



German Wehrmacht version AQ2.



Auxiliary receiver N2, AQ2 version.

N1

Country of origin:  
Poland

## DATA SUMMARY

**Organisation:** Polish Army.

**Design/Manufacturer:** Panstwowe Zaklady Tele i Radio-techniczne (PZTiR), Warsaw.

**Year of Introduction:** 1938.

**Purpose:** Communication at Regiment/Div/Brigade level.

**Transmitter:**

**Circuit Features:** MO, RF PA; control grid modulation.

**Frequency Coverage:** 2250-6750 kHz in two ranges: 2250-3875 kHz and 3875-6750 kHz.

**Valves:** DET9 X (Marconi); PC 05/15 (Philips).

**RF output:** R/T 7W; CW 21W.

**Receiver:** Superheterodyne.

**Circuit Features:** RF, mixer/oscillator, IF (2x), det/AF, BFO. AVC/MVC.

**Frequency Coverage:** 2250-6750 kHz in two ranges: 2250-3875 kHz and 3875-6750 kHz.

**Sensitivity:** 7µV for AM.

**Valves:** KF3 (4x), KK2, KBC1 (Philips).

**Aerials:** 9m telescopic steel mast, 3.5 and 6m bamboo poles and a 9m sloping wire aerial with as counterpoise 2x6m insulated wires.

**Working range (km):**

	R/T	CW
Rod aerial 9m	30	50
" 6m	20	35
" 3.5m	15	20

**Power Supply:**

**Transmitter:** Triple voltage pedal generator Type ZWN-39 providing 500V HT, 4V LT and -200 V. Current consumption: HT 0.13-0.24A, LT 3.5A.

A rotary converter Type RNS-39 was used when the station was installed in a vehicle.

**Receiver:** LT: Two type NON1 1½V batteries; HT: two 72V dry batteries, fitted in a plywood battery box,

**Size (cm):** Trans/receiver. Height 58, length 24, width 40.

**Weight:** Transmitter/receiver in its enclosure 30.8 kg, battery box 9.2 kg, pedal generator 50 kg, telescopic aerial mast 10 kg.

## REMARKS

The N1 was a short wave transmitter-receiver, primarily intended for fitting into vehicles for mobile and static operation. It was developed for wireless communication within Regiments and Divisions of infantry, Regiments and Brigades of cavalry, and Regiments of heavy artillery. The station was developed and manufactured by PZTiR in Warsaw. The main designer was eng. Henryk Magnuski (later co-designer of an American FM set SCR-300 'Walkie-Talkie'). The first 105 units were produced and given field trials in 1938.

Until September 1939 approximately 100 units of a final model N1 wz. 39 (makers designation AQ1) were delivered to the Polish Army.

After the German invasion of 1939, the PZTiR factory in Warsaw, then under German Verwaltung (supervision) and known as DERUFA, the production of the N1 was continued under the name '30 Watt-Sender-Empfänger' (p) (Sende-Empfangsapparatur Typ AQ2) for the Wehrmacht until 1944.

The main set, comprising a transmitter and receiver unit, was housed in a plywood box. For reception on the move or monitoring a second frequency, there was a separate (auxiliary) receiver, a type similar as used with the N2 station.

The radio was fully operational when on the move, though with a reduced range. A netting feature was incorporated.

The frequency dials of both transmitter and receiver were calibrated in standard channels with 25kHz spacing: Channel 0=6750kHz, and Channel 180=2250kHz. AQ2 sets made during the German occupation of Poland under the German Verwalter had dials calibrated in kHz.

Two basic variants of the N1 were noted:

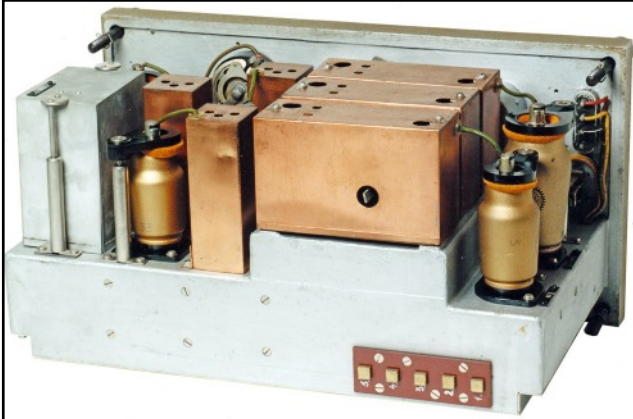
N1/T - Installed in a limber and cart which could be towed by 2 horses or a motor vehicle, fitted with a pedal generator type ZWN-39.

N1/S - Installed in a Polski Fiat 618 vehicle, with the rotary converter RNS-39 and 12 V accumulators.

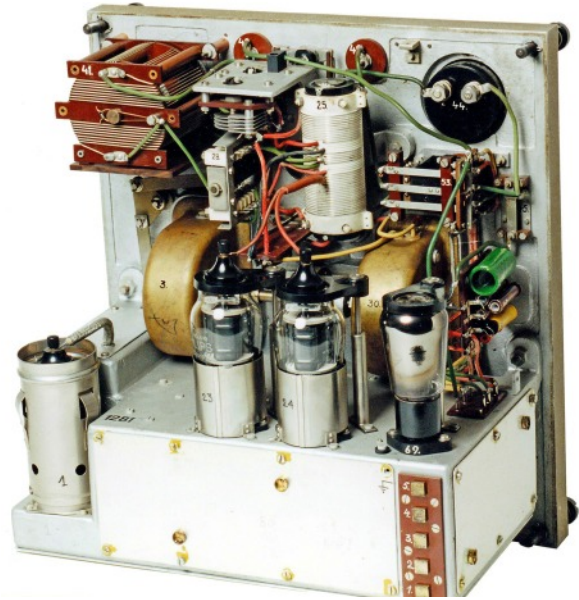
Remote control units, a local and remote unit, provided R/T communication via a four wire line of up to 200m distance from the set for e.g. artillery observation under cover.

## References:

- Many thanks to Bogdan Szkudlarek, SP3LD, Poland for the scan of the user manual and a colour photo of the AQ2 auxiliary rec.
- Permission for using photographs and text from 'Radiostacje Polowe' was kindly granted by Roman Buja, Poland.
- Radiostacje Polowe, Roman Buja, ISBN 978 83 7769 588 3, Edipresse, Warsaw 2014.



Internal view of the AQ2 receiver unit (above).



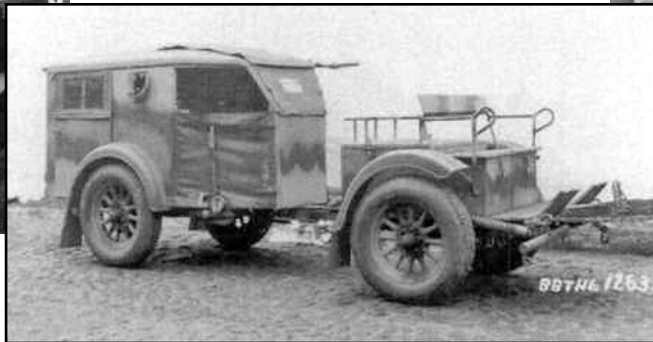
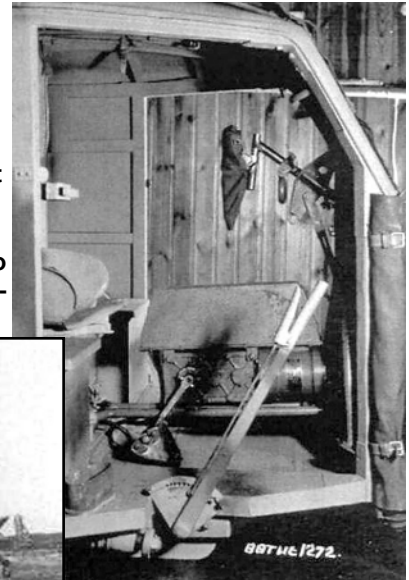
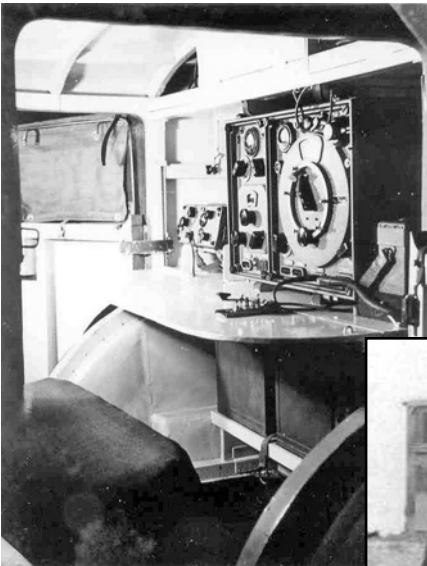
AQ2 transmitter unit internal view (right).

N1/T Limber Station

N1/T cart rear compartment with N2 auxiliary receiver (left), N1 (centre) and local remote control unit (right).

N1/T cart forward compartment with pedal generator (right).

A N1/T limber and cart station, drawn by two horses or a motor vehicle, had a closed Wireless cart with two compartments (below).



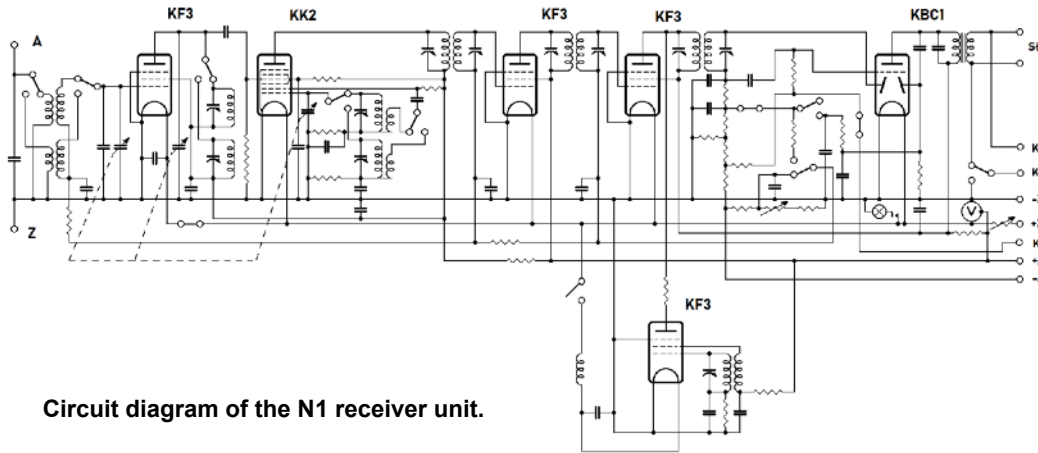
N1/S Vehicle Station



A N1/S station fitted in the rear compartment of a Polski Fiat 618 wireless version. Note the auxiliary receiver at the left and the power control/junction box at the right hand side of the transmitter-receiver.



N1/S Polski Fiat 618 wireless version - a gift from the Christian Masters of Bakery Association, Warsaw, 15.01.1939.

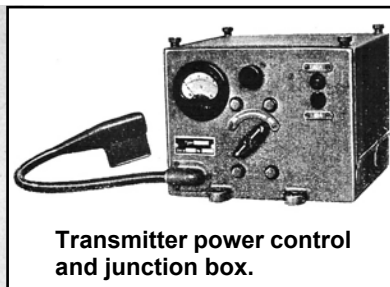
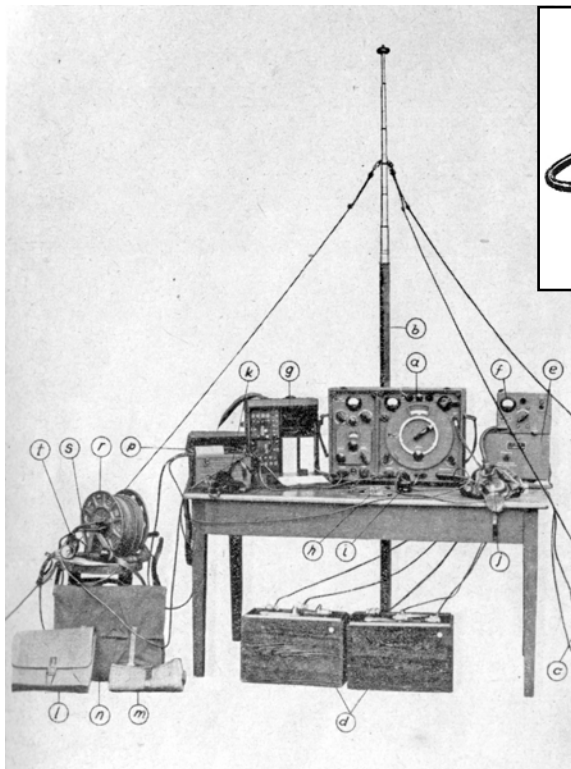
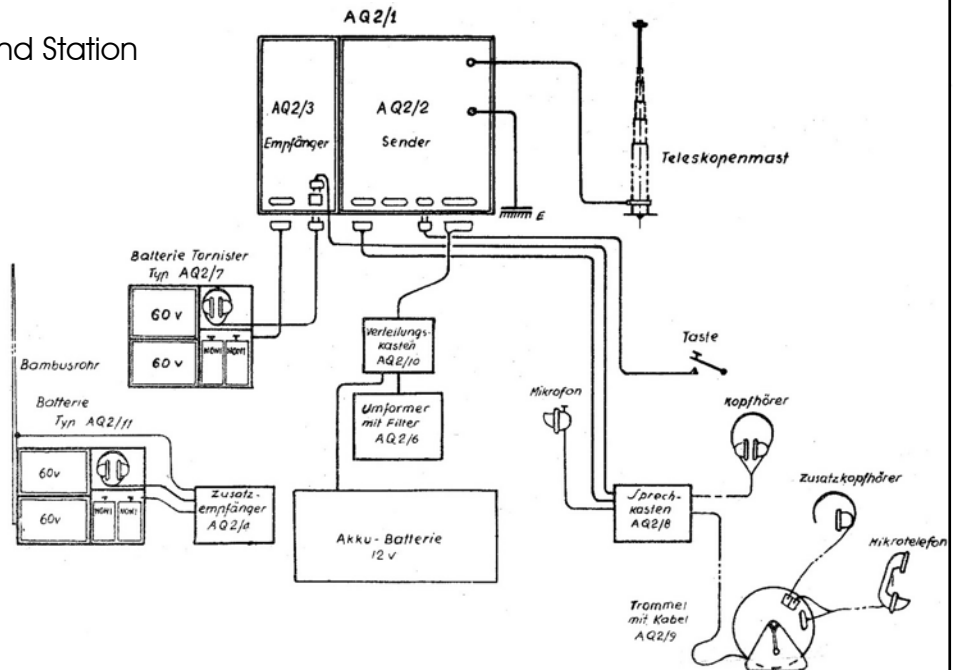


Circuit diagram of the N1 receiver unit.

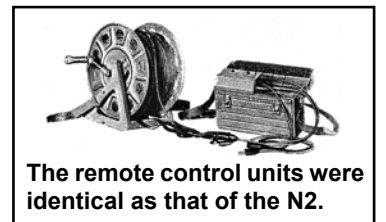
Wehrmacht AQ2 Ground Station

Functional block diagram of an AQ2 ground station powered by a 12V accumulator (right). The AQ2 differed only in detail from the N1, with as point of interest the frequency dials calibrated in kHz.

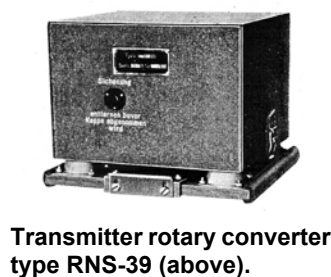
There were two versions of the AQ2 ground station: Powered by a pedal generator and from a 12V accumulator and a rotary converter unit. In both versions the receiver was powered by dry batteries. Note that the N2 auxiliary receiver was powered by an identical battery box at that of the AQ2.



Transmitter power control and junction box.



The remote control units were identical as that of the N2.



Transmitter rotary converter type RNS-39 (above).



AQ2 pedal generator (right), and setup as a battery powered ground station (left).