

Infrared V Country of origin: GDR  
JO-4.03 'Kleine Dahme'

**DATA SUMMARY**

**Organisation:** MfS HV A.  
**Manufacturer:** OTS; VEB Carl Zeiss, Jena.  
**Year of Introduction:** About 1986.  
**Purpose:** Agents cross border communication and various other applications.

**REMARKS**

JO-4.03 was the later produced version and replacement of the JO-4 (described in Chapter 68). Known as 'Kleine Dahme', it had a virtual identical appearance to its predecessor. The new control unit had a built-in microphone and a speech level/battery voltage meter led bar; the view finder was positioned on the other side; a short cable with socket replaced the original built-in socket, and a BNC socket was fitted for different functionality.

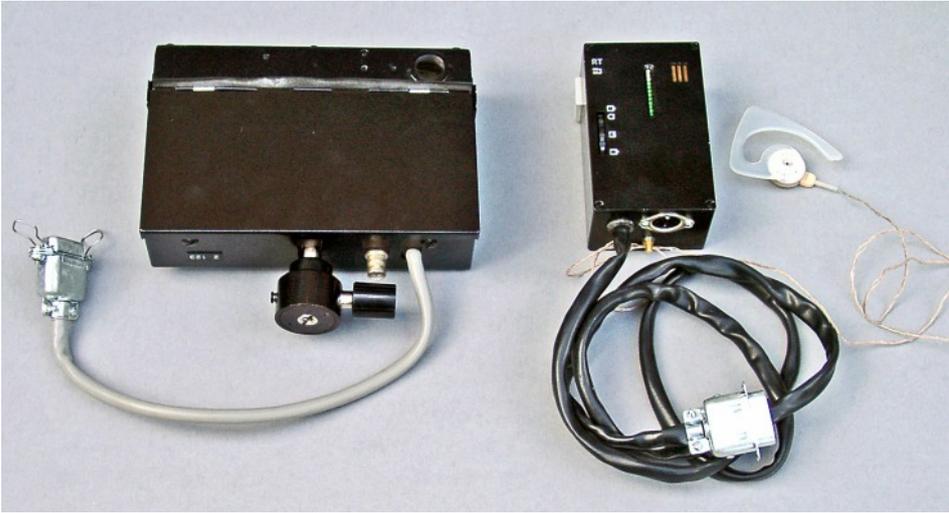
Development started in the early 1980s and serial production from 1986 onwards. About 160 pairs were ultimately made until 1989 at the cost of 30.000 Mark a pair. The JO-4.03 was functionally similar and interchangeable with the JO-4.02, having a shorter range of 3km, but when folded down it was considerably smaller and easier to conceal. A complete set comprised two Main Units, which differed only in the addition of a 16kHz pilot tone in the (agents side) Main Unit (1). See the 'Attachment Unit (3)' on page 3 in this chapter.



**Transit suitcase for a pair of sets with 2x JO-4.03 (Main Unit (1) right and Main Unit (2) left), Control Unit, Attachment Unit (3), Power Unit (4), cables and eyepiece extension.**

**References:**

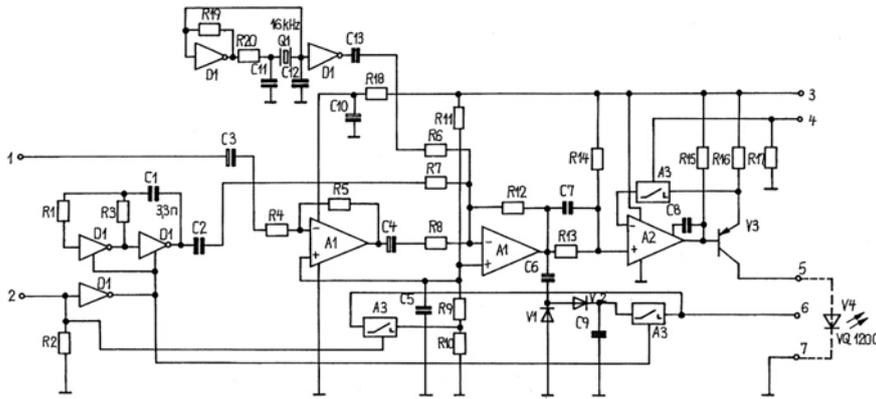
- Detailed information, data sheets and photos for compiling this chapter were provided by Detlev Vreisleben, DC7KG, Germany. Without Detlev's assistance this chapter would not have been possible!



When not required for use the JO-4.03 could be folded flat by closing the protective flaps at the side and top, and folding down the secondary mirror. (Left).

Shown in this picture is a Main Unit (2) (this number preceded the serial number on the type tag), used on the non-agents side of an infrared link.

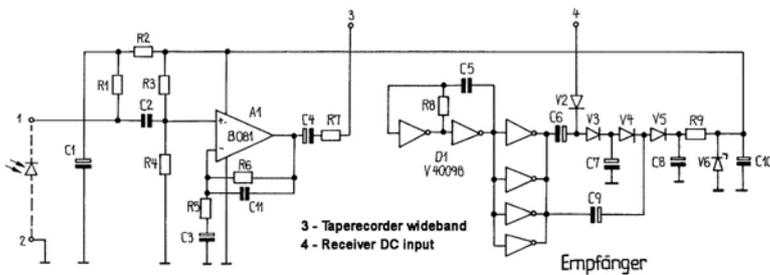
The Control Unit (right) was similar and interchangeable at both sides of a link.



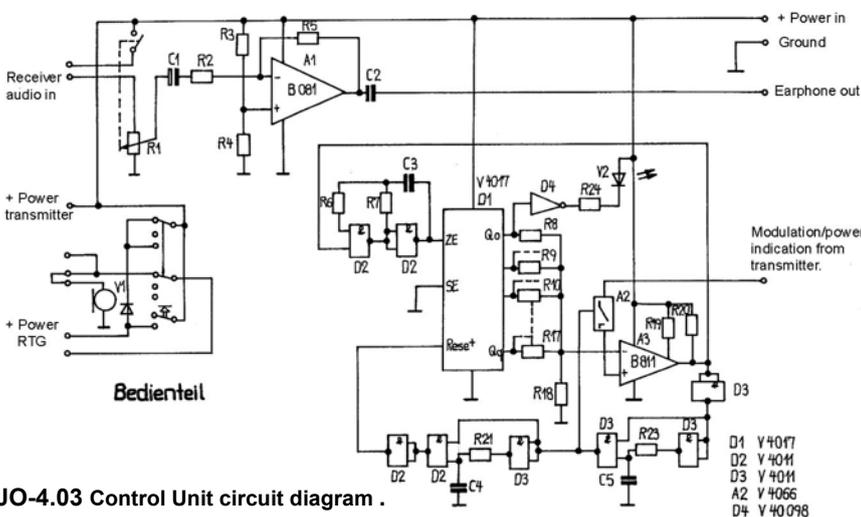
Sender  
JO-4.03 Transmitter circuit diagram.

A JO-4.03 or JO-4.02 infrared link could also be used for a one way carrier telephone transmission group (between 7 and 70kHz). A link was always between Main Unit (2) used at the transmitting side, as Main Unit (1) transmitted a constant pilot tone of 16kHz. The received carrier group signal could be taken from the BNC connector of Main Unit (1). This functionality was for special purpose only.

The Main Unit at either side was powered by three internal 1½V batteries carried in the Control Unit, or via a special cable terminating in an E10 socket which replaced the bulb of a standard electric torch. See page 3 in Chapter 68)



Empfänger  
JO-4.03 Receiver circuit diagram.



Bedienteil  
JO-4.03 Control Unit circuit diagram .



Size of an infrared led compared to a match.



The Attachment Unit (3) was used for automatic operation of a JO-4.02 or JO-4.03 Main Unit (2) in combination with a tape recorder. The Unit was connected to the Main Unit in place of the Control Unit, which in turn was connected to the socket top left.

Unattended automatic operation.

Automatic Operation of an infrared link allowing unattended recording of messages spoken by the agent was only used in exceptional circumstances. In combination with Attachment Unit (3), it was employed with either a pair of JO-4.02, JO-4.03, Finow I<sup>1</sup> or a combination of these, depending on the operational use and range of a link. (See block diagram below). The practical range in this mode was reduced by approximately 30%.

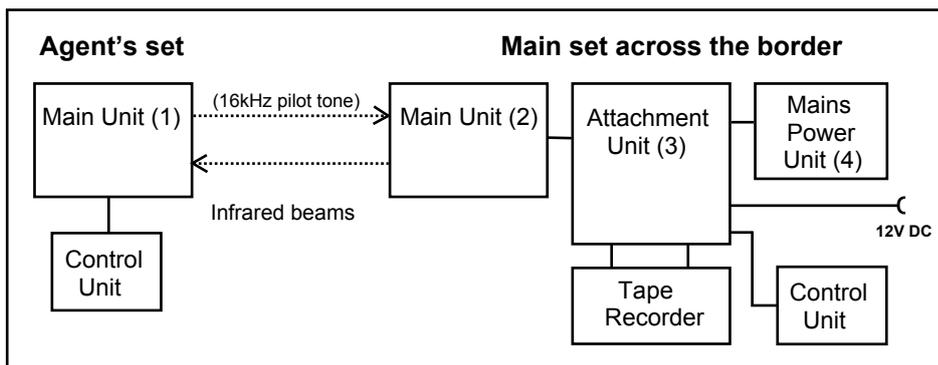
For automatic operation the agents set was Main Unit (1) and the automatic operating set at the other side a Main Unit (2), the latter connected to Attachment Unit (3).

The Main Unit (1) was modulated with a pilot tone of 16kHz and when received by Main Unit (2) resulting in starting the transmitter modulated with an acknowledge tone of 1kHz (length adjustable between 10 to 100 seconds), or alternatively voice information from a tape recorder. At the same time a second tape recorder was started which recorded the speech from the agent at Main Unit (1) as long the 16kHz pilot tone was received.

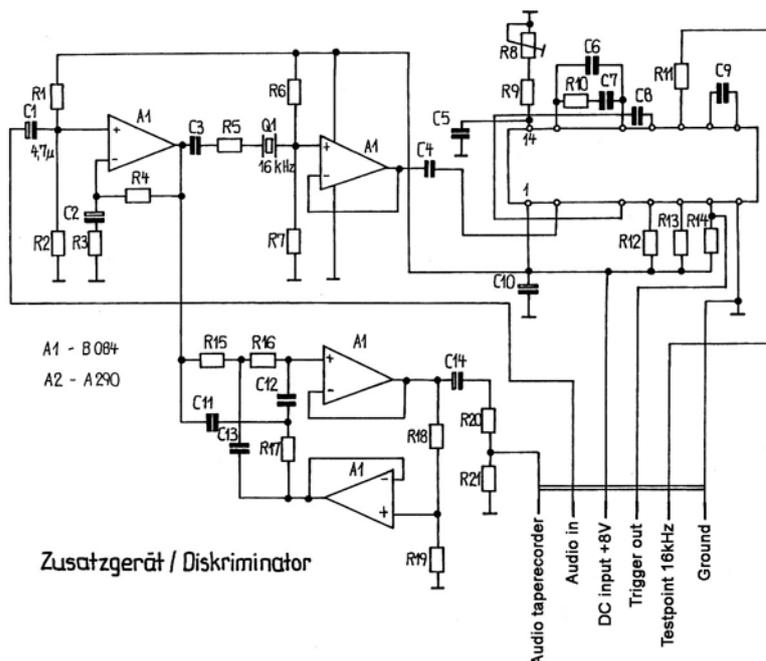
After switching off the transmitter at Main Unit (1), a second closing acknowledgement tone with the same length as the start of the transmission was transmitted before closing down the link.

The Attachment Unit (3) was powered from a 12V DC Mains Power Unit (4). Alternatively it could be powered from an external 12V accumulator battery. Main Unit (3) received 4½V from the Attachment Unit (3).

<sup>1</sup> For this mode the Finow I was fitted with a separate unit named 'Quartz' which provided the 16kHz pilot tone, and could only be used as Main Unit (1).



Block diagram of an infrared link with automatic operation. To avoid confusion and mistakes during setup, the units were given a number, followed by the serial number. The system allowed unattended recording of messages spoken by the agent at Main Unit (1).



Circuit diagram of 16kHz decoder-timer-audio board, part of Attachment Unit (3).