

HariFax IV - an universal Fax-Modem

13-july-98

Particularly suited to

Mscan v 3.xx (Win 95)
Mscan Meteo (Win 95)
Mscan 2.1x (Dos)
JvComm32 (Win 95)
JvFax 7.0/7.1 (Dos)
HamComm (Dos)

Power supply

+13...16 VDC, current consumption about 70ma.

Assembled board: + at Pin +12V , 0V at Pin GND of W4

Equipment: connector ,PWR' on the back side, positive pole are the center contact

Attention: The operating voltage must be a minimum of 13V. An unregulated plug-in power supply is not recommended!

Input signal

Assembled board: signal at pin ,AFin' , GND at pin ,GND' of W1

Equipment:: DIN-connector on the back side, allocation: shown below !

The Rx levels for FM-signals, including all fax- or slow Scan Television-signals, regardless of the band, should be in the range of 0.1 Vss (0.035 Veff) to 1.0 Vss (0.35 Veff).

Attention: Too high input voltages will result in untidy pictures !

When receiving weather satellites (AM), such as NOAA, Meteor or Meteosat, full scale (white), is set with an input voltage of about 1.5 Vss (0.53 Veff).

It is advantageous when the level of the signal from the receiver is adjustable.

The input impedance amounts is approximately 39kOhm.

Output signal

Assembled board: signal at pin ,AFout' , GND at pin ,GND' of W1

Equipment: DIN-connector on the back side, allocation: shown below.

The AF output signal level from the HariFax IV can be adjusted with potentiometer RT1. With the signal fed into the mike jack of a tranceiver only a few mv are required.

PTT – control

Assembled board: Pin PTT of W3

Equipment: DIN-connector on the back side, allocation: shown below.

This junction will be switched to GND via a transistor, when the software's program transmit function is activated. The Tx LED's illumination signals this condition.

Serial port

Assembled board: Pin row W2

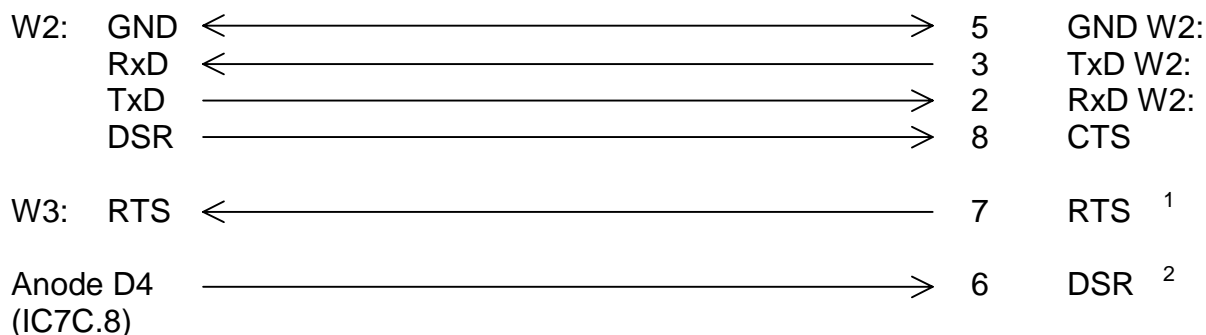
Equipment: 9-pol. DSUB connector on the back side (marked ,PC')

The data transmission from and to the PC is accomplished via a serial comport. The baud rate controls the selected mode: 115200 Baud within mode 1 (Mscan 2.2x, Mscan v 3.0x, JvComm32) and 57600 baud in mode 2 (JvFax 7.0/7.1). The data format is 8 bit, 1 start and 1 stop bit, no parity bit (8N1). The levels are appropriate RS232 - specification. Depending upon the program used, different connections are required. The following provides various pin connections.

Attention: Heed the footnotes!

allocation of W2 at HariFax IV

allocation at the PC (9-pol. DSUB)



Indication of the operation condition with the LED's

Some functions of the modem aren't affected by the switches Fx and Mx respectively or the jumper clips W5 and W6, but are program controlled. Hence, the 5 LED'S indicate current operational status.

Please note: LED 2, JvFax named now **M2** and LED3, Mscan named **M1**.

¹ only Tx-mode HamComm

² only Rx-mode HamComm

The following relates function to LED illumination status:

LED	function
M1 + FM	Mscan (windows and DOS version)
M2 + FM	JvComm32, slow Scan Television – mode
M2 + M1	JvComm32, FM – mode (fax)
M2 + AM	JvComm32, AM – mode (weather satellites)
AM	JvFax 7.x, AM – mode (weather satellites)
FM	JvFax 7.x, slow Scan Television – and FM – mode
TX	Transmit (with any program)

Note: A change of switch positions or the jumper positions is accepted only when the modem is powered on.

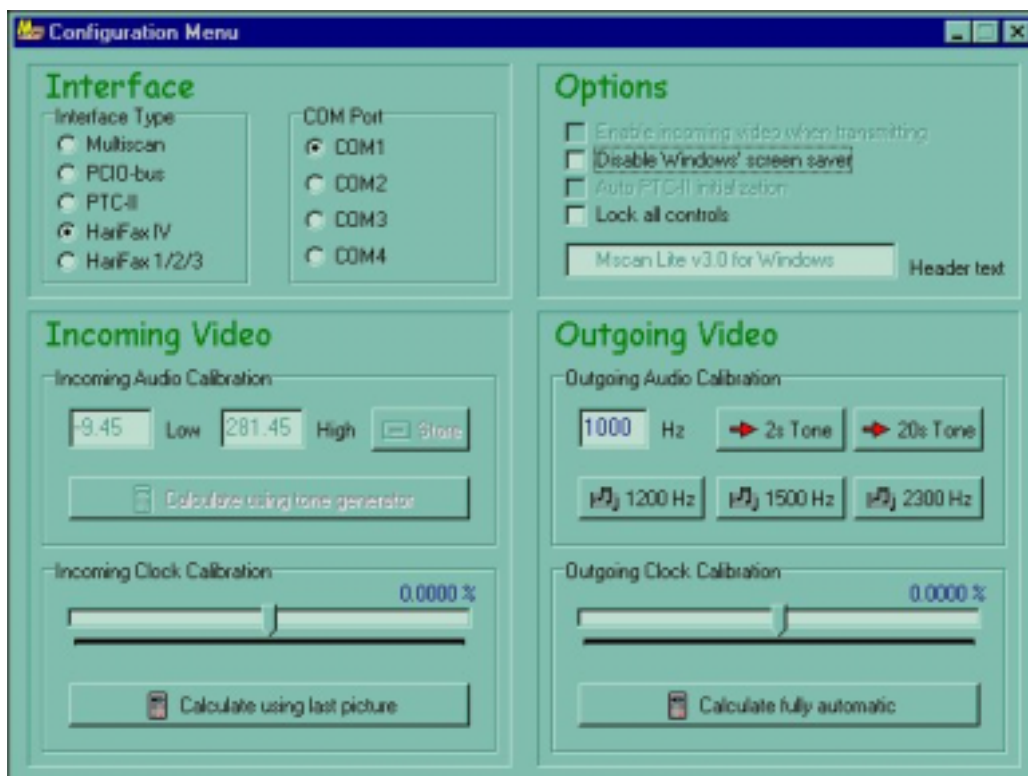
Operation with Mscan

Equipment: Mode – switch in position M1
Function – switch in position F1
Assembled board: bridge W5 and W6 open

Switch on: LED ,M1' and ,FM' illuminate

After starting Mscan v 3.0x choose an interface type i.e. ,HariFax IV' and the appropriate COM port. Further assistance can be obtained via the on-line Mscan manual (F1 key).

Remember to perform ,Incoming' and ,Outgoing Clock Calibration'.



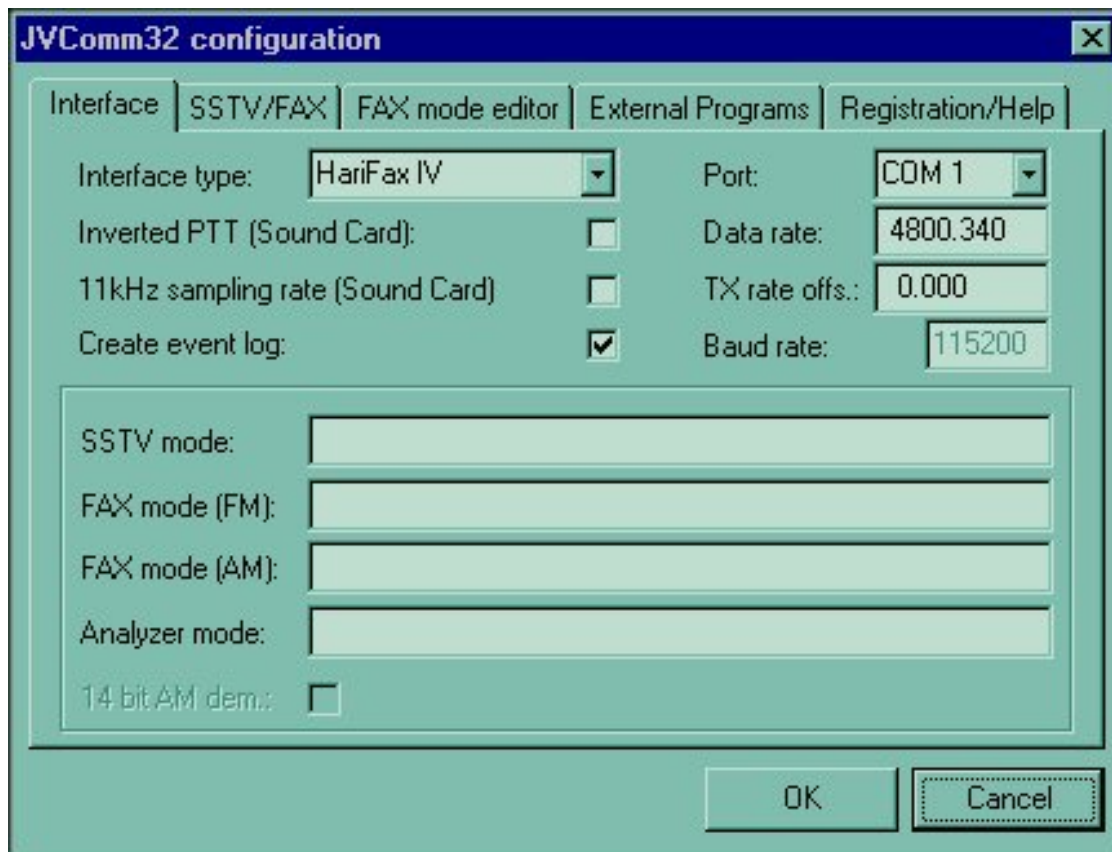
When using Mscan 2.3x from the DOS prompt, type *Mscan /c* and choose Type ,3 = Multiscan' as Rx interface. Rx-calibration for Multiscan is not necessary when using the HariFax IV. The default values for ,Spectrum calibration factor Low = -9.68' and ,... High = 282.68' should default when starting the Mscan 2.2x program for the first time. If you find other values, enter those above. If this does not work, calibrate as shown in the Mscan 2.2x – manual.

Operation with JvComm32

Equipment: Mode – switch in position M2
Funktionen – switch in position F1
Assembled board: bridge W5 closed and W6 open

Switch on: LED ,M2' and ,FM' illuminate

After starting JvComm32, choose HariFax IV as the interface, and select the appropriate COM port.



Further help is available with the ,on-line' JvComm32 manual. Simply click the desired area and hit the F1 Key.

Calibration

If the received pictures present a slanting frame, the Data rate must be corrected. A change in the decimal point value is usually enough.

Operation with JvFax 7.0/7.1

Equipment: Mode – switch in position M2
Function – switch in position F2
Assembled board: bridge W5 and W6 closed

Switch on: LED ‚AM‘ must illuminate

The modem's mode is defaulted to AM. With JvFax started and fax or Slow Scan Television reception chosen, the HariFax IV switches itself automatically to the corresponding mode of operation. Obviously, the configuration and the control bytes must be properly adjusted and the modem switched on, otherwise the command bytes will not be detected. See following example:

Configuration of the JvFax - program

The correct configuration of the JvFax program for the HariFax IV modem is included with the program's documentation (author: Eberhard Backeshoff, DK8JV).

This is a partial example of the appearance of the JvFax 'main'-configuration screen:

(JV)-FAX 7.1 configuration screen

```
Demodulator: 8 bits serial port/ser. addr:03F8h IRQ: -  LSB-SSTV-sync: no
Modulator: 6 bits on serial port  addr:03F8h  Bdrate: 57600  Dtarate: 4800
```

Note: demodulator = 8 bits serial port/**ser**.

The serial port COM1 corresponds to the address 3F8h, COM2 adr. 2F8h !

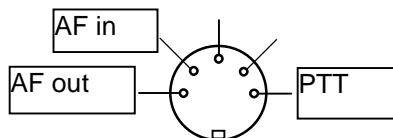
The Control codes are found in the Submenu ,MISC. SETTINGS' and should read as follows:



The different control bytes for AM1 and AM2 have the following operation: In ,4A' the A/D-conversion is linear; with ,4C' the neutral point will approach 12% of full scale. With these settings and an index of modulation of 87% (as used by the weather satellites) the system deviates over the range of 0-255, which results in an increase in contrast.

Miscellaneous

Allocation of the 5pol. DIN-connector (back view on the case):

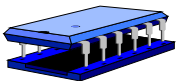


Self calibration

After switching the modem on, a self-calibration of the PLL section is automatically performed. During this time (about 3 seconds) the PTT is switched on. In the case of an internal fault the calibration will not be effectively performed, which is signaled by flashing LED's.

Short check:

- The current consumption should not exceed 80ma.
- Check ,Minus'-supply at R03 : -9...-7 VDC
- Select JvFax 7.x mode, no input AF-signal:
The terminals of following IC's should have 0VDC : IC7A.1, IC7D.14, IC5A.1, IC5B.7, IC5C.8, IC5D.14 and IC10B.7 .
- Test of the A/D-converter: connect Pin 1 of the μ C to GND (0V) , switch on operating voltage, and remove Pin 1 from GND. At IC8, Pin 2, a triangle voltage must appear. Check the linear going peaks. The amplitude must be in the range from 0V to 5V.



Elektronische Bauelemente

E. Thiem, Jean-Hofmann-Str. 21, D-63500 Seligenstadt, Tel. 06182-290366,
Fax 06182-290367, Email: A-EThiem@main-echo.net.