



APRS[®] multi I-GATE

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Station DB3FAT

Version 1.17

Overview	Comm	Modem	Station	IGate	Digipeater	Network	Dynamic DNS	Mail	WX	Messages	Display	Restart
Monitor	MHeard	Status	Changelog	About	Help							

Welcome!

View page 1 by remote control via Browser

APRS[®] multi-function I-GATE

Operators manual

technical status: June 2015

Version 1.17

- start up
- I-GATE functional description
- I-GATE settings
- configuration guidance
- automatic firmware update
- secure and restore configuration
- interface PIN-assignment
- send-receive modules 2m and 70cm
- diplexer for 2m / 70 cm duoband antenna
- 70cm frequency load shedding modul 9k6 Bd.
- ADS-B avionic aircraft

- PREPARED FOR ADDITIONAL OPTIONS
- **AIS marine Automatic Identification System**
- **Dual channel DSP Unit for 300 / 1200 baud**
- **Real Time Clock**

view on display



view on connections



ant. trx1+2

KISS

wx reset modem

on-off switch

LAN 12V dc

Instructions for initial start-up of the I-GATE.

Changed settings must be saved on each page. (save)

To save the settings permanently, click to the „restart“ tab and click then to “save permanent and restart”.

NOTE: If TRX modules are installed, always connect the antenna or a dummy load.

- 1.0 **Tab Overview** Most parameters are preset at the time of delivery. (default)
- 1.1 Apply a DC voltage between 8-15 volts / 200 mA to barrel connector socket 5,5 x 2,1 / 2,5 mm and switch on.
- 1.2 The display is now active and displays various information consecutively.
- 1.3 Wait for the network settings page to appear and read the IP. (2nd line left)
- 1.4 Enter the IP into the browser. You will get immediate access to the I-GATE.
- 1.5 In order to open the tab 2 to 15 a password is required.
- 1.5 As basic settings enter here “**admin**” and “**password**”. Please change the password.

- 2.0 **Tab Comm** Go to **presets** and select there a preset kiss device, Use the same baud rate as used for KISS device.
- 3.0 **Tab Modem** Go to **intern modem** and select 300 baud for short wave or 1200 baud for VHF.
- 3.1 For TRX1 or TRX2 (option) set frequency and baud rate 1200 or 9600 baud.

- 4.0 **Tab station** Enter call, latitude and longitude from APRS.FI and check entries. The locator is automatically calculated according to **save**.
- 4.1 Customize beacon comments for own texts. Set schedule day and time.
- 4.2 Select icon and enter status text.
- 4.3 Enter radio time interval for sending via HF. (distance less than 10 minutes will be locked)
- 4.4 Enter internet time interval for sending via the internet.

- 5.0 **Tab I-GATE** the servers are from top to bottom. If necessary, add server.
- 5.1 Enter validation number. Registration required <http://www.apritch.myby.co.uk/uiv32.htm>
- 5.2 EXTRA log on text for example: Filter m/15 b/call/call p/D/VE/P (this entry is optional).

- 6.0 **Tab Digipeater** Enter *wide1-1, wide2-2* as path entries. No APRS, no relay, no trace!
- 6.1 TRX1 Module 2m (option) for 1200 baud or 9600 baud.
- 6.2 TRX2 module 70cm (option) for 1200 / 9600 baud. (usable as frequency discharge module)
- 6.3 Waterfall spectrum from audio frequency spectrum as optical adjustment aid for RX on 30m/20m-band.
- 6.4 Set routing I-GATE filter. (firmware is here revised)

- 7.0 **Tab Network** Enter station call and port entries, I-GATE is also accessible via browser.
- 7.1 Check port and release with call in your own router, Change password and write it down.
- 7.2 Assign Fixed IP, In this case a password will be requested.

- 8.0 **Tab Dynamic DNS** Enter remote maintenance data so that the I-GATE can be contacted worldwide.

- 9.0 **Tab mail** Enter here your E-mail address. (no SSL)

- 10.0 **Tab WX** Select Weather Station Setup. Enter latitude and longitude,
- 10.1 Select send option and select time interval for sending weather data

- 11.0 **Tab messages** Enter destination callsign, write and send text message.
- 12.0 **Tab Display** Select display, select brightness and display duration, Leds on or off.
- 13.0 **Tab Restart** secure configuration data before the implementation of a firmware update by storing them on the hard drive of the remote PC's, then "save permanently and restart".
 - 13.1 After the firmware update access this backup file and restore configuration.
 - 13.2 Indication whether there is a new firmware update available.
- 14.0 **Tab Monitor** display of APRS packets live on all interfaces.
- 15.0 **Tab MHeard** Display of the last 20 stations heard.
- 16.0 **Tab Status** Waterfall spectrum displaying the live updated I-GATE and wx-data
- 17.0 **Tab Change log** info about firmware updates.
- 18.0 **Tab About** list of developers of the I-GATE.
- 19.0 **Tab Help** Link to help file. (not yet active)

APRS[®] multi I-GATE

APRS[™], Automatic packet Reporting System, is a registered Trademark of *Bob Bruninga WB4APR*

The I-GATE supports the following functions described in abbreviated form:

APRS-Digi and I-GATE for short wave with external receivers/transceivers for the 20m and 30m frequency band.

APRS-Digi in 2m-band with internal 2m-TRX extension. (Option with internal 15dBm TRX)

APRS-Digi Internal Modem: for e.g. short wave at 300 baud or 1200 Baud for VHF/UHF.

APRS-Frequency load shedding by 70cm link system with a 70cm module 9k6 baud. This leaves the 2m frequency free for mobile stations and digipeaters.

Messages can be read in the display. The broadcasting takes place via browser.

The 300 Baud Mark- and Space- frequency is adjustable, (frequency spacing retained)

KISS-interface supports Argent Data Modem OT2/3 with ext. 2m TRX extension. (or old TNC2)

Mini-DIN connector for radios, RJ45 for network, Barrel connector socket 5,5 x 2,1-2,5 mm for 12Volt dc. RJ12 connector for weather stations. There are 3 brands preset. More can be programmed on request.

Test tone output to adjust the TRX modulation on the Mini-DIN connector.

Remote control via firefox or windows browser for status, with waterfall audio spectrum to display the packet signals.

Global password protected access via a browser.

Dynamic-DNS setup for global accessibility via world wide web.

Station call, own weather station call, 5 beacon texts, 1 status text can be configured.

In the event of failure of an APRS-T2, I-GATE is automatically connecting to the next T2-servers in the server list. You can enter further T2 servers in the list.

By ticking a configurable matrix switch you can determine the RX / TX way of data.

The multi-color display monitor displays all routing channels of the packets.

Status mail from I-GATE to your own e-mail address displaying a status list containing all data since the last reset.

Configuration backup with possibility to restore the previous configuration.
Updating on the restart page to update firmware with version information.
MH-list of included stations.
Display of all operating parameters on the status page.

In the I-GATE built-in OLED-display shows in real-time the following data:

Waterfall audio spectrum range 300 baud or 1200 baud, Station call from I-GATE, used firmware version, name of the connected T2-server, all network data, DHCP on/off-screen, time online since last reset of the server connection, right to dismiss display tables shown with display duration in sec, 3 light intensities, Greenwich Mean Time (GMT) in UTC, automatic time synchronisation by time server, whiteboard to assignment of the bi-color LEDs to soft modem, KISS, TRX1 on 2m, TRX2 on 70cm, green for "decoded" and red for "send", power and LAN. Sum of included and send APRS-packets since the last reset listed separately by intern soft modem, KISS, TRX1, TRX2, I-GATE and the internet. Weather station data with pictograms for "fair", "changeable" and "rain", input and output of text messages. The received text messages are displayed below the station call in plain text in the OLED-display, or displayed in the Browser.

The complete circuit design, the programming of the firmware and the production are exclusively made in Germany

1. Overview – Overview (Tab 1, as well as tab 14 – tab 19 require no password)

The new, innovative multifunction I-GATE, was created from the previous model LSD-LAN-DIGI device. Many users have expressed the desire to purchase an I-GATE, which operates without a PC or additional software. This wish can now be granted in full. During the many years of development innovative features have been integrated in the I-GATE. The processing power of the APRS-packets have been significantly improved by modern circuits and tailor-made special firmware.

2. Comm setup - KISS-interface configuration. (tab 2-13 need a password)

User name (fixed) is "admin", password default is: "password" (please change)

The **necessary configuration settings** for external transceiver or modems are made here. There are various devices with KISS-interface are assigned under *presets*. Own settings and tests are possible under "custom". Please select for the external devices and KISS-interface a high baud rate but take care for them to match. It is usually not necessary to change the preset settings.

If you want the traffic in the KISS-mode to be switched off, you only have to remove a kiss-hook in the matrix and click save.

After each change of configuration click "SAVE" on each page in the lower left part of the display and then click on "Save permanently and restart".

If you do not use a KISS-TNC2 interface please read more in point 3.

To guarantee an interference-free operation the TNC2 must be preconfigured on a free frequency or without audio frequencies – You can use for this Windows Hyper Terminal, UI-View or Paxton. Each line settings start with "ESC" and the following commands:

1. Esc QRES performs the command to reset the TNC2 (first perform a reset)
2. Esc I MYCALL The station call in use must be entered here.
2. Esc C AGPE01 via wide1-1, wide2-2. The TNC2 uses the terminal identification to transmit.
3. Esc M n turns off all monitor commands. Packets to control the TNC2 should *be off*.
4. Esc M U turns on the non-logged packets which are needed for APRS.
5. \ # 27K switches into the KISS-mode, when successful the LEDs in the TNC2 flash 3 times. Further TNC2-commands can be found at the following URL of DB2OS.
http://www.pocket-packet.de/thefirmware2.7_befehle.txt

During reception of an APRS-Packet (without DCD) the TNC2 is working correctly if the yellow LED lights up. Without DCD the squelch must be closed, so that the TNC2 can send. For each received APRS-packet an LED flashes briefly.

3. **Modem – Internal Modem**

Set baud rate for internal modem: For VHF 1200 baud, for short wave 300 Baud. At 300 Baud and the mark and space frequency couples can be moved. The volume for input (audio spectrum) and output (microphone) is adjustable. in % “*Send Testtones*” transmits on the *internal modem*, if the hook is set. Test tones are switched on/off by pressing the enter key. TX delay between continuous wave and data is adjustable in msec. (400)
A slot for DSP-modem (option) is available for later installation.

After each change press SAVE and then save with “save permanently” and “restart”.

TRX1 can be operated in 2m or 70cm Band depending on the module used. The frequency is adjustable. The baud rate can be selected with 1200 Baud or 9600 baud. depending on the module in use.

- ### 4. **Station - radio station**
- Enter call sign. Enter your own coordinates according to the specification. The exact coordinates can easily be checked and taken from APRS.fi. The QTH-locator is calculated after restart or clicking on the button.

Unproto port is 1
Unproto address is APGE01. This address is the permanent name of the I-GATE.
Compressed beacon checked, the coordinates will be sent in a compressed form.
Beacon comments checked, beacon texts will be sent in the preset intervals in schedule
Time Schedules 1 - 5. Please keep the beacon texts short und use economically on shortwave. You can reduce the texts further by inserting day and time. The same goes for statuts texts.
Icon Selection of the icon to be sent (soon with overlay)
Status report/beacon comments send timing. Checked sends on short wave, delayed on KISS.

5. **I-GATE - connection between the Internet and radio**

Server Address several T2 server addresses can be entered here. The address is listed in order of precedence. In case of server failure the next server is connected automatically. If the data transit is low, use a different server. The 3 buttons below the server addresses are used to change the ranking of the server.

New Server New T2 server addresses can be entered here.

Validation Number Is required to transfer data to the server. This number can be registered under <http://www.apritch.myby.co.uk/uiv32.htm>.

APRS server log on required check automatically connects with the server.

Enable Auto Reconnect check to connect again after disconnection.

The extra log on Text changes the server behavior by Java Filter commands.

Filter P/call, CALL CLOSED sends these stations directly via HF on the I-GATE.
Disconnect temporarily Check interrupts the connection to the server for a short time so that changes can take effect.
See *Filter commands at:* <http://www.aprs-is.net/javaprfilter.aspx>
Filter example: filter m/30 shows all stations within a radius of 30 km.

6. **Digipeater - Forwarding data on the same frequency**

Enable RF Digi Checked, turns on the forwarding of data via HF.
Alias-Call WIDE1-1, WIDE2-2 is sufficient for the whole world.

Routing

The hook **I-GATE to KISS** Opens the way of I-GATE to KISS - TRX extension.
The hook **KISS to I-GATE** Opens the way of KISS to APRS-server.
The hook **internal modem to I-GATE** opens the way KW 300 Baud to APRS-server.
Data from FM on shortwave are not to be linked under any circumstances. This would cause a continuous carrier.
The hooks for TRX1 and 2 set accordingly. There should be no loops otherwise this will cause a continuous carrier. (Ping Pong effect).
Routing I-GATE Filter CALL=NONE ignored this call.
The firmware is here being revised.

7. **Network Settings - Network Setting.**

Host Name This name must be entered in the Dynamic DNS service providers.
HTTP Port For example 8090. This port is to be entered at the Dynamic DNS service providers
Host Password The password is the same as used for the dynamic DNS service providers.
This Port must also be entered in your own router (Port Forwarding router)
Enable DHCP If the router has registered a static IP-address for the I-GATE, no mark needs to be set. (This is safer) with hook the router automatically assigns an IP address to the I-GATE.
IP address Enter the self-selected in-house-IP: mostly 192.168.xxx.xxx
Subnet Mask 255.255.255.0
Gateway, Primary DNS, Secondary DNS 192.168.xxx.xxx according to the setting in your own router.

8. **Dynamic DNS Services** IP updated by DNS provider for IP-change. DNS is the Domain Name System. Its primary role is to respond to requests for name resolution.
Whit dynamic IP address: This is about renewed every 24 hours by forcing the provider. The external DNS service is aware of this change and then automatically connects the external inquires with the new IP, the router has received from the provider.
Dynamic DNS Services at e.g. www.no-ip.com with: user name and password login. Add linked to the provider host.

9. **Mail - E-mail**

Status Mail Settings Enter the own E-mail account information here
Not all internet service providers support this service.
Mail send time Enter time in UTC
Send mail Hook set for *send*

Mail Recipient *Enter E-mail address*
Mail address *Enter E-mail address*

SMTP server *mail.arcor.de (example)*
SMTP port *25 (arcor)*
User name *name of mail account*
Password *mail account password*

10. WX - Weather

Stations Type *Choose the meteorology station type in the drop down list.
on request appropriate software will be installed.*

WX Call Sign *Use "station call-6" with SSID -6 for a weather station.*

WX Latitude *50° 23' 20N Enter the corresponding coordinates (ex.)*

WX Longitude *008° 57' 15E -as before, please note the spelling.*

Smart WX *checked - only changed weather data will be sent.*

Send Options

Interfaces *select desired interface.*

Radio (minutes) *2 updates are sufficient per hour, enter 30 (min).*

Internet (minutes) *- as before, but enter here 10 (min) -*

11. Messages

Send Message

Destination call *open I-GATE with a web browser and enter the (recipient) call sign of an
APRS-station. (with SSID e.g. CALL-2)*

Message Text *sends the text message with 40 characters.
You can also be send messages successively.
The short message can be read on the I-GATE-display, or with a web
browser on the APRS.fi-page see releases.*

Send now *The click of this connecting bar causes the immediate
sending of the text message.*

12. Display

Display Pages *Enter the duration in seconds of the ticked display table.*

Show network *This panel should always remain visible so that the IP can be read
in case the I-GATE is not responsive. (or has received a new IP with DHCP)*

Show labels *Shows the assignment of the light-emitting diodes.*

Show Stats *Displays the sum of the forwarded APRS-packets.*

Show waterfall *The waterfall spectrum shows the audio - range of the RX*

Show WX *Displays the weather data of the connected weather station. (Option)*

Show clock *Shows in Greenwich Mean Time.*

Show S-Meter *Displays the S-Meter indicator for the TRX modules.*

Show Spectrum *The Spectrum shows the audio - level of the RX*

Brightness *the OLED-display is here switched on and the desired
brightness level of 3 is selected.*

Front LEDs

Enable LEDs *Here the LED's can be turned on and off*

13. Restart

Configuration *click here are the corresponding switch strips.*

Upload Config *search backed up I-GATE configuration file on PC/laptop*

Upload	Import again saved configuration file in the I-GATE
Download Config	backup of configuration file to PC
Restore Config	Restore factory defaults.
Save Permanently and restart	Save changes permanently and reboot.
Reset	
Restart Device	trigger a restart of the I-GATE.
Update	
Firmware update	Check for new software version Checking whether there is a newer version.

14. Monitor - Display

The monitor displays on 6 different colored panels from the bottom to the top in real-time continuous APRS-packages.

1. Upper panel lists the packets received on the KISS-interface (1200 baud).
Packets are sent via HF displayed brighter.

The 2. Panel lists the packets received from internal modem (300 baud or 1200 Baud).
packets sent on HF are displayed brighter.

The 3. Panel lists the TRX1 packets received by the modem, via HF
Sent packets are displayed brighter. (option with 2m or 70cm TRX module)

The 4. Panel lists the TRX2 packets received by the modem, via HF
Sent packets are displayed brighter. (Option with 2m or 70cm TRX module)

The 5 panel lists the TRX3 packets received by the modem, via HF
Sent packets are displayed brighter. (Option with AIS module only RX)

The 6. Panel lists the packets received with the I-GATE from ARRS-server via the Internet in blue. The packets transmitted via the I-GATE to APRS-server via the Internet will appear in light blue.

15. MHeard - stations heard

All stations heard on TRX-modules or Kiss-interface are listed here (the last 20 different calls are shown)

16. Status - Overview of all important I-GATE settings with waterfall spectrum.

A table with the currently set parameters is displayed here. By remote access with a browser the correct frequency location of the 300 Baud APRS-packet's can be checked here by a waterfall audio spectrum.

The weather data of a connected weather station (option) are also displayed here.

17. Changelog

Listing of modifications and extensions to the previous firmware version.

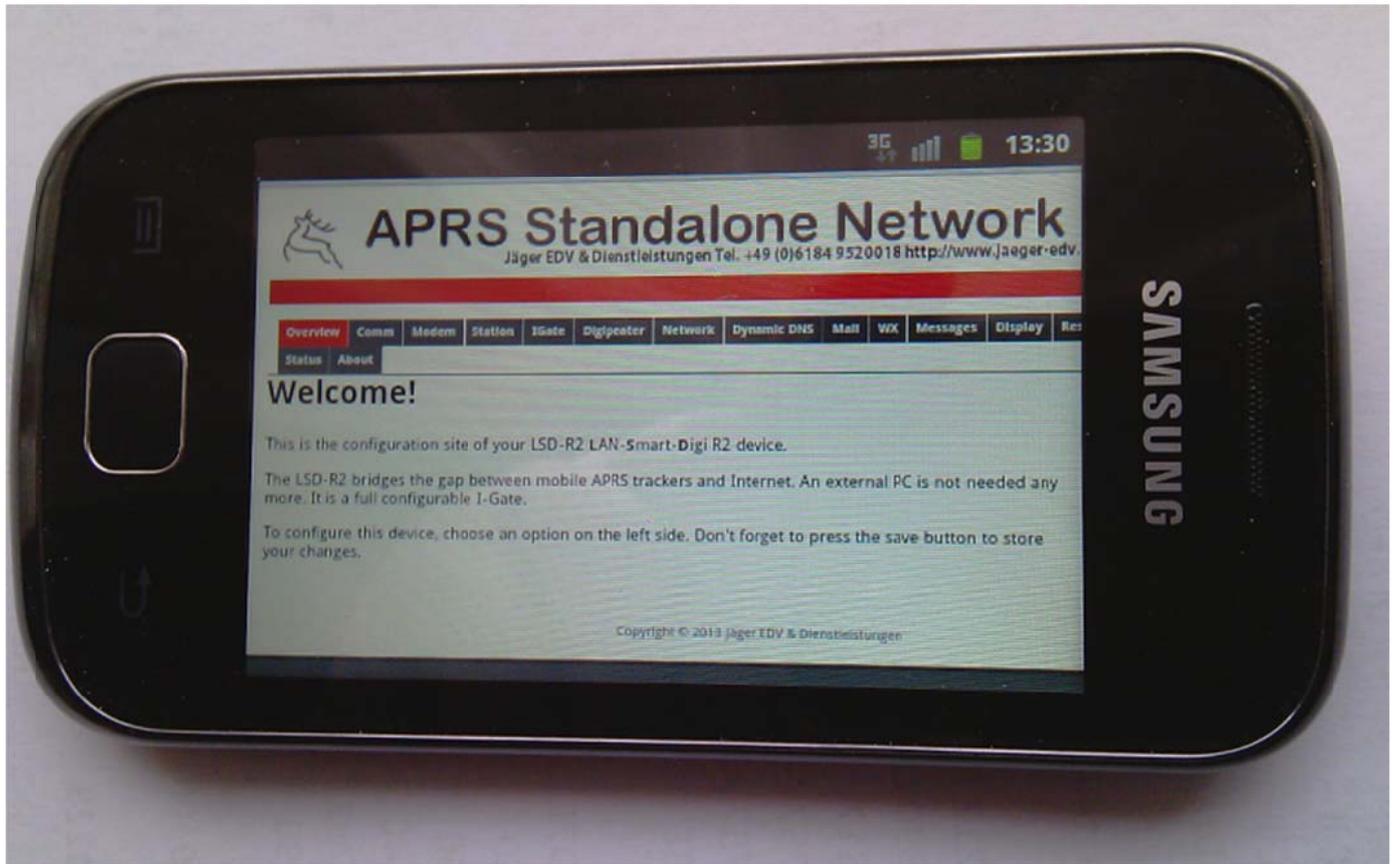
18. About - about the I-GATE

List of the developers of the I-GATE with E-mail address

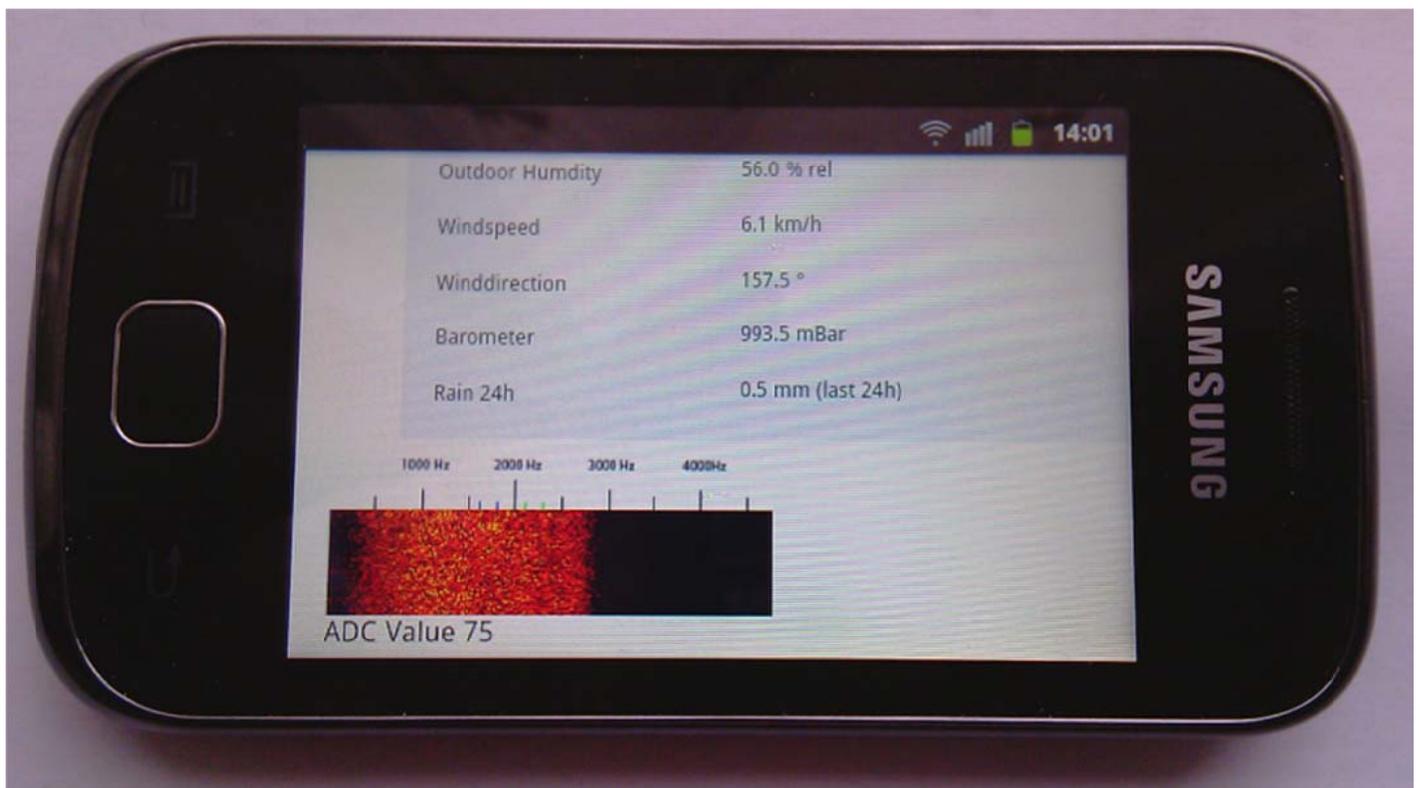
Each programming may contain hidden bugs. Please help us to remedy them.
A further development is also driven by feedback from users. Thank you for your cooperation.
The notifications will be, as far as possible, incorporated in the next update.
Please report incidents and suggestions by e-mail to:

info@jaeger-edv.de

The complete configuration can be easily carried out from your smartphone.



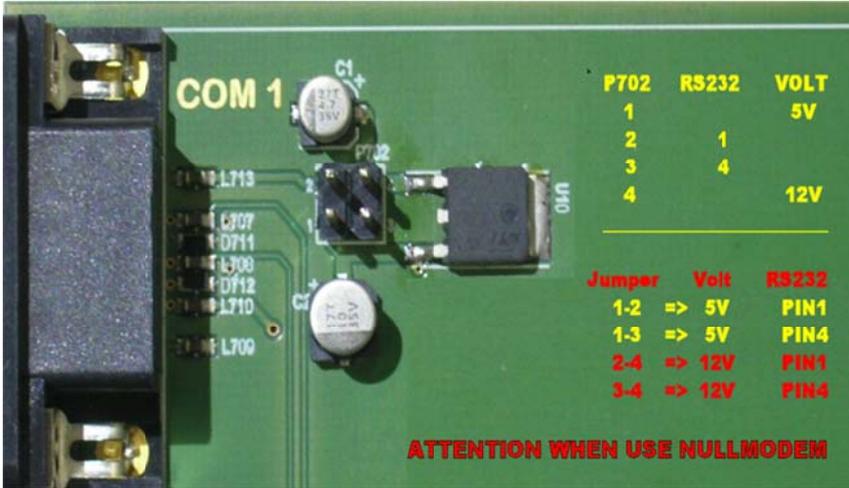
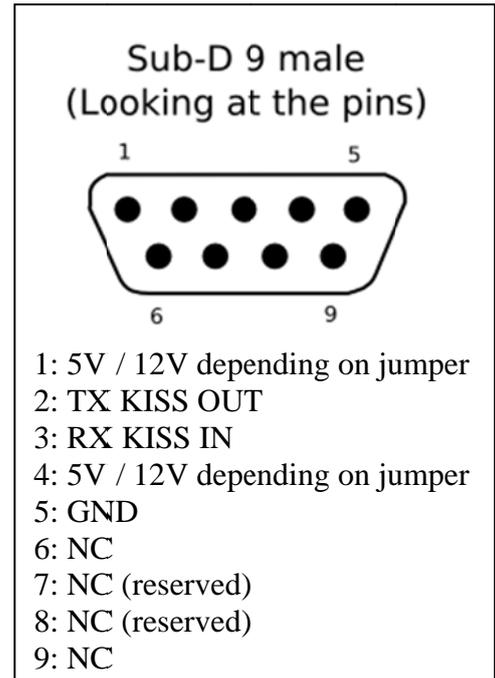
The waterfall spectrum is also quite good to see and the frequency settings on the TRX can be easily controlled. You can also see some data of the connected weather station.



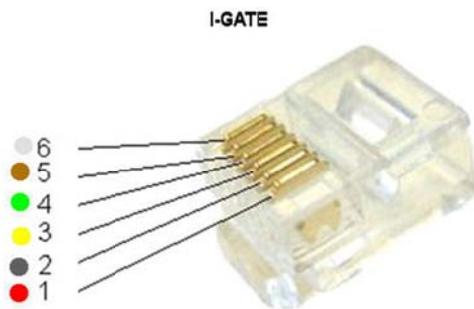
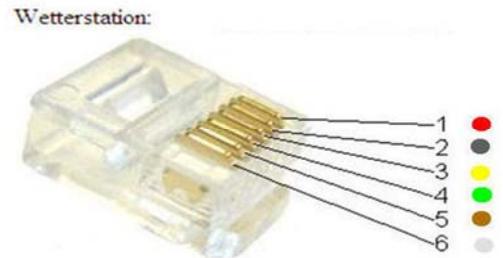
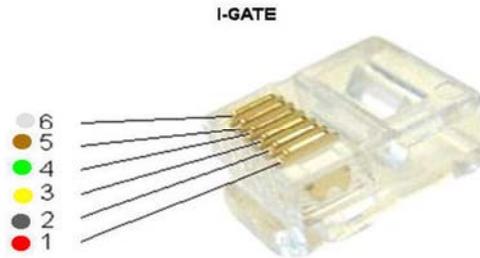
PIN-assignment of the interfaces

User name: **admin**
 Password: **password**
 The password can be changed.

12V DC-hollow plug
 5,5 x 2.1-2.5 mm dia.

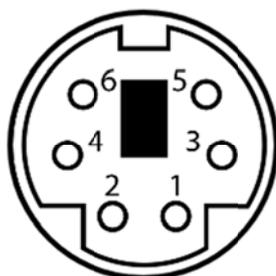


- 1: CTS
- 2: RTS
- 3: RX
- 4: TX
- 5: DTR
- 6: GND

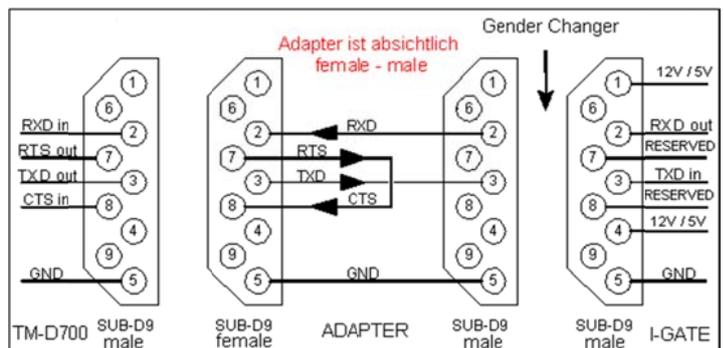


MINI DIN 6-pin data socket 300 Baud / 1200 baud,
 Directly to radios with this jack.

- 1: Audio Out
- 2: GND
- 3: PTT
- 4: NC
- 5: Audio IN
- 6: NC



Adapter for TM-D700 to kiss I-GATE





APRS® multi I-GATE

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Station DB3FAT

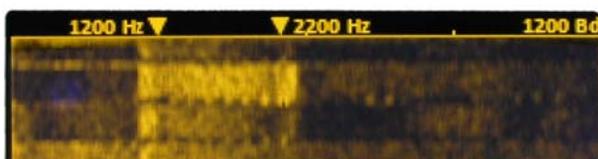
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Welcome!

APRS multi I-Gate
 by DB3FAT, DC1MD and DC4ZZ
 1.17 - TRX 2m AFSK - TRX 70cm (A)FSK - ADS-B

RX Softmodem
 TX TRX1
 RX TRX2
 TX LAN
 PWR



UTC **18:16**

1006.9mBar
 50.0%RH
 20.4°C
 8.6km/h
 202.5°

TRX1
 1 2 3 4 5 6 7 8 9 20 40 TRX3
 TRX2
 1 2 3 4 5 6 7 8 9 20 40

DHCP off MAC: 00:04:a3:751b:79
 IP: 192.168.10.5 1. DNS: 192.168.10.1
 Subnet: 255.255.255.0 2. DNS: 192.168.10.1
 Gateway: 192.168.10.1 HTTP Port: 8082



Translated by DG7CM 18.01.2015