



VARA UND VARAC

JÜRGEN WIEGAND
WWW.DL6WAB.DE
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ALLE MARKENZEICHEN SIND MARKENZEICHEN DER JEWEILIGEN HERSTELLER

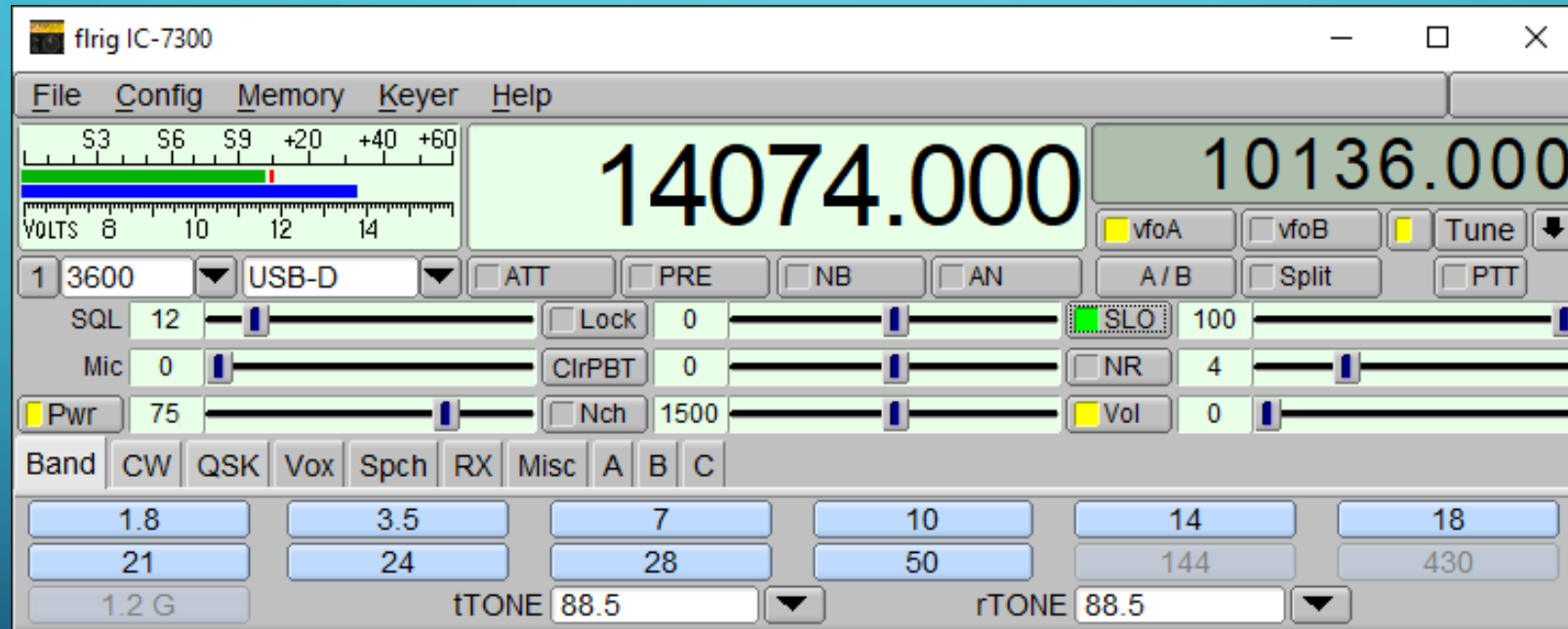
WELCHE GERÄTE?

- TRX (Transceiver, SSB (HF), FM (VHF, UHF))
 - ACC Buchse (Zubehörbuchse, mehrpolig)
 - Remote Buchse (3,5 mm Klinke, CI-V Kommandos, ICOM Geräte)
 - USB Buchse
- PC (Windows)
- Evtl. „Soundkarteninterface“ (Audio, PTT, CAT)

FUNKTIONEN?

- AUDIO Interface (Audio IN, Audio OUT)
- PTT Steuerung (Push to Talk)
- CAT Steuerung (Computer Aided Transceiver)

CAT STEUERUNG IC 7300 (FLRIG GUI)




CAT INTERFACE (CI-V ICOM GERÄTE)



SCHNITTSTELLEN IC 718



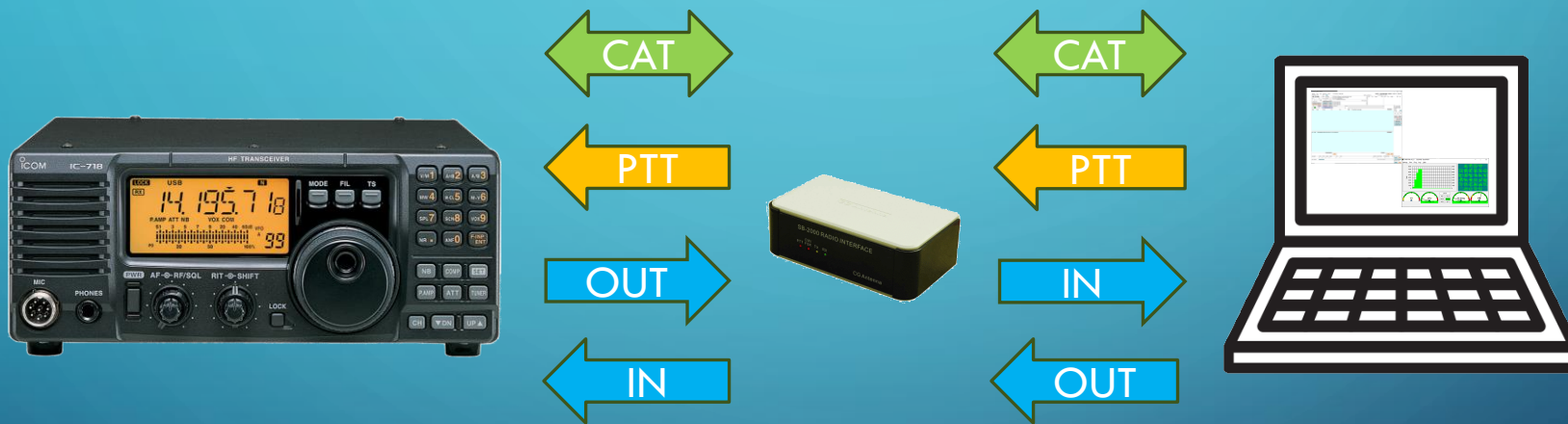
ACC BUCHSE IC 718

ACC	PIN #	NAME	DESCRIPTION	SPECIFICATIONS
 <p>Rear panel view</p>	1	8 V	Regulated 8 V output.	Output voltage : 8 V \pm 0.3 V Output current : Less than 10 mA
	2	GND	Connects to ground.	—————
	3	SEND	Input/output pin. Goes to ground when transmitting. When grounded, transmits.	Ground level : -0.5 V to 0.8 V Input current : Less than 20 mA
	4	BDT	Data line for the optional AT-180.	—————
	5	BAND	Band voltage output. (Varies with amateur band)	Output voltage : 0 to 8.0 V
	6	ALC	ALC voltage input.	Control voltage : -4 to 0 V Input impedance : More than 10 k Ω
	7	NC	—————	—————
	8	13.8 V	13.8 V output when power is ON.	Output current : Max. 1 A
	9	TKEY	Key line for the AT-180.	—————
	10	FSKK	RTTY keying input.	Ground level : -0.5 to 0.8 V Input current : Less than 10 mA
	11	MOD	Modulator input.	Input impedance : 10 k Ω Input level : Approx. 100 mV rms
	12	AF	AF detector output. Fixed, regardless of [AF] position.	Output impedance : 4.7 k Ω Output level : 100 to 300 mV rms
	13	SQLS	Squelch output. Goes to ground when squelch opens.	SQL open : Less than 0.3 V/5 mA SQL closed : More than 6.0 V/100 μ A

INTERFACE



MIT EXTERNEM INTERFACE (ACC, REMOTE)



INTERFACE LINKS


- <https://www.cgantenna.be> (SB 2000)
- <https://tigertronics.com> (Signalink)
- <https://unicomradio.com> (Kabelinterface)
- <https://www.microham.com> (USB Interface III)

SCHNITTSTELLEN IC 7300 (USB)



ACC BUCHSE IC 7300

• ACC socket

ACC	PIN No.	NAME	DESCRIPTION	SPECIFICATIONS	
<p>13-pin</p>  <p>Rear panel view</p> <p>① brown ⑧ gray ② red ⑨ white ③ orange ⑩ black ④ yellow ⑪ pink ⑤ green ⑫ light blue ⑥ blue ⑬ light blue ⑦ purple ⑬ light green</p> <p>Color refers to the cable strands of the supplied cable.</p>	1	8 V	Regulated 8 V output. (Used as the reference voltage for the band voltage.)	Output voltage: 8 V \pm 0.3 V Output current: Less than 10 mA	
	2	GND	Connects to ground.	—	
	3	SEND*1	Input/output pin.	An external unit controls the transceiver. When this pin goes to ground, the transceiver transmits. The pin goes low when the transceiver transmits.	Input voltage (RX): 2.0 to 20.0 V Input voltage (TX): -0.5 to +0.8 V Current flow: Maximum 20 mA Output voltage (TX): Less than 0.1 V Current flow: Maximum 200 mA
	4	BDT	Not used.	—	
	5	BAND	Band voltage output. (Varies with the selected amateur band)	Output voltage: 0 to 8.0 V	
	6	ALC	ALC voltage input.	Input level: -4 to 0 V Input impedance: More than 3.3 k Ω	
	7	NC	—	—	
	8	13.8 V	13.8 V output when power is ON.	Output current: Maximum 1 A	
	9	TKEY	Not used.	—	
	10	FSKK	Controls RTTY keying.	High level: More than 2.4 V Low level: Less than 0.8 V Output current: Less than 2 mA	
	11	MOD	Modulator input.	Input impedance: 10 k Ω Input level: 100 mV rms*3	
	12	AF/IF (IF=12 kHz)*2	Fixed AF detector or receive IF (12 kHz) signal output.	Output impedance: 4.7 k Ω Output level: 100 ~ 300 mV rms*4	
	13	SQL S	Squelch output. Grounded when the squelch opens.	SQL open: Less than 0.3 V/5 mA SQL closed: More than 6.0 V/100 μ A	

OHNE EXTERNES INTERFACE



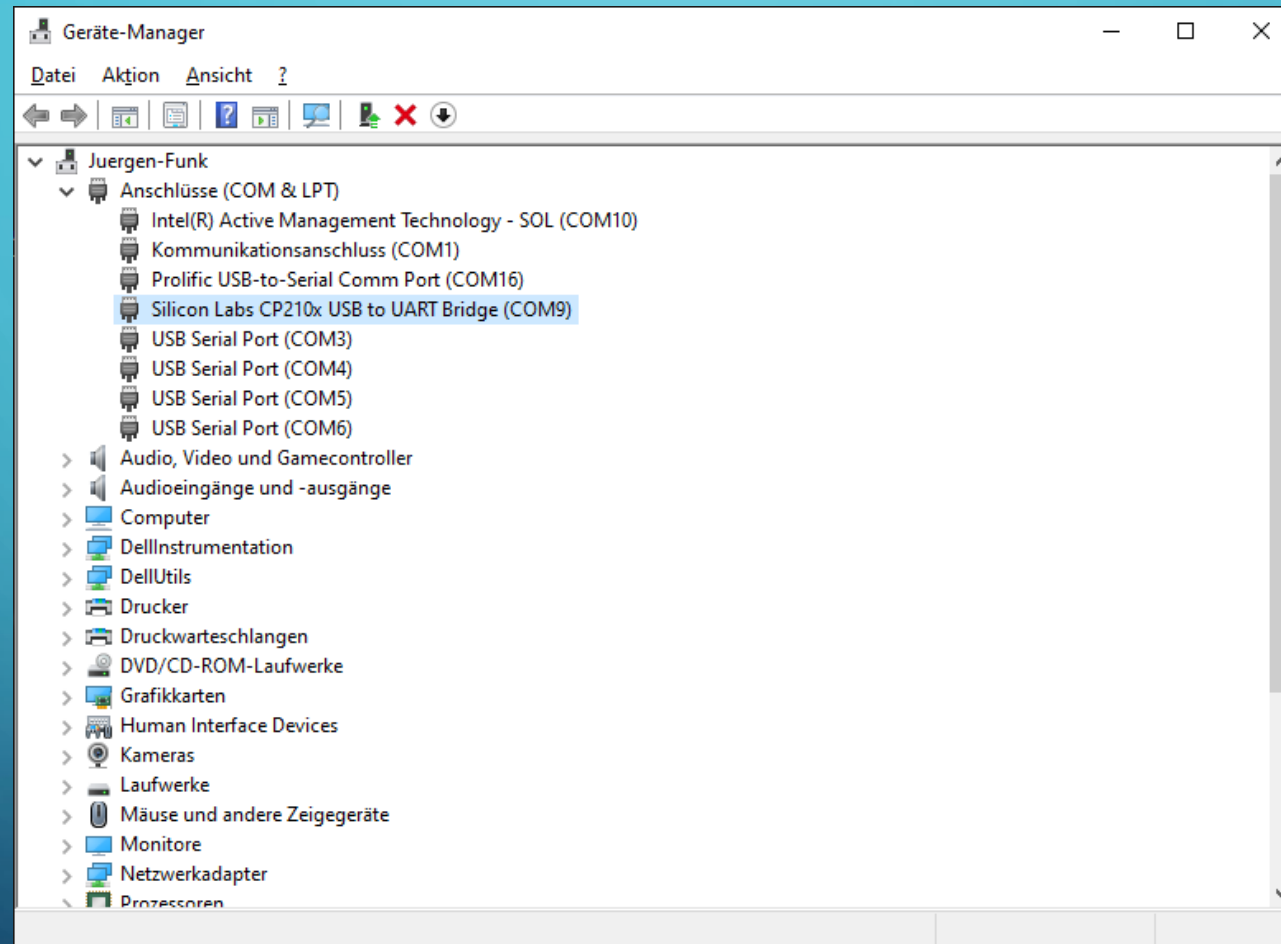
Audio, PTT, CAT (USB)



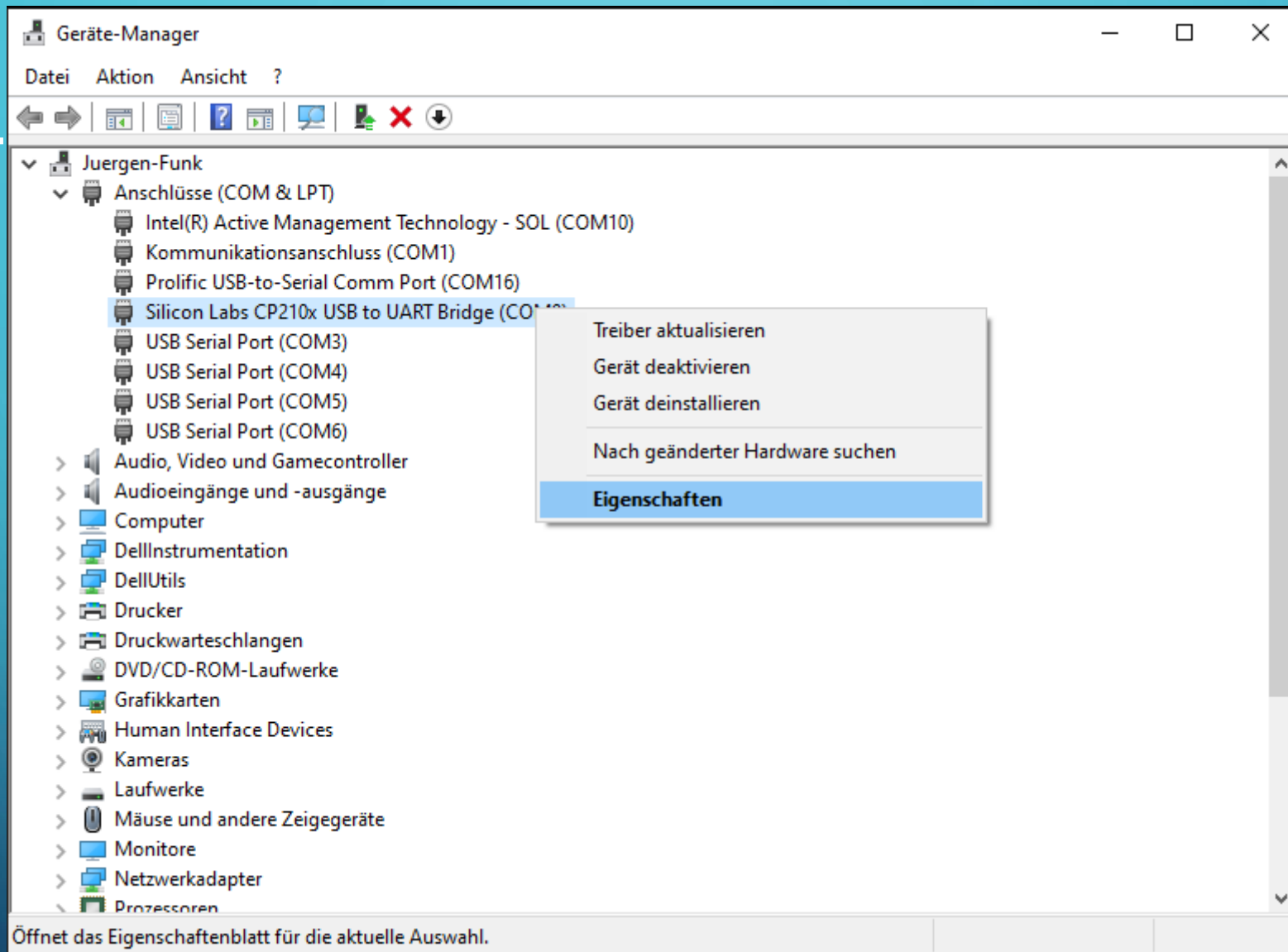
INTERFACE IDENTIFIZIEREN

- 1 oder 2 neue serielle Schnittstellen (COM)
 - CAT
 - PTT
- 0 oder 1 neuen Audiocontroller (Soundkarte)
 - neuer Audioeingang
 - neuer Audioausgang

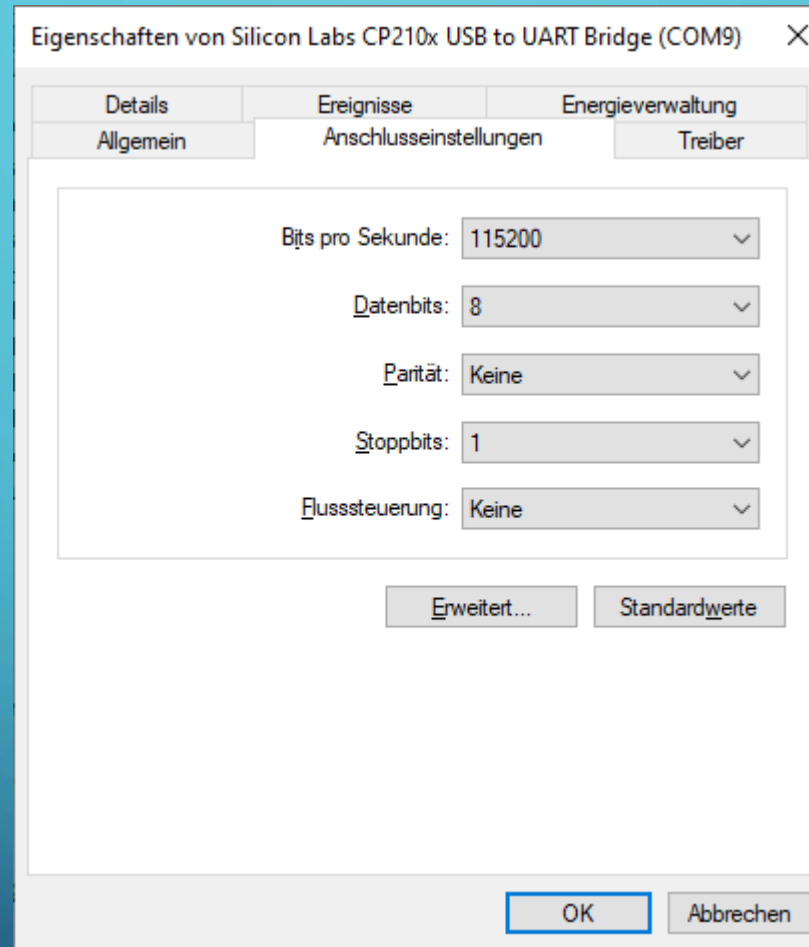
SERIELL



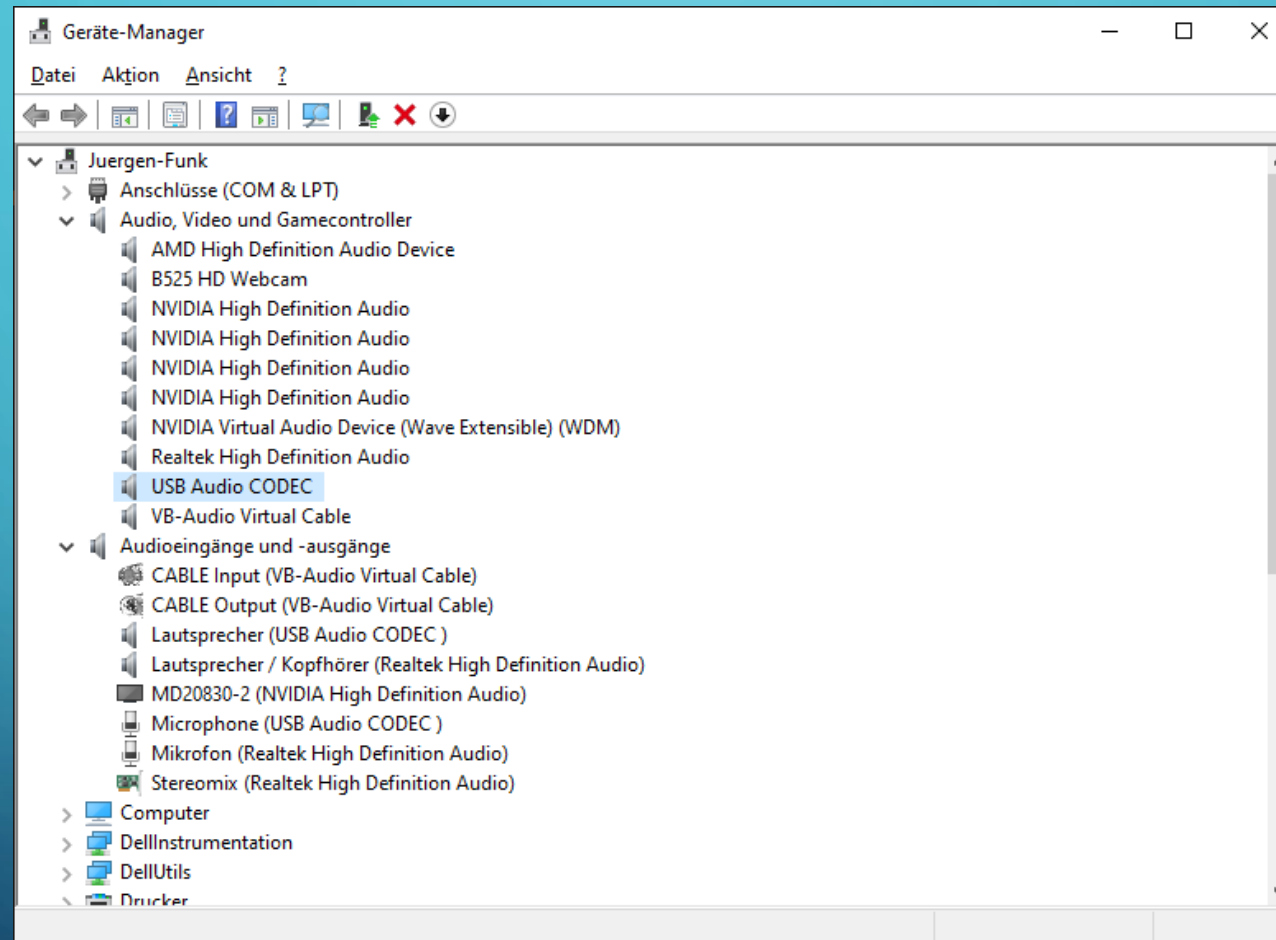
SERIEL



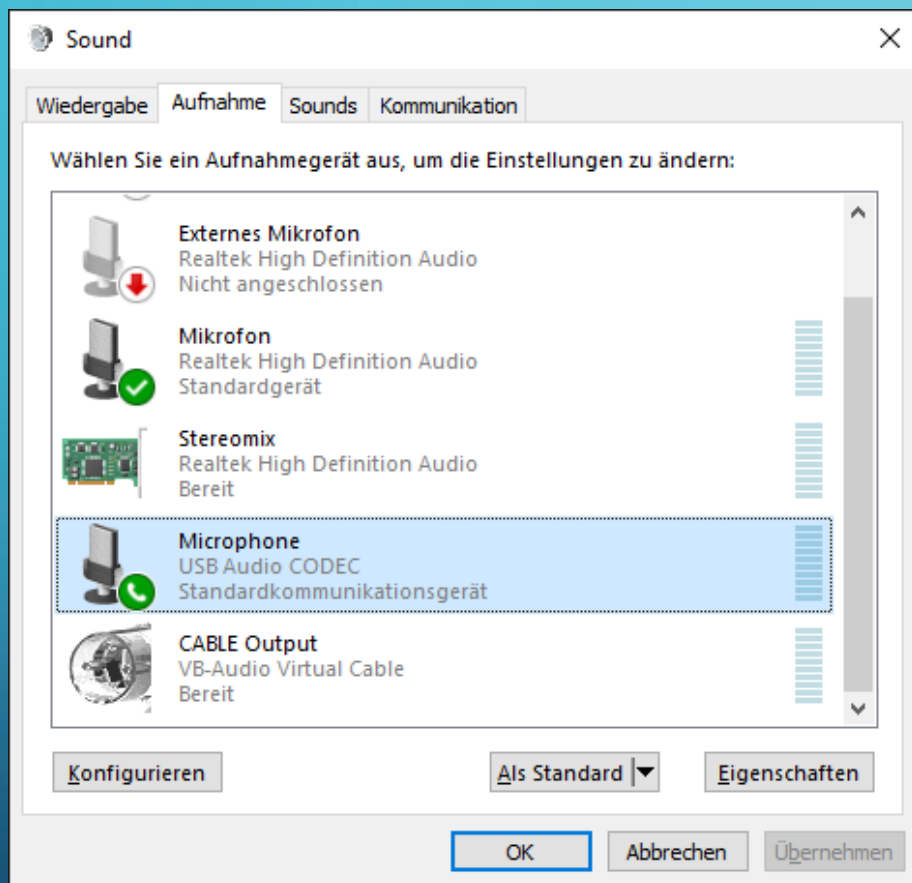
SERIELL



AUDIO








AUDIO



Sound

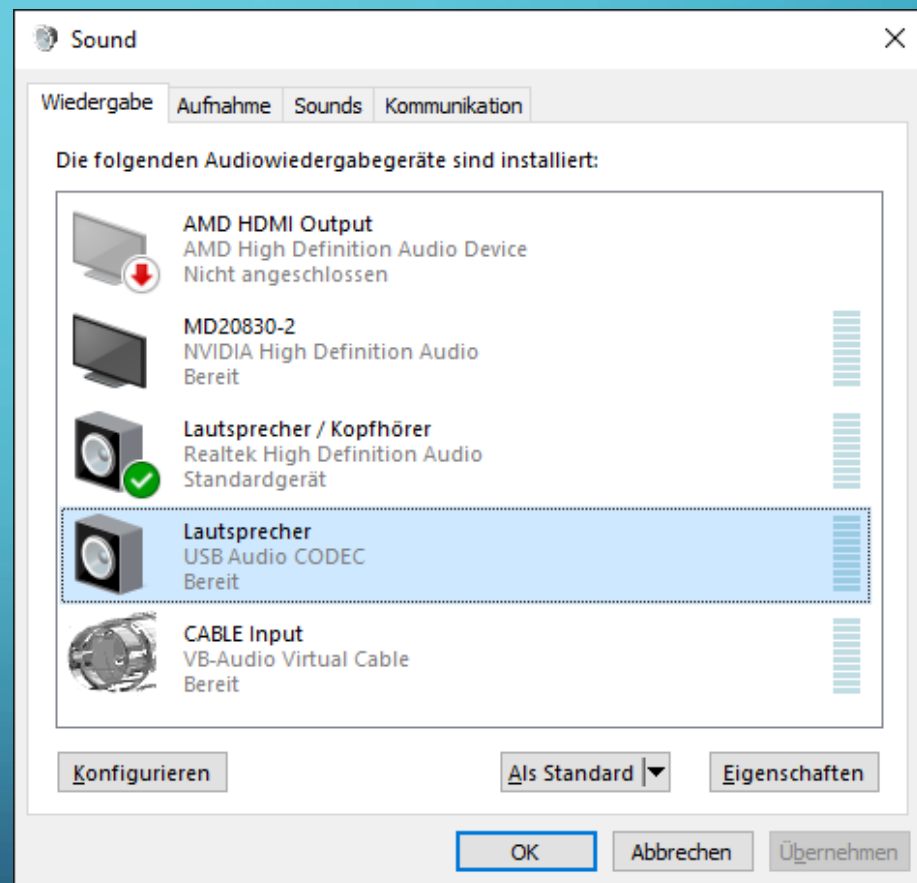
Wiedergabe Aufnahme Sounds Kommunikation

Wählen Sie ein Aufnahmegerät aus, um die Einstellungen zu ändern:

-  **Externes Mikrofon**
Realtek High Definition Audio
Nicht angeschlossen
-  **Mikrofon**
Realtek High Definition Audio
Standardgerät
-  **Stereomix**
Realtek High Definition Audio
Bereit
-  **Microphone**
USB Audio CODEC
Standardkommunikationsgerät
-  **CABLE Output**
VB-Audio Virtual Cable
Bereit

Konfigurieren Als Standard Eigenschaften






OK Abbrechen Übernehmen



Sound

Wiedergabe Aufnahme Sounds Kommunikation

Die folgenden Audiowiedergabegeräte sind installiert:

-  **AMD HDMI Output**
AMD High Definition Audio Device
Nicht angeschlossen
-  **MD20830-2**
NVIDIA High Definition Audio
Bereit
-  **Lautsprecher / Kopfhörer**
Realtek High Definition Audio
Standardgerät
-  **Lautsprecher**
USB Audio CODEC
Bereit
-  **CABLE Input**
VB-Audio Virtual Cable
Bereit

Konfigurieren Als Standard Eigenschaften

OK Abbrechen Übernehmen

The background is a gradient of blue, darker at the bottom. In the corners, there are decorative white line-art patterns resembling circuit traces or neural network connections, with small circles at the end of the lines.

INTERFACE UND TRX

Fragen?

VARA (MODEM)

- VARA bezeichnet eine digitale Betriebsart im Amateurfunkdienst.
- Es wurde für die Verwendung mit WinLink auf Kurzwelle (VARA HF) und im VHF- und UHF-Bereich (VARA FM) entwickelt und ermöglicht das Übertragen von Daten, z. B. E-Mails, über Funk.
- Zum Betrieb über den geostationären Amateurfunk-Satelliten QO-100 dient die Variante VARA SAT.

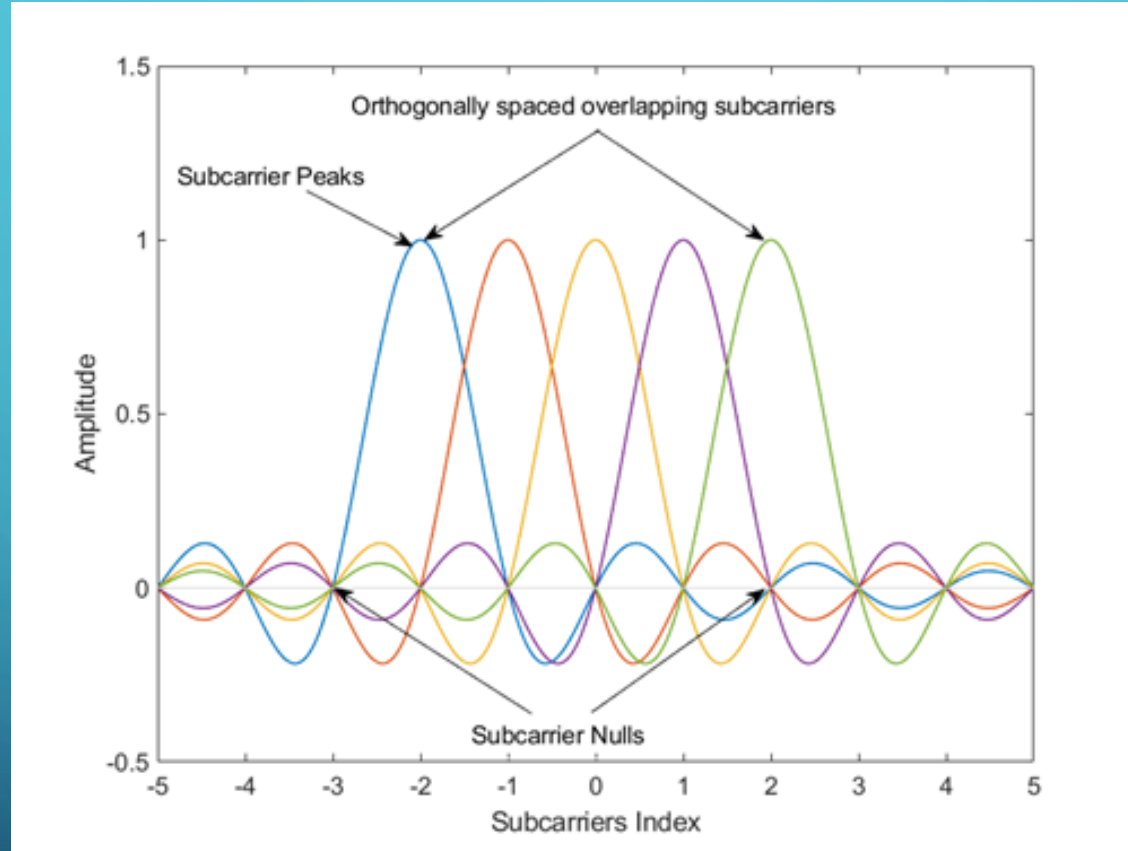
VARA (MODEM)

- Entwickelt vom spanischen Funkamateurl José Alberto Nieto Ros (EA5HVK), ebenfalls Autor des Protokolls ROS
- Kommt ohne Hardware-TNC aus
- Datenübertragungsrate den Hardware-Protokollen (z.B. PACTOR) ebenbürtig
- Es gibt eine freie VARA Version mit Einschränkungen (Übertragungsrate 500 bps) und eine Kaufversion (59.- €) ohne Einschränkungen

VARA (MODEM)

- VARA verwendet zur bitgenauen Datenübertragung ein ARQ-Protokoll (Automatic Repeat reQuest), welches nach jedem übertragenen Datenblock eine Bestätigung der Gegenstation erfordert.
- Die Modulation erfolgt durch ein OFDM-Verfahren (Orthogonal Frequency-Division Multiplexing), indem innerhalb der verfügbaren Bandbreite mehrere phasenmodulierte Träger mit Redundanzinformation gesendet werden.

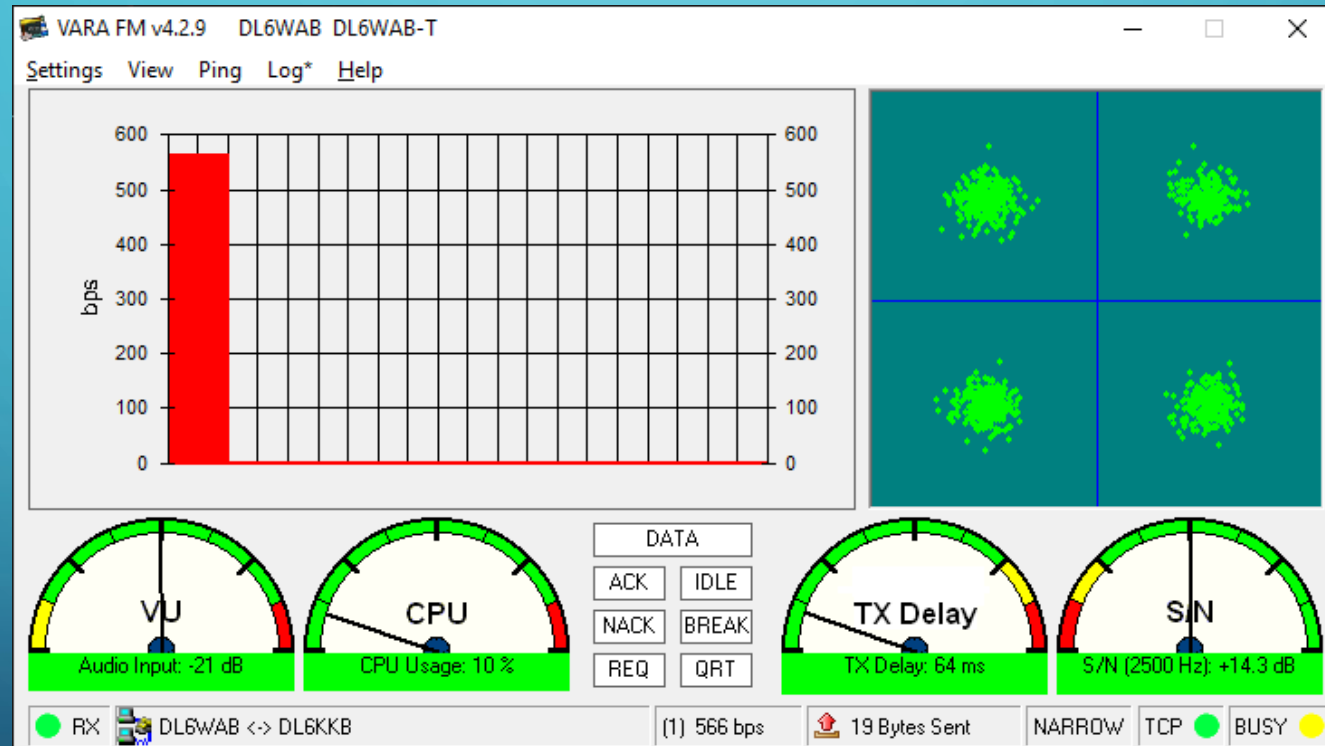
VARA MODEM OFDM



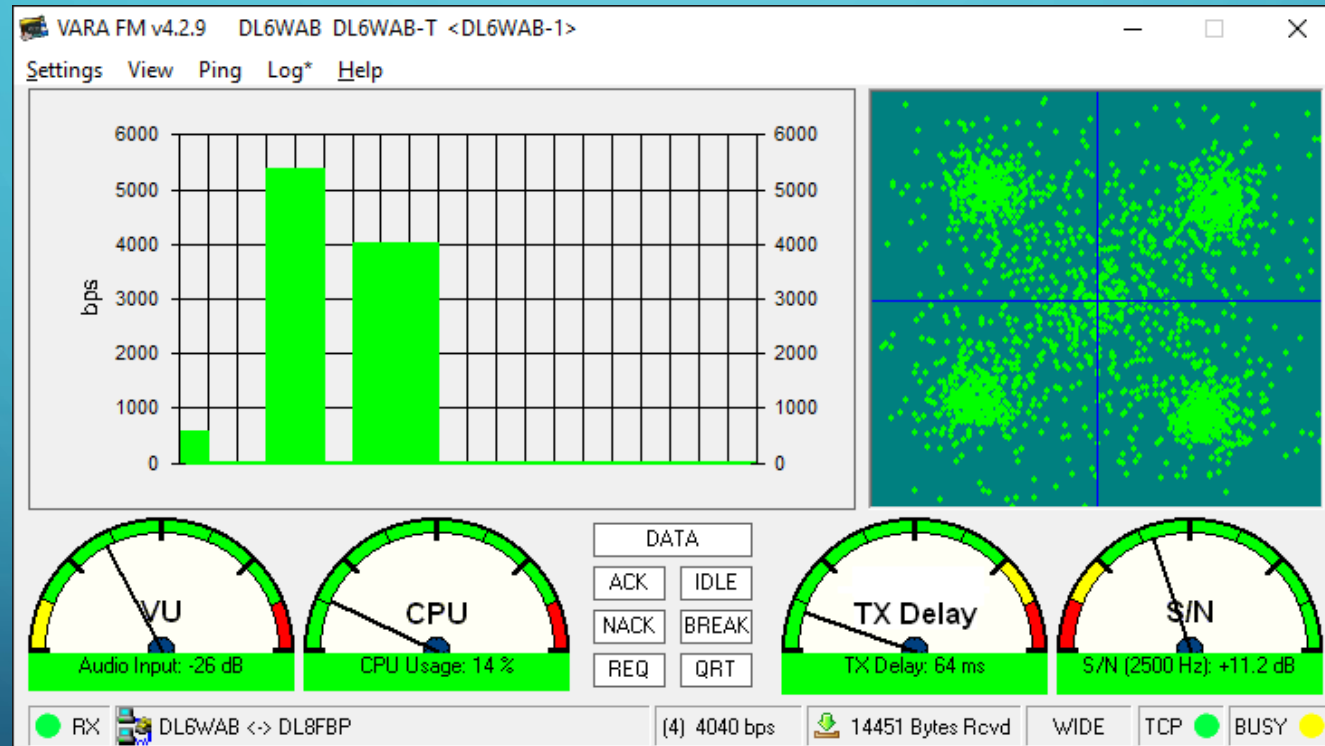
VARA (MODEM)

- VARA ist ein proprietärer Software-TNC (Terminal Node Controller).
- Ein Computer mit Audiocontroller und ein Transceiver sind zum Modulieren und Demodulieren erforderlich.
- VARA **HF** erreicht bei einer Bandbreite von 2300 Hz (VarAC 500 Hz) eine Datenübertragungsrate von über 5 kBit/s.
- Mit VARA **FM** sind Datenübertragungsraten bis zu 25 kBit/s möglich.

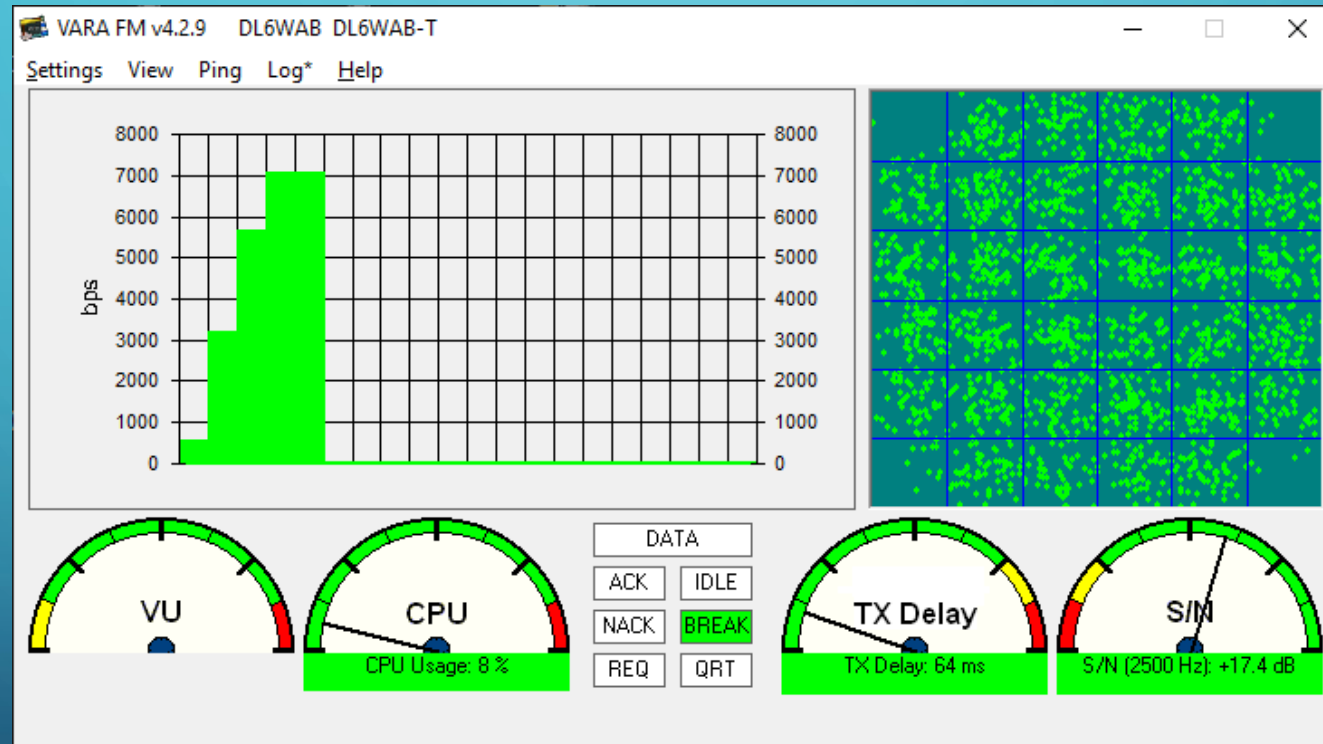
VARA FM MODEM FREE (GUI)



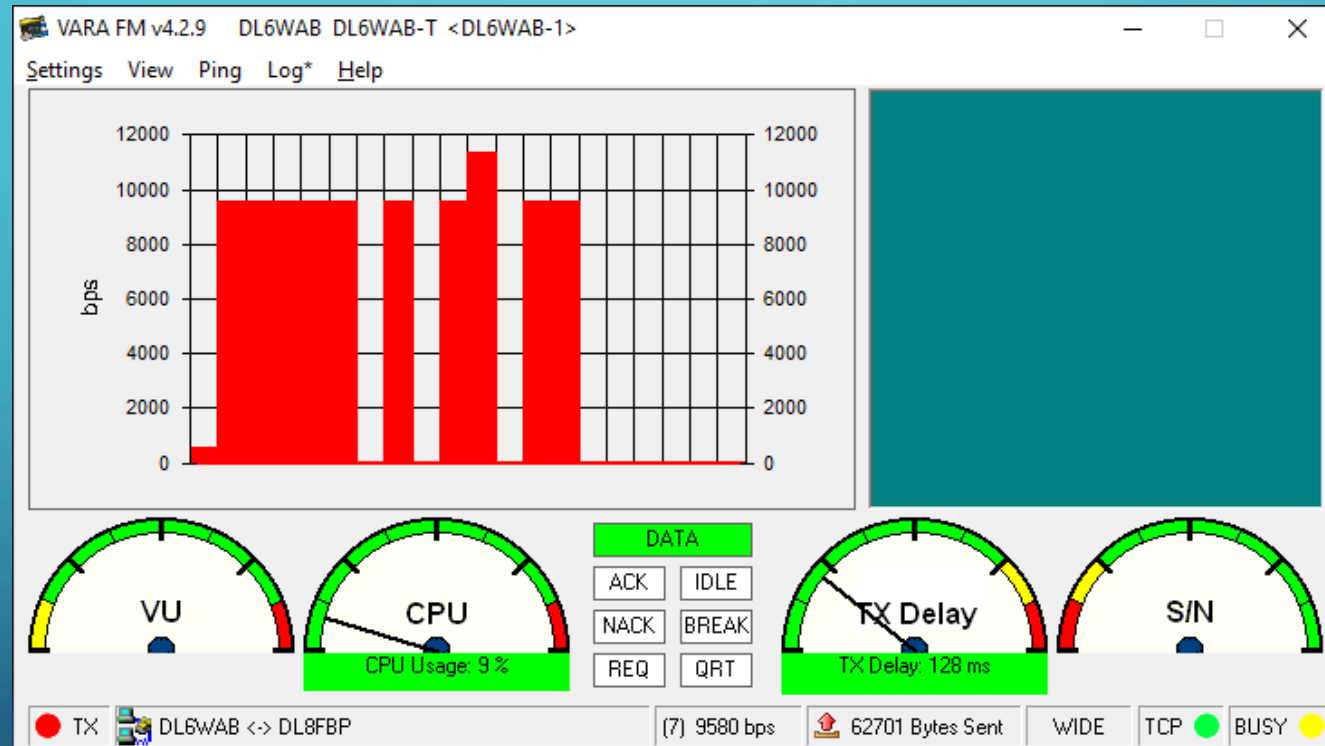
VARA FM MODEM LICENSED (GUI)



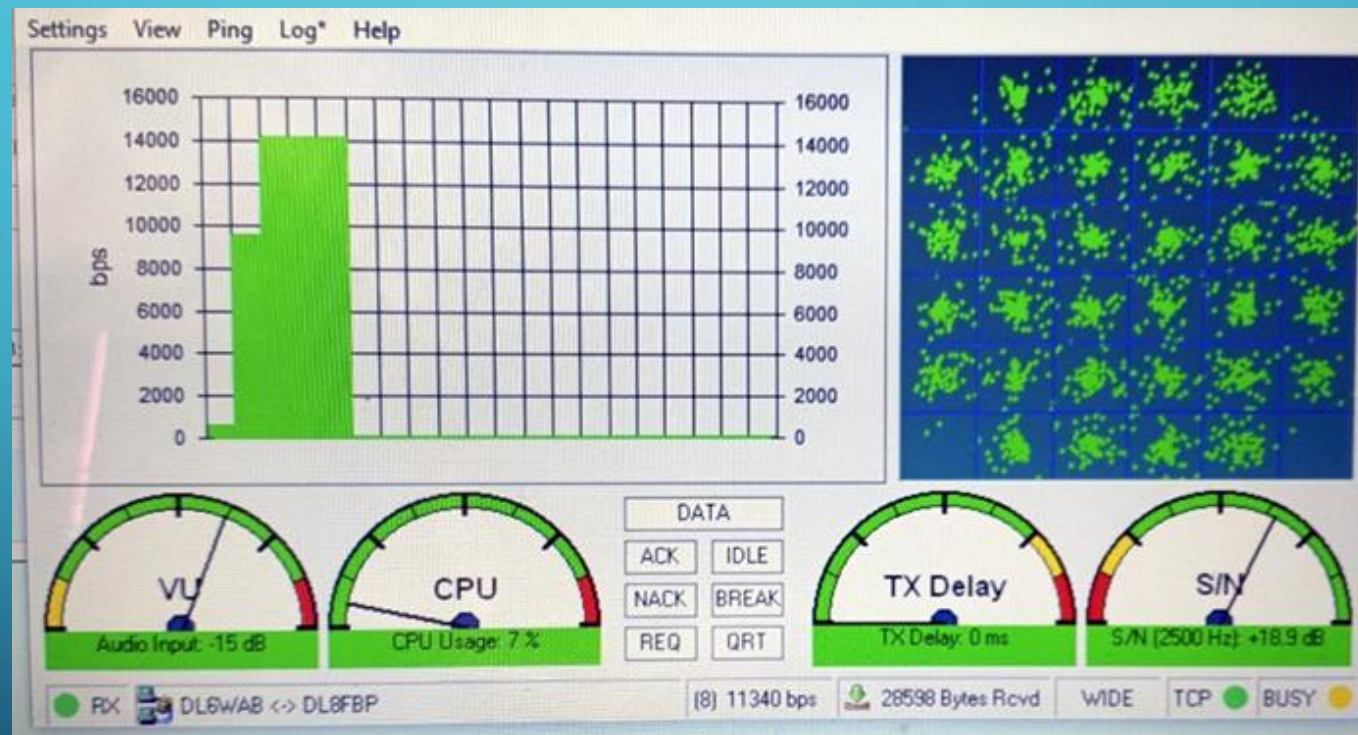
VARA FM MODEM LICENSED (GUI)



VARA FM MODEM LICENSED (GUI)



VARA FM MODEM LICENSED (GUI)



VARA BEISPIELKONFIGURATION



VARA BEISPIELKONFIGURATION



VARA BEISPIELKONFIGURATION (SB2K-IC8)



VARA BEISPIELKONFIGURATION



VARA FM KONFIGURATION (IC 910)

VARA Setup 192.168.168.22

TCP Ports:
Command: 8300
Data: 8301

FM System: WIDE
Digipeater: DL6WAB-1
Retries: 2
 Allow VARA check for updates
 KISS interface SysLog

VARA Licenses:
Callsign: DL6WAB Registration Key: [REDACTED]
Callsign: [REDACTED] Registration Key: [REDACTED]
Callsign: [REDACTED] Registration Key: [REDACTED]
Callsign: [REDACTED] Registration Key: [REDACTED]

**42 baud Symbol Rate
Legal on 2 meters band**

* VARA FM WIDE needs a FM rig set for 9600 Packet operation, with a special soundcard interface (6 kHz BW) connected to rear panel: RA-Board, Signalink "Black" transforms, Modified Signalink (red audio transforms removed), homebrew interface (a simple direct cable)...

* In other case, you must select VARA FM NARROW

Close

VARA FM PTT

PTT

PTT Via

CAT COM RA-Board VOX

Brand: Icom Port: COM4

Model: IC-910 Bauds: 9600

RTS
 DTR

CI-V Address: 60

Close

PTT

PTT Via

CAT COM RA-Board VOX

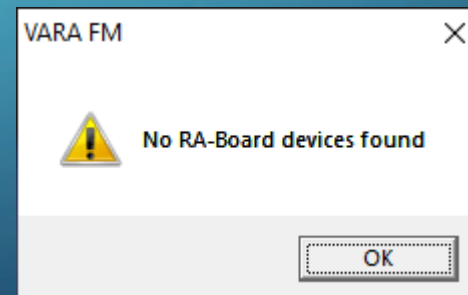
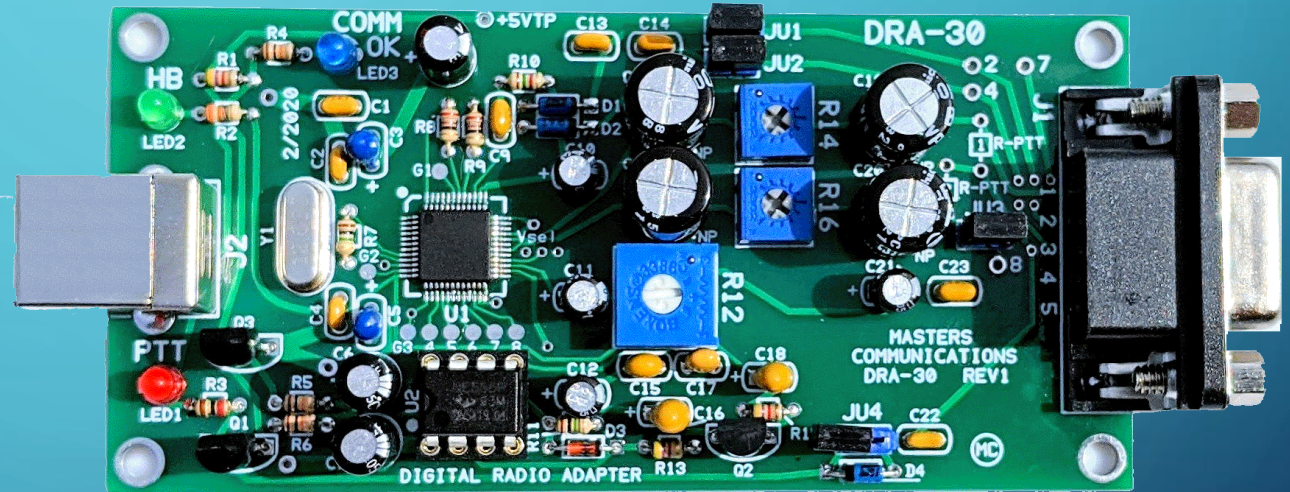
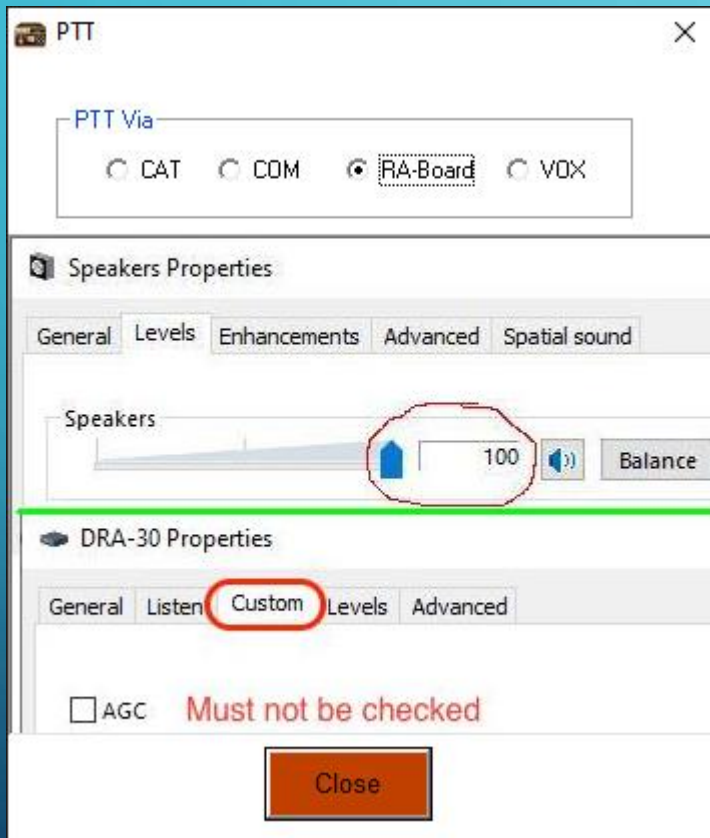
Port: COM3

PTT Pin

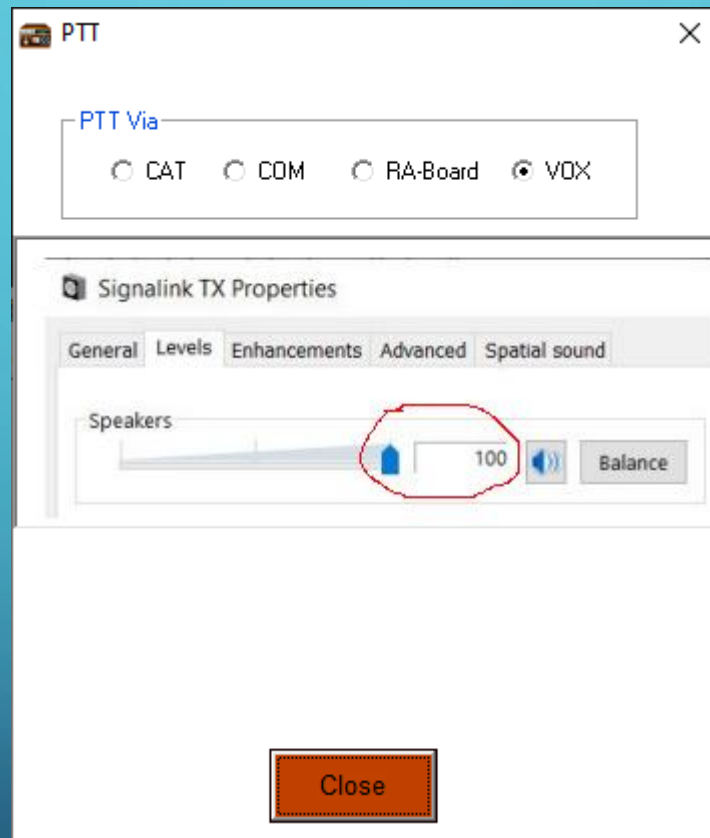
RTS
 DTR
 RTS+DTR

Close

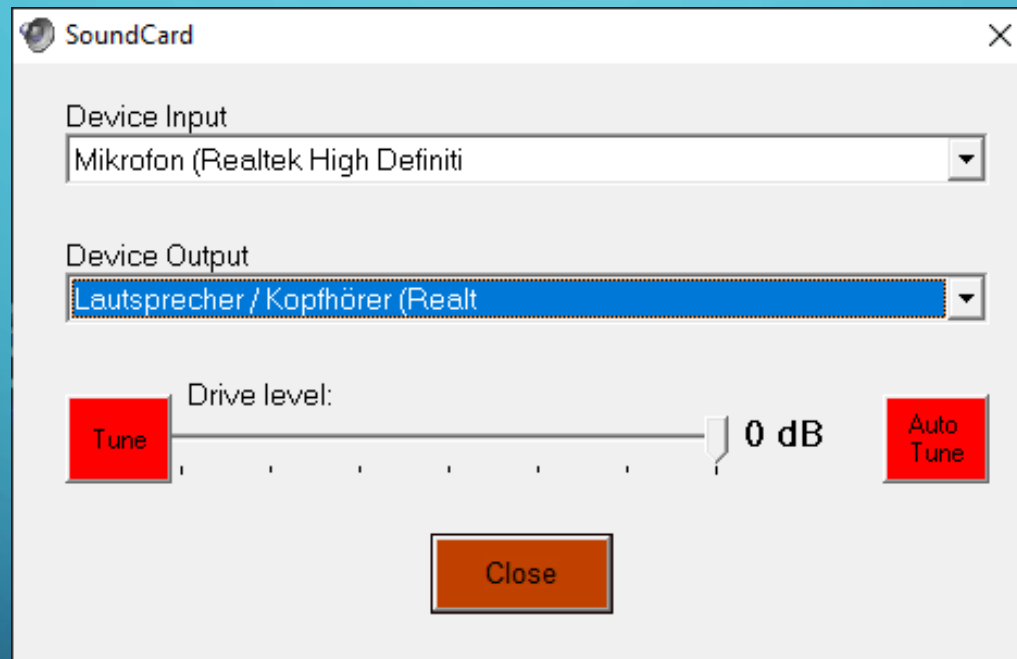
VARA FM PTT



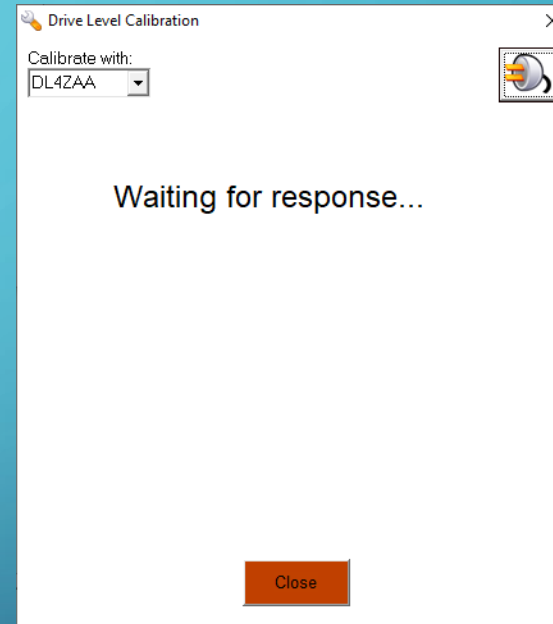
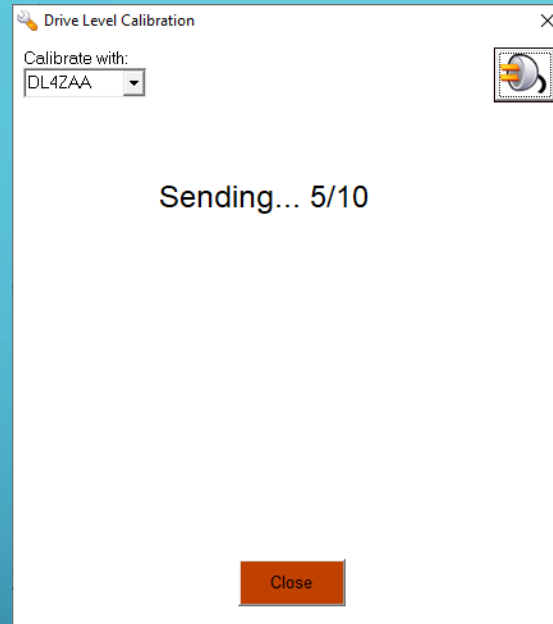
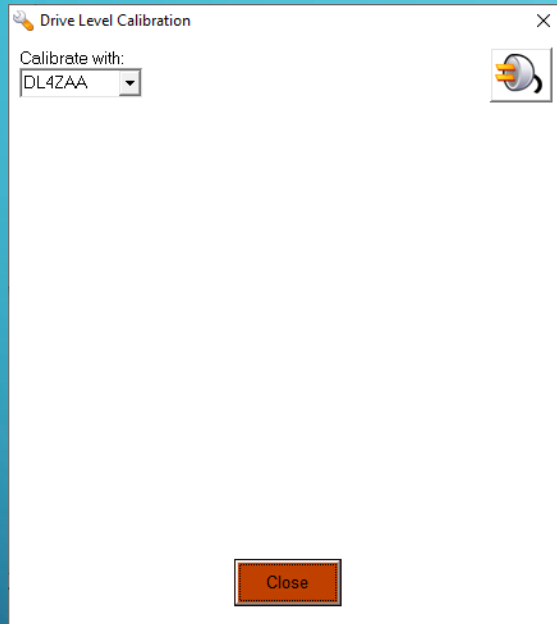
VARA FM PTT



VARA FM AUDIO



VARA FM CALIBRATION



VARA FM CALIBRATION


Drive Level Calibration

Calibrate with:
DF1ZW

Drive Level: +0 dB

S/N: +24.0 dB

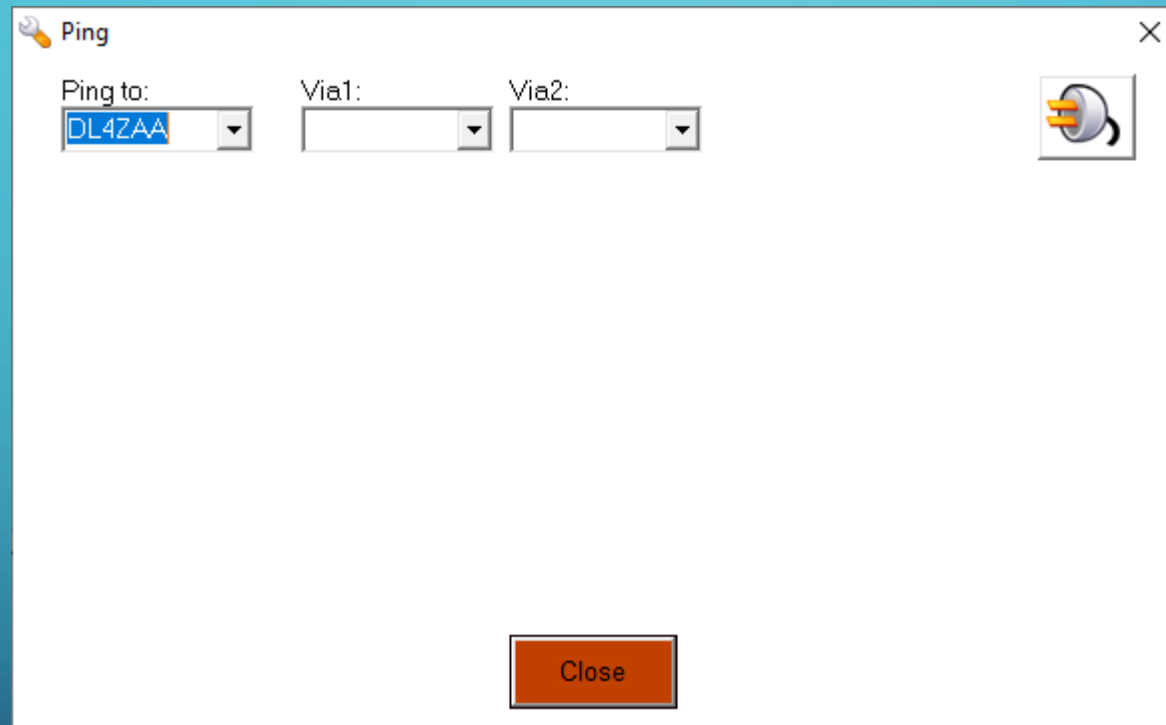
VU: -33 dB



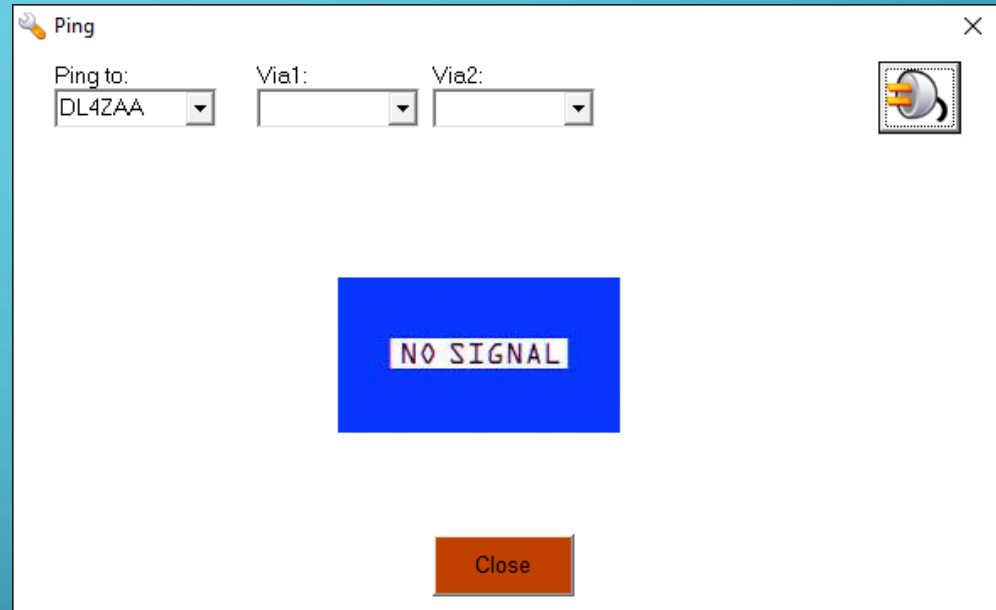
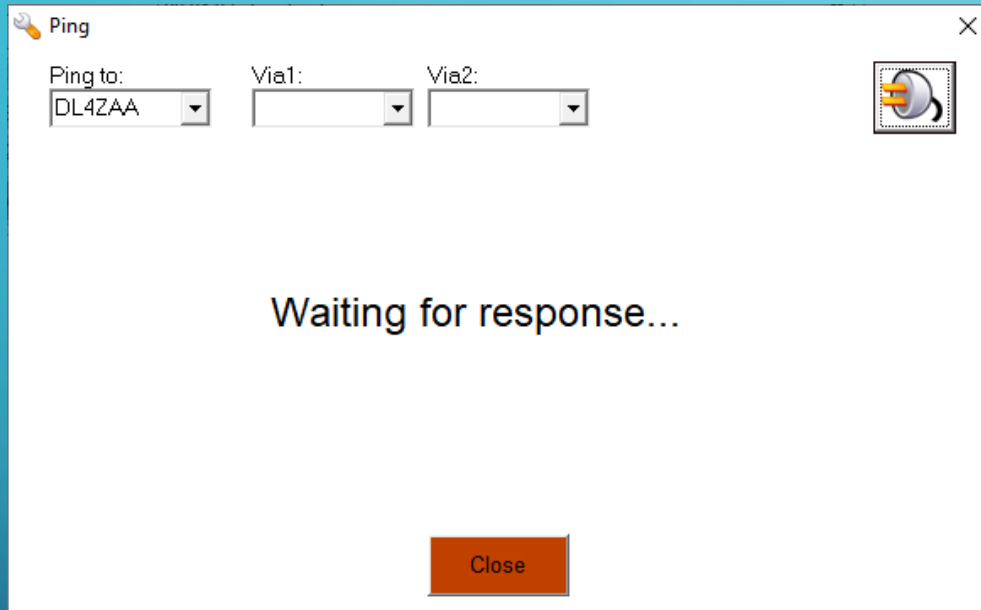
Turn the TX knob to the right

Close

VARA FM PING



VARA FM PING



VARA FM PING

Ping

Ping to: DL8FBP Via1: Via2:

S/N: +26.8
VU: -36 dB

DL6WAB

DL8FBP

S/N: +30.0
VU: -12 dB

Close

Ping

Ping to: DF1ZW Via1: DL8FBP-1 Via2:

S/N: +20.1
VU: -37 dB

DL6WAB

DF1ZW

S/N: +10.7
VU: -12 dB

Close

The background is a dark teal gradient. In the corners, there are decorative white line-art patterns resembling circuit traces or fiber optic paths, with small circles at the end of the lines.

VARA MODEM

Fragen?

VARAC (VARA CHAT)

- Was ist VarAC?
- Entwickelt von Irad Deutsch (4Z1AC)
- VarAC ist eine kostenlose, moderne HF P2P (Point to Point) Echtzeit-Chat-Anwendung für den Funkamateure
- Nutzt das VARA-Protokoll
- Aktuelle Version 8.0.6

VARAC 8.0.6 FUNKTIONEN

- Beacon (Bake)
- Gruppenchat via Broadcast Meldung
- Einzelchat via Connect
- V-Mail (E-Mail via Funk und Repeater Funktion)
- Repeating (im VARA Modem Rufzeichen mit SSID (-1) eintragen)
- Filetransfer kleinerer Dateien

VARAC 8.0.6 FUNKTIONEN

- Alarmmeldungen
- Automatische Pfadsuche (Pathfinder)
- LH (Last Heard) Abfrage bei der Gegenstation
- Info Abfrage bei der Gegenstation
- Frequenz Schedule (HF)
- Band Hopping (HF)

VARAC GUI 8.0.6

VarAC by 4Z1AC (V8.0.6) UTC: 2023-08-13 06:59:40 Advanced mode

Settings Tools Logs Resources About

FREQUENCY **144.775.000** Profile: **VarAC** VarAC Log

SLOT FREQ SCHEDULE OFF

CF DL8FBP VIA DF1ZW-9

CONNECT MODEM CONNECT PING

DISCONNECT MODEM DISCONNECT ABORT

TUNE CALL CQ END CQ

Disable PTT SEND BEACONS

Beacons Time diff view CQ calls

Bnd	TΔ	Callsign	SNR	Bnd	TΔ	Callsign	SNR	Slot

VarAC Log

06:59:01 - Opening com port
 06:59:01 - Away status set to false
 06:59:01 - Setting away status to false (auto)
 06:59:01 - VARA version: VARA FM v4.2.9

VARA Log

06:59:20 - BUSY ON
 06:59:20 - BUSY OFF
 06:59:33 - BUSY ON
 06:59:33 - BUSY OFF

In QSO with Duration:

Bnd	Time	From	To	Via	SNR	Broadcast message
2m	20:53	DL8FBP	ALL		+28	Ich wünsche Euch noch einen schönen Abend.
2m	20:53	DF1ZW	ALL		+28	Bis die tage
2m	20:53	DL6WAB	ALL		--	Bis Morgen fürh zur OV Rundel! 73

Graph Last Avg Mine Send 'is typing'
 SNR(db) Mute all sounds
 I'm away (Auto)
 Verbose SNR

QSY #

SEND VMAIL
 BROADCAST
 PSK REP. MAP
 SEND FILE
 PATH FINDER
 SNR INFO
 LH.P FS.P

Currently sending In queue

CALLSIGN SNR-S SNR-R BAND NAME LOC QTH MyPWR START TIME END TIME

New message Gestures/Tags

TX **RX** 0/0 IDLE DL6WAB **ALERT** NO NEW VMAIL RELAY Outbox: 0 Parking: 0

VARAC FM KONFIGURATION (IC 910)

My Information

	Special prefix	Your callsign	Special suffix
Callsign:	<input type="text"/>	<input type="text" value="DL6WAB"/>	<input type="text"/>
Example:	<input type="text" value="W9"/>	<input type="text" value="4Z1AC"/>	<input type="text" value="QRP"/>

[How complex callsigns work?](#)

QTH:

Name: Locator:

RIG:

Power (W):

Antenna:

Use the following tags during a QSO or in your canned messages to share your information:

<CALL>
<QTH>
<NAME>
<LOC>
<RIG>
<PWR>
<ANT>

SAVE AND EXIT

VARAC KONFIGURATION (IC 910)

Settings

PTT Configuration

CAT OmniRig DTR/RTS FLRig VOX/None

TEST PTT ON PTT OFF

CAT Configuration

COM Port TCP

Port COM4 Baud 9600 Parity None DataBits 8 DTR L StopBits 1 RTS L Host 127.0.0.1 Port 60000

Frequency Control

CAT OmniRig FLRig None

Load last freq. Offset Hz (?) 0 Read freq. every 2 sec

Antenna tuner OFF

FM-D 7105000 TEST

FLRig Host localhost Port 12345

DTR/RTS Port COM3 Type RTS

OmniRig Rig# 1

VMail Relay notification (?) Allow parking (?) Allow path finder (?)

VARA Modem Configuration

	IP/host	Main port	KISS port
VARA modem type	127.0.0.1	8300	8100
VARA file path	C:\VARA FM\VARAFM.exe		
VARA monitor path (?) (Optional)		Port 8350	

QSO Configuration

Call ID interval (min) 10 Allow last heard peeking Allow non-ham callsigns Allow incoming pings Allow info request Auto QSY Band skip (F) Load broadcasts history Auto accept verbose SNR

Auto disconnect 5 Show distance in KM Callsigns block list Auto away in 10 minutes

File Transfer

Incoming file size limit (bytes) 10000 Incoming files directory C:\Funk\VarAC VHF\In Outgoing files directory C:\Funk\VarAC VHF\Out

DX Cluster uploads

Enable TEST Host ve7cc.net Port 7373 Username DL6WAB Password

Beacons / CQs

Skip CQ slot selector

Beacon interval (minutes) 10 Digipeat via Load last heard history ON CQ Slot wait (seconds) 300

Logging

ADIF file C:\Funk\VarAC VHF\VarAC_qso_log.adf Submode VARA FM 1200 Load history upon connection Send log NONE IP Port

PSKReporter

Upload Self report Custom map &timerange=21600&s

Misc.

Debug mode Linux compatible mode

SAVE AND EXIT

CAT Test Error Log [\(?\) I'm having trouble with CAT control](#)

[DOWNLOAD latest CAT command file](#)

VARAC GUI 8.0.6

VarAC by 4Z1AC (V8.0.6) UTC: 2023-08-13 06:59:40 Advanced mode

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CONNECT MODEM

Disable PTT

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VARA Log

06:59:20 - BUSY ON
 06:59:20 - BUSY OFF
 06:59:33 - BUSY ON
 06:59:33 - BUSY OFF

In QSO with Duration:

Bnd	Time	From	To	Via	SNR	Broadcast message
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2m	20:53	DF1ZW	ALL		+28	Bis die tage
2m	20:53	DL6WAB	ALL		--	Bis Morgen fürh zur OV Rundel! 73

Graph Last Avg Mine Send 'is typing' Mute all sounds I'm away (Auto) Verbose SNR

SNR(db)

QSY

Currently sending In queue

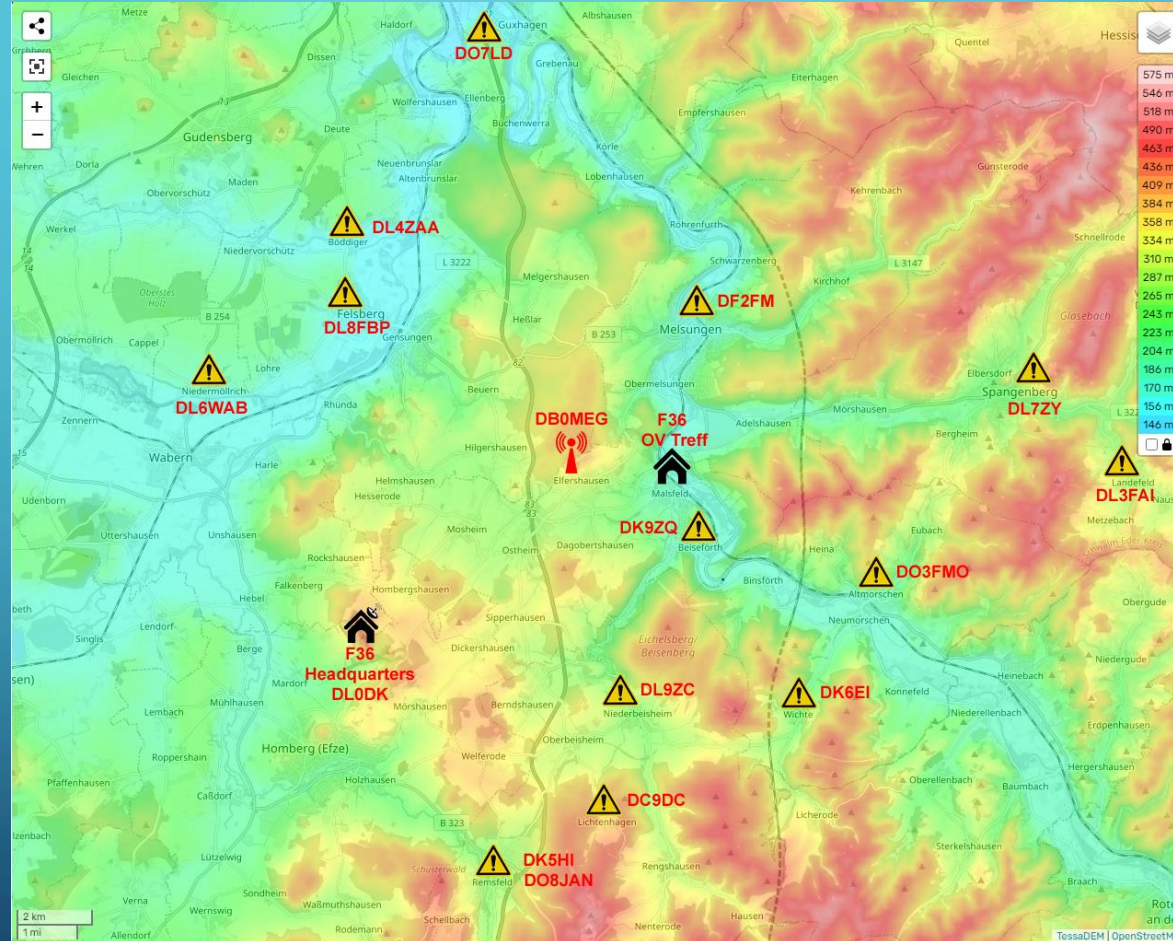
CALLSIGN	SNR-S	SNR-R	BAND	NAME	LOC	QTH	MyPWR	START TIME	END TIME
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

New message Load canned message:

Auto log QSO Enter to send

TX **RX** 0/0 IDLE DL6WAB **ALERT** NO NEW VMail **RELAY** Outbox: 0 Parking: 0

VARAC GUI 8.0.6



VARA UND VARAC LINKS

- <https://rosmodem.wordpress.com> (VARA Modem)
- <https://www.varac-hamradio.com> (VarAC Software)
- <https://www.dl6wab.de> (Funktionsbeschreibung)



VARAC

Fragen?

