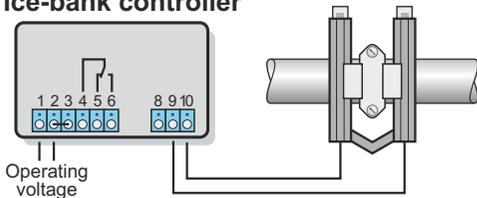
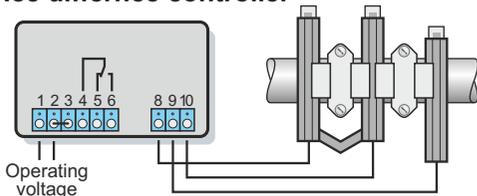


Installation

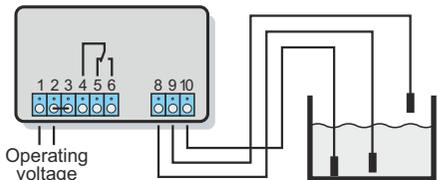
Ice-bank controller



Ice difference controller



Electronic level controller



Adjustable sensitivity

The EA-200 can be adjusted with a potentiometer for different electrical conductivity medias.

Ice-bank electrodes (accessories)

WELBA ice-bank electrodes are available as a set, ready for connection to all pipe diameters between 7 and 17 mm.



Each set consist of:

- 1 Double electrode with 4 m connection cable
- 1 Single electrode with 4 m connection cable
- 2 Connecting clips with screws
- 3 Cable lugs

Electrodes can be used for controlling either ice-banks or ice-bank differential.

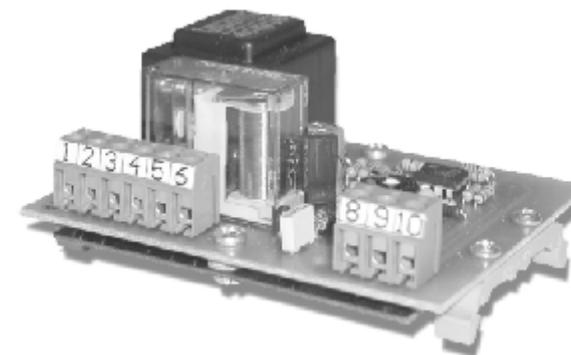
Technical data

Operating voltage:	depen. on execution: 230 V AC, 50/60 Hz 115 V AC, 50/60 Hz or 24 V AC, 50/60 Hz
Relay contact:	1 voltage-free make-contact
max. switch. current :	10 A AC 1
max. switch. voltage :	250 V ~
Measure signal:	Umeas <20V AC
Board:	
- Format	85 x 65 mm
- Fixing	rail mounting
Connections:	screw terminals
Environment conditions:	
- Temperature:	- 20°C to +50°C
- Max humidity:	75% (no condensation)



Installation and Operating Instructions

Ice-bank regulator EA-200



The Ice bank regulators of the type EA-200 can operate as an

- **Ice-bank regulator**
- **Ice-bank difference regulator** or
- **Electronic level monitor**

The diversity of the applicabilities makes the EA-200 as an universal device for lot of different applications.

The electrodes are only operated with AC voltage to prevent any electrolysis effects.

The electrode voltage signal will electronically controlled below 20V and is therefore not dangerous by any contact.



This operating instructions contains important technical and safety informations.

Please read carefully before installation and before any work on or with the ice-bank regulator!

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Safety

The ice-bank regulator may only be installed by an authorized specialist, observing all local safety requirements!

Only specialists must be allowed to access the environment when connected!

The ice-bank regulator must not be used if the board or connection terminals are damaged!

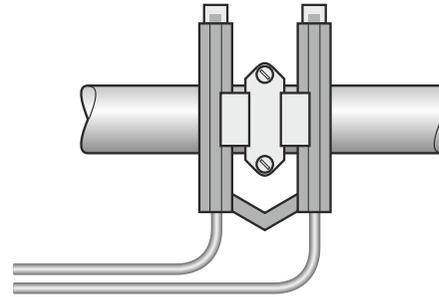
The ice-bank regulator may be exported to the USA with the permission of the manufacturer only.

Installation

It is essential not to install the device under the following conditions:

- severe jolting or vibration
- permanent contact with water
- relative humidity of more than 90%
- sharply fluctuating temperatures (condensation)
- operation in an aggressive atmosphere (ammonia or sulphur fumes) - risk of oxidation
- operation in the immediate vicinity of radio transmitters with high levels of spurious radiation.

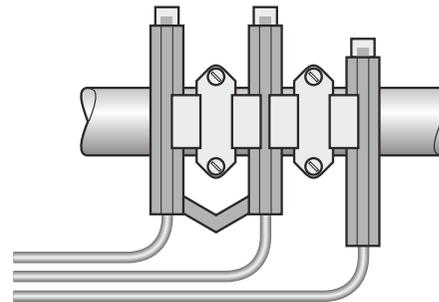
Operating description



Ice-bank regulation

The principal function of the ice-bank regulators are the different electrical conductivity of water and ice. If the ice-bank covers the evaporator coil and both ends of the electrodes, the relay will get triggered and cut off the cooling process.

If the ice-bank is defrost the relay will get triggered again and the cooling process will continue.



Ice-bank difference regulation

The ice-bank difference regulators are operated with three electrodes besides the ice-bank regulators. With three electrodes it is possible to adjust the minimum and maximum ice thickness. So it is possible to get an optimal actual value of the cooling unit.

An output relay controls the cooling process.

Intended use

It is only allowed to operate the EA-200 as an ice-bank regulator, ice-bank difference regulator or electronic level monitor.

Its function is to monitor (free of DC voltage) electric conductible material with minimum and maximum electrodes.

It is not allowed to install this device in explosive environment.

 The ice-bank regulator EA-200 fulfills EC requirements for electromagnetic compatibility (EMC).

The safety components meet VDE regulations.

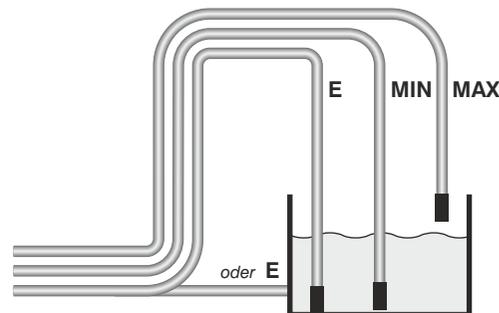
Electrical connections

An incorrect operation voltage can destroy the device and the additional components as well!

It is only allowed to switch on the EA-200 when all components are finally connected to the device!

If the external components use more than >10A (or high drain of the relay contacts) it is strictly important to use a contactor with a RC circuit!

Take care of technical data!



Electronic level monitor

The EA-200 can by using suitable electrodes operate as a level monitor. It is also possible to use two or three electrodes.

The output relay can have different functions.