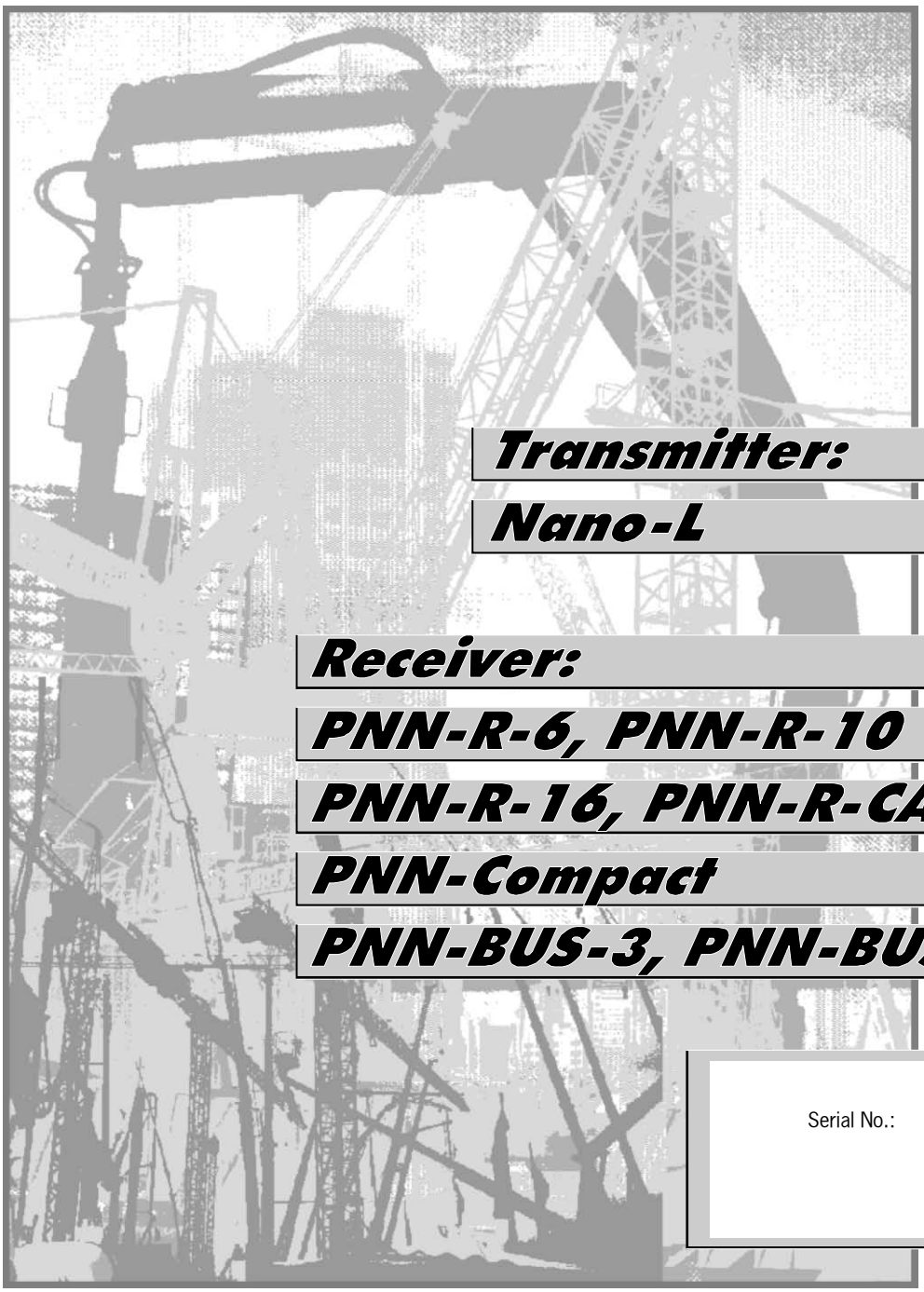
OPERATING INSTRUCTIONS - USA/CANADA



Transmitter:

Nano-L

Receiver:

PNN-R-6, PNN-R-10

PNN-R-16, PNN-R-CAN

PNN-Compact

PNN-BUS-3, PNN-BUS-5

Serial No.:

1. STANDARD SPECIFICATION

- Portable transmitter with two replaceable 7,2 volt NiCd batteries, neck and waist straps.
- Receiver with NBB adapter plate for fastening purposes (PNN-BUS-3), receiver with 4 fixing angles (PNN-BUS-5), with 1 mounting bracket (PNN-R-10) or with integrated mounting holes (PNN-R-6, -16, -CAN and PNN-Compact).
- Multi-pin connecting cable for the receiver according to your specifications.
- Automatic battery charger with charging adapter (rapid charging in three hours).

The actual delivery specification is as detailed on the confirmation of order or the delivery note accompanying the goods!

2. SAFETY PRECAUTIONS

Even if you are accustomed to working with radio control systems, read these operating instructions carefully before using this equipment. Only this document contains the latest information relating to your NBB radio control system.

For explanatory notes on obtaining an operating permit please refer to registration documents enclosed in the appendix of this operating instruction. Observe all applicable work-safety and accident prevention regulations carefully. Only fully trained, authorized personnel may use the NBB radio control equipment. Components, etc. built into the NBB equipment for safety purposes must be regularly inspected.

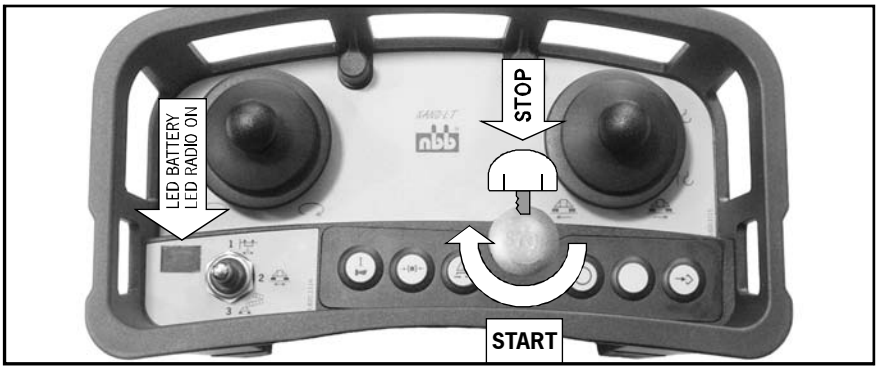
If the NBB radio control unit develops a fault, it must be shut down immediately. The transmitter should be switched off with the EMERGENCY STOP switch. The connecting cable must be disconnected at the receiver from the connecting socket (terminal) of the unit to be controlled . The repair of the equipment must not be carried out other than by NBB or an NBB authorized technician.

Failure to observe these recommendations will put both you yourself and others at risk. Under these circumstances, NBB rescinds the guarantee and any other form of liability. This radio control unit is designed exclusively for the control of construction machines and industrial plants. Only under these conditions are the safety systems (EMERGENCY STOP, zero setting) fully effective. No other form of use is permitted.

Any non-observance of this condition will relieve NBB of all liability.

3. TRANSMITTER Nano-L

To make the unit ready for use, insert the battery into the battery compartment. To remove the battery, press in the pin and push out the battery. The power supply to the transmitter is activated with the EMERGENCY STOP switch. (When pressed, the EMERGENCY STOP switch can also be secured by removing the key cap). The green LED on the transmitter control panel must flash regularly. Commands can now be put in by means of the controls. The operating period with a charged battery is approximately 8 hours with the transmitter in continuous use.



When the red "Battery" indicator lamp lights up, the battery is nearly empty. The transmitter can be operated for approximately 15 minutes more in this condition. During this time, bring the unit to be controlled to a safe position and install a new battery. Removal of the battery interrupts the radio link. As a result, the master switch for the unit to be controlled must be switched on again. Charge the discharged battery with the charger supplied.

4. BATTERY CHARGER

Steady light of the green LED (if existing): The battery charger is ready for use. Place the battery in the charger.

If the battery is totally discharged, the yellow LED flashes slowly during pre-charging.

Steady light of the yellow LED: The battery will now be charged.

The yellow LED flashes quickly: The charging process is finished.

No harm will come to the battery if it is left in the charger beyond the required charging time.

Do not use the charger other than in dry rooms having a min-max temperature range of 0-40°C! A charged battery is a concentrated energy source. Never store a charged battery in a toolbox or similar where it could be short-circuited by metal components (even a key in your trouser pocket can cause a short circuit).

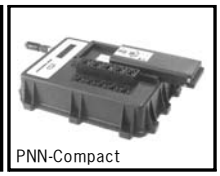
Optional: Integrated battery charger if DC-supply: In the receivers PNN-R-6 and PNN-R-10. In PNN-R-16, -CAN and PNN-Compact rapid charging in about 1 hour. In PNN-BUS-3 about 3 hours. Use this battery charger only in closed rooms.

5. RECEIVER

PNN-R-6, -10
PNN-R-16
PNN-R-CAN
PNN-Compact
PNN-BUS-3, -5

PNN-R-6, -16, -CAN

PNN-R-10


PNN-Compact

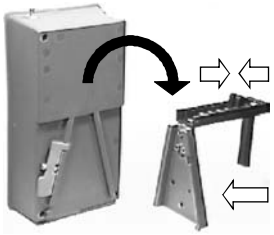
PNN-BUS-3

PNN-BUS-5

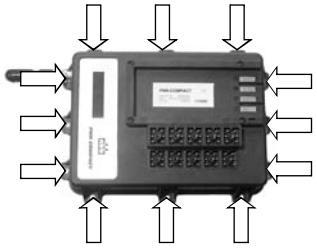
The receiver is connected to the unit to be controlled with the multi-pin connecting cable supplied. Please observe the instructions issued by the manufacturer of the unit to be controlled! **We recommend urgently to realize this connection via a central, well accessible, multi-pin plug connector (for example HTS-plug connector series HE/HB/HN/HA or comparable ones of other manufacturers) to make possible a quick and clear fault diagnosis in the service case and to take off the receiver without an expenditure of assembly.**

The power supply of the receiver is generally effected by the connecting cable.

- **In general, an earth lead is required in case the units to be controlled have not previously been operated by radio control. Failing this, the receiver electronic circuit will not receive any power supply. Ensure that the operating voltage of the receiver complies with the electrical specifications of the unit to be controlled. The applicable operating voltage is specified in the supplement.**
- **Never expose the receiver to a high pressure cleaning jet. This applies to the transmitter also.**
- **The receiver should always be fixed vertically at the outside panel of the switching cabinet. (The antenna should always reach over the top of the panel.)**
- **You have to make sure that the antenna is not shielded by metal parts totally or partly.**
- **Mounting the receiver in a cabine or in a switching cabinet the antenna should be layed with an extension cable to the outside and be attached with the fastening strapping as horizontally as possible with distance to the shielding metal parts.**
- **In general the antenna should always be mounted in such a way so that the antenna is still visible with each change of position of the transmitter.**

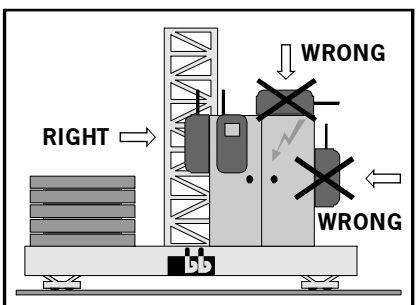


Mounting possibility of the PNN-BUS-3 or PNN-BUS-5.

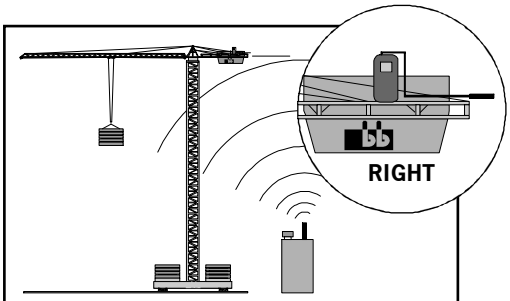


Mounting possibility of the PNN-Compact

Mounting possibility of the PNN-R-6, -10, -16 oder des PNN-R-CAN.



Mounting on a tower slewing crane.



Top slewing crane: Mount the antenna with extension cable horizontally.

6. OPERATING THE UNIT

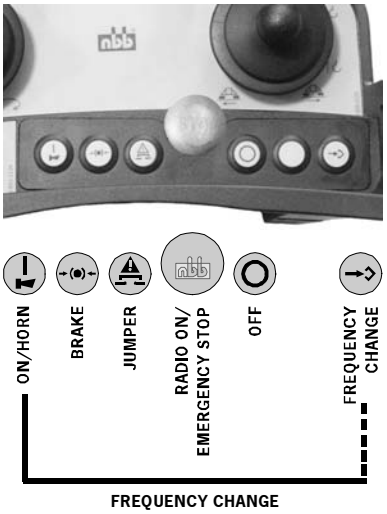
Safety equipment in the NBB-radio remote control:

In the transmitter, this comprises mainly:

- EMERGENCY STOP with automatic disconnection of the power supply.
- Automatic zero positioning.

In the receiver:

- Two diversity units for evaluation of the EMERGENCY STOP signal.
- Automatic zero setting when switching back on after radio interruption.
- Locking of the radio commands at relay level in the event of a defective EMERGENCY STOP circuit.



To ensure fault-free operation, please follow precisely the following rules for operation: The unit to be controlled can only be switched on - it is assumed that the transmitter is ready to operate - when no command unit is actuated. The command necessary to do so is triggered by the key "ON/HORN". This triggers a horn signal in the unit to be controlled. After switch-on of the facility to be controlled, this key is used for repeated emission of the horn signal in accordance with working regulations.

If the NBB radio remote control is not used for a long period, it is urgently recommended that the batteries be charged now and again (about every 4 weeks). This prevents deep discharges of the batteries and prolongs their useful life. If you shut down the NBB radio remote control for a long period, we recommend you take the battery out of the transmitter.

Frequency change:

To change the frequency, keep the "ON/HORN" key pressed down. Then operate the "FREQUENCY CHANGE" key. If the receiver locks into the new frequency, a horn signal is given (if present) and the unit to be controlled is ready for operation.

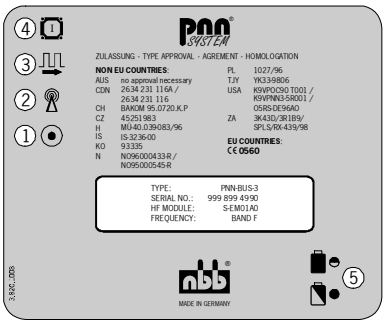
(Please observe the particular postal approval regulations of the concerned country.)

7. FUNCTION CHECK

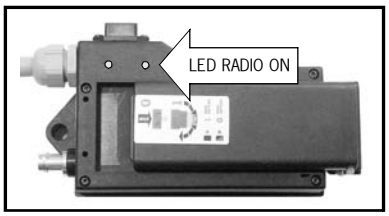
To maintain operational safety, a regular function check of the NBB radio remote control is necessary. In single-shift day-to-day operation, we recommend performing this check at least once a week. Checking is possible using the display lights provided on the receiver. To do so, the transmitter must be set to the ready-to-operate state.

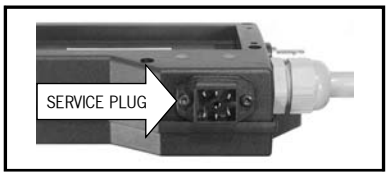
- First connect just the receiver - the transmitter remains switched off.
- Activate the transmitter by unlocking the EMERGENCY STOP switch.
- Now check the commands (always start with the lowest stage) and check for correct reaction of the unit to be controlled.
- Ensure in particular that there is nobody in the danger area.
  ACCIDENT RISK!
- **EMERGENCY STOP check**. Press the EMERGENCY STOP switch at the transmitter until the switch engages. Then observe if the unit to be controlled is switched off (time to switch off according to the application).

Checking the LED's at the receiver PNN-BUS-3:



- **LED1:** POWER ON. If LED fails to come on, check the power supply. If the power lead is OK, call in the after-sales service.
- **LED2:** HF PRESENT. Steady light when transmitter is switched on (insignificant for scanner operation).
- **LED3:** Flashes evenly during fault-free operation. Irregular flashing means that the HF channel is probably at fault - please set another channel.
- **LED4:** If this LED comes on, the HF channel is at fault.
- **LED5:** Charge condition display of battery (only present when charger is integrated). Steady light when charging a battery. LED flashes: The battery is charged, the charging process is finished.





Checking the LED at the receiver PNN-R-16 and PNN-R-CAN:

The Green LED flashes: RADIO PRESENT.
If the LED fails to come on:
1. Check that the transmitter is on.
2. Check the power supply of the receiver.
3. (Optional) Irregular flashing of the LED:
Check or change the current radio channel.

Service plug: Information about this programming plug see customized specifications in the annex.

8. RATING PLATES

The rating plates state the serial number, the unit model, the HF part model and the frequency.
Always state the serial number in all your queries.

NANO-L-A1 Serial-No.: 9810000183
FCC: SJ7 TJOY96 IC:2634B TJOY96
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
NBB Controls & Components AG Germany 0404

9. LICENSING

Please observe the particular postal approval regulations of the concerning country.

10. MAINTENANCE

Your NBB radio remote control is largely maintenance-free. Nevertheless, please bear in mind the following points:

- EMERGENCY STOP switch must be easy to move.
- Remove any leftover building materials!
- During electro-welding work on the unit to be controlled, disconnect the receiver from the current supply! Otherwise there is a risk of damage to the receiver's electronic system!
- Check wear and tear parts like dust shield tops regular!

11. WARRANTY

We grant a function warranty for 6 months after the sale date for all NBB radio remote controls (transmitter, receiver, charger). The warranty covers working time and material used. Shipping costs shall be charged to the customer. The warranty shall not cover: wear and tear parts, relays and batteries. The function warranty shall be invalidated in the case of damage, accident damage, negligence, incorrect use, non-compliance with operating conditions, non-compliance with operating, testing and maintenance instructions, and repairs or unit modifications not authorised by NBB. NBB shall not be liable for indirect damage and reserves the right to decide on repair or replacement.

12. IN CASE OF DEFECTS

Do not attempt to continue working with a defective NBB radio remote control. Even initially minor defects might be the start of a more extensive defect.
Do not try to repair the NBB radio remote control yourself. If there is any fault please contact your dealer or our company.

13. FCC

!

NOTE: This equipment has been tested and found to comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

⚠

CAUTION: Changes or modifications not expressly approved by the manufacture could void the user's authority to operate the equipment.

TECHNICAL DATA

Operating ambient temperature	-20 to +65 °C
Insulation class - Protection	IP 65

TRANSMITTER Nano-L

Transmission frequency range	400 - 477 MHz, 25kHz FM

The use of synthesizer technology permits frequencies to be selected in accordance with the appropriate waveband for the country of use.

Low frequency modulation	FSK signal to CCITT V.23
Data repetition rate	about 60 ms
Baud rate	1200 baud (bits per sec.)
Range	300 up to 1000 m
Power input	60 - 100 mA
RF ouput	≤ 10 mW (This is a generic value. Actual value can be limited by national regulations!)
Weight (without battery)	1,0 kg
Size (L x W x H)	24,7 x 13,9 x 11,7 cm

RECEIVER PNN-R-6, -10, -16, -CAN, PNN-Compact, PNN-BUS-3, PNN BUS-5

Reception frequency range	400 - 477 MHz

Data security:
Generates a CRC code with a Hamming distance = 4.
Generates a neutral position.
Addressing of each transmitter with its own, unique combination (max. 2^{16} possible combinations).

Data reception security: Diversitary evaluators, CRC, EMERGENCY STOP and neutral position bits.

Restart inhibitor if EMERGENCY STOP relay defective. (PNN-BUS-3, PNN-BUS-5, PNN-R-10-N)

Contact loading for EMERGENCY STOP and commands. (PNN-BUS-3, PNN-BUS-5, PNN-R-10-N)

max. switching voltage	250V AC (12V / 24V DC - PNN-R-16, PNN-R-CAN, PNN-Compact)
max. switching current	4A AC (3A DC at 12V / 24V - PNN-R-16, PNN-R-CAN, PNN-Compact)
max. switching power	1000 VA

	Weight	Size (L x W x H)
PNN-R-6 (with cable)	640 g	13,5 x 8,6 x 5,7 cm
PNN-R-10 (with cable)	740 g	13,5 x 8,6 x 7,3 cm
PNN-R-16, PNN-R-CAN	640 g	18 x 9,7 x 4,4 cm
(potted)	800 g	
PNN-Compact (potted)	1,5 kg	21,5 x 16 x 6,5 cm
PNN-BUS-3	3,0 kg	30,6 x 18,1 x 13 cm
PNN-BUS-5	4,7 kg	36,4 x 28,3 x 15,2 cm

BATTERY

7,2V / 1000mAh (Planar: 2 x 1,2V AA-Mignon-R6 batteries)

CHARGING UNIT

Operating voltage / external charging unit	12V/24V DC, 110V AC, 230V AC
Operating voltage / PNN-BUS-3 / PNN-BUS-5	40V-230V AC, 8V-32V DC, 12V / 24V DC
Operating voltage / PNN-R-6, -10, -16, -CAN / PNN-Compact	12V / 24V DC

APPROVALS AND CERTIFICATES

Obtainable at demand:

Federal Approvals Office For Telecommunications Of The Federal Republic Of Germany

APPROVAL CERTIFICATE	No. G120912F	S-DE96A0	05.10.1995
TYPE-EXAMINATION CERTIFICATE	No. G129014H	S-EM01A0	26.08.1996

telefication

Certificate EC type-examination	No. TRQ/97213021/AA/00	S-DE96A0	19.11.1997
Statement of Opinion	No. 01214115/AA/00	S-DE96A0	19.06.2001

TÜV

Certificate	No. U 950721342002	PNN Nano-S-A2, PNN Nano-E-A2 Pocket-S, Pocket-V PNN BUS-3, PNN BUS-E-3	19.07.1995

Germanischer Lloyd

TYPE APPROVAL CERTIFICATE	No. 11248-97HH	Radio Remote Control / PNN SYSTEM	05.02.1998

M-Zert mbH

Certificate DIN EN ISO 9001:2000-12	No. 03022	NBB Controls & Components AG	15.07.2003

Approvals:

NON EU COUNTRIES:

AUS	no approval necessary
CDN	2634 231 116A / 2634 231 116
CH	BAKOM 95.0720.K.P
CZ	45251983
H	MÜ-40.039-083/96
HR	I-ETS 300 220
IS	IS-3236-00
KO	93335
N	NO96000433-R / NO95000545-R
PL	1027/96
TH	KorKor0704 (MorWor.) / 4436
TJ	YK33-9806
USA	SJ7 TJOY96 / SJ7 TKEY96 K9VPNN3-5R001
ZA	3K43D/3R1B9/SPLS/RX-439/98

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We reserve the right to alter specifications without notice.

Bedienungsanleitung Nano-L, PNN-R-6, -10, -16, -CAN, PNN-Compact, PNN-BUS-3, -5,
Englisch, USA, Kanada, Teile-Nr. 3.150.1051, Stand 11.04