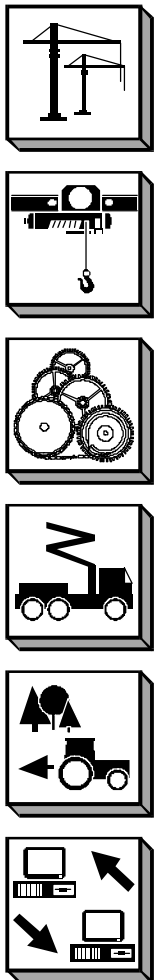


HBC – Radio Control



Radio Transmitter micron 5-3





Operating Instructions **Radio Transmitter micron 5-3**

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1 Description

The micron 5-3 transmitter is designed to transmit command instructions for controlling industrial cranes and hoists as well as operating machines and plants.

Depending on the type and version selected, up to 14 control commands plus the integrated safety commands are available to the operator.

A non-interchangeable system address ensures the functional safety of the radio control system when operating cranes or machines. This feature is particularly important when several cranes or machines are in use, for example in halls and shops. The system address is exclusively allocated to each HBC radio transmitter and its respective receiver.

It is not possible to activate crane or machine functions using a radio control system allocated to another crane or machine.

The transmitter has general telecommunications approvals. It is not necessary to have or to apply for a license to operate the transmitter with the respective receiver. The transmitter broadcasts in either a 30 cm or 70 cm bandwidth. The transmitter is equipped with < 5 mW or < 10 mW transmitting power.

Operating the transmitter using a different frequency range or transmitting power requires the approval of the competent regulative authorities for telecommunication.

High-quality radio technology pursuant to the guidelines laid down by the German Regulative Authorities for Telecommunications and Postal Services and the Regulations For The Prevention of Accidents combined with perfected microprocessor technology guarantees the highest degree of operative safety, service quality and serviceable life.

2 Safety Instructions

2.1 Pictographs

The following pictographs will be used throughout the present operating instructions :



Indicates a possible shock hazard

Contacting components under voltage may lead to death. Housing (e.g. hoods and lids) marked with this symbol may only be opened by qualified electricians after having disconnected the device from the mains supply (supply voltage, operating voltage or input terminal voltage).



Indicates safety relevant passages

You will find this pictograph as an indicator for occupational safety measures. The neglecting of such measures poses a serious hazard.
Always observe the instructions and be particularly attentive and careful.
Avoid any situations that could at any time be a danger to persons or machines.



Indicates important information

This symbol brings your attention to important information on how to secure a long serviceable life of the radio control system.
Pay attention to the comments and instructions given. Ignoring the information provided may permanently impair the reliability and operability of the equipment.



2.2 General Safety Instructions

Radio control systems facilitate and increase the operating efficiency of cranes and machines. Nevertheless, the operator must thoroughly understand and be in a position to properly use a radio control system !

- Read the Operating Instructions Manual carefully and thoroughly before working with the transmitter for the first time !
- The operator undertakes to strictly adhere to the instructions and proceedings described in this manual as well as to follow the general rules and regulations for worker safety and accident prevention. Ignoring any such instructions or regulation could pose a fatal threat to the operator or others.
- Keep this manual on location and readily available at all times !
- Only authorized and properly trained personnel may operate the radio control system.
- Anyone who is under the influence of drugs, alcohol or medication that has a detrimental effect on a person's reactions may at no time commission, operate, maintain or repair the transmitter.
- Before switching the transmitter ON ensure that no-one is or can be endangered by the initiated operation.
- With the first signs of any malfunction related to the operative safety and reliability of the device the operator must immediately shut down or not activate the transmitter. For the purpose of the present manual "shut down" implies :
 - switching OFF the transmitter,
 - storing the transmitter in a safe place and ensuring no unauthorized access,
 - de-energizing the receiver,
 - unplugging the connection cable on the receiver !
- Defects must be repaired and objects of interference must be removed immediately !
- A defective transmitter may only be repaired by qualified and competent personnel. Use only original HBC spare parts. The use of any other spares will render the technical inspectorate approval invalid as well as substantially impede operative safety.
- Observe all periodical tests and inspections that are required by law or recommended in the present operating instructions !
- When using the transmitter always observe the regulations and instructions stipulated in the authoritative worker safety and accident prevention regulations.
 - The transmitter has been manufactured in accordance with the regulations and guidelines stipulated in the German Trade Association's "Safety and Accident Prevention Regulations for Operating Cranes by Radio Controls" (VBG 9) and pr EN 12077-1.
 - The transmitter has been tested and approved in accordance with EMC guidelines and complies with the authoritative standards for emitted interference and interference immunity.
- Use the transmitter cautiously and properly. In particular when using a transmitter to radio control a machine or crane for the first time.




2.3 Operator Safety Instructions

- Before beginning crane operation, position yourself so that you have a clear and complete overview of the working radius of the crane or machine.
- Use the enclosed belt-clip to carry the transmitter. To operate, hold the transmitter securely in your hand. Use the wrist strap. Follow these instructions to ensure personal safety.
- Depending on your angle or position to the crane or machine, the transmitter control commands "trolley left" and "trolley right" appear to interchange ! It is essential that you take your bearings to the crane or machine into due consideration before operating equipment.
- In case of an emergency or any disturbances within the working range of the crane or machine, switch the transmitter OFF immediately by pressing the STOP pushbutton. Should the transmitter show signs of technical failure or breakdown, disconnect the radio control system immediately !
- Switch the transmitter OFF during breaks and after finishing work to avoid any misoperation of crane or machine by unintended activation of the operator controls.
 - These precautions are particularly important whenever changing your position or climbing over an obstacle.
- Never leave an activated transmitter unattended. The operator undertakes to follow and comply with the authoritative regulations for worker safety and accident prevention.






Note :

In the event of an interruption of the radio link during a working cycle – what can occasionally happen – both transmitter and receiver automatically shut down (so-called "**compulsory switch-off**").

To reactivate the system release all operator controls, such as pushbuttons, and allow the control elements to return to their zero position. Press the  pushbutton. The system must be reactivated before the crane or machine can react to control commands ! This feature hinders any uncontrolled or unwanted crane or machine movement, should the radio link be interrupted.

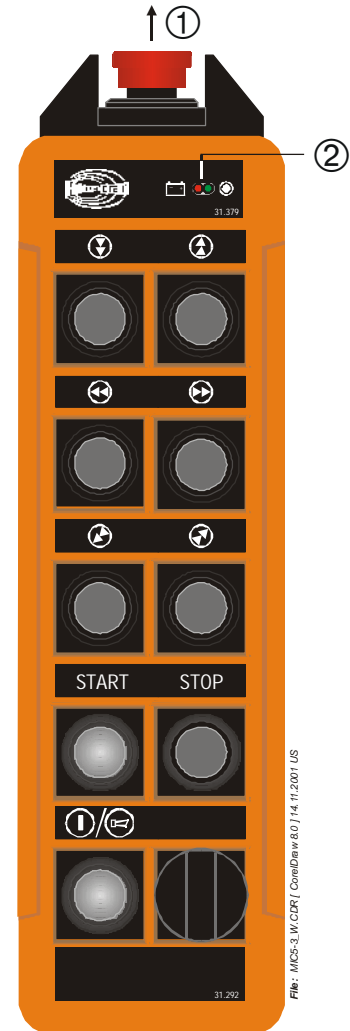
3 Operation

Activating the transmitter

1. Make sure that the STOP push button ① is released.
2. Insert a charged battery into the battery compartment. Inscription must be visible.
3. Press and release  button.
4. Press and release  button.
5. Press and release  button.


The display ② will blink green. The transmitter is now ready to operate.

Please note: Input has to occur within 6 seconds.



Note :

After switching ON the transmitter and before operating the crane or machine you must always :

- Trigger the acoustic signal by pressing the  button this warns all colleagues that the crane or machine is about to move.
- Test the operativeness of the transmitter using the STOP push button ①.

After switching ON the transmitter the instrument indicates a successful radio link to the receiver when the red LED "HF/RF/H.F./HF" extinguishes and the green LED "Si 1" lights up (refer to control light panel on receiver), i.e. the radio control system is now operative. The operator can now issue control commands using the transmitter control elements.

When the battery is nearly empty, the display ② lights up red or an acoustic signal sounds. The drained battery must be **immediately** replaced by a fully charged battery and then inserted into the battery charger for recharging (refer to chapter "Battery and Battery Charger" for further details).



Note :

The transmitter will automatically switch off within a few minutes if the operator fails to replace the drained battery.

Should the operator switch OFF the transmitter with the STOP push button ①, release the STOP push button and restart the transmitter according to the instruction above.

For safety reasons we have equipped the transmitter with an automatic switch OFF (APO = **A**utomatic **P**ower **O**ff function). The transmitter is automatically put out of circuit after 15 minutes of non-use.

The automatic power OFF also saves battery power.



Note:

The automatic switch-OFF (APO function) does not relieve the operator of his responsibility to turn OFF the transmitter when not in use !

Option rotary switch

With the optional 3-step rotary switch 2 hoisting gears or 2 trolleys can be operated.

Frequency Selector (Scanner)

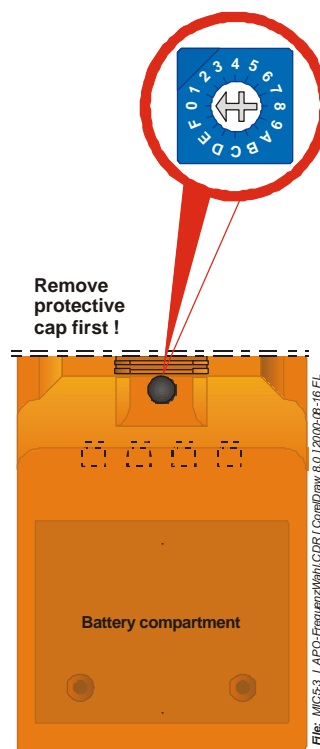
In the event that a particular channel is being used by another operator, the transmitter can be switched to a different channel by means of the rotary selector switch located inside the transmitter (4 frequencies). The receiver scanner automatically adjusts the receiver to the selected radio frequency.

0 - 3 = Frequency 1-4 with APO
4 - 7 = Frequency 1-4 without APO
8 - B = Frequency 1-4, with APO
C - F = Frequency 1-4, without APO

Changing radio control system frequencies

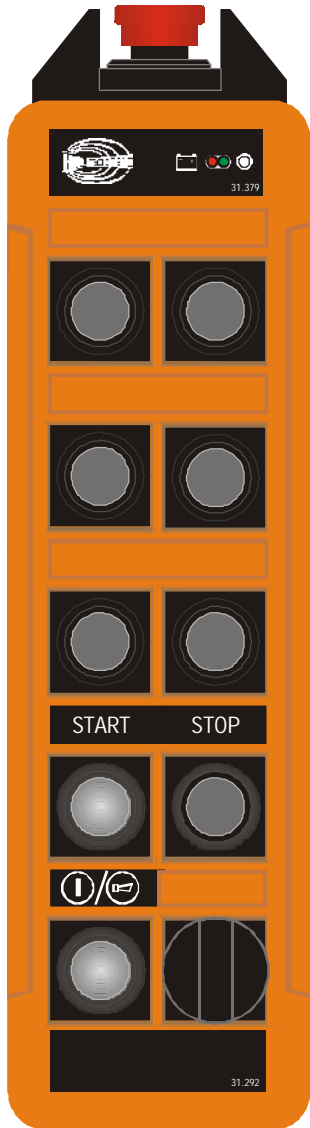
1. Press **STOP** button to switch off the transmitter.
2. Remove protective cap from the back of the transmitter.
3. To select a new frequency, use a screwdriver (size 0) and turn the switch clockwise (one step).
4. Replace protective cap.
5. Press **ⓘ/Ⓟ** button to switch on the transmitter.

The receiver automatically resets the system to the new frequency selected in less than a second.



Transmitter Inscription

The transmitter can be labeled by means of the attached sheets.



File: MIC53_W_O.CDR [ConDraw 6.0] 13.11.2001

micron 3 / 5 ; Sheet 1 ; Standard symbols

Lg Nr. 31.351										
1		11		21		31		41		
2		12		22		32		42		
3		13		23		33		43		
4		14		24		34		44	RESERVE	
5		15		25		35		45	RESERVE	
6		16		26		36		46		
7		17		27		37	1 1+2 2	47		
8		18		28		38	Katze 1+2 2	48	Hubwerk 1+2 2	
9		19		29		39	Übernahme	49		
10		20		30		40	Freigabe	50		
Lg Nr. 31.381										

micron 3 / 5 ; Sheet 3 ; English or Portuguese Text

Lg Nr. 31.381									
1	GUINCHO SUBC	11	TROLLEY LEFT	21	TROLLEY SOUTH	31	DOWN	41	SPARE
2	GUINCHO DESCE	12	TROLLEY RIGHT	22	TROLLEY NORTH	32	UP	42	SPARE
3	CARRO DESTE	13	BRIDGE REVERSE	23	TROLLEY WEST	33	LOWER	43	HOIST A
4	CARRO ESTE	14	BRIDGE FORWARD	24	TROLLEY EAST	34	RAISE	44	HOIST B
5	PONTE NORTE	15	BRIDGE NORTH	25	START NORTH	35	EAST	45	HOIST B
6	PONTE SUL	16	BRIDGE SOUTH	26	1 1+2 2	36	WEST	46	START 1 AND TEST
7	PARTIDA	17	BRIDGE EAST	27	LIGHTS	37	NORTH	47	HOIST A A+B B
8	SIRENE	18	BRIDGE WEST	28	TROLLEY 1 1+2 2	38	SOUTH	48	CATCH
9	PARILJA/SIRPDA			29	HOIST 1 1+2 2	39	RESERVE	49	PITCH
				30		40	1 2	50	RELEASE
Lg Nr. 31.381									



Please note: The push buttons in the fourth line are solely reserved for and may not be used for other commands !



3.1 Battery and Battery Charger

3.1.1 FuB 3A Transmitter Battery

The age and ambient temperature are decisive for the length of battery application. Older batteries lose capacity over time. Temperatures under zero also have a negative effect on battery charge.

The length of serviceable battery life depends on how the battery is treated. When handled properly the FuB 3A can exceed 500 charging cycles. Do not totally discharge or short-circuit contacts as this can permanently destroy the battery.

We recommend recharging the battery only when it is empty, i.e. when the red LED blinks or an acoustic signal sounds. Always store rechargeable batteries at room temperature (20 °C or 68 °F).



3.1.2 FLG 105 Battery Charger

Recharging batteries

1. Connect battery charger to mains (refer to nameplate on battery charger for operating voltage).
2. Insert the adapter for the FuB 3A battery in the charging compartment of the battery charger.
3. Insert battery with the nameplate facing up into the battery compartment (pos. ②).

Charging indicator (red LED ; pos. ①)

LED lit : battery charging.

LED OFF or blinking : battery full, i.e. operable.

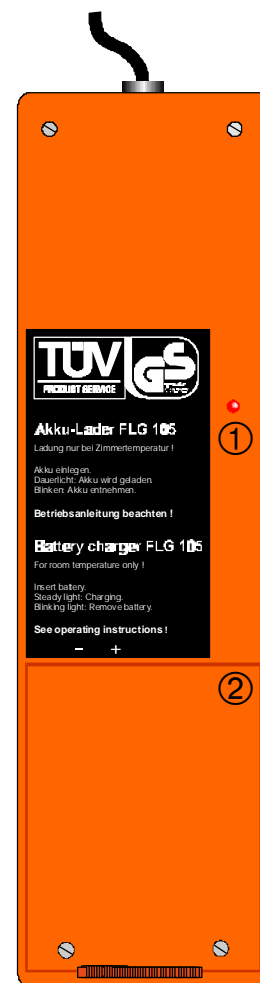
LED blinks

when inserting battery : battery totally discharged or defective.



Note :

- A discharged FuB 3A battery recharges in approx. 2 hours. Electronics in the battery charger ensure that charging does not exceed 5 hours.
- The quick charging of NiCd batteries should only take place at temperatures between +10 °C and +40 °C (50 °F and 104 °F).
- Protect battery contacts against short circuits. Never store batteries in a tool box or trouser pockets. A bunch of keys is enough to short the battery. Always use the protective cap included.
- Use the charger at room temperature (20 °C or 68 °F) and protect it from extreme heat (direct sun).



4 Fault Correction

**Note :**

Check the functions using the cabin or cable controls first !

Problem	Possible Cause	Remedy
Transmitter does not react when switched on.	<ul style="list-style-type: none">– No power.	<ul style="list-style-type: none">– Check the battery contacts for damage or contamination.– Insert a fully charged battery in battery compartment.– Recharge battery.
Low-power indicator blinks after minimal operating time, i.e. red LED illuminates.	<ul style="list-style-type: none">– Battery contacts are contaminated or damaged.– Battery not charged.– Battery defective.	<ul style="list-style-type: none">– Check battery contacts for damage or contamination.– Fully recharge battery.– Ensure that recharging process runs correctly.– Check transmitter functions using a fully charged or replacement battery.

5 Maintenance

The radio control system is virtually maintenance-free. However, the following points should be taken into due consideration :

- Ensure that the STOP push button works smoothly.
Contaminants of any kind can reduce or fully block the switch function.
- Charge and discharge transmitter batteries regularly.
- **Never** use a high-pressure cleaner or steam jet cleaner to "clean" the transmitter.
Use a soft brush or cloth only!



Note :

Should you have any problems with the radio control system, contact your local distributor or HBC-radiomatic GmbH.

5.1 In the Event of a Fault



Warning :

Never operate a crane or machine with a faulty or defective radio control system.

- Never try to repair the transmitter electronics ! Opening the transmitter housing terminates the manufacturer guarantee.
 - Send any defective or faulty equipment to you local distributor or to the manufacturer. They are experts and have the necessary know-how and OEM spare parts.
 - Always send transmitter **and** receiver and enclose a detailed description of the problem.
 - Do not forget to enclose your address and telephone number so that we can get in touch with you quickly if necessary.
- To avoid damage during transport, use the original packing supplied with the transmitter and receiver, otherwise pack securely. Send the consignment to your distributor or to the following address :

HBC-radiomatic GmbH
Haller Strasse 49 – 53
D-74564 Crailsheim
Germany

- Should you chose to deliver a defective radio control system personally to your distributor or our factory, please call and arrange an appointment.

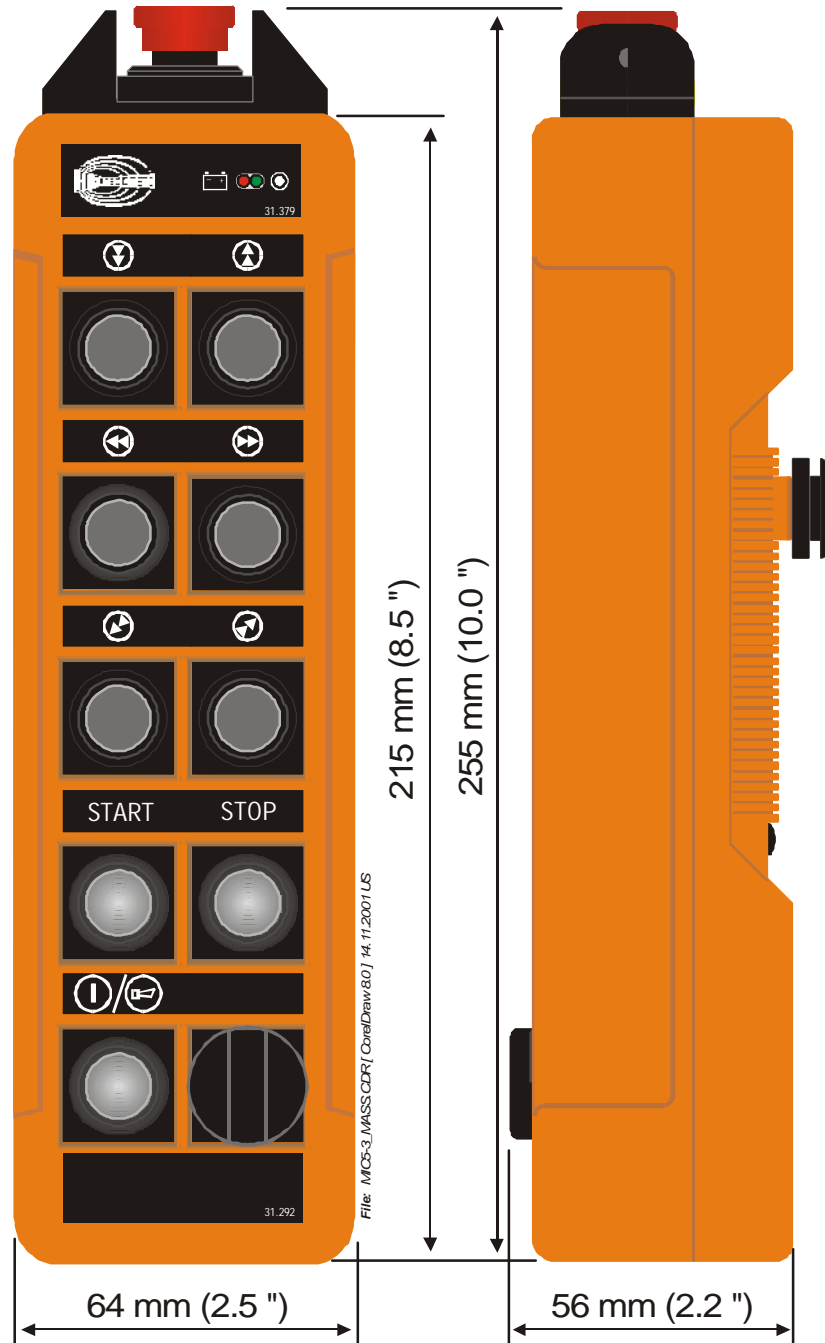
HBC-radiomatic GmbH
– Customer Services / Repair Service –
Tel.: +49 (0) 79 51 – 3 93 - 800



6 Technical Data

General Technical Data	
<i>System</i>	micron 5-3
<i>Max. number of control commands</i>	14
<i>Unique system addresses</i>	over 65,000 combinations
Transmitter-Specific Technical Data	
<i>Transmitting power</i>	<i>FuS 680/3 :</i> < 5 mW (synthesizer) <i>FuS 671/3 :</i> < 10 mW (synthesizer)
<i>Transmitter antenna</i>	internal
<i>Battery type</i>	FuB 3A (blue , NiCd)
<i>Power supply with NiCd battery</i>	6 V DC / 250 mAh
<i>Battery charge</i>	<i>at 50 % duty cycle :</i> 8 hours <i>at 100 % duty cycle :</i> 4 hours
<i>Operating temperature range</i>	-25 °C to 75 °C (-13 °F to +167 °F)
<i>Housing material</i>	ABS plastic
<i>Housing color</i>	orange
<i>Dimensions</i>	255 x 64 x 50 mm (9.8 x 2.5 x 2.2 ")
<i>Weight</i>	approx. 450 g (1.0 lb.)
<i>Protection class</i>	IP 55 (Nema 4)

Dimensions





6.1 Accessories

Description	Order no.
Belt clip for micron transmitter (standard accessory)	D-500006
Nylon carrier bag for micron	D-500012
Shock protection with wrist strap	B-500015
NiCd battery FuB 3A, blue, 6 V / 250 mAh	FuB 3A
Adapter for FuB 3A batteries (inset for battery charger)	D-900064
Battery charger FLG 105 (indicate distribution voltage range !)	FLG 105
Transmitter labels micron 3 / 5, sheet 1 [31.391]	G-900208
Transmitter labels micron 3 / 5, sheet 2 [31.392]	G-900209
Transmitter labels micron 3 / 5, sheet 3 [31.384]	G-900210
Transmitter labels micron 3 / 5, sheet 4 [31.385]	G-900211
Self-adhesive foil DIN, colored	D-900051
Self-adhesive foil SEB, colored	D-900052



7 Certificates and Approvals

EC Declaration of the Manufacturer and of Conformity

according to EC Directives for Machinery 98/37/EG , Appendix II B

We,

HBC-radiomatic GmbH
Haller Strasse 49-53 • 74564 Crailsheim • GERMANY

hereby certify that the following products



Radio Control Transmitter orbit, vector, patrol, micron, eco, spectrum, geo
Radio Control Receiver 505, 514, 707, 716, 717, 722, 735, 770, 808

correspond to the following EC guidelines

98/37/EG Directives for machinery
..... (altered by 91/263/EWG, 92/31/EWG, 93/68/EWG)
73/23/EWG Directives for low voltages (altered by 93/68/EWG)
1999/5/EG Radio and Telecommunications Terminal Equipment Act
..... (FTEG)

In particular, the tests executed were based on the following harmonized standards

EN 300 220 EMC - emission
EN 300 683 EMC – immunity
EN 954-1:1996 Safety of machinery;
..... Safety relevant parts of controls
EN 60529 Degree of protection provided by enclosure (IP)
IEC 68 Mechanical strength
prEN 50178 Climatic tests
DIN V VDE 0801 appendix 1 ... Principles for computers in safety-related systems

and on the following national technical standards :

ZH 1/547:1976 Directives for radio controls of cranes
ZH 1/295:1995 Safety regulations for wireless control facilities

Note : **The commissioning of the machine on which this part of the machine was installed is prohibited until it has been established that the machine corresponds to the 98/37/EG Directives.**

Authorized by :

Name, first name: Brendel, Wolfgang

Position in the company : General Manager

Location and date : Crailsheim, November 23, 2001

Authentic signature :



Operating Instructions **Radio Transmitter micron 5-3**