Operating instructions
Installation instructions

for the radio remote control systems of different transmitter versions from HETRONIC

CE

Please enter the system number here!
Please retain for reference!

Date of publication:

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OPERATION INSTRUCTIONS

1. Safety

1.1. Safety of this radio remote control system

This radio remote control system is equipped with both electronic and mechanical protection devices. When allocated, coding applies to one transmitter only, meaning that control commands cannot be received from other transmitters.

<u>This concerns your safety</u>

In the event of incorrect operation or misuse, there is a risk of harm to

- the health of the operator or other persons, and
- the machine and other property.

All persons working with this radio remote control system

- must be both suitably qualified and have been instructed as required by regulations
- must strictly comply with the contents of these operating instructions.

1.2. Safety information and tips

<u>The following symbols are used for warnings and advisory notes in these operating instructions, with the following meanings:</u>

This symbol is used to warn you of the risk of fatal accidents or serious injuries. Such risks can arise whenever operating or working instructions are not strictly followed.

This symbol is used to warn you of the risk of damage to the machine or to other property if the operating or working instructions are either not followed or not followed properly. Disregarding these warnings may void your warranty.

This symbol is intended to draw your attention to particular features or important information designed to make your work easier.

1.3. Sources of risk

The system is designed for permitting machines to be controlled by radio remote control.
However, since the control commands also are transmitted beyond your range of vision, and through or around obstacles in the vicinity, you should always:

- Put the transmitter down only in a safe and dry location, switch the transmitter off and pull the key from the key switch (or if your transmitter does not have a key switch, remove the rechargeable battery or the battery compartment).
- Disconnect the power supply before you start any installation, maintenance or repair work!
- Avoid removing or modifying any safety devices!

1.4. Qualified operators

(Refer to the operating instructions for the machine you intend to operate with this control system!)
The operator is responsible for ensuring that when the transmitter is put down, it cannot be used by unauthorized persons. This can be done either by pulling the key from the key switch, by removing the rechargeable battery or by storing the transmitter in a locked location.

The owner must:
- provide the operator with these operating instructions and
- ensure that the operator has read and understood them.

1.5. Safety precautions in the working area

- Ensure that there is no risk of slipping in the work area.
- Before each use of the radio remote control system, check that nobody is within the working area or swiveling range of your load.
- If a carrying aid is prescribed for your transmitter, this is to be worn during use.

Either turn the key switch to the off position and pull the key, or remove the rechargeable battery or the battery compartment from the receptacle when putting the transmitter down. This will prevent undesired use or misuse of the transmitter by third parties.

1.6. Protection devices

The machine will be stopped:

- If you actuate the red EMERGENCY STOP button or the Stop button on the control panel of the transmitter
- If the range is exceeded
- If there is receiver or transmitter interference or when the radio signal is interrupted
- If the rechargeable battery or the battery compartment is removed
- If the rechargeable battery or non-rechargeable batteries is/are run down

These protection devices:

- are included for the safety of both persons and property, and
- must not be modified, removed or bypassed under any circumstances or in any way whatsoever!

Additional protection devices (depending on transmitter version):

- **Guard rim, guard clip or recessed function buttons. These safety devices protect against undesired actuation of the control elements, which in turn prevents unintentional control commands from being transmitted.**

1.7. What to do in an emergency

In an emergency, immediately press the red EMERGENCY STOP button or the other EMERGENCY STOP button on the transmitter control panel. Then proceed as instructed in the operating instructions for your machine.
(Fig. 1, 2, 3)

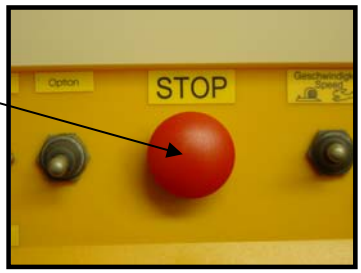
EMERGENCY STOP button

(Fig. 1)

Red EMERGENCY STOP
Version 1

(Fig. 2)

Red EMERGENCY STOP
Version 2



(Fig. 3)

2. Operation

Have you read and understood the operating instructions, in particular section 1 on safety and protection devices?
You may **not** use the device until you have done so!

2.1. Handling non-rechargeable/rechargeable batteries

Depending on the version, HETRONIC radio remote control systems either come with a battery compartment for two or three 1.5 V alkaline mignon batteries

or

with a HETRONIC rechargeable battery/battery charger set (12/24 VDC or 115/230 VAC depending on the transmitter type) and two HETRONIC interchangeable batteries

or

with a VersaPak rechargeable battery/battery charger set (115 V AC or 230 V AC) with two interchangeable VersaPak penlite batteries rated at 3.6 V each.

If your HETRONIC radio remote control system was delivered with a battery compartment for alkaline mignon batteries, never attempt to charge the battery compartment with the alkaline batteries in a battery charger!
Alkaline batteries are not capable of recharging; only batteries specially designed for this purpose can be recharged!

2.1.1. Replacing rechargeable/non-rechargeable batteries

Ensure that there is no dirt or grime in the non-rechargeable / rechargeable battery compartment, as this can lead to breaks in contact. Only use alkaline batteries. Zinc-carbon batteries are not suited for powering the transmitter. The transmitter electronics continuously monitor the battery voltage. When this has dropped below a certain value, the operating LED on the transmitter begins to flash red, or you hear an acoustic signal and the system switches off (handheld transmitter versions excluded).

Proceed as follows:

- Bring the machine to a safe state within 30 seconds (transmitter switches off after about 30seconds).
- Switch off the transmitter by turning the key switch to position 0 (if your transmitter has a key switch).

Alkaline mignon batteries:

- Remove the battery compartment with the run down alkaline batteries from the transmitter.
- Remove the run down alkaline batteries (two or three).
- Place two or three fully charged 1.5 V alkaline batteries in the battery compartment as depicted on the latter.
- Insert the battery compartment in the battery receptacle of the transmitter with the contacts first and the open side facing down.
- Now press the battery compartment until it fully locks into place.

VersaPak rechargeable battery:

- Press the lever at the end of the rechargeable battery compartment until the battery releases.
- Replace the run down rechargeable battery with a fully charged one.
- Press the end of the rechargeable battery until it fully locks into place.

HETRONIC rechargeable batteries:

- Remove the run down rechargeable battery by pressing the edge lip or battery cover forward, then pull up and out.
- Take a charged battery and insert it in the designated pockets of the transmitter battery compartment with both contact points forward or down (TG) and both guide rails down.
- Then press the rechargeable battery in the direction of the battery receptacle until the battery fully locks into place.

2.1.2. Battery charger and charging the battery

Charging the rechargeable batteries:

- Remove the rechargeable battery as described in section 2.1.1.
- Then place the battery in the charger designed for your particular battery (see Figs. 9 to 11).
- Ensure that the battery charger is connected to the respective power supply (power plug, vehicle, etc.).
- Charging should take approximately 3 to 6 hours, depending on the version. See section 6, “Technical data”, for more information.

Please make sure that you read the operating instructions provided by the manufacturer for the battery charger prior to use and that you follow all safety instructions contained therein. HETRONIC will not accept liability for improper or negligent use.

Only use genuine HETRONIC parts or parts approved by HETRONIC. Not doing so introduces the risk of explosion! Emitted chemicals and flying parts can cause injury.

Battery chargers from HETRONIC have a charge level recognition feature that automatically switches the charger to charge retention mode when the batteries are at full capacity. Always leave one battery in the HETRONIC battery charger so that you will have a fully recharged battery in reserve at all times.

To prevent possible damage to VersaPak rechargeable batteries and the battery charger: Please ensure that VersaPak batteries do not remain in the battery charger for more than 24 hours (only applies to VersaPak penlite rechargeable batteries and the battery charger).

Batteries and rechargeable battery packs are to be treated as hazardous waste!
Use a specialist disposal company for recycling and disposal! Defective rechargeable battery packs can also be disposed of directly through HETRONIC.

2.1.3. Battery chargers

Battery charger UCH-2-AC or UCH-DC
The battery charger contains a processor to control and regulate the whole charging process. Depending on the version it is designed for operating voltages of 10-30 VDC or 90-270 VAC. After inserting the battery, a yellow LED indicates the charging process. When the battery is fully charged a green LED lights up. When you switched to fast charge a red LED lights up additionally. If no LED is shining after inserting battery on power at charger the yellow LED is flashing continuously, the battery is bad.

(Fig. 9)

Version 1; VersaPak

Version 2; HETRONIC MINI

(Fig. 10)

Version 3; HETRONIC TG

(Fig. 11)

Your HETRONIC radio remote control system is delivered with charged rechargeable batteries (optional) or with non-rechargeable batteries, i.e. the radio remote control system is ready for immediate use.

Battery compartment:

Version 1; Battery

(Fig. 4)

Version 2; Battery

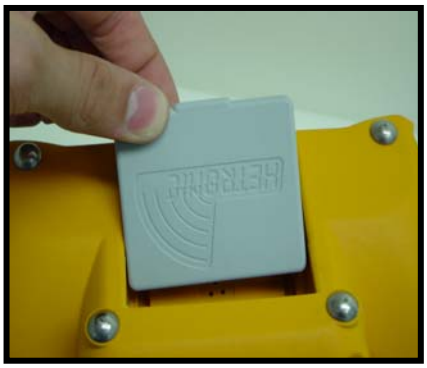
(Fig. 6)

Rechargeable battery:

Version 1; VersaPak rechargeable

(Fig. 5)

Version 2; HETRONIC MINI



(Fig. 7)

Version 3; HETRONIC GL

(Fig. 8)

2.2. Control elements

Please refer to the transmitter and receiver diagram included with these operating instructions for the control element arrangement of your radio remote control system. The diagram forms an integral part of these operating instructions.
The following is a description of those control elements that are standard on HETRONIC radio remote control systems.

2.3. Operation

Before you use the system, you must carry out the safety checks described in sections 2.3.1. and 2.3.2. below.
These safety checks must be carried out at least once each day before you start using the system or before each change of shift.

A diagram of your transmitter version is included with these operating instructions. The diagram forms part of the operating instructions. The arrangement of the control elements and the transmitter labeling will vary subject to customer requirements, but generally will be the same as the labeling of the previous controls. The only essential difference, in fact, is that you will now be able to exert control without the need for cable connections.

Refer also to the manufacturer's operating instructions for your machine and the diagram of your transmitter version to familiarize yourself with the arrangement of the control elements and their functions!

The section below deals with the radio remote control system’s control elements and special features.

Risk to life and property!
Check the EMERGENCY STOP function each time before use as described in the manufacturer’s manual.

2.3.1. Visual checks

<u>Always check the transmitter for damage each time before use!</u>

- Are all protection devices present and intact?
- Are there any broken parts?
- Are the rubber sleeves and pushbutton caps free of cracks?

Never work with a transmitter that is damaged in any of these ways!
Ensure that such damage is dealt with immediately!

2.3.2. Safety checks and starting the radio remote control system

- Check the charge state of your transmitter's power supply (rechargeable battery, non-rechargeable batteries)

- In the event that your transmitter is equipped with an EMERGENCY STOP button, ensure that it is not activated. If the button is activated, unlock it (see pictures 12,13 and 14).

- Now start the machine to be controlled.

- If your transmitter has a green START button, press it or start the transmitter by turning the key switch. If your transmitter does not have a green START button, start the machine by pressing one of the function buttons or the rocker switch.

- Jog mode: The transmitter does not transmit a continuous signal after the START button or one of the function buttons is pressed, but switches itself off two seconds afterwards. Thus, keep one of the function buttons depressed in this mode upon actuating the EMERGENCY STOP button or the STOP button during a safety check.

- Continuous transmission mode: The radio signal and the EMERGENCY STOP relay remain active until the transmitter is switched off.

- Now press one of the function buttons of the transmitter and keep it depressed.

2.4. Fault troubleshooting table

Your radio remote control system has been designed and manufactured using state-of-the-art technology. Every individual device is subjected to a stringent quality control process at the manufacturer's factory before being released for delivery to the customer.

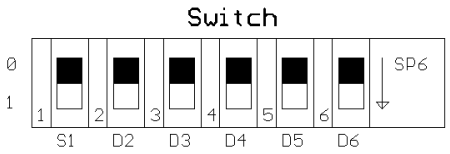
Please check the following points in the event of a fault:

Trouble symptom	Possible causes	Remedies
On/Off function cannot be actuated or controlled.	Self-test routine	The transmitter is ready for operation after a 3 second self-test routine.
	Rechargeable battery/non-rechargeable batteries run down.	Insert charged rechargeable battery or check non-rechargeable batteries. Switch on the master switch of the machine.
No reaction to keying the transmitter.	Interruption to receiver power supply.	Check connectors. Measure the power supply of the receiver.
	Rechargeable battery or battery compartment is defective (contact corrosion). Batteries are run down.	Check to see if the same effect occurs with the second rechargeable battery or with new batteries. Check the battery compartment and rechargeable battery compartment and clean if required. Please contact your dealer.
	A non-compatible transmitter and receiver combination is being used. Addresses of transmitter and receiver do not correspond with each other.	Check the system number on the stickers of the transmitter and receiver to see if you are using two compatible devices. The device numbers correspond to the system address and therefore must be identical.
Operating time is too short.	Incorrect or run down rechargeable batteries/non-rechargeable batteries were inserted.	Check if the power supply for the charger was switched off, or if the connection is faulty or loose. Only use rechargeable batteries approved by HETRONIC. **Only use alkaline batteries.**
There is interference with the transmission of the control commands to the machine.	No radio link.	Check that a yellow and red LED flash on the receiver. If not, please contact your dealer.
	Check to see if there is a large metal surface located between the transmitter and receiver.	A projecting aerial must be installed outside the steel cabinet, vehicle or the machine to be controlled. Try an alternative frequency setting for the transmitter and receiver. Please contact your dealer.
	The range has been exceeded. Please contact your dealer.	
	The receiver is located in a steel cabinet or a vehicle, or is installed inside the machine to be controlled. The aerial is inadequate. A radio remote control system with the same frequency is being used within the vicinity.	
Individual functions cannot be actuated or controlled.	Break in the control lead between the machine and the receiver.	Check that the connector plug is properly seated. Check the connecting cable to the machine. Check the wiring and carry out cable-based control checks of the individual functions if necessary.
	Output module in receiver is defective.	Check that a LED illuminates on the output modules in the receiver in response to actuating the corresponding function. Please contact your dealer.

2.5. Frequencies and addressing

Radio remote control systems from HETRONIC include a CS434, CS447 or CS458 RF module synthesizer (not subject to registration), which incorporates an RF transmitter module and an RF receiver module.

2.5.1. FREQUENCY ALLOCATION FOR CS434TXN



MANUAL SETTING
S1 = 0

D2	D3	D4	D5	D6	Frequency	Channels
0	0	0	0	0	433.1000	2
0	0	0	0	1	433.5500	20
0	0	0	1	0	434.0500	40
0	0	0	1	1	434.0750	41
0	0	1	0	0	434.1000	42
0	0	1	0	1	434.1250	43
0	0	1	1	0	434.1500	44
0	0	1	1	1	434.1750	45
0	1	0	0	0	434.2000	46
0	1	0	0	1	434.2250	47
0	1	0	1	0	434.2500	48
0	1	0	1	1	434.2750	49
0	1	1	0	0	434.3000	50
0	1	1	0	1	434.3250	51
0	1	1	1	0	434.3500	52
0	1	1	1	1	434.3750	53
1	0	0	0	0	434.4000	54
1	0	0	0	1	434.4250	55
1	0	0	1	0	434.4500	56
1	0	0	1	1	434.4750	57
1	0	1	0	0	434.5000	58
1	0	1	0	1	434.5250	59
1	0	1	1	0	434.5500	60
1	0	1	1	1	434.5750	61
1	1	0	0	0	434.6000	62
1	1	0	0	1	434.6250	63
1	1	0	1	0	434.6500	64
1	1	0	1	1	434.6750	65
1	1	1	0	0	434.7000	66
1	1	1	0	1	434.7250	67
1	1	1	1	0	434.7500	68
1	1	1	1	1	434.7750	69

Maximum power is 10mW ERP, 100% duty cycle in Europe
Maximum power is 1mW ERP, 100% duty cycle in Europe

AUTOMATIC SETTING

S1 = 1
D2 = 1 = FCS (Free Channel Search TX), and SCAN-RX
D3 = 1 = AUTX (Automatic Channel Change TX), and SCAN-RX

Freq Group for FCS/AUTX/SCAN

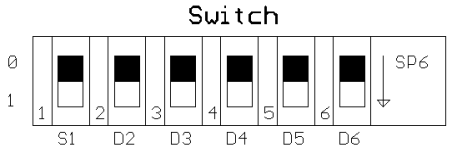
D4	D5	D6	Channels
0	0	0	68, 58, 54, 52, 49, 41
0	0	1	67, 59, 55, 53, 47, 44
0	1	0	66, 64, 61, 57, 51, 43
0	1	1	65, 63, 60, 56, 50, 42
1	0	0	38, 32, 28, 18, 10, 8, 5
1	0	1	37, 29, 25, 23, 17, 14, 4
1	1	0	36, 34, 31, 27, 21, 13, 3
1	1	1	35, 33, 30, 26, 20, 12, 2

If FCS is selected,
the module will remember the last frequency that is set and then the frequency change is made by pushing the decrement switch button.
FCS on the transmitter module will only work with decrement switch button.

In AUTX mode, the TX module will remember the last frequency and then it will automatically decrement the channel everytime it is cycled On-Off-On.

In both, AUTX and FCS mode, the decrement switch button is always active.
Thus, the user can change the frequency by pushing the button.

2.5.2. FREQUENCY ALLOCATION FOR CS458TXN



MANUAL SETTING
S1 = 0

D2	D3	D4	D5	D6	Frequency	CH
0	0	0	0	0	458.5000	0
0	0	0	0	1	458.5250	1
0	0	0	1	0	458.5500	2
0	0	0	1	1	458.5750	3
0	0	1	0	0	458.6000	4
0	0	1	0	1	458.6250	5
0	0	1	1	0	458.6500	6
0	0	1	1	1	458.6750	7
0	1	0	0	0	458.7000	8
0	1	0	0	1	458.7250	9
0	1	0	1	0	458.7500	10
0	1	0	1	1	458.7750	11
0	1	1	0	0	458.8000	12
0	1	1	0	1	458.8250	13
0	1	1	1	0	458.8500	14
0	1	1	1	1	458.8750	15
1	0	0	0	0	458.9000	16
1	0	0	0	1	458.9250	17
1	0	0	1	0	458.9500	18
1	0	0	1	1	458.9750	19
1	0	1	0	0	459.0000	20
1	0	1	0	1	459.0250	21
1	0	1	1	0	459.0500	22
1	0	1	1	1	459.0750	23
1	1	0	0	0	459.1000	24
1	1	0	0	1	459.1250	25
1	1	0	1	0	459.1500	26
1	1	0	1	1	459.1750	27
1	1	1	0	0	459.2000	28
1	1	1	0	1	458.5000	0
1	1	1	1	0	458.5250	1
1	1	1	1	1	458.5500	2

UK Channels

AUTOMATIC SETTING

S1 = 1
D2 = 1 = FCS (Free Channel Search TX), and SCAN-RX
D3 = 1 = AUTX (Automatic Channel Change TX), and SCAN-RX

Freq Group for FCS/AUTX/SCAN

D4	D5	D6	Channels
0	0	0	18, 15, 10, 3, 1
0	0	1	17, 14, 9, 2, 0
0	1	0	18, 12, 8, 5, 3
0	1	1	17, 11, 7, 4, 2
1	0	0	27, 19, 16, 14, 10, 0
1	0	1	24, 15, 13, 9, 6, 1
1	1	0	26, 18, 12, 8, 5, 3
1	1	1	25, 17, 11, 7, 4, 2

If the FCS mode is selected, the module
will check for free channels and transmit if a channel is free.
The module also remembers the last channel and transmits in
that channel the next time power is on.
If all channels are occupied, the module will transmit at the least crowded
channel.

In AUTX mode, the TX module will remember the last frequency
and then it will automatically decrement the channel everytime
it is cycled On-Off-On.

In both, AUTX and FCS mode, the decrement switch button is
always active.
Thus, the user can change the frequency by pushing the button.

Use of the CS 434 RF module is not subject to registration or payment a fee!
The transmitter must never be used without an aerial, as this could destroy the RF module!
The frequency is preset by HETRONIC in the factory. If you should experience difficulties with the radio link in your system, please contact your dealer or HETRONIC's aftersales service team. The phone number can be found on the cover page of these operating instructions.

INSTALLATION INSTRUCTIONS

3. *Installation*

3.1. Connection information and start-up

The machine may only be connected by a qualified expert familiar with the machine to be operated (see section 4., “Maintenance”).

The following also applies:

- Before starting any work on the switch cabinet or the receiver, switch off the power supply to the machine to be controlled.
- VDE regulations (German Association of Electrical Engineers), the regulations of local electricity supply companies, and German UVV (accident prevention) safety regulations must all be fulfilled.

HETRONIC will not accept liability or provide a guarantee in the event of personal injury, damage to property and consequential damage resulting from improper or negligent handling of this product or from handling that does not comply with the regulations and standards on which these operating instructions are based.

Take steps to ensure that the receiver is located in an easily accessible place and is not installed within the vehicle, the machine to be controlled, a switch cabinet or any other similar equipment.
If installation in such a location is unavoidable, a projecting aerial must be mounted with it as well.

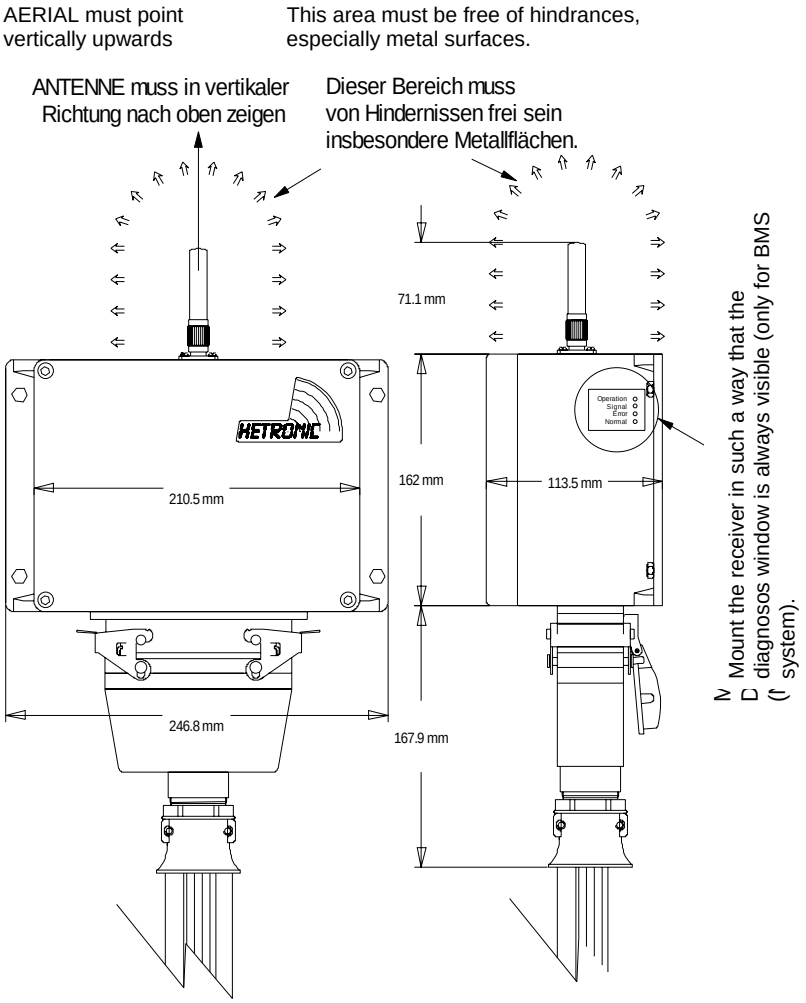
Switch off the power supply to the machine before connecting the power supply unit of the receiver.

Please refer to section 3.2. on the following page for the dimensions of the receiver and the drilling pattern.

The radio remote control system may only be connected by a qualified expert familiar with the electrical circuitry of the machine to be controlled.

Mounting the receiver:

The receiver should be mounted on the vehicle or machine to be controlled with the screwed glands or connections underneath. If your receiver is to be installed on a vehicle or on a mobile machine, you should equip the receiver with four rubber buffers. These can be obtained from your dealer or direct from the replacement parts sales division at HETRONIC. The rubber buffers will prevent heavy vibrations being transferred from the machine to the receiver. A diagram of your transmitter and receiver version is included with these operating instructions.

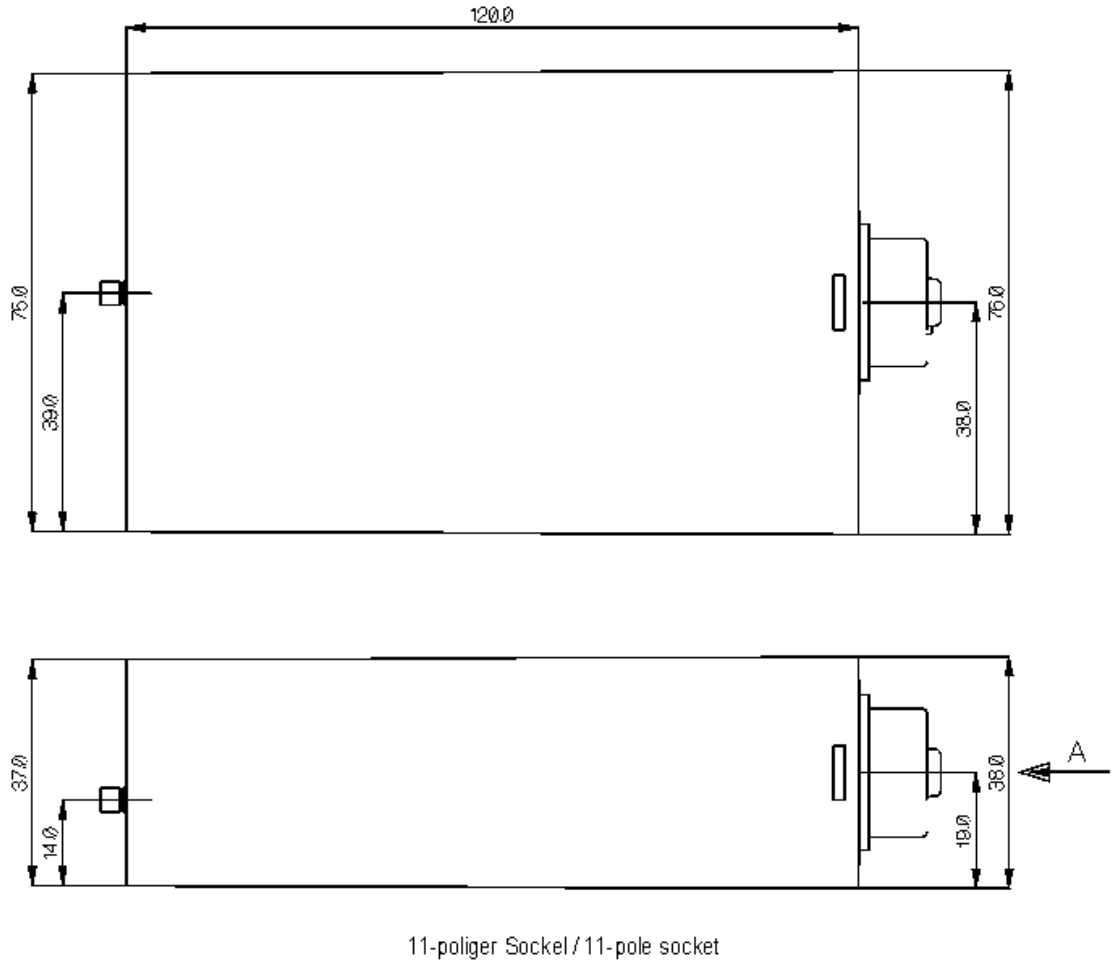


When mounting the receiver, ensure that the aerial is positioned in such a way that it is minimally shielded by large metallic surfaces.
The receiver has an internal aerial. If it is not possible to mount the receiver in a favorable position, be sure to order a projecting aerial from your dealer. Projecting aerials can be ordered with 1.5, 3.0 and 5.0 meter extension lines. Then mount the aerial in a more favorable position.

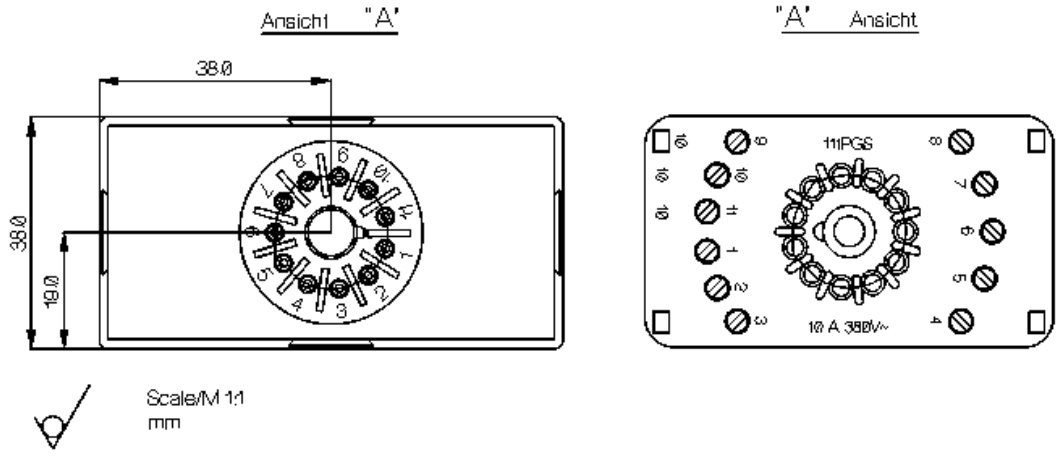
3.2. Receiver dimensions

Please refer to the following pages for the receiver dimensions required for mounting. All receiver types that are offered standard by HETRONIC are listed. If your receiver type is not listed, you will find a diagram of your receiver dimensions included with these operating instructions. The diagram forms an integral part of the operating instructions.

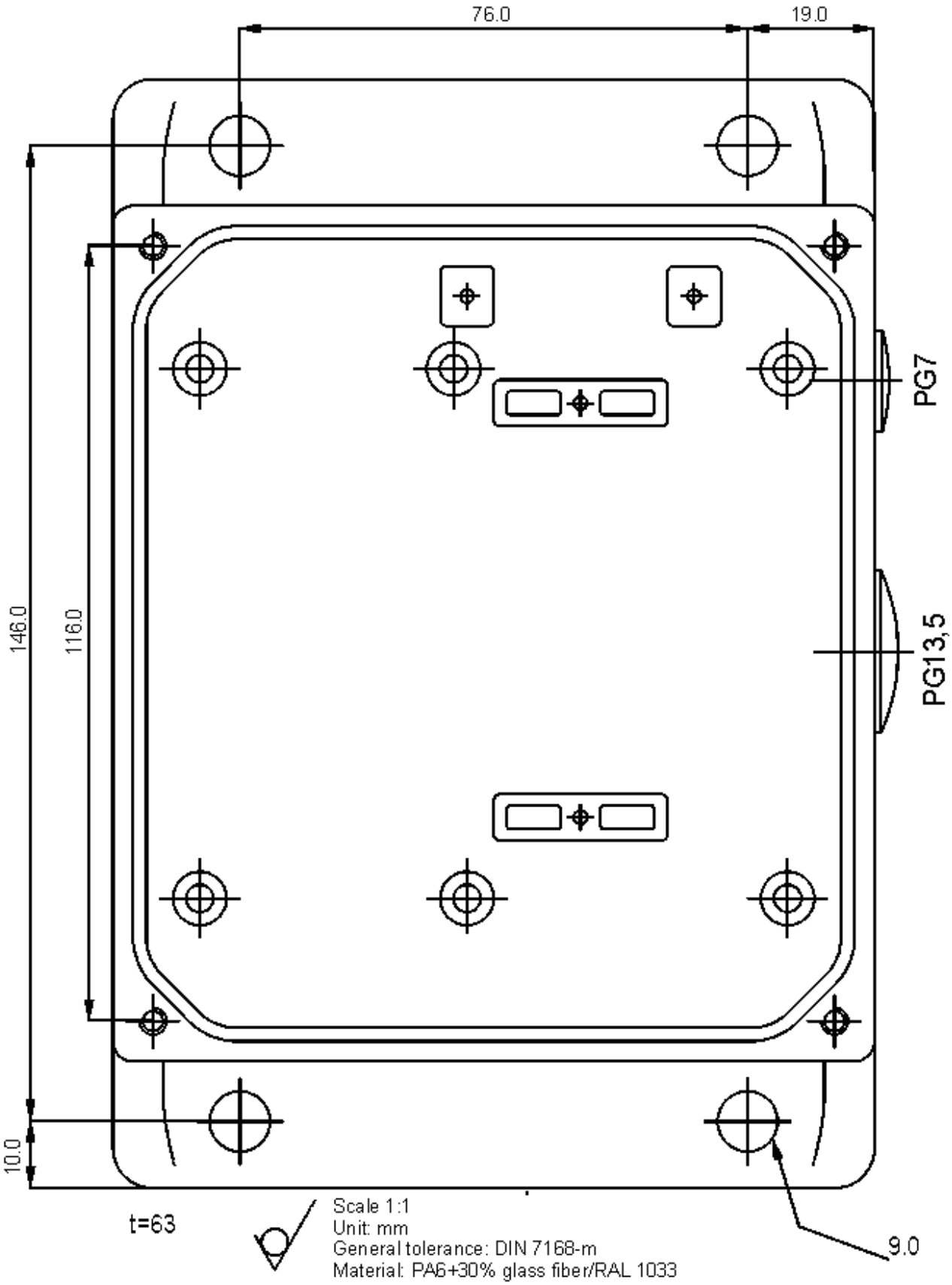
3.2.1. RX-CP housing



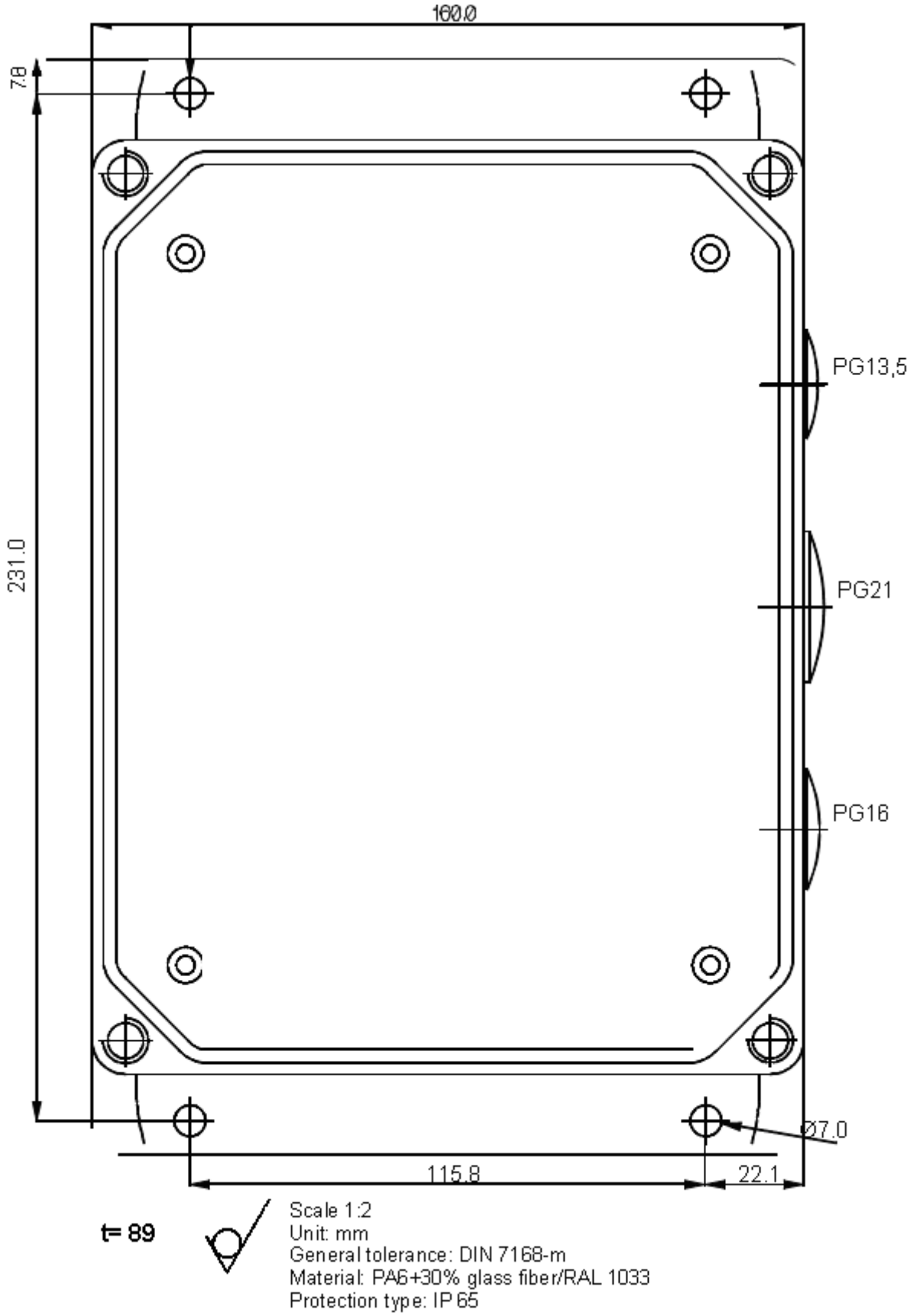
11-poliger Sockel / 11-pole socket



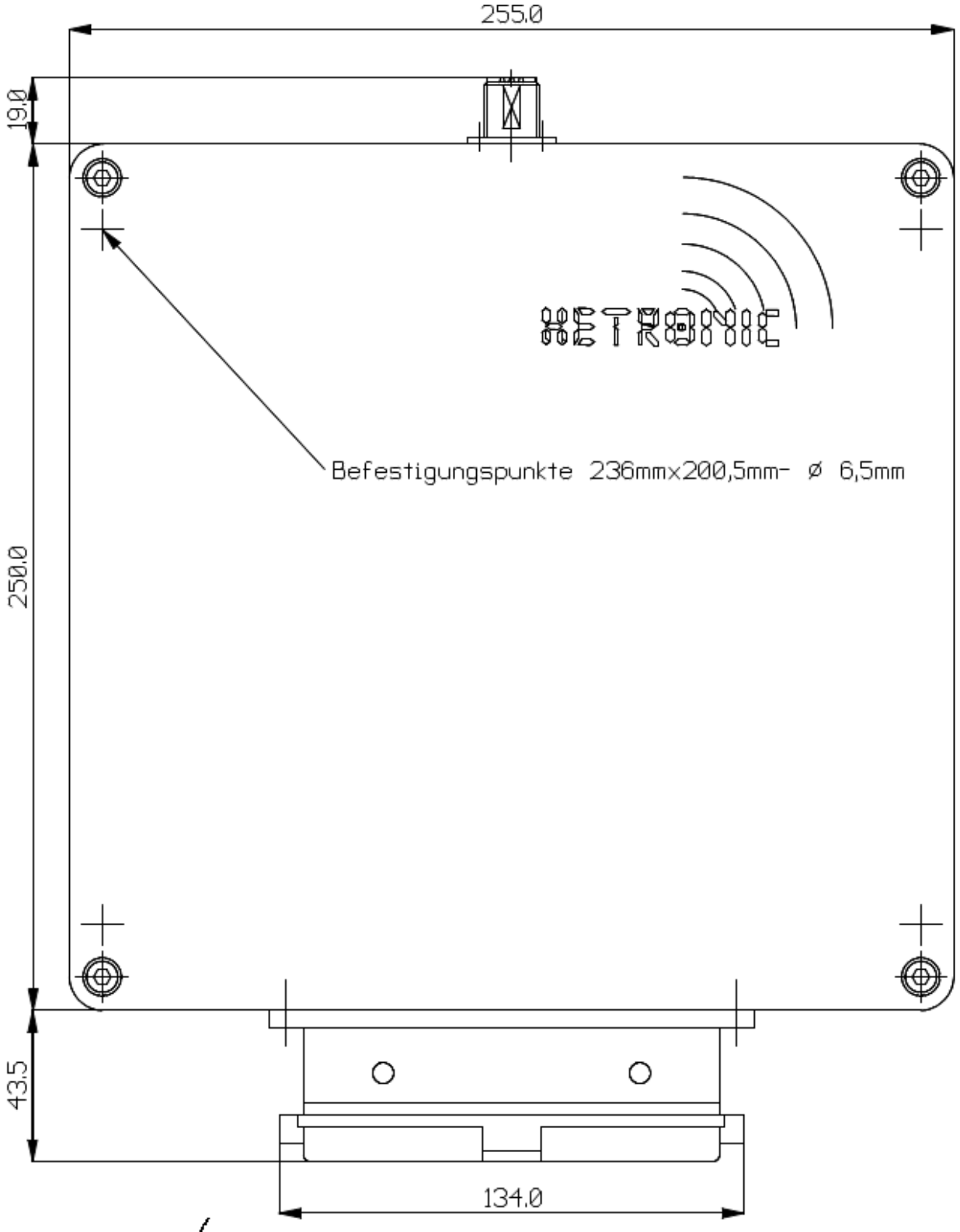
3.2.2.HS-1 housing



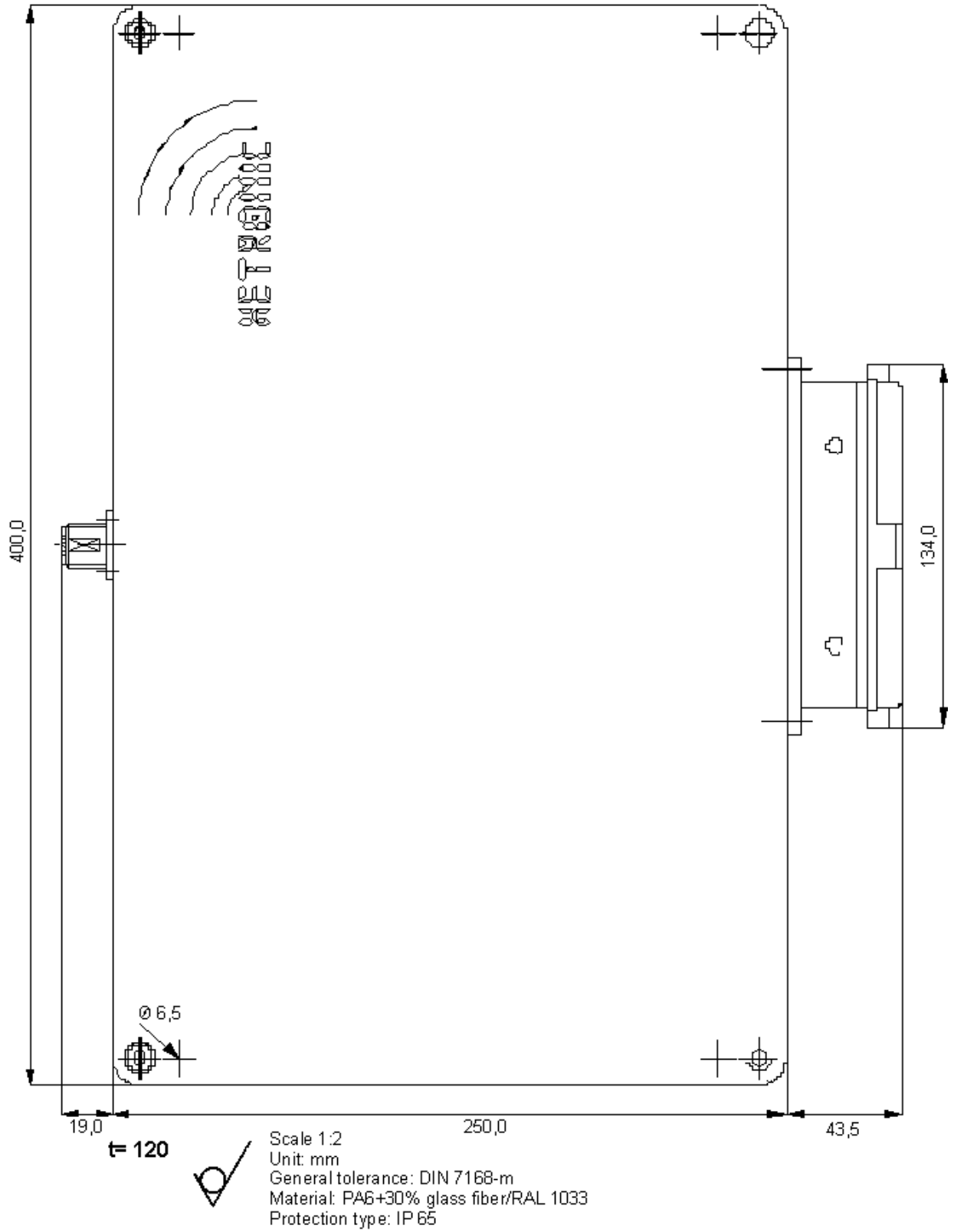
3.2.3.HS-2 housing



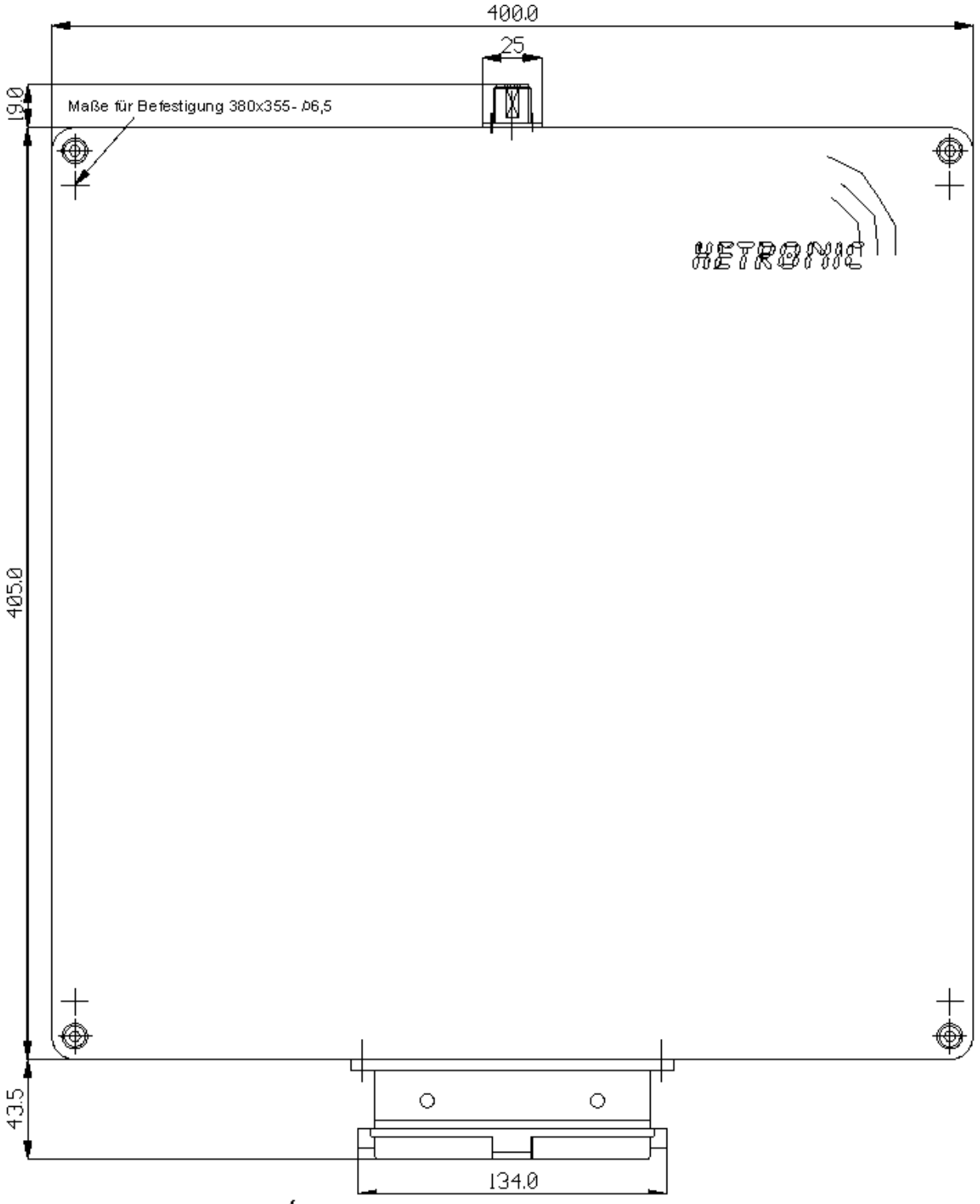
3.2.4.Receiver housing, 250 x 255



3.2.5.Receiver housing, 400 x 250



3.2.6.Receiver housing, 400 x 400

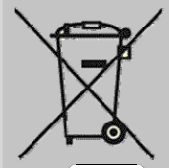


4. Maintenance

The employer is responsible for ensuring that devices for the wireless transmission of control commands are inspected by a qualified expert on a regular basis, and at the latest once annually.

A qualified expert is someone who has adequate skills and knowledge in the field of wireless transmission of commands, based on relevant technical training and experience, and is familiar with applicable national industrial safety regulations, safety standards, guidelines and generally approved technical practice (including DIN standards, VDE standards, and technical standards of other member states of the European Union or other states party to the convention on the European Economic Area), to the extent that they can assess the operating safety of devices for the wireless transmission of control commands.

5. Disposal



Do not pollute the environment!
Electronic devices and their components are hazardous waste!
This applies particularly to rechargeable battery packs!
Use a specialist disposal company for recycling and disposal!
Defective rechargeable battery packs also can be disposed of directly through HETRONIC!

6. Technical data

6.1. General:

Frequency range:	400 - 470 MHz Other frequency ranges available on request
RF synthesizer:	Microprocessor-controlled PLL synthesizer with 32 selectable frequencies
RF output:	<10 mW standard Higher transmitter outputs available on request
RF certifications:	Certified for frequency ranges subject to approval and freely assignable frequency ranges in over 40 states
Modulation:	FM - narrow bandwidth
Bandwidth:	12.5 kHz/25 kHz according to the system
Range:	Approx. 100 meters (with standard aerial) Approx. 200 meters (with special aerial)
Addressing:	20-bit (over 999,999 individual options)
Temperature range:	-25 °C - +70 °C (-18 °F - +160 °F)
Resistance to moisture:	0 - 97 % max. (applies only for condensation)
Response time:	Approx. 55 ms
Baud rate:	2,400/4,800 bps
Main components:	Surface mounting, modular construction
Diagnosis:	Status displays for Rcommunication; operating voltage displays for transmitter and receiver; undervoltage display
Certificates:	CE, TÜV, ISO 9001 to name a few

6.2. Rechargeable batteries and battery charger:

Operating voltage:	9 - 30 VDC or 110/230 VAC
Charging time:	Approx. < 4 hours
Service life:	Approx. 900 charges
Type:	NiCd or NiMh (depending on version)
Capacity:	600 mAh/1,200 mAh (depending on version)
Contacts:	Gold-plated, self-cleaning contacts

6.3. Transmitter:

Type:	Ergonomically-shaped housing
Housing material:	Fiberglass-based polyamid with 30% glass fibre rate, according to the system Other materials available upon request
Protection class:	IP 65

Weight:	Less than 2.00 kg (including non-rechargeable batteries or rechargeable battery), according to the system
Aerial:	Internal
(Non)rechargeable battery housing:	Electrically separated with gold-plated, self-cleaning contacts
Operating time:	14 - 20 hours (continuous operation), according to the system
Pushbuttons:	One or two-stage
Master switch/joystick:	All master switches have an automatic reset function, multiple-steps and proportional, are moisture resistant and ergonomically designed

6.4. Receiver:

Housing material:	Fiberglass-based polyamid with 30% glass fibre rate, according to the system Other materials available upon request
Connection:	Via moisture resistant connecting plug
Protection class:	IP 65
Operating voltage:	9 - 30 VDC, 48/110/220 VAC
Weight:	< 7.2 kg
Current consumption:	< 0.8 A
Aerial:	External aerial, with moisture resistant connection, partly internal
Digital outputs:	Fail-safe and self-monitoring EMERGENCY/STOP circuit. All relay outputs 275 VAC/8A
Proportional resolution:	8-bit (256 increments per function) Built-in ramp function selectable
Proportional outputs:	PWM signal with selectable dither frequency and current range Linear output voltage Proportional functions set via the transmitter (with quick set properties) or via potentiometer Multiple speed ranges selectable All proportional functions can be set with initial and final speeds Serial interfaces - RS232, RS458, CAN bus, Profibus

6.5. Standard options:

Proportional or digital feedback with or without display, 45° inclination sensor switch with configurable time delay in transmitter, dead man’s master switch, interlocking of individual functions, mechanical dead man, optical and acoustic undervoltage display 10 minutes in advance, one transmitter for multiple receivers, tandem operation, replacement transmitter, radio remote controls for explosion-protected areas

7 Appendix A

Installation and safety test declaration

This form must be completed and signed by the person responsible for undertaking installation of the system. HETRONIC will not accept liability for the correctness of the installation of the radio remote control system. As the operator, you have responsibility for ensuring that the radio remote control system and the machine have been properly coordinated with each other and tested, and that all relevant safety provisions are maintained (see section 2).
Intended use!

Machine data: Manufacturer: .....
Type description: .....
Serial number: .....
Year of manufacture: .....

Radio remote control system:
Manufacturer: Albatros Besturingsstemen b.v
HETRONIC NL
Type description: .....

.....
ID number: .....

I/We have carried out the installation, start-up and safety checks for the radio remote control system on the above-mentioned machine.
In doing so and in this respect, the latest standards and regulations applicable to this type of machine have been maintained.

Location/address: .....
Date: .....
Company: .....
.....
.....
.....
.....

Name of person responsible: .....

Signature: .....