HB-Therm®
PANEL-5

Instruction Manual

HB-FB51

Control Module

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Translation of original instruction

(Typenschild)

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1 General

1.1 Information about this manual

This manual makes it possible to handle the Panel-5 service module safely and efficiently.

The manual is a component of the service module and must be kept in the immediate vicinity so that it is available to the personnel at all times. Before starting any work, the personnel must have carefully read through and understood this manual. A basic requirement to work safely is to comply will all the safety instructions and behaviour guidelines in this manual.

In addition, the local accident prevention regulations and general safety conditions for the area where the service module is used apply.

Illustrations in this manual serve the basic understanding and can deviate from the actual design.

We reserve the right to make technical modifications in order to improve usability.

1.2 Explanation of symbols

Warnings

Warnings are identified by symbols. These warnings are introduced by signal words, which express the severity of a danger. Adhere to these warnings and act cautiously in order to avoid accidents, personal injuries and damage to property.

DANGER!

… indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING!

… indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION!

… indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

ATTENTION!

… indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Hints and recommendations

NOTE!

… emphasizes useful hints and recommendations as well as information for efficient and trouble-free operation.

1.3 Limitation of liability

All information and notes in this Manual were compiled under due consideration of valid standards and regulations, the present status of technology and our years of knowledge and experience.

The manufacturer can not be made liable for damage resulting from:

- disregarding this Manual
- unintended use
- employment of untrained personnel
- unauthorized conversions
- technical modifications
- use of unapproved spare parts

In case of customised versions the actual scope of delivery can vary from the explanations and representations in this Manual, because of the utilization of additional options or due to latest technical changes.

Apart from this, the obligations agreed upon in the delivery contract, the general terms and conditions and the delivery conditions of the manufacturer and the legal regulations valid at the time of contract do apply.

1.4 Copyright

This Manual is protected by copyright law and exclusively to be used for internal purposes.

Passing this Manual on to third parties, duplication of any kind – even in form of excerpts – as well as the use and/or disclosure of the contents without the written consent of the manufacturer is not permitted, except for internal purposes.

Violations oblige to compensation. The right for further claims remains reserved.

1.5 Warranty terms

The warranty terms are provided in the manufacturer's terms and conditions.

1.6 Customer Service

For technical information, please contact the HB-Therm representatives or our customer service department → www.hb-therm.ch.

Furthermore, our employees are always interested in new information and experiences resulting from the application that could be valuable for the improvement of our products.

2 Safety

This paragraph provides an overview of all important safety aspects for optimal protection of personnel as well as safe and trouble-free operation.

Disregarding this Manual and safety regulations specified therein may result in considerable danger.

2.1 Intended Use

The Panel-5 service module is designed and constructed exclusively for the intended use described here.

Observance of all information in this manual also pertains to the-intended use.

Any use of the unit other than or going beyond the intended use is deemed as misuse.

NOTICE!

The Panel-5 service module is only for operation and display of the HB-Therm products Thermo-5, Flow-5 and Vario-5.

2.2 Customer’s responsibility

The device is implemented commercially. Thus the owner of the device is subject to legal industrial safety obligations.

In addition to the safety instructions in this Manual, the safety, accident prevention guidelines and environmental protection regulations, applicable at the site of implementation must be complied with. In particular:

- Owner must inform himself of applicable industrial safety regulations and determine additional hazards that arise due to the specific working conditions prevailing at the site where the device is implemented, in a risk analysis. The risk assessment must be implemented in the form of work instructions for device operation.
- Owner must check throughout the entire implementation period of the device, whether the work instructions that owner has created satisfy current legislation, and must adapt the instructions if necessary.
- Owner must clearly regulate and specify the responsibilities for installation, operation, maintenance, and cleaning.
- Owner must ensure that all employees who deal with the device have read and understood this Manual.
  In addition, owner must train personnel at regular intervals and inform personnel of the hazards.
- Owner must provide personnel with the required protective equipment.

In addition, owner is responsible to ensure that the device is always in a technically perfect condition, and therefore the following applies:

- Owner must ensure that the maintenance intervals described in these operating instructions are complied with.
- Owner must have all safety devices inspected regularly for function and completeness.

2.3 Personnel requirements

2.3.1 Qualifications

WARNING!
Danger of injury if insufficiently qualified!

Improper operation can lead to serious personal injuries or property damage.

Therefore:

– Have all activities performed only by qualified personnel.

The following qualifications are specified for different areas of activity listed in the Manual.

- **An instructed person**
  has been instructed by the customer in an orientation session on the assigned tasks and possible dangers in case of improper behavior.
- **Qualified personnel**
  based on their professional training, know-how and experience as well as knowledge of the applicable standards and regulations is able to perform assigned work activities and to detect and avoid possible dangers on their own.

2.3.2 Unauthorized persons

WARNING!
Danger for unauthorized persons!

Unauthorized persons not meeting the requirements outlined here are not aware of the dangers in the work area.

Therefore:

– Keep unauthorized persons away from the work area.

– If in doubt, address the persons and direct them to leave the work area.

– Interrupt work activities as long as unauthorized persons are present in the work area.

2.4 Specific dangers

The following section lists the residual risks that have been determined by the risk assessment.

- Heed the safety instructions listed here, and the warnings in subsequent chapters of this Manual, to reduce health hazards and to avoid dangerous situations.

Electric current

DANGER!
Danger of death by electric current!

Live parts are dangerous. Contact with high voltages causes injury or death. Damaged insulation or components can cause injury or death.

Therefore:

– In case of damage of the insulation of the power supply, switch off immediately and arrange repair.
– Work on the electrical system must only be carried out by certified electricians.
– For all work on the electrical system, for maintenance, cleaning or repair work, disconnect from the mains or disconnect all phases of the external power supply and secure them against being switched on again. Check unit is isolated from power supply.
– Do not by-pass or disable fuses. Comply with the correct ampere when changing fuses.
– Keep away humidity from live parts. This could cause a short circuit.

2.5 Safety devices

WARNING!
Malfunctioning safety devices may pose a fatal risk!

Safety devices must be intact in order to guarantee safety.

Therefore:

– Never disable safety devices.
– Take care to ensure that safety devices such as main switch are always accessible.

Main switch

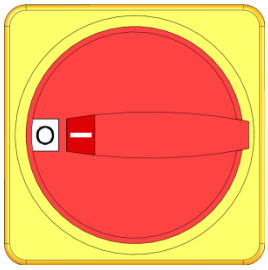


Fig. 1: Main switch

The power supply to consumers is cut and an emergency stop is triggered by turning the main switch to the "0" position.

WARNING!
Danger of fatal injury from uncontrolled restarting!

Premature uncontrolled restarting can lead to severe personal injury or to death!

Therefore:

– Before restarting, make sure that the cause for the emergency stop is eliminated and all safety devices are installed andoperational.

WARNING!
Danger of fatal injury from live conductors!

After switching off the unit via the main switch, there are still live conductors in the unit!

Therefore:

– For all work on the electrical system, for maintenance, cleaning or repair work, disconnect from the mains or disconnect all phases of the external power supply and secure them against being switched on again
– Check unit is isolated from power supply

2.6 CE Declaration of Conformity for Machinery

(CE-Directive 2006/42/EG, Annex II 1. A.)

Product	Control Module HB-Therm Panel-5
Unit types	HB-FB51
Manufacturer Address	HB-Therm AG Piccardstrasse 6 9015 St. Gallen SWITZERLAND www.hb-therm.com
CE guidelines	2014/30/EU; 2011/65/EU
Responsible for documentation	Martin Braun HB-Therm AG 9015 St. Gallen SWITZERLAND
Standards	EN IEC 61000-6-2:2019; EN IEC 61000-6-4:2019; EN IEC 63000:2018; EN ISO 12100:2010; EN ISO 13732-1:2008; EN 60204-1:2018

We declare of our own responsibility that the above mentioned products, to which this declaration refers, comply with the appropriate regulations of the CE-Machinery Directive.
(CE-Directive 2006/42/EG), including its appendices and the corresponding legal remission for implementation of the directive in national law.
Furthermore, the above mentioned CE-Directives and standards (or parts/clauses thereof) are applied.

St. Gallen, 2023-08-17

Reto Zürcher
CEO

Stefan Gajic
Compliance & Digitalisation

2.7 UK Declaration of Conformity for Machinery

(Supply of Machinery (Safety) Regulation 2008, Statutory Instrument 2008 No. 1597)

Product	Control Module HB-Therm Panel-5
Unit types	HB-FB51
Manufacturer Address	HB-Therm AG Piccardstrasse 6 9015 St. Gallen SWITZERLAND www.hb-therm.com
UK guidelines	The Electromagnetic Compatibility Regulations 2016 Statutory Instruments 2016 No. 1091 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 Statutory Instruments 2012 No. 3032
Responsible for documentation	Martin Braun HB-Therm AG 9015 St. Gallen SWITZERLAND
Standards	EN IEC 61000-6-2:2019; EN IEC 61000-6-4:2019; EN IEC 63000:2018; EN ISO 12100:2010; EN ISO 13732-1:2008; EN 60204-1:2018

We declare of our own responsibility that the above mentioned products, to which this declaration refers, comply with the appropriate regulations of the Supply of Machinery (Safety) Regulations 2008, including its appendices. Furthermore, the above mentioned Statutory Instruments and standards (or parts/clauses thereof) are applied.

St. Gallen, 2023-08-17

Reto Zürcher
CEO

Stefan Gajic
Compliance & Digitalisation

3 Technical data

3.1 General Information

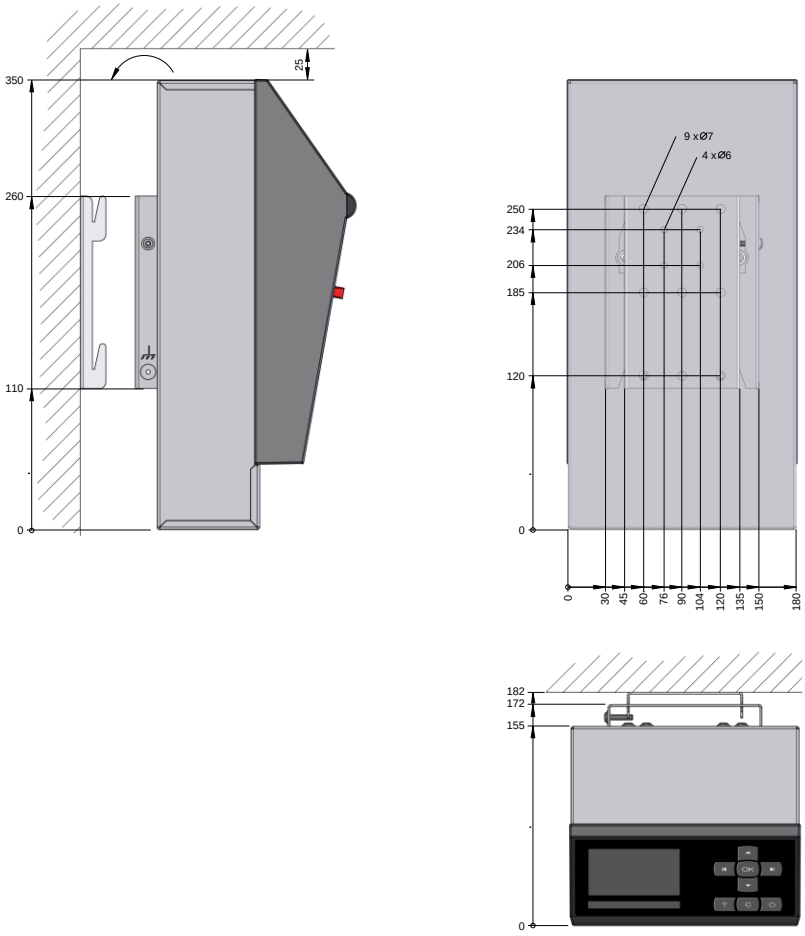


Fig. 2: Dimensions

Max. weight

	Value	Unit
HB-FB51	5,5	kg

Technical data

3.2 Operating conditions

Environment

The unit may only be operated indoors.

	Value	Unit
Temperature range	5–40	°C
Relative humidity *	35–85	% RH

* non-condensing

3.3 Connection values

Electrical connection

see nameplate on unit or on page 2

3.4 Nameplate

The nameplate is located on the inside of the service flap and on page 2 of this manual.

The following information can be taken from the nameplate:

- Manufacturer
- Type designation
- Unit number
- Year of manufacture
- Performance data
- Connection data
- Type of protection
- Additional equipment

4 Structure and function

4.1 Overview

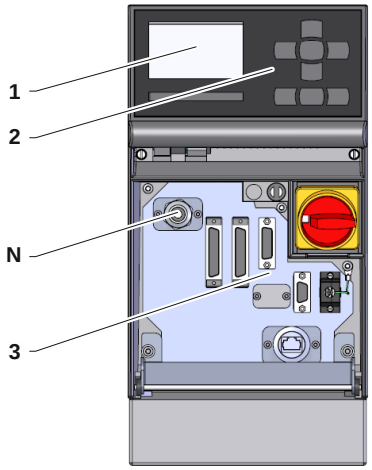


Fig. 3: Overview

1 Display
2 Operation
3 Interface connections
N Mains connection cable

4.2 Functional principle

The Panel-5 service module is for operation and display of the HB-Therm products Thermo-5, Flow-5 and Vario-5.

The Panel-5 service module is run through the HB interface with the HB-Therm products.

4.3 Additional equipment

The following additional equipment can be installed in addition to the basic equipment for the unit (→ nameplate):

	Additional equipment	Description
ZD	Interface DIGITAL	Serial data interface 20 mA, RS-232 or RS-422/485
		Various protocols selectable: Arburg, Billion, Bühler, Dr. Boy, Engel, Ferromatik Milacron, Haitian, KraussMaffei, MODBUS (RTU-Mode), Negri Bossi, SPI (Fanuc, etc.), Stork, Sumitomo Demag, Wittmann Battenfeld, Zhafir
		2 sockets Sub-D 25 pin (female)
ZC	Interface CAN	Series data interface CAN-bus (Sumitomo Demag) and CANopen (EUROMAP 66; Netstal, etc.)
		To remotely control singular units
		2 sockets Sub-D 9 pin (1 male and 1 female)
ZO	Interface OPC UA	Ethernet interface (EUROMAP 82.1)
		1 socket RJ-45 (female)
ZP	Interface PROFIBUS-DP	Serial data interface PROFIBUS-DP
		1 socket sub-D 9 pin (female; not possible with ZC)
ZK	Keyboard-protection	Transparent flap over display and controls

5 Transport, packing and storage

5.1 Safety notes for transport

Improper transport

ATTENTION!
Damage due to improper transport!

Improper transport can result in considerable material damage.

Therefore:

– Only use original or equivalent packaging.
– On delivery as well as during internal transport, proceed carefully when unloading the packages and observe the notices on the packaging.
– Only remove the packaging shortly before assembly.

Transport, packing and storage

5.2 Transport inspection

Check the delivery immediately on receipt for completeness and transport damage.

If externally detectable transport damage is found, proceed as follows:

- Do not accept the delivery, or only with reservation.
- Record the extent of transport damage in the transport documents or on the delivery note of the forwarding agent.
- Start complaints procedure.

NOTE!

Claim any damage as soon as it is detected. Compensation claims can only be submitted within the applicable complaints periods.

5.3 Packing

Fig. 4: Packaging

The controle module is packed in a cardboard box appropriate to the expected transport conditions.

Only environmentally compatible materials have been used for the packaging.

The packaging should protect the individual components from transport damage, corrosion and other damage. Therefore, do not destroy the packaging.

Handling packing materials

If there is no returns agreement for the packing, separate materials according to type and size and direct to further use or recycling.

ATTENTION!
Environmental damage caused by incorrect waste disposal!

Packing materials are valuable raw materials and can continue to be used in many cases or sensibly reconditioned and recycled.

Therefore:

– Dispose of packing materials environmentally.
– Follow the locally valid waste disposal regulations. If necessary employ a special waste disposal company to dispose of packing material.

Transport, packing and storage

Recycling codes for packaging materials

Recycling codes are markings on packaging materials. They provide information about the type of material used and facilitate the disposal and recycling process.

These codes consist of a specific material number framed by an arrow-triangle symbol. Below the symbol is the abbreviation for the respective material.

Transport pallet

→ Wood

Folding carton

→ Cardboard

Strapping band

→ Polypropylene

Foam pads, cable ties and quick release bags

→ Polyethylene low density

no recycling code

Stretch film

→ Polyethylene linear low density

Transport, packing and storage

5.4 Symbols on the packing

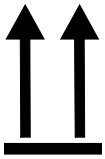
Protect against wetness

Protect packages against wetness and keep dry.

Fragile

Identifies packages with fragile or sensitive content.

Handle package with care, do not drop and do not subject to shock loads.



Top

The arrows in this sign symbolize the top side of the package. They must always point up, as otherwise the content may get damaged.

5.5 Storage

Storing the packages

Store the packages under the following conditions:

- Do not store out of doors.
- Store dry and dust-free.
- Do not expose to aggressive media.
- Protect from sunlight.
- Avoid mechanical vibrations.
- Storage temperature: 15 to 35 °C.
- Relative humidity: max. 60 %.

6 Installation and initial commissioning

6.1 Requirements for the installation location

WARNING!
Improper installation can cause risk of injury and fire!

Improper installation can lead to severe personal injury or material damage.

Therefore:

– Observe and comply with the requirements at the installation site

Install the control module under the following conditions:

- ensure adequate ventilation and a water-protected unit location
- all connection cables of the unit must not touch hydraulic lines or parts whose surface temperatures are above 50 °C

Installation and initial commissioning

6.2 Connect Interface

HB interface

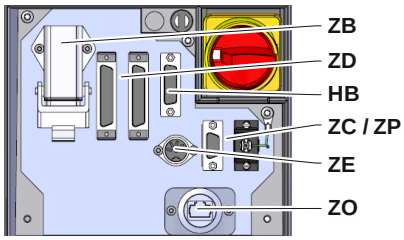


Fig. 5: Interfaces individual unit

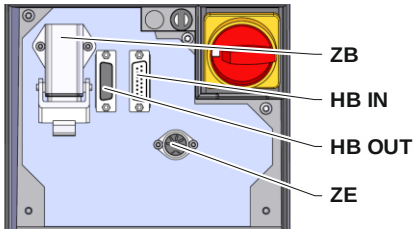


Fig. 6: Interfaces modular unit

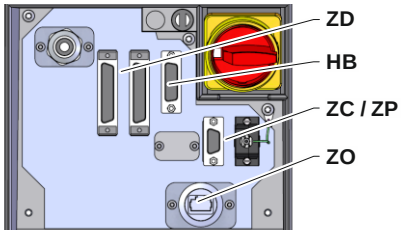


Fig. 7: Interfaces Panel-5

Fig. 8: Interfaces Flow-5
Modul: Unit attached/ stand-alone

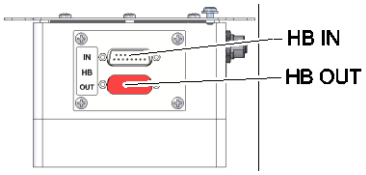


Fig. 9: Interfaces Flow-5
Modul: Autonom.

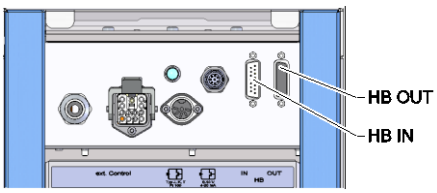
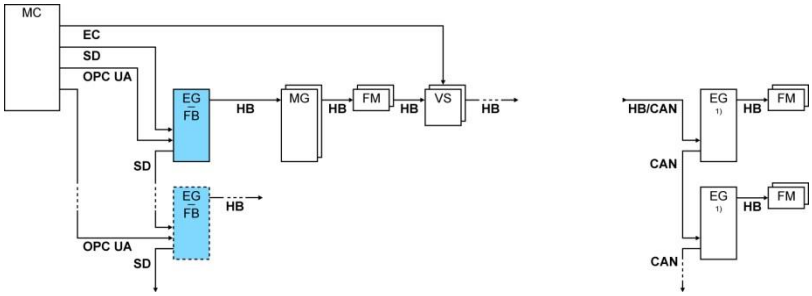


Fig. 10: Interfaces Vario-5

To operate or monitor a modular unit Thermo-5 Ext. Flow meter Flow-5 or a switching unit Vario-5, a control cable must be connectedto the device:

1. Loop the control cable between the front and the service cover at Thermo-5 resp. Panel-5.
2. Plug the control cable into socket HB IN.
3. Attach the other side of the control cable to the HB-Therm Thermo-5, Flow-5 or Vario-5 through the HB IN plug.
4. Attach additional HB-Therm products through the socket HB OUT.
5. Close the service lid.

Legend	Designation	Comment
MC	Machine controller	max. 1
FB	Operating module Panel-5	max. 1
EG	Temperature thermostat Thermo-5 singular unit	max. 16 (per operation)
MG	Temperature thermostat Thermo-5 modular unit	
FM	Flow meter Flow-5	max. 32 (with 4 circuits)
VS	Switching unit Vario-5	max. 8
SD	Communication via serial data interfaces DIGITAL (**ZD**), CAN (**ZC**), PROFIBUS-DP (**ZP**)	Maximum number of sim. modules, operatingvolume and transfer of flow rate values depend on the machine controller or protocol
OPC UA	Communication OPC UA via Ethernet (**ZO**)	
HB 2)	Communication Interface HB	Order of connection not relevant
HB/CAN	Communication Interface HB/CAN	For remote control of singular units
CAN	Communication Interface CAN (**ZC**)	
EC	External control (ext.) Control)	Configuration depends on machine controller



1) operation switched OFF

2) Max. length cable HB: Total 50 m

Data interface (additional equipment ZD, ZC, ZP, ZO)

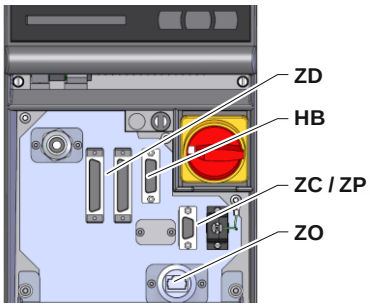


Fig. 11: Interfaces

In order to control the unit via an external controller, a control cable can be connected to the unit:

1. Pull the control cable between the front and the service cover.
2. Plug the control cable into socket ZD, ZC, ZP or ZO.
3. Close the service lid.
4. Settings for Address resp. of the Protocol (→ Instruction Manual Thermo-5, chapter remote mode settings
5. Setting of the network configuration (only with additional equipment ZO → Instruction Manual Thermo-5), chapter remote mode network settings.

NOTE!

The pin assignment for the various control cables is given in page 38.

6.3 Ground

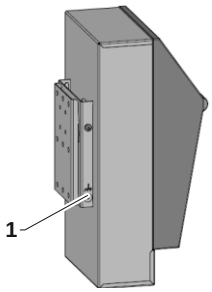


Fig. 12: Ground

Larger EMC interference sources in the vicinity of the control module can affect its function.

Connected in this case, the cabinet of the control module with a ground strap to the ground (→ Fig. 12).

7 Control

Up to 16 Thermo-5 units, 128 Flow-5 measuring circuits and 8 Vario-5 units can be serviced and displayed using the service module.

For more details on running the individual HB-Therm products, see the instructions for Thermo-5, Flow-5 and Vario-5 in the chapter on control.

8 Operation

For more details on servicing the individual HB-Therm products, see the instructions for Thermo-5, Flow-5 and Vario-5 in the chapter on servicing.

8.1 Switching on

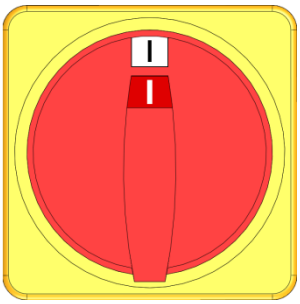


Fig. 13: Main switch

Switch on the control module as follows:

1. Turn the main switch to position "I".

→ Unit initialisation runs. Control module is ready for operation.

8.2 Switching off

Switch off the service module

After use, switch the service unit off as follows:

1. Switch off all modular units.
2. Turn the main switch to "0".

Operation

8.3 Emergency stop

In dangerous situations, the unit must be stopped as quickly as possible and the power supply switched off.

Emergency stop

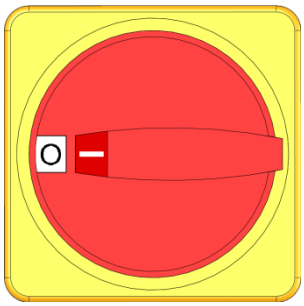


Fig. 14: Main switch

Proceed as follows in a hazardous situation:

1. Turn the main switch to "0".
2. Disconnect from the mains or disconnect all phases of the external power supply and secure them against being switched on again.
3. If necessary, bring people out of the danger area and carry out first-aid.
4. If necessary, alert a doctor and the fire brigade.
5. Inform the responsible person on site.

After rescue measures

6. If required by the severity of the emergency, inform the responsible authorities.
7. Commission qualified personnel to do the fault rectification.

WARNING!
Danger of life due to premature re-activation!
On restarting there is a danger of fatal injury for people in the danger area.
Therefore:
Before restarting, ensure that there are no persons in the danger area.

8. Before recommissioning, check the unit for perfect functioning.

9 Maintenance

9.1 Maintenance tasks

9.1.1 Cleaning

Clean the control module under the following conditions:

- Only clean the outer parts of the unit with a soft, moist cloth.
- Do not use any aggressive cleaning agents.

9.1.2 Software update

To install a new application program on the connected products Thermo-5 temperature control unit, Flow-5 flow rate meter or Vario-5 switching unit, proceed as follows:

NOTICE!

The "gba03Usr.upd", "SW51-1_xxxx.upd" or "SW51-2_xxxx.upd" software must be in the root of the data carrier. It may not be stored in a folder.

NOTICE!

During the software update, the Thermo-5 unit or the Panel-5 control model and all products connected to them may not be switched off.

Necessary tools:

- USB data carrier with the current software

→ The latest software can be acquired from the HB-Therm representative (→ www.hb-therm.ch).

NOTICE!

Only USB data carriers in FAT32 format are supported.

Maintenance

Run software update

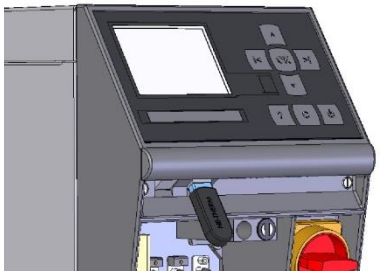


Fig. 15: Connect USB data carrier

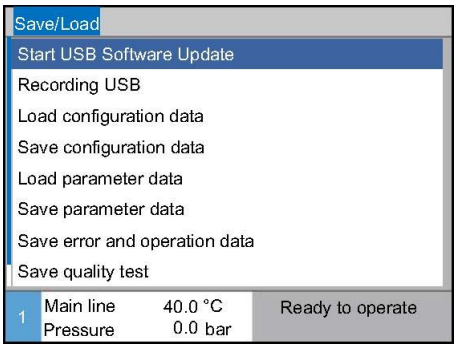


Fig. 16: Start USB software update

1. Switch on main switch.
2. Connect USB data carrier (Fig. 15).
3. Display menu page Profile.
4. Set parameter User profile to "Enhanced".
5. Display menu page Save/Load.
6. Select function Start USB Software Update and confirm with the OK key.

→ The data is loaded from the USB data carrier to the memory in the USR-51. Do not disconnect the USB connection.

→ Conclusion of data transfer is indicated on the display. The USB connection can now be disconnected.

→ The new software is written to the USR-51 flash. On completion, an automatic restart is initiated.

7. If required, the USB connection must be re-established to install further data.

→ If necessary, the new software is written to the connected GIF-51, DFM-51 or VFC-51 after the restart. This process can take a few minutes. On completion, another restart takes place.

→ The message *Ready to operate* appears on the display.

Checking the software version

1. In the basic display, press the ? key.

→ The current software version appears at the top right.

10 Faults

The fault display, reason for fault and fault correction are described in the operating instructions for the HB-Therm products Thermo-5, Flow-5 and Vario-5 in the chapter on faults.

11 Disposal

11.1 Safety

Personnel

- Disposal must only be carried out by qualified personnel.
- Work on the electrical system must only be carried out by certified electricians.
- Work on the hydraulic system must only be carried out by qualified hydraulics technicians.

11.2 Disposal of materials

Once the end of the useful life has been reached, the unit must be disposed of in an environmentally compatible manner.

As long as no return or disposal agreement was made, dismantled constituent parts are to be recycled:

- Metals should be scrapped.
- Plastic elements should be passed on for recycling.
- Other materials should be sorted and disposed of according to material composition.

ATTENTION!
Environmental pollution on wrong disposal!

Electrical waste, electronic components, grease and other additives are subject to the treatment of special refuse and may only be disposed of by approved specialised companies.

The local authority or specialised disposal companies can give information on environmentally compatible disposal.

12 Spare parts

WARNING!
Safety risk due to wrong spare parts!

Wrong or defective spare parts can impair safety as well as leading to damage, malfunctions or total breakdown.

Therefore:

– Only use original spare parts from the manufacturer.

Purchase spare parts through the HB-Therm representative (→ www.hb-therm.ch).

The spare parts list can be found in Appendix B of this operating manual.

On use of non-approved spare parts, any guarantee or service claims are forfeited.

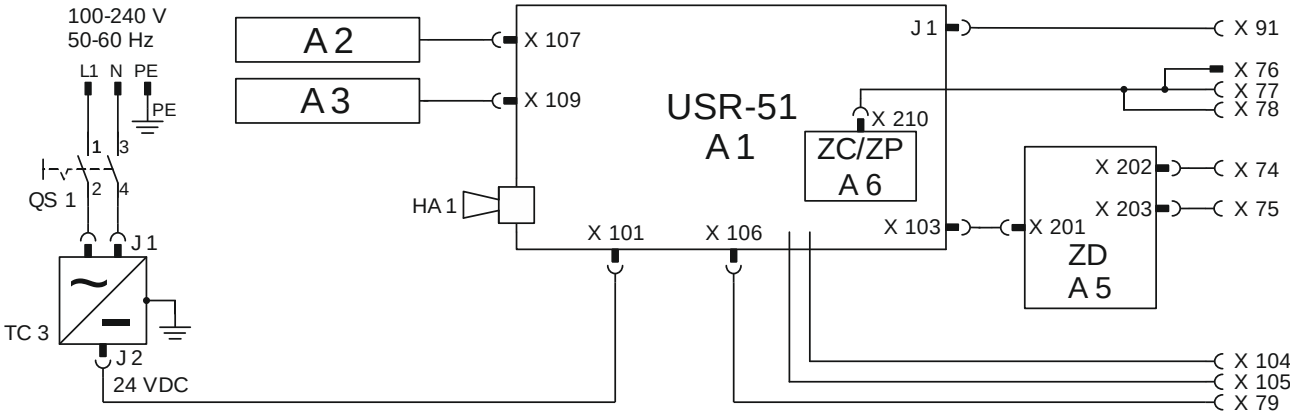
12.1 Ordering spare parts

When ordering spare parts, always indicate:

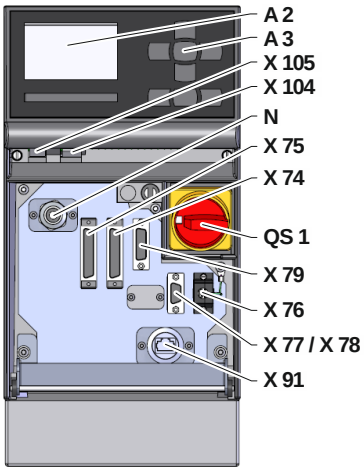
- The designation and ID No. of the spare part.
- Amount and unit.

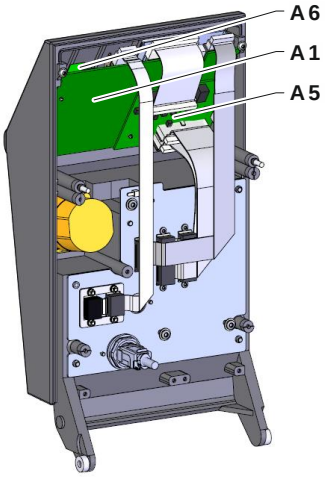
13 Technical information

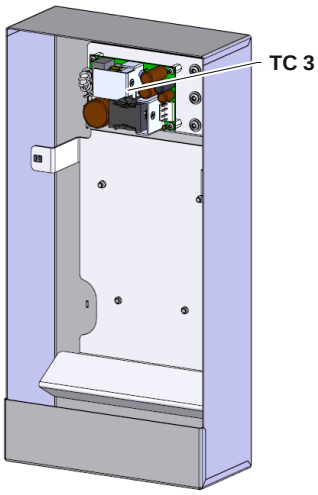
13.1 Electrical circuit diagram



13.2 Item location







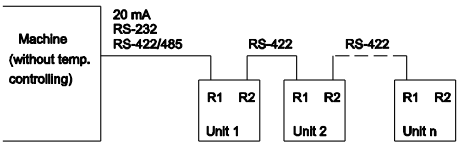
13.3 Legend

KZ	Designation	only with version
A 1	Control unit USR-51	
A 2	Display	
A 3	Keyboard	
A 5	DIGITAL module	ZD
A 6	CAN- resp. PROFIBUS-DP- module	ZC, ZP
HA 1	Horn	
N	Mains connection cable	
QS 1	Main switch	
TC 3	Power supply 100-240 VAC, 50-60 Hz, 24 VDC, 60 W	
X 74	Connector interface DIGITAL 1	ZD
X 75	Connector interface DIGITAL 2	ZD
X 76	Connector (CAN-Bus)	ZC
X 77	Connector (CAN-Bus)	ZC
X 78	Connector PROFIBUS-DP	ZP
X 79	Socket HB OUT	
X 91	OPC UA socket	ZO
X 104	Connector USB-Host	
X 105	Connector USB-Device	

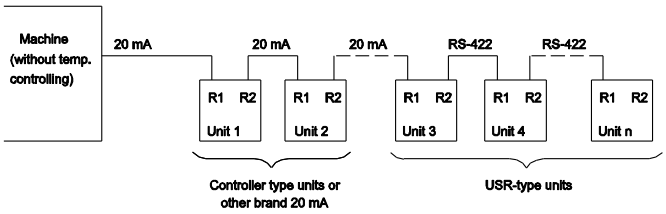
14 Interface cables

14.1 Serial data interfaces

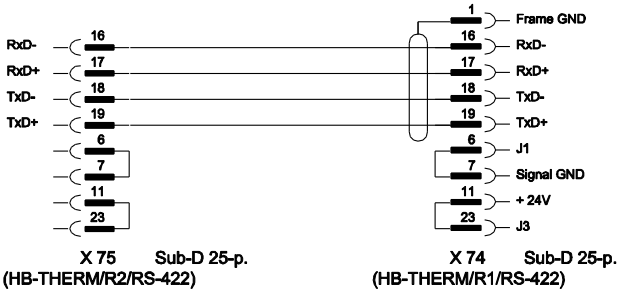
Operation with USR type units



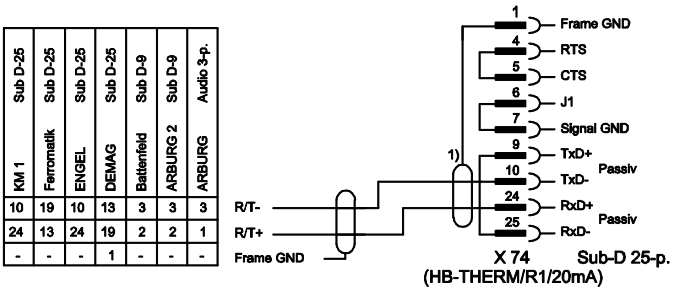
Operation with USR and controller type units



Connection cable RS-422 (between 2 USR units)

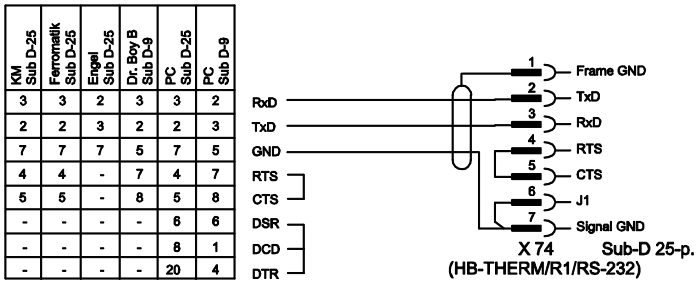


20 mA (current loop)

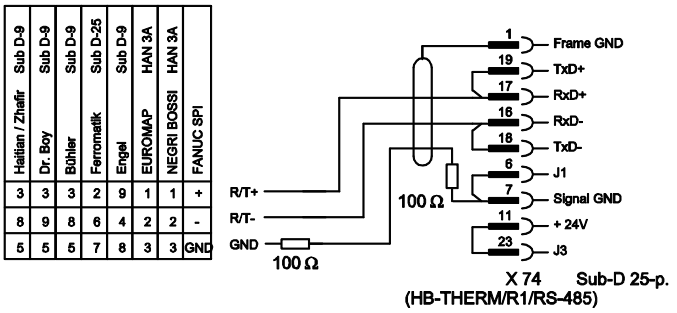


1) not applicable if shield exists on machine side

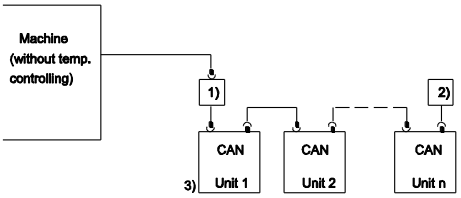
RS-232



RS-485

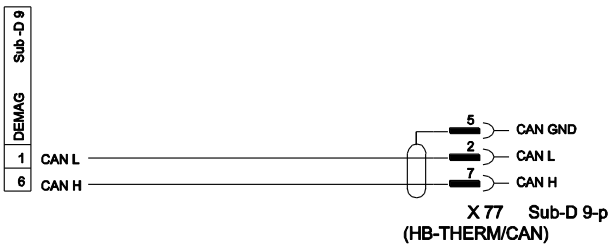


14.2 CAN-Bus interfaces



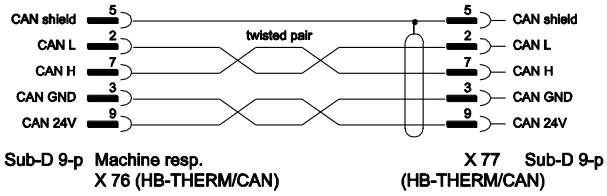
No.	Description		
1)	Adapter u/ID No. 22590 (only for DEMAG machine)		
2)	Terminator 120 Ω (not for older DEMAG machines with integrated connector)		
3)	Address	DEMAG	Unit 1 with address 13, unit 2 with address 14, etc.
		Netstal	Unit 1 with address 31, unit 2 with address 32, etc.

Adapter



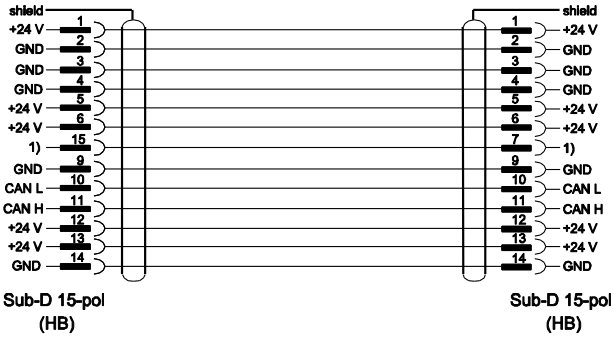
Interface cables

Connection cable CAN



14.3 Interface HB

HB



1) An automatic terminal resistance is connected over this contact.

HB/CAN