options] [Common settings]

4. Enable the checkbox [Activate auto-archiving] in the [Archiving] frame.

5. Enable the checkbox [Activate user administration] in the [User administration] frame.

⇒ The frame [Archiving] is hidden. You can display the frame again by deselecting [User administration]. To do this, the rights [Power user] or [Administrator] are required.

1. Click on [OK].



⇒ The process has now been completed. To use the user control panel, you must restart HRSoft.

Changing the language

✓ To change the user interface language:

1. Click on [Languages] in the left section of the frame:

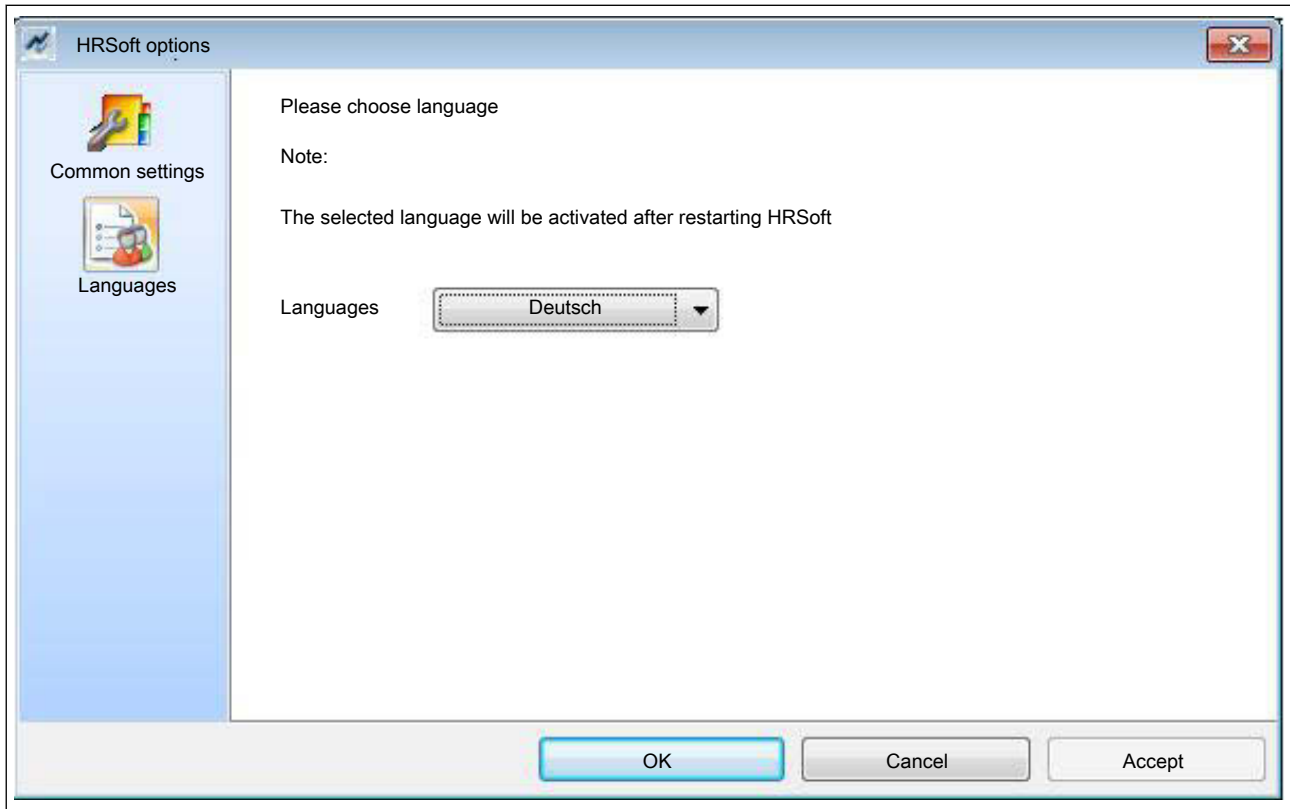


Fig. 28: The dialog box [HRSoft options] [Languages]

2. Select a language in the drop-down menu [Languages].

3. Click on [OK].

⇒ The process has now been completed. To enable the selected language, you must restart HRSoft.



6.3.1.4 Database assistant

To work with the HR 600 unit, the [ErsaHRData] database is required. This database contains the user data, profiles and process records. The database must be set up on an SQL server.

All server and database settings have already been made when commissioning the HR 600 unit; with regard to this, please read section [Starting HRSoft](#) [▶ 41]. Should it be necessary to make changes to these settings, you can use the [Database assistant]. It is recommended to use an SQL server on a network drive and outsource the database there. This database can then be used simultaneously by multiple users of the HR 600 unit. For any questions about the regular backup of the database, contact your network administrator. You can also back up the database manually. With regard to this, please read section [Database administration and Maintenance manager](#) [▶ 81].

✓ To open the dialog box [Database assistant]:

1. In the menu bar, enable the tab [Extras].

⇒ The menu [Extras] appears:

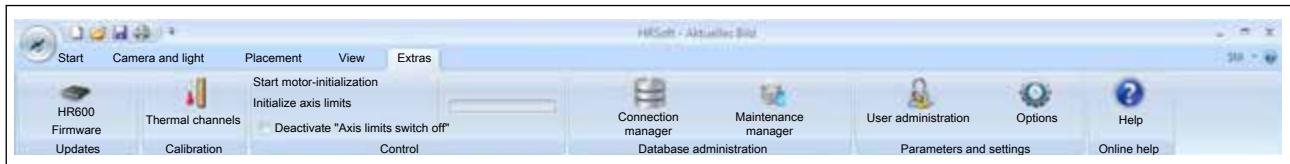


Fig. 29: The menu [Extras]

2. Click on [Connection manager] in the [Database administration] menu area.

⇒ The [Database assistant] dialog box is displayed:



Fig. 30: The dialog box [Database assistant]

Selecting a new server:

- ✓ To select a new server:
 1. [Server name:]: Select a server from the drop-down menu.
 2. Click on [Update].

⇒ The data in the [Information] frame is updated.

Authentication:

- ✓ To perform authentication:
 1. Select an authentication method in the [Login on server] frame.

⇒ You may need to enter a username and a password!
 2. Click on [Connect server].

⇒ The connection to the server is established.



To select a database:

- ✓ Select a database on the server, if it already exists on the server:
 1. Select the [ErsaHrData] database from the drop-down menu [Database on server] in the [Database selection] frame.
 2. Click on [Test connection].
 - ⇒ A message appears.
 3. Confirm with [OK].
 - ⇒ The connection to the database is now established.

To create a new database:

- ✓ If the [ErsaHrData] database is not yet available, create a new database on the server:
 1. Click on [Create HR database] in the [Database selection] frame.
 - ⇒ A new database named [ErsaHRData] is created.
 2. Click on [Test connection].
 - ⇒ A message appears.
 3. Confirm with [OK].

To delete a database:

	⚠ CAUTION Risk of data loss! If you delete the [ErsaHrData] database, all user data, profiles and process records contained therein will be lost! Delete the database only when you no longer need the data, or if you have previously created a backup!
---	---

With regard to this, please read section [Database administration and Maintenance manager](#) [► 81].

- ✓ To delete a database:
 1. Select a database in the [Database on server] drop-down menu.
 2. Click on [Delete database].
 - ⇒ A query dialog is displayed.
 3. Confirm with [OK].
 - ⇒ The database has been deleted.



6.3.1.5 Database administration and Maintenance manager

In these menus you can view the computer/server settings. You can also create a backup of the [ErsaHrData] database, restore a backup and optimize the database.

✓ To open the dialog box [Database service]:

1. In the menu bar, enable the tab [Extras].
2. The menu [Extras] appears:

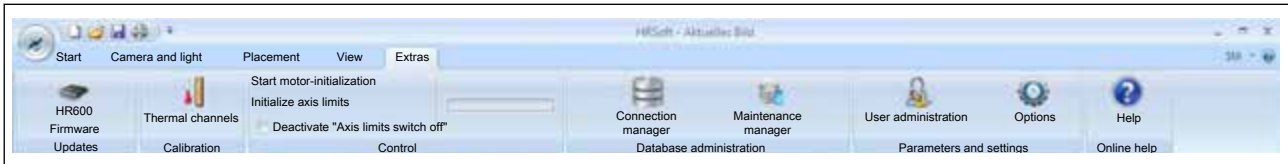


Fig. 31: The menu [Extras]

3. Click on [Maintenance manager] in the [Database administration] menu area.

⇒ The [Database service] dialog box is displayed:

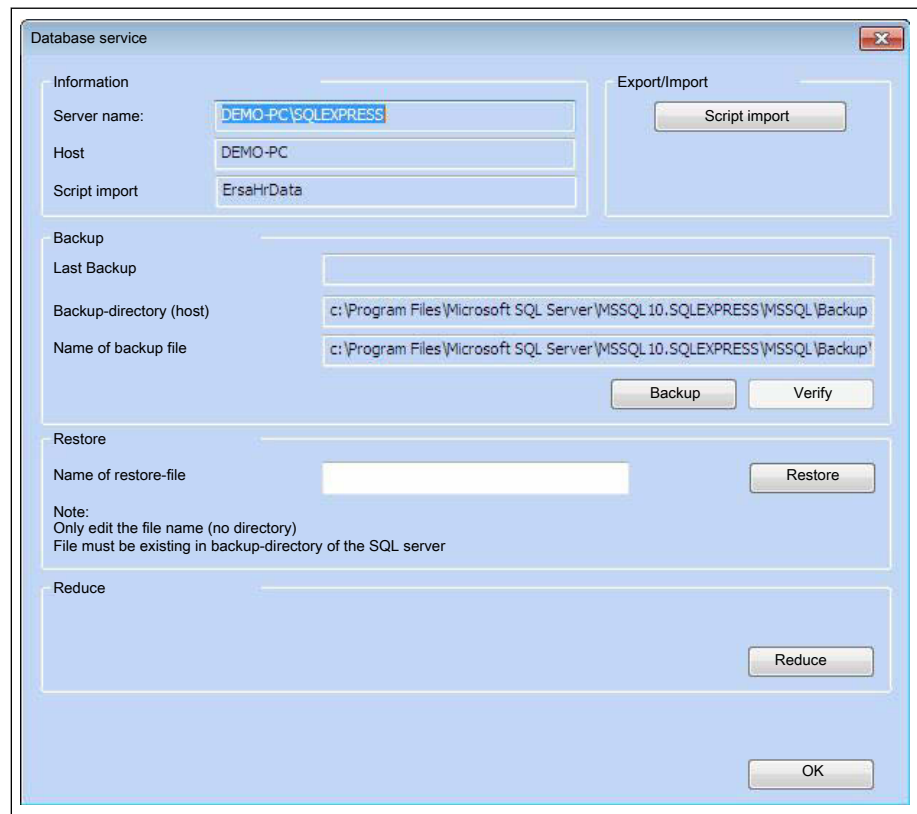


Fig. 32: The dialog box [Database service]

The frame [Information]:

In this frame, the information entered into the dialog box [Database assistant] is displayed:

[Server name:], [Host] and [Database]. With regard to this, please also read section [Database assistant](#) [► 78].

The frame [Export/Import]:

In this frame you can import additional profile templates. The original profile templates will be overwritten. The file must be available in the file format [.scr].



✓ To import profile templates:

1. Click on [Script import].
⇒ A window is opened.
2. Select a file in [.scr] format.
3. Confirm with [OK].
⇒ The profile templates are imported.

The frame [Backup]:

In the display field [Last Backup]:

In the display field [Backup-directory (host)], you can find the path to the backup process.

In the display field [Name of backup file], you can find the path and full file name of the backup process.

✓ To create a backup of the [ErsaHrData] database:

1. Click on [Backup].
⇒ The backup is created.
⇒ A message appears.
2. Confirm with [OK].
⇒ The backup has been successfully created.

✓ To check a created backup:

1. Click on [Verify].
⇒ The backup is verified.
⇒ A message appears.
2. Confirm with [OK].
⇒ The process has now been completed.

The frame [Restore]:

✓ To restore a backup of the [ErsaHrData] database:

1. Enter the full file name of the backup file into the entry field [Name of restore-file].
⇒ Note: Navigate using Windows Explorer to the directory [Name of restore-file] and copy the desired file name to the clipboard. Return to HrSoft and copy the name in the entry field [Name of backup file].
2. Click on [Restore].
⇒ The backup is restored.
⇒ A message appears.
3. Confirm with [OK].
⇒ The process has now been completed.

The frame [Reduce]:

✓ To optimize a database:

1. Click on [Reduce].



⇒ The database is optimized and restored. Through this operation, the file size decreases.

1. Click on [OK].

⇒ The process has now been completed.



6.3.1.6 Firmware update and axis control

The following operations must be performed by trained and qualified staff only!

✓ To perform a firmware update:

1. In the menu bar, enable the tab [Updates].

⇒ The menu [Extras] appears:

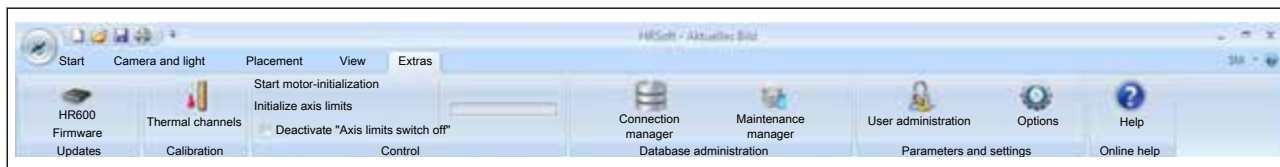


Fig. 33: The menu [Extras]

2. Click on [HR600 Firmware] in the [Updates] menu area.

⇒ The [Update firmware] dialog box is displayed:

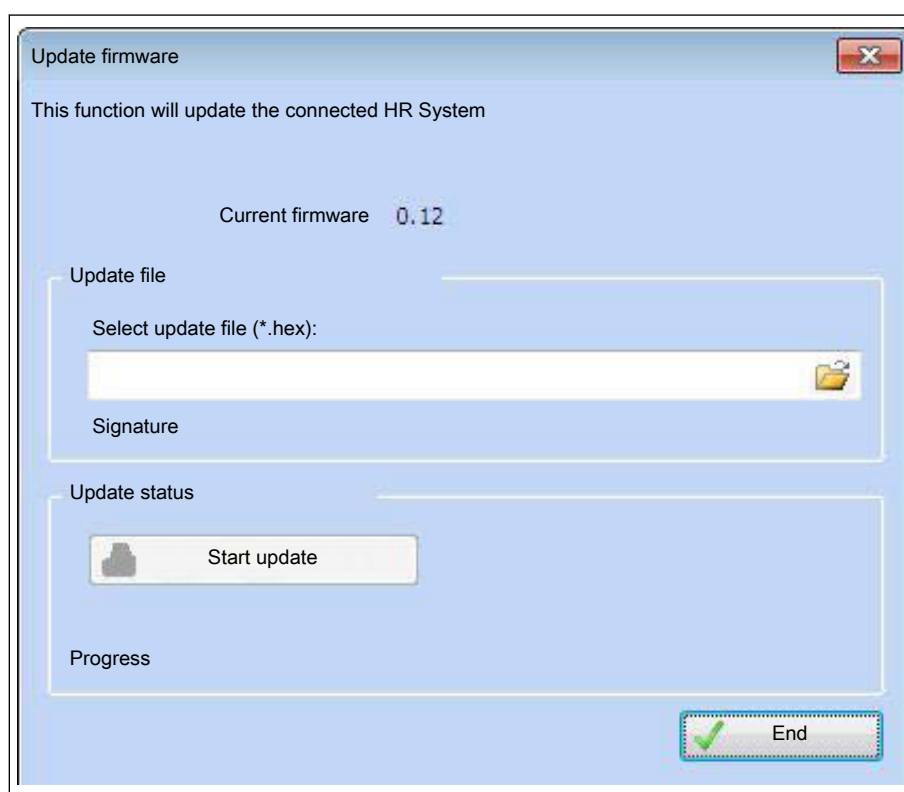


Fig. 34: The dialog box [Update firmware]

The [Current firmware] is displayed in the upper part of the window. Information about the current firmware version can be found in chapter [The parameter window \[System info\]](#) [▶ 68].

Axis initialization:

	 CAUTION Risk of material damage! Initialization has already been carried out when configuring the HR600 unit, and should not be generally changed. Settings must only be changed by trained and qualified staff!
---	--



✓ Initializing the motor and the axis limits; disabling the axis shutdown:

1. To do this, the following functions are available in the menu area [Control]:
⇒ [Start motor-initialization], [Initialize axis limits] and [Deactivate "Axis limits switch off"]].

Firmware update:

✓ To perform a firmware update:

1. In the display field [Select update file (*.hex):], click on the icon of the file folder.
⇒ A window is opened.
2. Search for the update file. The file must be available in the file format [.hex].
3. Click on [Open].
⇒ If the version level of the selected file is equal to or lower than the current firmware version level, an error message is displayed. In this case, you cannot update the firmware with this file.
⇒ If the version level of the selected file is higher than the current firmware version level:
4. Click on [Start update].
⇒ A message appears.
5. Click on [OK].
⇒ The update is carried out.
6. Wait for a message to be displayed.
7. Confirm the message with [OK].
⇒ The process has now been completed.



6.3.2 Profiles

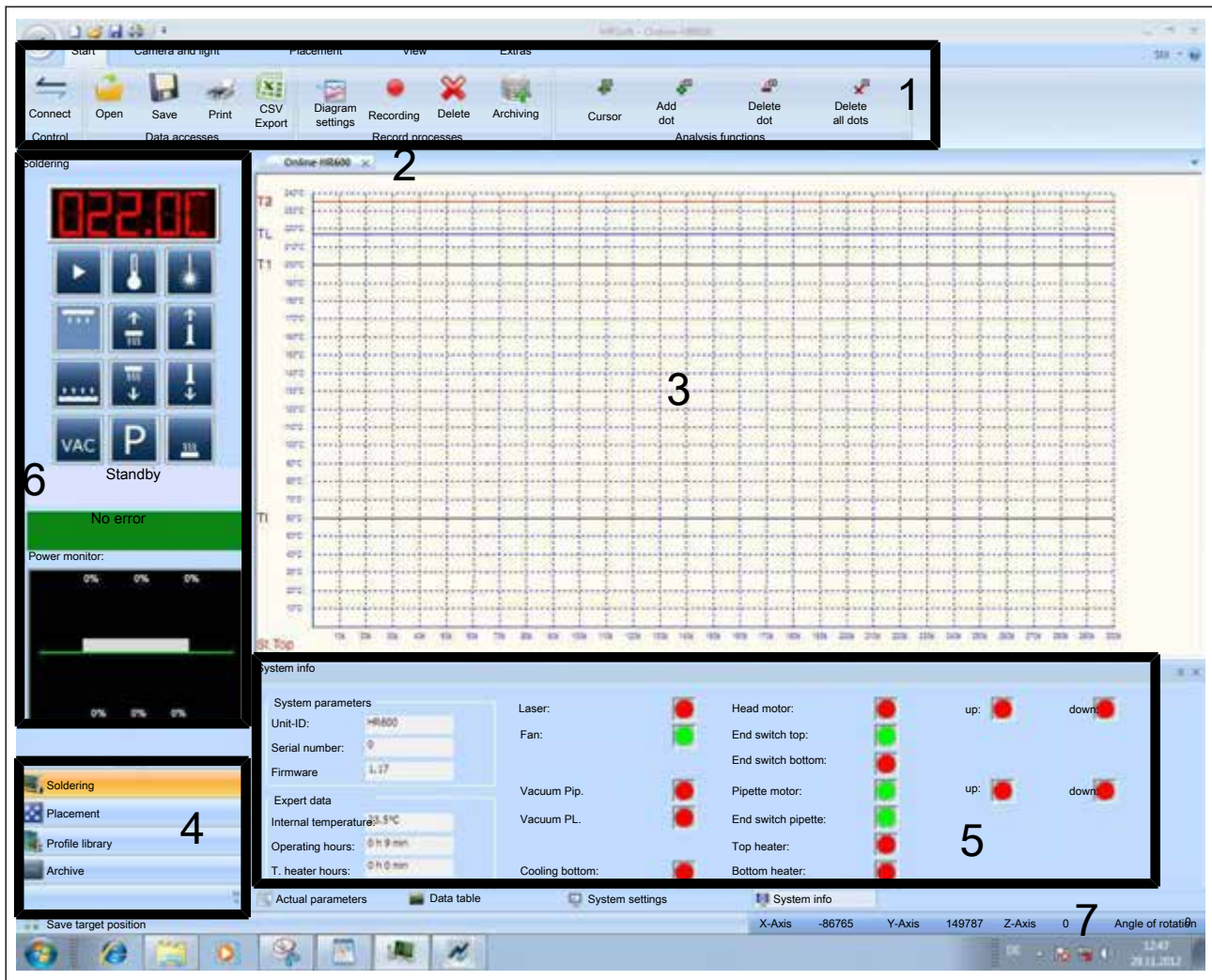


Fig. 35: User interface

1	Menu bar	4	Function selection
2	Tab	5	Parameter window
3	Display window	6	Work area



What are profiles?

Profiles contain all the relevant data for the rework process and settings. You can create profiles, save them and enable them at a later time.

✓ To display profiles:

1. In the function selection field, enable the tab [Profile library].

⇒ The window [Profile] is displayed in the display window (3):



Fig. 36: Profiles



6.3.2.1 Enabling a profile

Some [Template profiles] are deposited in the factory. These templates already contain useful settings for the most common rework processes. You can choose a template, customize it to your needs, as well as rename and save it. To do this, first select a template and then save it in your own [Profile library].

Selecting a template:

✓ Select a template and save it in your own [Profile library]:

1. In the function selection field, enable the tab [Profile library].

⇒ The window [Profile] is displayed in the display window:



Fig. 37: Profiles

2. Enable the [Common settings] tab.

3. The [Profile library] appears; on delivery, the table is empty.

4. Click on [Show template profiles] in the [Search for profiles] frame.

⇒ The window [Profile-templates] appears:

5. Select one or more templates and confirm with [OK].

⇒ The template is copied and saved in your own [Profile library]. There you can enable, customize, rename and save the profile.



Enabling profiles

✓ To enable a profile:

1. In the function selection field, enable the [Profile library] tab.

⇒ The window [Profile] is displayed in the display window:

2. Enable the [Common settings] tab.

⇒ The window [Profile] appears:



Fig. 38: Profile, enabled [Common settings] tab

3. In the table, select a profile; the profile highlights with colour.

4. Depending on the work you want to carry out, select either a Profile type for Desoldering or a Profile type for Soldering.

5. Click on [Activate] in the [Profile parameters] frame.

⇒ The profile is loaded and immediately active. You can now work with the profile.



6.3.2.2 Deleting a profile

A profile which is no longer needed can be deleted.

✓ To delete a profile:

1. In the [Profile library], select a profile; the profile highlights with colour.
2. Click on [Delete] in the [Profile parameters] frame.
 - ⇒ A query dialog is displayed.
3. Confirm with [OK].
 - ⇒ The profile has been deleted.



6.3.2.3 Searching for a profile

If many profiles are already available in your [Profile library], you can use the [Search for profiles] to search for an existing profile.

Search:

✓ To search for a profile:

1. Enable the [Common settings] tab in the [Profile] window.
⇒ The [Profile library] is displayed.
2. In the [Search for profiles] frame, click on the entry field.
3. Enter a profile name, or part of the profile name.
4. Click on the magnifying glass next to the entry field.
⇒ The search results are displayed.

If the desired profile does not appear, you can also search for the profile manually. To do this, you must remove all your search filters.

To display all profiles:

✓ To display all profiles:

1. In the [Search for profiles] frame, click on the entry field.
2. Delete the previously entered search term.
3. Click on the magnifying glass next to the entry field.
⇒ All profiles are displayed.



6.3.2.4 Customizing a profile

6.3.2.4.1 Select a profile and save it under a new name

In most cases, it makes sense to adapt an existing profile to your own requirements. To do this, use the [Template profiles] which were delivered together with the HR 600 unit. You can also customize a profile from your own [Profile library].

✓ Select a profile and save it under a new name:

1. If in your own [Profile library] no profile exists yet, copy a template first. With regard to this, please read section [Enabling a profile](#) [88].
2. Enable the [Common settings] tab.

⇒ The [Common settings] window is displayed:



Fig. 39: Profile table

3. In the table, select a profile; the profile highlights with colour.
 4. Click the entry field [Profile name] and enter a new name. Assign unambiguous, descriptive profile names because you can also search by profile name. You can use the search function in the frame [Search for profiles] or the advanced search in the workspace [Archive]. With regard to this, please read section [The \[Archive\] work area](#) [61].
 5. Click on [Add] in the [Profile parameters] frame.
- ⇒ The profile appears as a new profile in the [Profile library]. You can now edit the profile. Eventually enable the following tabs: [Common settings], [Profile settings], [Configuration], [Placement], and [Image and document]. In each tab, you can now edit the profile.



6.3.2.4.2 Customizing a profile in the [Common settings] tab.

✓ To customize general settings:

1. Enable the [Common settings] tab in the [Profile] window.

⇒ The [Profile library] is displayed:



Fig. 40: Enabled tab [Common settings] with profile table.

- In the table, select a profile; the profile highlights with colour.
- Click on the entry field [Profile name] and enter a new name.
- Click on the entry field [Board] and describe the property of the circuit board in a more detailed way.
- Click on the entry field [Component] and describe the property of the component in a more detailed way.
- Click on the drop-down menu [Profile type] and select a profile type:
⇒ [Desoldering] or [Soldering]:
- Click on the drop-down menu [Sensor] and select the sensor used for temperature control:
⇒ [TC1], [TC2] or [IRS].
- Click on the drop-down menu [Pin 1 orientation] and select the position of pin 1 on the component:
⇒ [Bottom left], [Top left], [Bottom right] or [Top right].
- Click on the drop-down menu [Adaptor (head)] and specify the air deflector used on the heating head.



10. Click on the drop-down menu [Head position] and specify the [Head position] to be used.

⇒ Note: For head positions of less than 40 mm, the [IRS] sensor cannot be used. A message appears on the screen in this case.

11. [Board Pos. X:], [Board Pos. Y:]: Click on the entry fields and specify the coordinates of the PCB position.

To save:

✓ To save changes in the profile:

1. Click on [Overwrite] in the [Profile parameters] frame.

⇒ Changes are saved in the profile.

6.3.2.4.3 Customizing gradients in the [Profile Settings] tab

Now adjust gradients to your requirements. The gradients stored in the templates have been identified in elaborate test series and fit the most common rework processes. Therefore, change the gradient only slightly and occasionally run a soldering test!

✓ To customize gradients:

1. Enable the [Profile settings] tab in the [Profile] window.

⇒ The [Profile settings] window is displayed:



Fig. 41: The [Profile settings] window

2. In the field [TL], set the temperature in [°C] at which the solder used becomes liquid (liquidus temperature). During the desoldering process, the pipette is moved downwards when this temperature is reached.



3. With the horizontally arranged sliders you can change the times from [time 1] to [time 4].
4. With the vertically arranged sliders you can change the temperatures from [Tinit], [T1] to [T3].
5. As you are configuring the settings, observe how the gradient changes.
 - ⇒ In the display fields beside and below the sliders, you can read the set values or enter your own values directly.

To save:

- ✓ To save changes in the profile:
 1. Click on [Overwrite] in the [Profile parameters] frame.
 ⇒ Changes are saved in the profile.

6.3.2.4.4 Customizing the radiator configuration in the [Configuration] tab.

Now adjust the radiator configuration to your requirements. A radiator configuration can be set for [time 2], [time 2], [time 3], and [time 4].

- ✓ To customize the [Configuration]:
 1. Enable the [Configuration] tab in the [Profile] window.
 ⇒ The [Configuration] window is displayed.

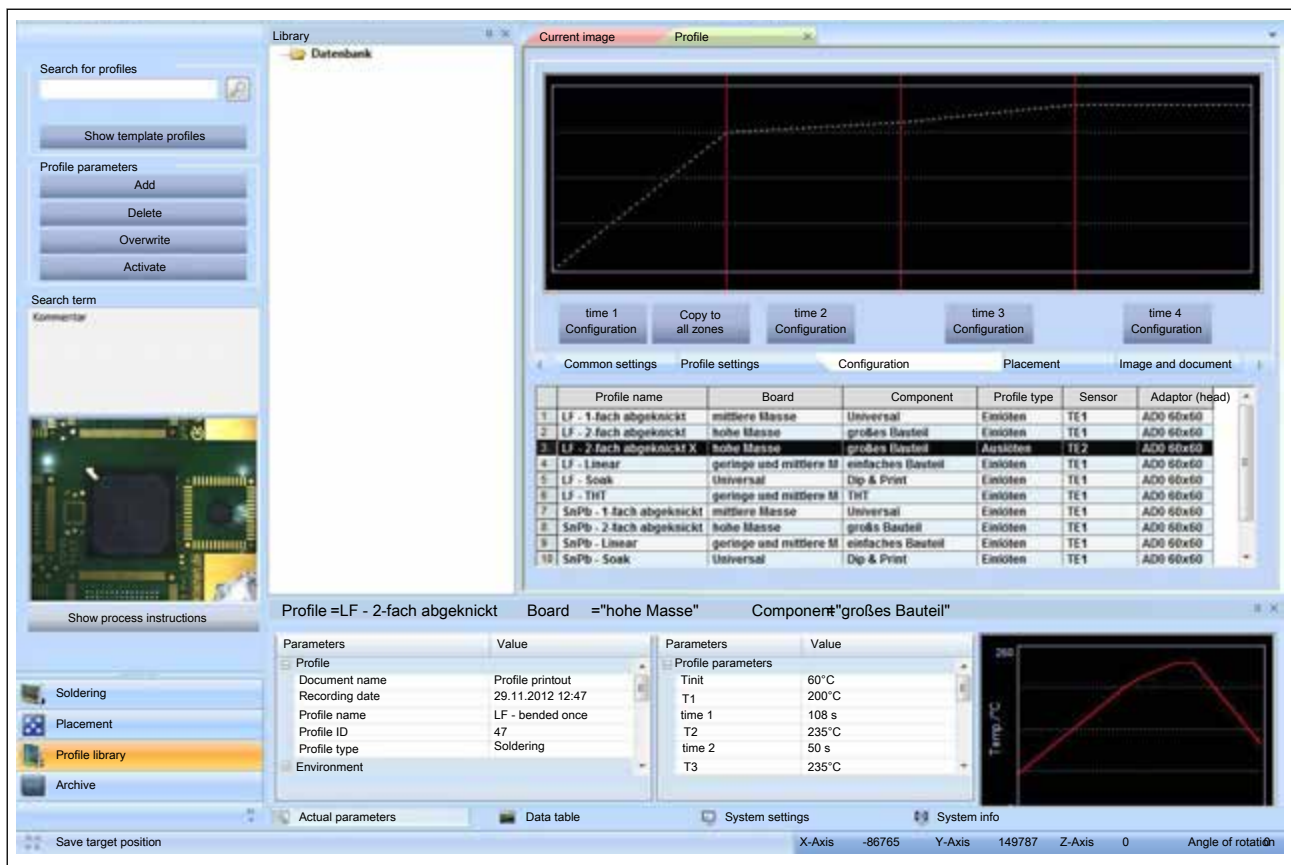


Fig. 42: The [Radiator configuration] window

- ⇒ The top graph window is divided into four areas [time 1] to [time 4], separated by vertical red lines. The function buttons are there.
- 2. Click on [time 1] [Configuration].



⇒ The configuration window is displayed:

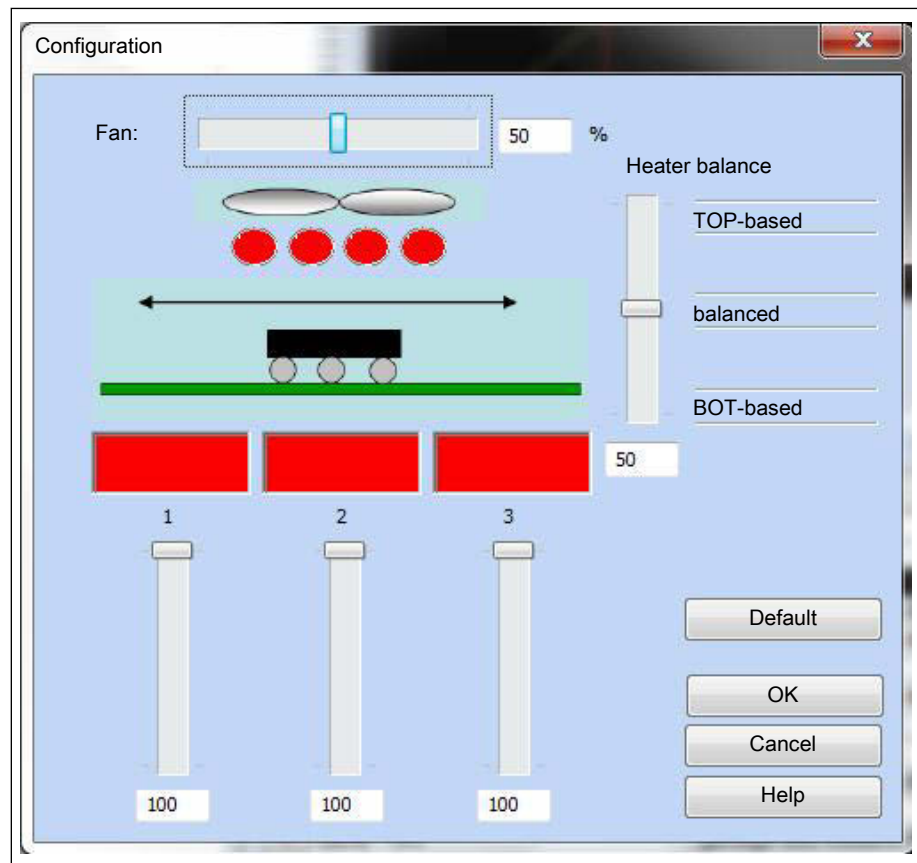


Fig. 43: [Configuration] window

To enable convection fans:

✓ To customize the performance of a convection fan:

1. Move the slider [Fan:] to the left or right.

⇒ In the display field to the right of the slider, you can read the performance of the fan expressed in [%] with respect to the maximum value, or enter a custom value directly.

To enable the upper and lower radiators:

The upper radiator group consists of four individual radiators. You can either enable all or only the two inner radiators. Only enabled radiators are used for the process.

✓ To enable the upper radiator group:

1. Click on the icon of a radiator with the mouse. The colour changes to either blue or red.

⇒ Red: The radiator is enabled. Blue: The radiator is disabled.

The lower radiator group consists of three individual radiators. You can enable each radiator separately. Only enabled radiators are used for the process.

✓ To enable the lower radiator group:

1. Click on the icon of a radiator with the mouse. The colour changes to either blue or red.

⇒ Red: The radiator is enabled. Blue: The radiator is disabled.

**To customize the maximum performance of the lower radiators:**

You can limit the performance of each individual radiator to a maximum value.

✓ To customize the maximum value:

1. Move the slider of a radiator up or down.

⇒ In the display field below the slider, you can read the set value expressed in [%] with respect to the maximum value, or enter a custom value directly.

**To customize the control ratio between upper radiator/lower radiator:**

You can change the power ratio:

- [TOP-based] (100%, heat only the upper radiator)
- [balanced] (50%, heat upper and lower radiators equally)
- [BOT-based] (0%, heat only the lower radiator)

In between, control conditions can be set with 1%-increments.

✓ To customize the control ratio:

1. Move the slider [Heater balance] up or down.

⇒ In the display field below the slider, you can read the set value or enter a custom value directly.

✓ Saving changes:

1. Click on [OK].

⇒ The settings are applied, the window is closed.

✓ To cancel the operation:

1. Click on [Cancel].

⇒ The window is closed. All changes will be lost.

✓ To restore the factory settings:

1. Click on [Default].

⇒ The factory setting has been restored:

- Fan power: 50%
- All the radiators are active
- Lower radiator power: 100%
- Control ratio 50 ([balanced])

Help:

✓ To display help:

1. Click on [Help], or press the [F1] key on the keyboard.

⇒ The online help is displayed.

Copy configuration to other areas:

✓ Copy the [Configuration] of [time 1] to the areas [time 2], [time 3] and [time 4]:

1. Click on [Copy to all zones] in the [Configuration] window.

⇒ The settings of the area [time 1] are reflected in all areas.

To save:

✓ To save changes in the profile:

1. Click on [Overwrite] in the [Profile parameters] frame.

⇒ Changes are saved in the profile.



6.3.2.4.5 Customizing the placement process in the [Placement] tab

You can now adjust the placement process to your requirements. You can make settings affecting [Automation] and [Placement mode] and define target coordinates for component placement.

✓ To adjust the placement process:

1. Enable the [Placement] tab in the [Profile] window.

⇒ The [Placement] window is displayed:

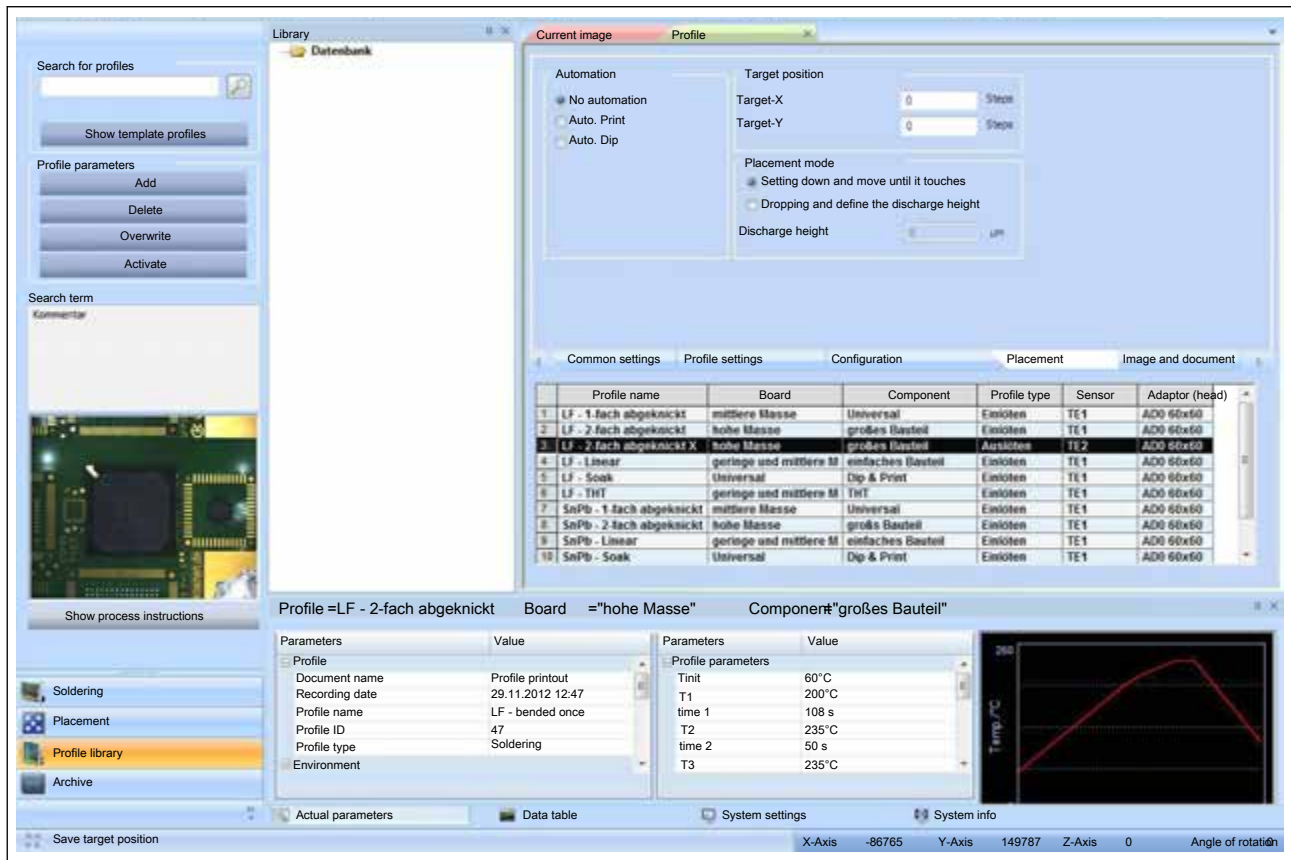


Fig. 44: The [Placement] window: on the bottom right, the coordinates of the target position are displayed.

[Automation]:

When using a DIP & Print Station, the following functions are provided for the automation of the placement process:

[No automation]: in this case, the component must lie on the glass plate. The following steps are performed automatically:

- The head moves to the landing surface.
- The head collects the component on the glass plate and aligns it.
- The head places the component onto the landing surface.

[Auto. Print]: in this case, the print template must be incorporated and the component must lie on the print template. The following steps are performed automatically:

- The head moves to the landing surface.
- The head collects the component on the print template and moves to the glass plate. Here, the component is aligned.



- The head places the component onto the landing surface.

[Auto. Dip]: in this case, the Dip station must be incorporated and the component lie on the glass plate. The following steps are performed automatically:

- The head moves to the landing surface.
- The head collects the component on the glass plate and aligns it.
- The head moves to the dip station and dips the component into the solder paste.
- The head moves to the glass plate. Here, the component is aligned.
- The head places the component onto the landing surface.

✓ To select an automation process:

1. In the frame [Automation], enable a radio button [No automation], [Auto. Print] or [Auto. Dip].

⇒ The automation process is saved as described above in the profile.

[Placement mode]:

✓ To place a component:

1. Enable the radio button [Setting down and move until it touches] in the frame [Placement mode].

⇒ The component is placed onto the landing position, until it comes into contact with the circuit board.

✓ To discard a component:

1. Enable the radio button [Dropping and define the discharge height] in the frame [Placement mode].

⇒ The entry field [Discharge height] can now be edited.

2. Enter a value in [μm] into the entry field.

⇒ The component is driven to the landing position and lowered, until the [Discharge height] is reached. The component is then discarded.

[Target position]:

For larger series of a rework task, it is appropriate to save also the coordinates of the [Target position] of a component in the profile. This is especially true when the same components must be processed always in the same [Target position]. When the process starts, the head then always moves immediately to the specified [Target position].

✓ To save [Target position]:

1. Move the head to the landing surface.

⇒ The coordinates of the landing area are displayed in the window, in the lower right corner, [X-Axis], [Y-Axis]. With regard to this, please read section [Description of the user interface](#) ► 47].

2. In the frame [Target position], enter the coordinates into the entry fields [Target-X] and [Target-Y].

⇒ The process has now been completed.



To save:

- ✓ To save changes in the profile:
 1. Click on [Overwrite] in the [Profile parameters] frame.
 ⇒ Changes are saved in the profile.

6.3.2.4.6 Entering information into the [Image and document] tab

You can enter additional information into your profile, such as work instructions, documents or pictures. All information can be saved in the profile.

- ✓ To enter information:
 1. Enable the [Image and document] tab in the [Profile] window.
 ⇒ The [Image and document] window is displayed.



Fig. 45: The window [Image and document]

To insert pictures:

- ✓ To insert a picture from your file system:
 1. Click on [Add/change image].
 - ⇒ A window is opened.
 2. Select a picture from your file system. Supported formats are [.jpg] and [.bmp].
 3. Click on [Overwrite] in the [Profile parameters] frame.
 ⇒ The picture will be shown in the [Profile library] window as soon as you select the profile.

**To take and insert pictures:**

✓ To take and insert a picture:

1. In the menu bar, enable the tab [Camera and light].
 2. Select a camera in the menu area [Live video].
 3. Move the camera to the position from which you want to capture the image.
Now go back to the profile and enable the [Image and document] tab.
 4. Click on [Snapshot].
 5. Click on [Overwrite] in the [Profile parameters] frame.
- ⇒ The picture is now stored in the profile.

Adding comments:

✓ To add a [Search term]

1. Enter a text into the frame [Image comment].
 2. Click on [Overwrite] in the [Profile parameters] frame.
- ⇒ The comment will be shown in the [Profile library] window as soon as you select the profile.

To add documents:

✓ To add a document:

1. Click on [Add/change document] in the [Profile documents] frame.
 2. A window is opened.
 3. Select a document from your file system. Supported formats are [.jpg], [.PDF], [.xls], [.doc] oder [.ppt].
- ⇒ The process has now been completed.

Saving:

✓ To save changes in the profile:

1. Click on [Overwrite] in the [Profile parameters] frame.
- ⇒ Changes are saved in the profile.

To display documents:

✓ To display an inserted document:

1. This process is only possible if the profile has been saved! Click on [Show actual document].
- ⇒ The currently stored document is opened. To do this, the necessary software, such as the Microsoft™ Office package, must be installed on your computer.

6.3.3 Tutorial

6.3.3.1 Desoldering a component manually

Following is a step-by-step description of the desoldering sequence:

6.3.3.1.1 Inserting the PCB

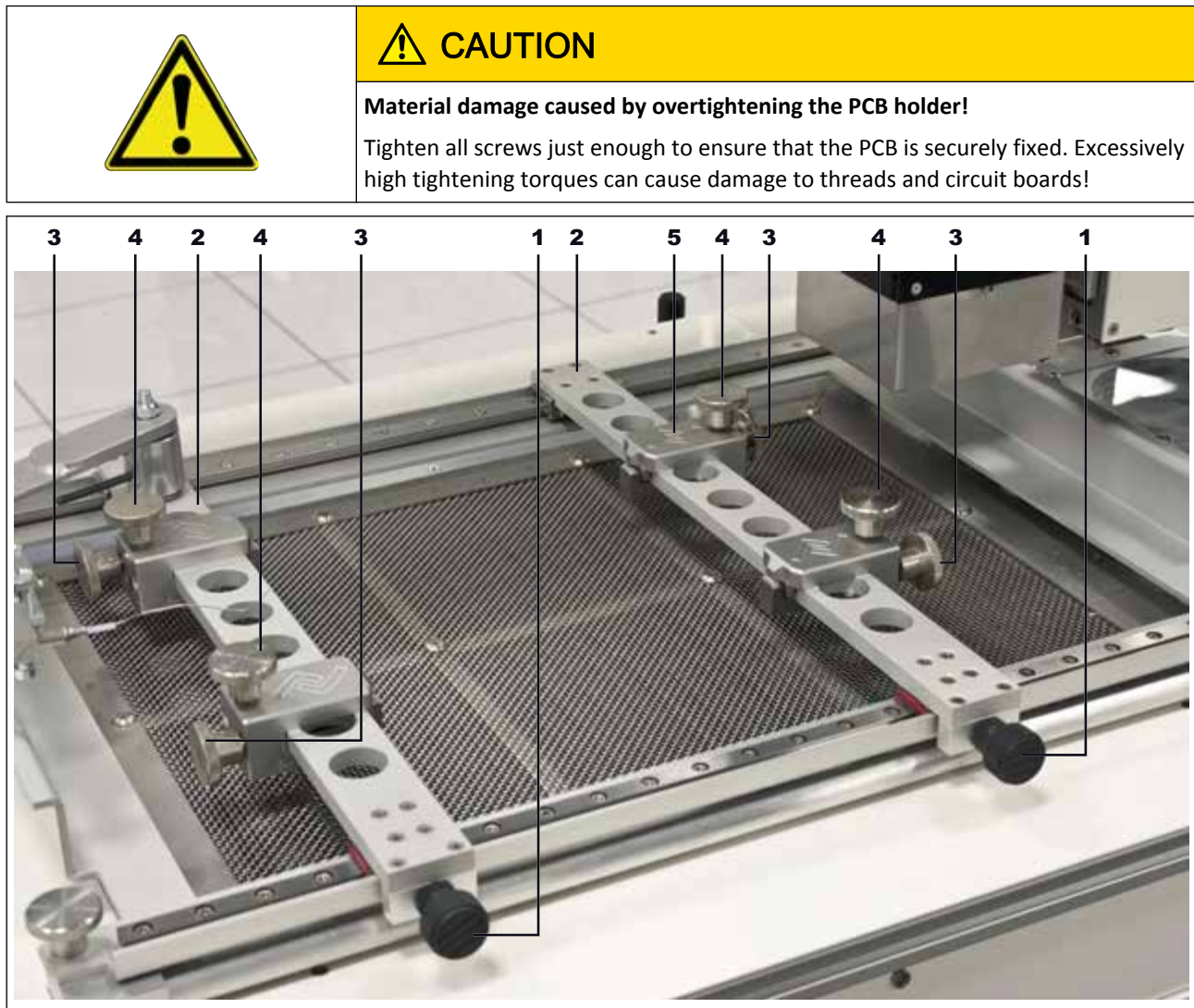


Fig. 46: Inserting the circuit board

✓ To insert the circuit board:

1. In the menu bar, enable the tab [Start].
2. In the work area, click on the  button.
⇒ The heads move to the park position.
3. Loosen the knurled screws (1).
4. Adjust the distance between the rails (2) approximately to the width of the circuit board.
5. Loosen the knurled screws (3) of all four circuit board holders (5).
6. Adjust the distance of the circuit board holders (5) to the dimensions of the PCB. In this case, components standing in the way should also be considered.
7. Tighten the knurled screws (3).



8. Loosen the circuit board clamp (4) fixed to the knurled screws.
9. Insert the circuit board.
10. Adjust the rails (2) to the width of the circuit board.
11. Tighten the knurled screws (1).
12. Tighten the circuit boards clamp with the knurled screws (4).

⇒ The circuit board is now fixed.

✓ To move the fixed circuit board:

1. Loosen the two knurled screws (1).
 2. To move the circuit board:
 3. Retighten the two knurled screws (1).
- ⇒ The process has now been completed.

6.3.3.1.2 Assembling a thermocouple

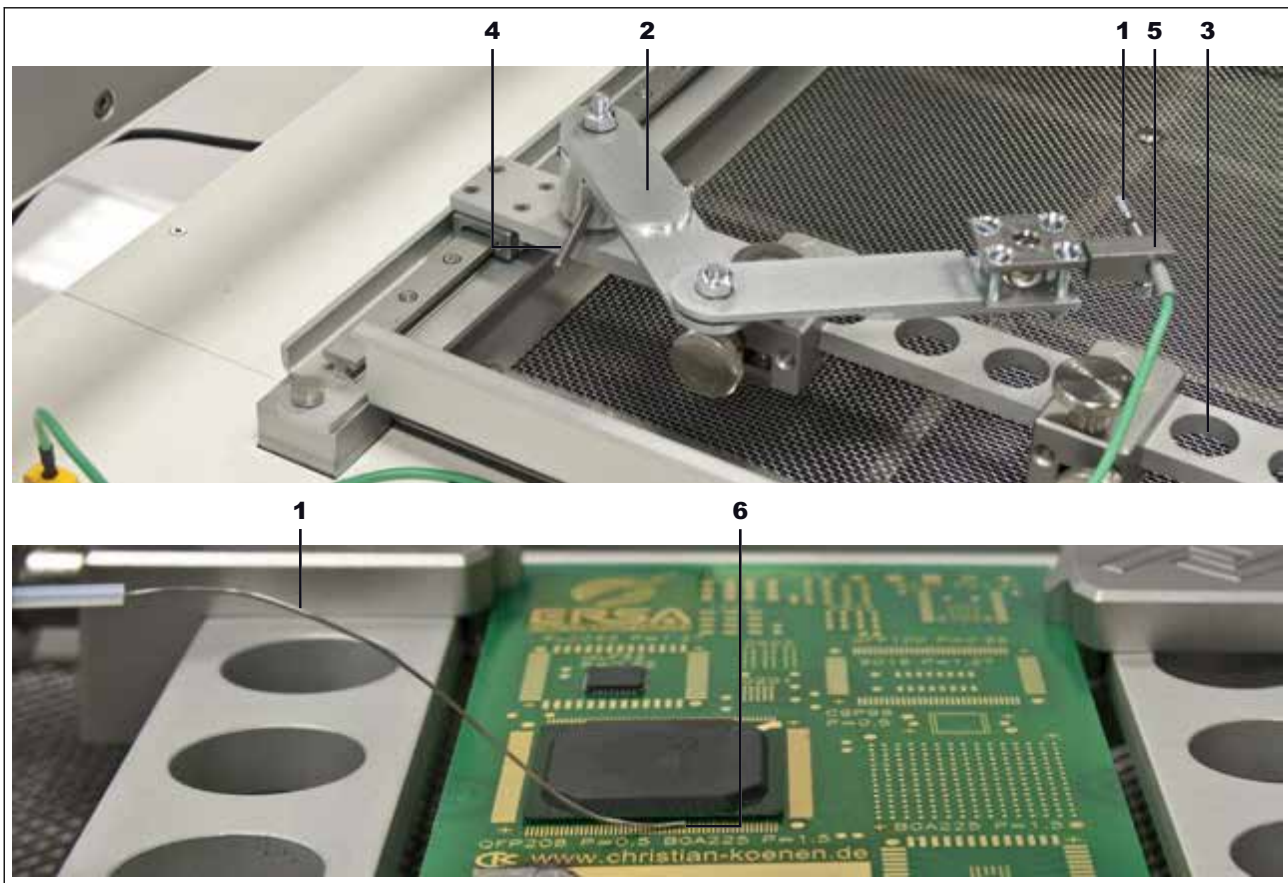


Fig. 47: Assembling a thermocouple

✓ To assemble a thermocouple:

1. Assemble the holder (2) into one of the holes (3).
2. Firmly clamp the holder with the lever (4).
3. Connect the thermocouple (1) to the socket [TC1].
4. Slide the thermocouple in the holder (5).
5. Adjust the holder (2) so that the end of the thermocouple (6) can be placed very close to the component.



6. Bend the end of the thermocouple into shape so that the final 3 mm lie on the circuit board very close to the component.

⇒ The process has now been completed.

6.3.3.1.3 Shielding heat sensitive components

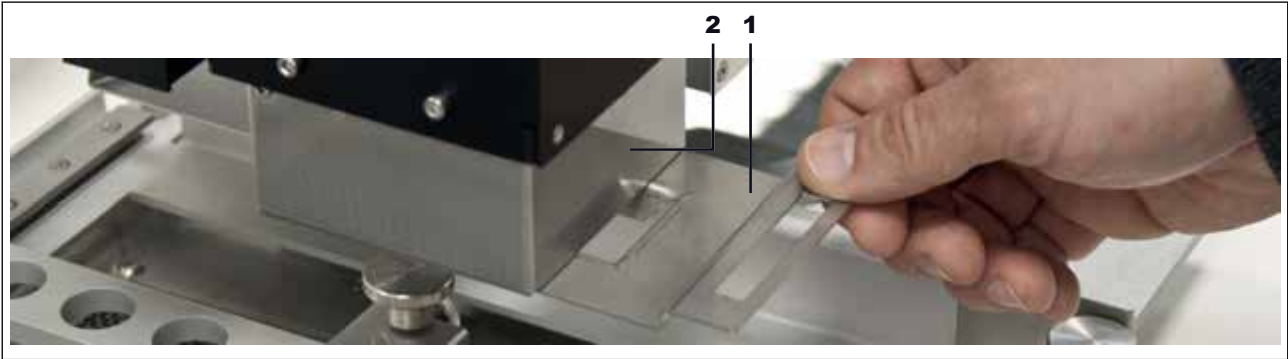


Fig. 48: Shielding heat sensitive components

- ✓ To shield heat sensitive components:

1. Use reflector tape or a suitable air deflector for shielding.
2. To this purpose, push the air deflector (1) into the heating head (2).

⇒ The process has now been completed. In the next step, if you want to desolder a component, you must select a profile of the type [Desoldering] and enable it.

6.3.3.1.4 Enabling a profile

Some [Template profiles] are deposited in the factory. These templates already contain useful settings for the most common rework processes. You can choose a template, customize it to your needs, as well as rename and save it. To do this, first select a template and then save it in your own [Profile library].

Selecting a template:

- ✓ Select a template and save it in your own [Profile library]:

1. In the function selection field, enable the tab [Profile library].



⇒ The window [Profile] is displayed in the display window:



Fig. 49: Profiles

2. Enable the [Common settings] tab.
3. The [Profile library] appears; on delivery, the table is empty.
4. Click on [Show template profiles] in the [Search for profiles] frame.
⇒ The window [Profile-templates] appears:
5. Select one or more templates and confirm with [OK].
⇒ The template is copied and saved in your own [Profile library]. There you can enable, customize, rename and save the profile.



Enabling profiles

✓ To enable a profile:

1. In the function selection field, enable the [Profile library] tab.

⇒ The window [Profile] is displayed in the display window:

2. Enable the [Common settings] tab.

⇒ The window [Profile] appears:



Fig. 50: Profile, enabled [Common settings] tab

3. In the table, select a profile; the profile highlights with colour.

4. Depending on the work you want to carry out, select either a Profile type for Desoldering or a Profile type for Soldering.

5. Click on [Activate] in the [Profile parameters] frame.

⇒ The profile is loaded and immediately active. You can now work with the profile.

6.3.3.1.5 Place the head above the component

With regard to this, please read section [The work area \[Placement\]](#) [57].

Version 1:

✓ Position the head using the laser:

1. In the tools section, enable the [Placement] button.

⇒ In the work area, the buttons and the visual displays for the placement process appear.

2. Click on the button .



⇒ The laser is turned on.

3. Move the head by clicking on the buttons  ,  or  until the laser beam can be seen on the centre of the component.
4. In the menu bar, enable the tab [Placement].
5. Click on [Heating head to laser].

⇒ The heating head moves now to the position of the laser beam.

⇒ The process has now been completed.

Version 2:

✓ Position the head with the help of the upper camera:

1. In the menu bar, enable the tab [Camera and light].
2. Select the upper camera.
3. In the menu bar, enable the [Placement] tab.
4. In the menu area, [Crosshair], click on [Switch ON/OFF].

⇒ The crosshair is displayed.

5. Move the head by clicking on the buttons  ,  or  until the crosshair can be seen in the centre of the component.
6. In the menu bar, click on [Heating head to camera].

⇒ The heating head now moves to the position of the crosshair.

⇒ The process has now been completed.

6.3.3.1.6 Desoldering a component

✓ To desolder a component:



1. In the menu bar, enable the [Start] tab:

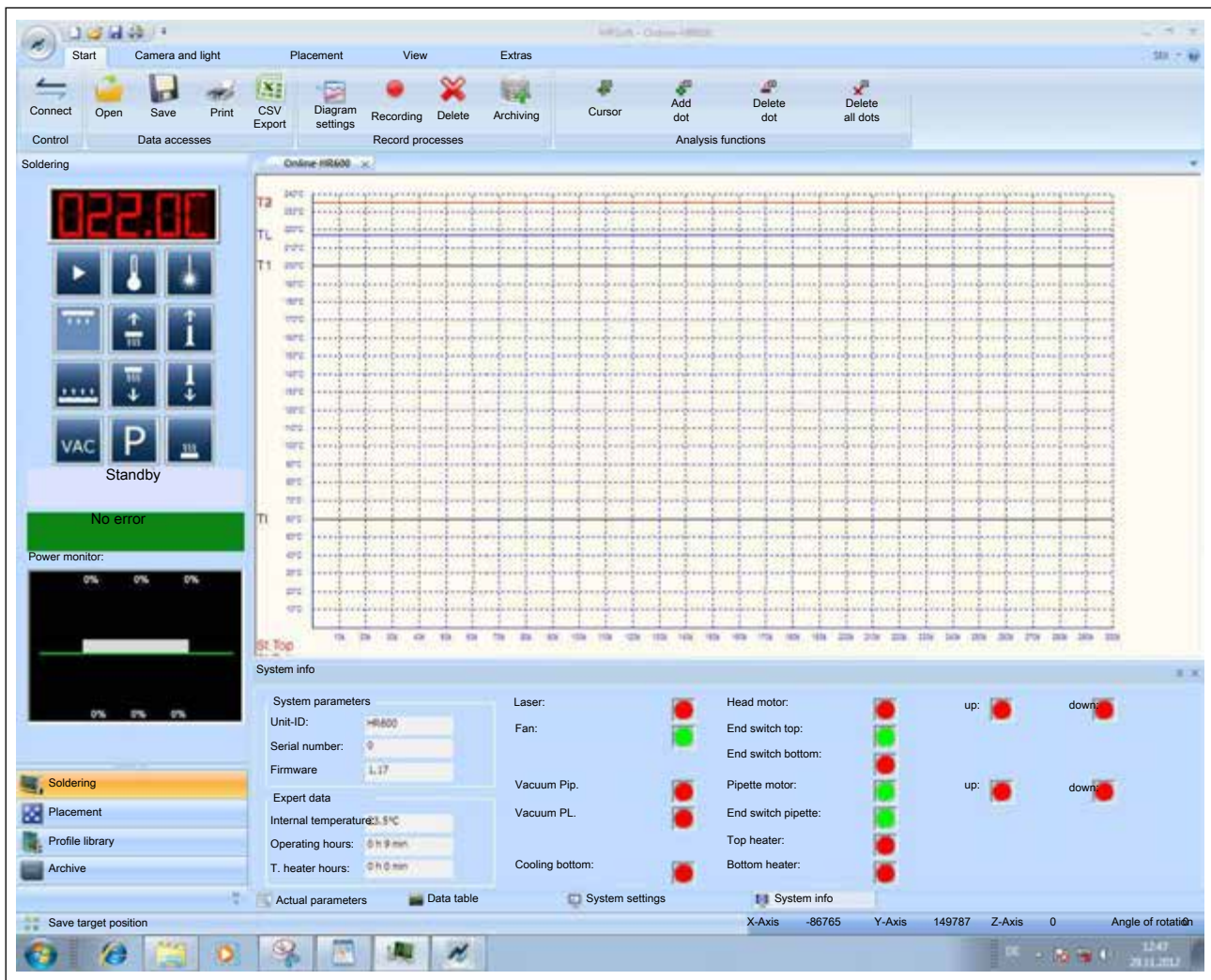


Fig. 51: The workspace [Soldering] appears automatically when the [Start] tab is enabled in the menu bar.

2. In the work area [Soldering] click on .

- ⇒ The process is started. The External Viewer opens.
- ⇒ According to the settings of the profile and the [System settings], the component is desoldered and placed on the component tray.
- ⇒ You can view the process in the [Online-HR 600] window.
- ⇒ The process has now been completed.

6.3.3.1.7 Removing residual solder

✓ To remove residual solder:

1. Apply some fluxing agent to solder.
2. With a suitable tool (for example TechWell solder tip), remove the residual solder.
3. Remove flux residue with Ersa Flux-Remover (OFR200).
4. Dry the solder joints with a clean, lint-free cloth.



- ⇒ The process has now been completed. The component is unsoldered and the solder joint is ready to receive the new component. If you want to solder a component in the next step, you must first search for a profile of the type [Soldering] and enable it.



6.3.3.2 Soldering a component

Following is a step-by-step description of the soldering sequence:

6.3.3.2.1 Enabling a profile

Some [Template profiles] are deposited in the factory. These templates already contain useful settings for the most common rework processes. You can choose a template, customize it to your needs, as well as rename and save it. To do this, first select a template and then save it in your own [Profile library].

Selecting a template:

✓ Select a template and save it in your own [Profile library]:

1. In the function selection field, enable the tab [Profile library].

⇒ The window [Profile] is displayed in the display window:



Fig. 52: Profiles

2. Enable the [Common settings] tab.
3. The [Profile library] appears; on delivery, the table is empty.
4. Click on [Show template profiles] in the [Search for profiles] frame.
⇒ The window [Profile-templates] appears:
5. Select one or more templates and confirm with [OK].
⇒ The template is copied and saved in your own [Profile library]. There you can enable, customize, rename and save the profile.



Enabling profiles

✓ To enable a profile:

1. In the function selection field, enable the [Profile library] tab.

⇒ The window [Profile] is displayed in the display window:

2. Enable the [Common settings] tab.

⇒ The window [Profile] appears:



Fig. 53: Profile, enabled [Common settings] tab

3. In the table, select a profile; the profile highlights with colour.

4. Depending on the work you want to carry out, select either a Profile type for Desoldering or a Profile type for Soldering.

5. Click on [Activate] in the [Profile parameters] frame.

⇒ The profile is loaded and immediately active. You can now work with the profile.

6.3.3.2.2 Select the type of component and set it ready

✓ To select the type of component:

1. Properly position the component in the middle of the glass plate.

⇒ Properly positioned means: If Pin 1 is located top left in the soldering position, also Pin 1 of the prepared component must be placed top left.

2. In the function selection field, enable the [Placement] tab.

⇒ In the work area, a drop-down menu appears.

3. From the drop-down menu, select a component matching entry, for example [BGA].



4. Click on the button .

- ⇒ The component filter is applied. The camera then re-detects the connection of the component.
- ⇒ The process has now been completed.

6.3.3.2.3 Starting the placement process

Version 1: Single-step mode:

In this mode, the process is always stopped when an input is expected from the user.

- ✓ To start the placement process in the single-step mode:

1. In the function selection field, enable the [Placement] tab.

2. In the work area, click on the  button.

- ⇒ The single-step mode is started.
- ⇒ The head is moved to the last target position.
- ⇒ The crosshair is automatically activated.
- ⇒ When the crosshair is not in the centre of the target position:

3. Move the head by clicking on the buttons , ,  or  until the crosshair can be seen in the centre of the target position.

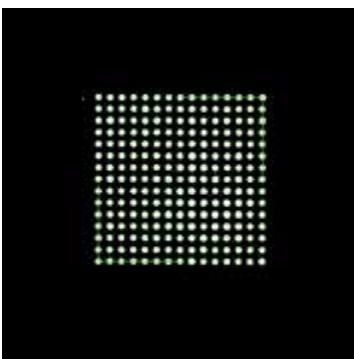
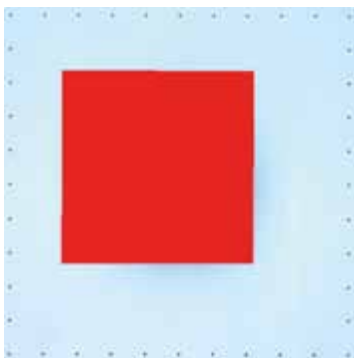
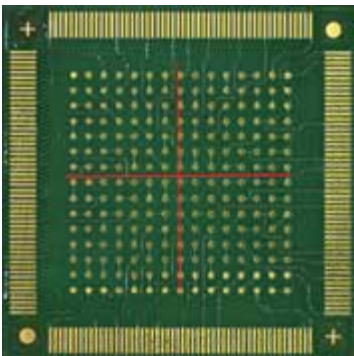
- ⇒ The process is stopped.

4. Click on the  button to proceed to the next step.

- ⇒ The picture of the target position is saved.

- ⇒ The head moves to the glass plate.

- ⇒ The contours of the component are identified and displayed as a red area.

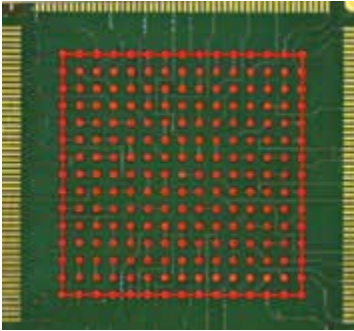


- ⇒ The lower camera detects the connections of the component with different brightness degrees. The connections of the component are shown with a coloured border.

- ⇒ The process is stopped. If not all connections are recognized:

5. Select the component filter and reapply it.

6. Click on the  button to proceed to the next step.



- ⇒ The component is lifted and if necessary oriented. Subsequently, the connections can be detected again. The overlay is displayed.
 - ⇒ The process is stopped. By pressing the [F5] key, you can now change the overlay colour. To do this, check if the overlay is correct.
 - ⇒ If the overlay is not correct:
7. Move the head by clicking on the buttons , ,  or  until the overlay is correct.
 8. Click on the  button to proceed to the next step.
 - ⇒ The pick-and-place nozzle places the component in the target position.
 - ⇒ The process is stopped. The upper camera is switched on.
 - ⇒ If you want to check the positioning result:
 9. Move the camera by clicking on the buttons , ,  or  until the positioned component is displayed.
 10. Check the positioning result.
 11. Click on the  button to proceed to the next step.

Version 2: Automatic mode:

In this mode, the entire process is carried out automatically. To do so, you must select and enable a profile with a saved [Target position]. However, between the single steps you will have the opportunity to intervene in the process.

- ✓ To start the placement process in automatic mode:
1. In the function selection field, enable the [Placement] tab.
 2. In the work area, click on the  button.
 - ⇒ The automatic mode is started.
 - ⇒ The head is moved to the target position saved in the profile.
 - ⇒ The picture of the target position is saved.
 - ⇒ The head moves to the glass plate.
 - ⇒ The contours of the component are identified and displayed as a red area.
 - ⇒ The lower camera detects the connections of the component at different levels of brightness. The connections of the component are shown with a coloured border.
 - ⇒ The component is lifted and if necessary oriented. Subsequently, the connections can be detected again.
 - ⇒ The pick-and-place nozzle places the component in the target position.
- ⇒ The process has now been completed.

6.3.3.2.4 Starting the soldering process

- ✓ To start the soldering process:
1. Click on the  button to proceed to the next step.
 - ⇒ The soldering process is started.
 2. You can view the process in the [Online-HR 600] window.
 - ⇒ At the end of the process, the head moves to the park position.
 - ⇒ Cooling is started.



3. Wait until PCB and device are cooled down to safe temperatures.
 4. Remove the circuit board.
- ⇒ The process has now been completed.

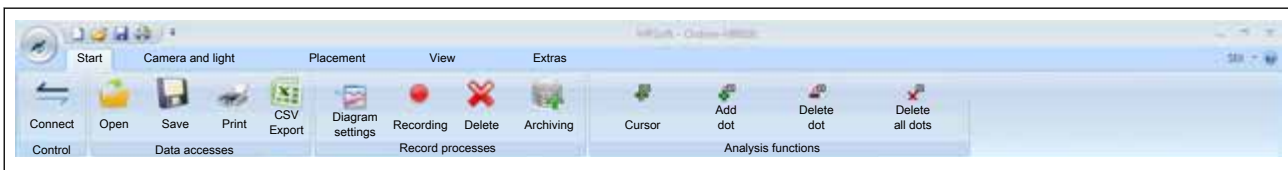


6.3.3.3 Recording, archiving, analyzing processes

Recording and observing a process

✓ To record and observe a process when the automatic process recording is enabled. With regard to this, please read sections [Setting the language and user control panel](#) [▶ 76] and [The parameter window \[System settings\]](#) [▶ 67]:

1. Select and enable a profile.
2. Start the process.
 - ⇒ The recording is started automatically and displayed in a new window.
3. In the menu bar, enable the [Start] tab.



4. Click on [Cursor] in the [Analysis functions] menu area.
 - ⇒ The analyzing cursor appears.
5. Move the cursor with the mouse to any desired point in the process.
 - ⇒ Next to the pointer, the numerical values of the process are displayed:

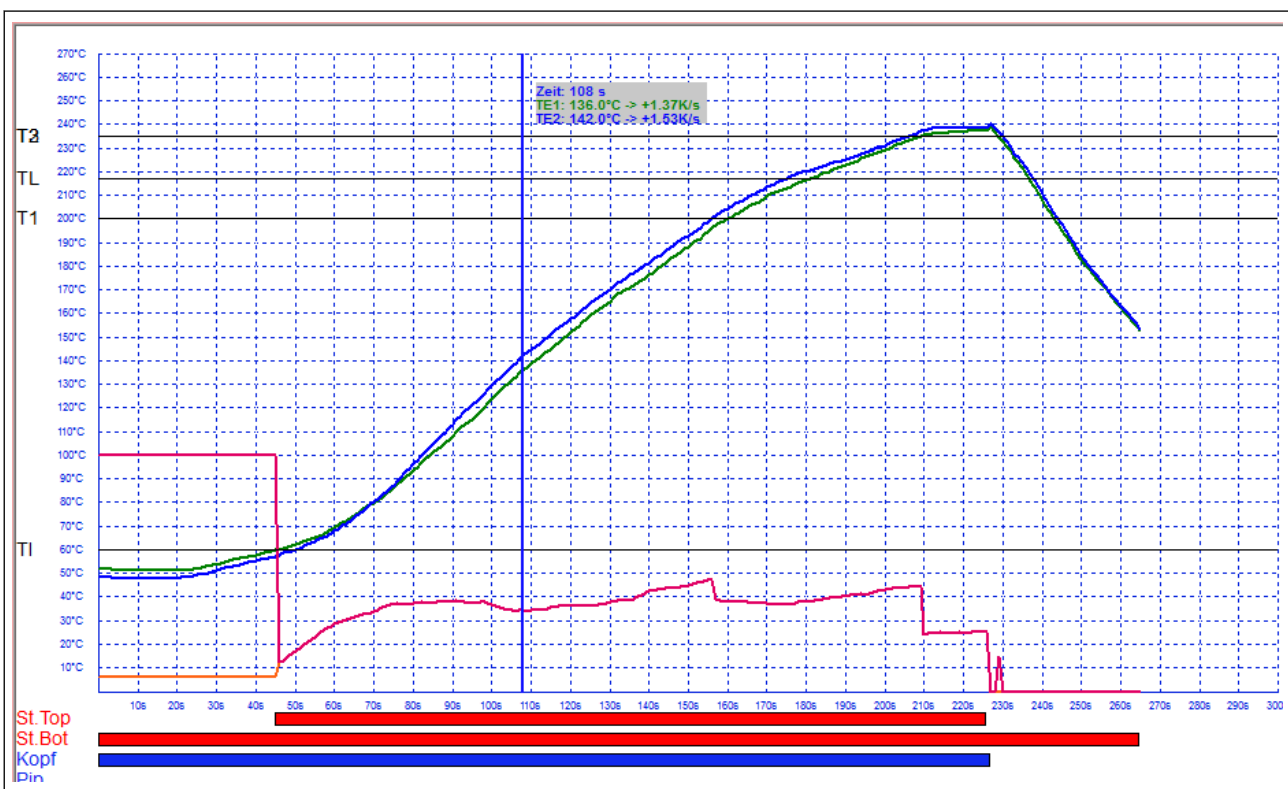


Fig. 54: Graphical presentation of the process, analyzing cursor.

Automatically archiving a process

When the process is finished, the recording process is automatically archived.

Analyzing a process

✓ To analyze an archived process:



1. In the function selection field, enable the [Archive] tab. With regard to this, please read section [The \[Archive\] work area](#) [► 61].
2. Search for an archived process and highlight it.
3. Click on [Show profile].
⇒ The process is displayed in a new window.
4. In the menu bar of the menu area [Analysis functions], click on [Cursor].
⇒ The analyzing cursor appears.
5. Move the mouse pointer over the process and click on the desired analysis point.
6. Click on [Add dot] in the [Analysis functions] menu area.
7. The analysis point is added. You can add up to 5 analysis points.
⇒ The process has now been completed.

Manually archiving an edited process

- ✓ To manually archive an edited process:
 1. In the menu bar of the menu area [Data accesses], click on [Save].
⇒ A query dialog is displayed.
 2. Save the process into the desired directory. The analysis points are stored here along with the process.
⇒ The process has now been completed.

To display an archived process again:

- ✓ To display an edited, archived process again:
 1. In the menu bar of the menu area [Data accesses], click on [Open].
⇒ A query dialog is displayed.
 2. Select the archived process recording. The file must be available in the file format [.hrs].
⇒ The process recording is displayed in a new window.



7 Spare and wear parts

7.1	Read this first!	120
7.1.1	Nameplate and machine number	120
7.1.2	Target readers, permitted spare parts	120
7.2	Spare parts	121



7.1 Read this first!

7.1.1 Nameplate and machine number



NOTICE

Important note

When ordering spare parts always specify the machine number. This number is printed on the nameplate (see illustration above). The nameplate contains other important information about the machine such as machine type, electric power rating, conformity marking and disposal data.

The spare and wear parts are listed in table form. The last two columns indicate the parts as either a **wear part (A)** or as a **spare part (B)**.

7.1.2 Target readers, permitted spare parts



! WARNING

Machine malfunctioning is possible!

Personal injury or material damage due to the machine inadequate maintenance and improper operation!

- ✓ Maintenance work must be performed by trained and qualified staff only.
 - ✓ Carry out the maintenance and inspection activities recommended in this instruction manual.
1. First, read the section "Safety instructions"!
 2. Comply with the specified maintenance intervals!
 3. Wear suitable protective clothing for all types of work! Also, check personal protective equipment for cleanliness and functional efficiency! Do not use damaged protective equipment, replace it with new items!
 4. Use spare parts, replacement parts and wear parts exclusively authorized by the machine manufacturer!
 5. Thoroughly clean the machine before starting work!
 6. Re-tighten loosened screws after completion of maintenance! Install safety devices and check for their proper operation!
 7. Dispose of operating and auxiliary materials, cleaning agents, and replacement parts properly and in an environmentally-friendly manner!



7.2 Spare parts

Pos	Designation	Item number	A	B
1	Controller for stepper motor	3ET00339		
2	Main board axis control	3ET00340		
3	Control board	0HR605		
4	USB cable A-B	3ET00241		
5	USB cable	3ET00347		
6	USB stick	0HR630		
7	Operating instructions HR 600	3BA00207		
8	USB Hub, 7-fold	3ET00369		
9	Power supply	3ET00370		
10	Product CD HR 600	3BA00209		
11	Stepper Motor NEMA 17	3ET00333		
12	Expansion bellows	3HR600-03-07		
13	Coupling	223030		
14	Pushbutton	223031		
15	Sensor	6ET00283		
16	Adaptor for suction device	0IR5500-45		
17	Stepper Motor NEMA 11	3ET00334		
18	Lens for placer camera, top	3ET00335		
19	Placer camera, top, colour	3ET00336		
20	Placement nozzle, Ø 10 mm	3HR600-06-021		
21	Placement nozzle, Ø 4 mm	3HR600-06-022		
22	Bottom heater	0IR6500XL-02		
23	Light dome, Glass plate 50 x 50 mm	3HR600-09-003		
24	Lens for device camera, bottom	3ET00337		
25	Device camera, bottom, monochrome	3ET00338		
26	Heating head, complete	3HR600-05-050		
27	PCB frame, standard	0HR625		
28	PCB frame, XL	0HR635		
29	Vacuum generator	168120		
30	One-way restrictor	6BO548		
31	Maintenance unit	3PT00046		
32	2 directional valve	3PT00049		

See also [Available options](#) [► 20].





8 Treatment of messages and malfunctions

8.1	Sluggish control of pick-and-place nozzle in Z-direction	124
8.2	Pin pad overlay incorrect	124
8.3	Contours are not correctly recognized	124
8.4	Positions are approached improperly	124



8.1 Sluggish control of pick-and-place nozzle in Z-direction

If this error occurs, the control of the pick-and-place nozzle needs to be cleaned. With regard to this, please read section [Clean the control of the pick-and-place nozzle](#) [► 126].

8.2 Pin pad overlay incorrect

If the scale factors of the pin/pad picture are not equal, the overlay can not be made to coincide. With regard to this, please read section [Clean the control of the pick-and-place nozzle](#) [► 126].

8.3 Contours are not correctly recognized

If image contours cannot be recognized correctly, the optimization of the workstation lighting can be a remedy. If the workstation lighting is too bright, it can interfere with the proper function of the cameras! Also avoid direct illumination of the glass plate with bright light. To clean the glass plate, please read section [Cleaning the glass plate](#) [► 126].

8.4 Positions are approached improperly

✓ Carry out camera and axis referencing:

1. End HRSoft. Use the main switch to turn off the HR600 unit.
2. Wait 5 seconds. Use the main switch to turn on the HR 600 unit.
3. Start HRSoft.

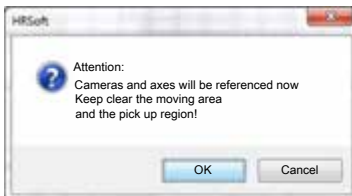
⇒ The message [Cameras and axes will be referenced now] appears.

4. Click on [OK].

⇒ Cameras and axes are referenced.

5. Wait until referencing starts. Referencing can take up to 30 seconds.

⇒ The process has now been completed.





9 Service and maintenance

9.1	Clean the control of the pick-and-place nozzle	126
9.2	Cleaning the glass plate	126



9.1 Clean the control of the pick-and-place nozzle

When using the HR600 unit intensely, the control of the pick-and-place nozzle must be cleaned daily.

✓ To clean the control:

1. In the menu bar, enable the [Placement] tab.

⇒ The menu [Placement] appears:

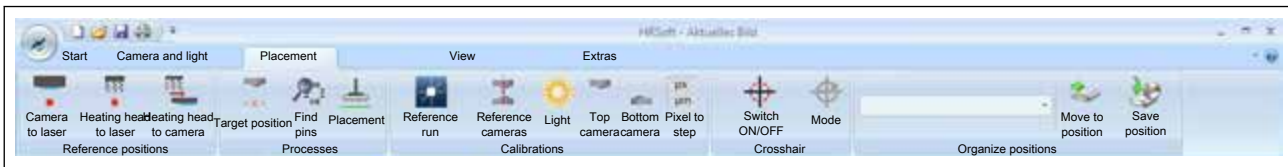


Fig. 55: The menu [Placement process]

2. In the drop-down menu [Organize positions], select the entry [Change nozzle]
3. Click on [Move to position].
 - ⇒ The pick-and-place nozzle moves to the maintenance position.
4. Let the machine cool down to a safe temperature.
5. Carefully pull the pick-and-place nozzle down.
6. Clean the pick-and-place nozzle with a dry, lint-free cloth.
7. Reinsert the pick-and-place nozzle. Carry out this operation carefully!
 - ⇒ The pick-and-place nozzle is fixed by a magnet.
8. Release the pick-and-place nozzle. The nozzle must glide smoothly to the lower limit.
 - ⇒ If this is not the case:
9. Repeat the cleaning process. In this case, clean also the control in the placement head with a lint-free cloth.
 - ⇒ The process has now been completed.

9.2 Cleaning the glass plate

✓ To clean the glass plate:

1. Let the machine cool down to a safe temperature.
2. Occasionally clean the glass plate with a lint-free cloth and a commercial glass cleaner.
 - ⇒ If heavily soiled with flux or solder paste:
3. Never work with hard or sharp objects! Use a detergent recommended by the flux or solder paste manufacturer.
 - ⇒ The process has now been completed.