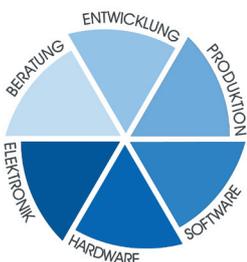


IP Interface

FT 636B



FunkTronic
Kompetent für Elektroniksysteme

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General Features

The **FT636B** IP Interface comes into play, if one or two radio base stations are to be remote controlled. The device will provide two ethernet ports (planned, currently just one) and will connect to up to eight remote stations/consols per ethernet port. This can be used for redundancy purposes (up to eight connections via different network paths) or for a total number of up to 16 remote consols.

Audio signals and control signals are converted to IP data packets and transported via local network (LAN), wide area network (WAN) or internet to the remote station. Using VoIP (Voice over IP) and RoIP (Radio over IP) technology practically unlimited distances can be covered.

Features

- Support of up to 2 radio base stations
 - AF In/Out (transformer balanced), 2-wire or multi-wire
 - PTT output (potential free relais output)
 - Squelch input
- 2 independent RS232
 - Remote transmission of data
 - Radio control
- 16 swithing inputs/outputs
- Two (planned) ethernet network ports supporting up to 8 remote stations
- Pilot signal decoder, encoder and filter
- Tone sequence decoder and encoder
- Web intereace for configuration via Internet Explorer, Firefox, ...
- Option
 - FMS/FFSK decoder and encoder

The FT636B IP Interface is available in two different housings.



- black aluminium flange housing



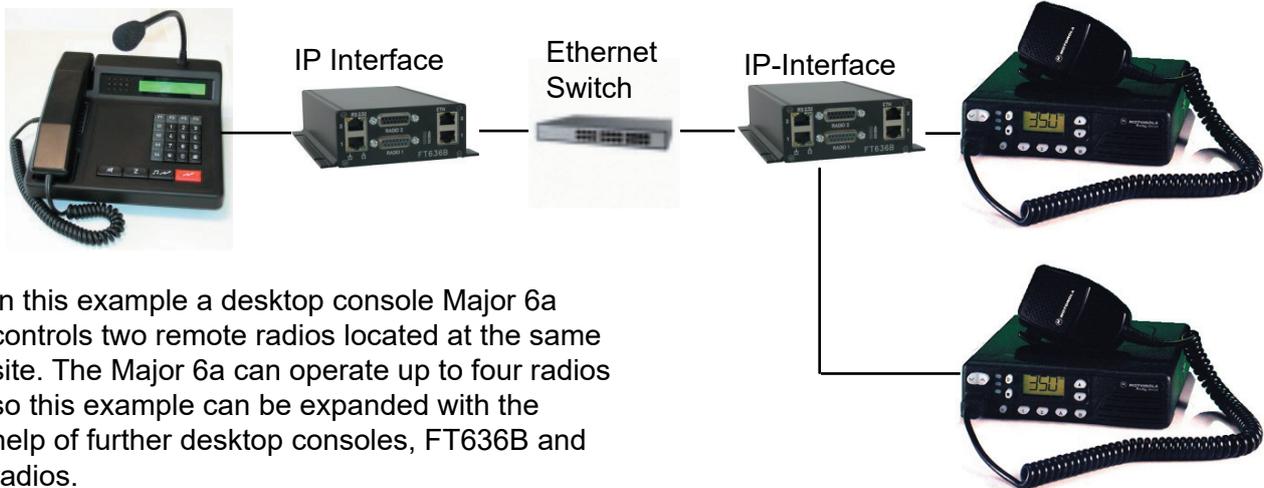
- 19" rack mount module

Configuration examples

Local network (LAN)

e.g. two base stations with one desktop console

Major 6a

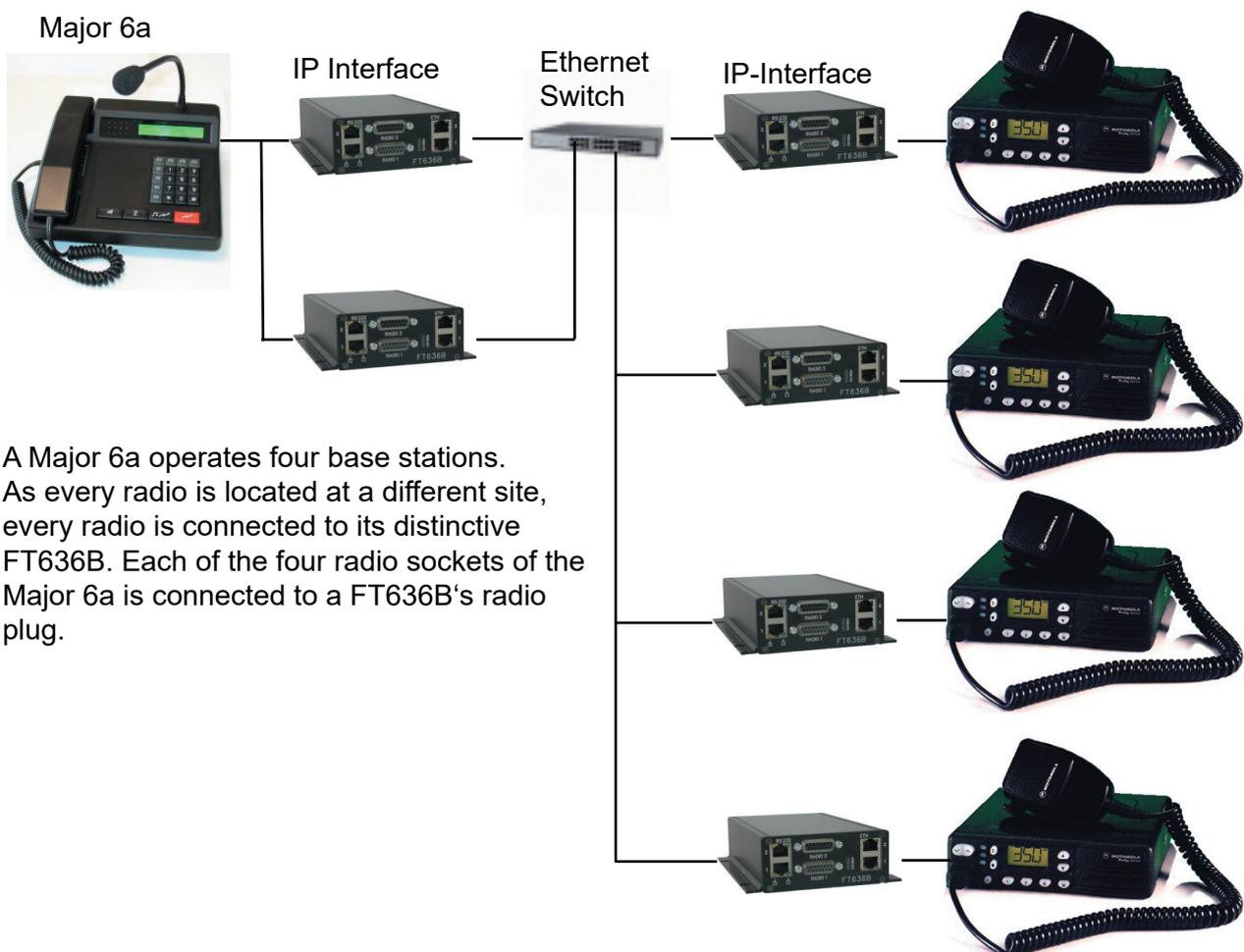


In this example a desktop console Major 6a controls two remote radios located at the same site. The Major 6a can operate up to four radios so this example can be expanded with the help of further desktop consoles, FT636B and radios.

Local network (LAN)

e.g. four base stations at different locations, one desktop console

Major 6a



A Major 6a operates four base stations. As every radio is located at a different site, every radio is connected to its distinctive FT636B. Each of the four radio sockets of the Major 6a is connected to a FT636B's radio plug.

Wide area internet connection (WAN, DSL)

The configurations in the above descriptions can of course be implemented using internet connection. The DSL lines have to have sufficient transfer rates.

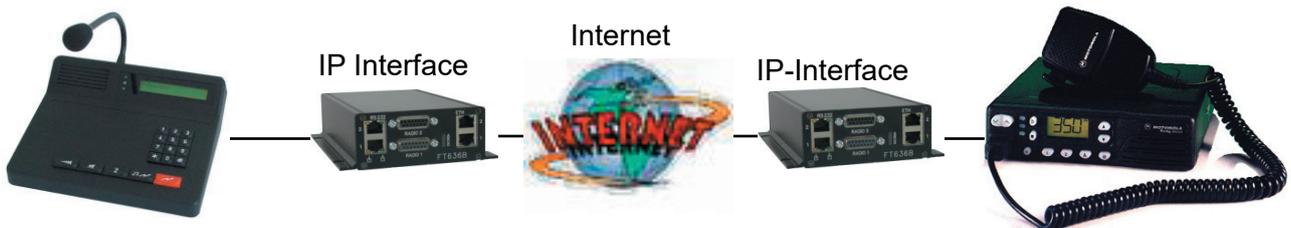
The following up- and download rates have to be considered:

- 100kBit/sec per remote connection

Internet (WAN, DSL)

e.g. one base station, one desktop console

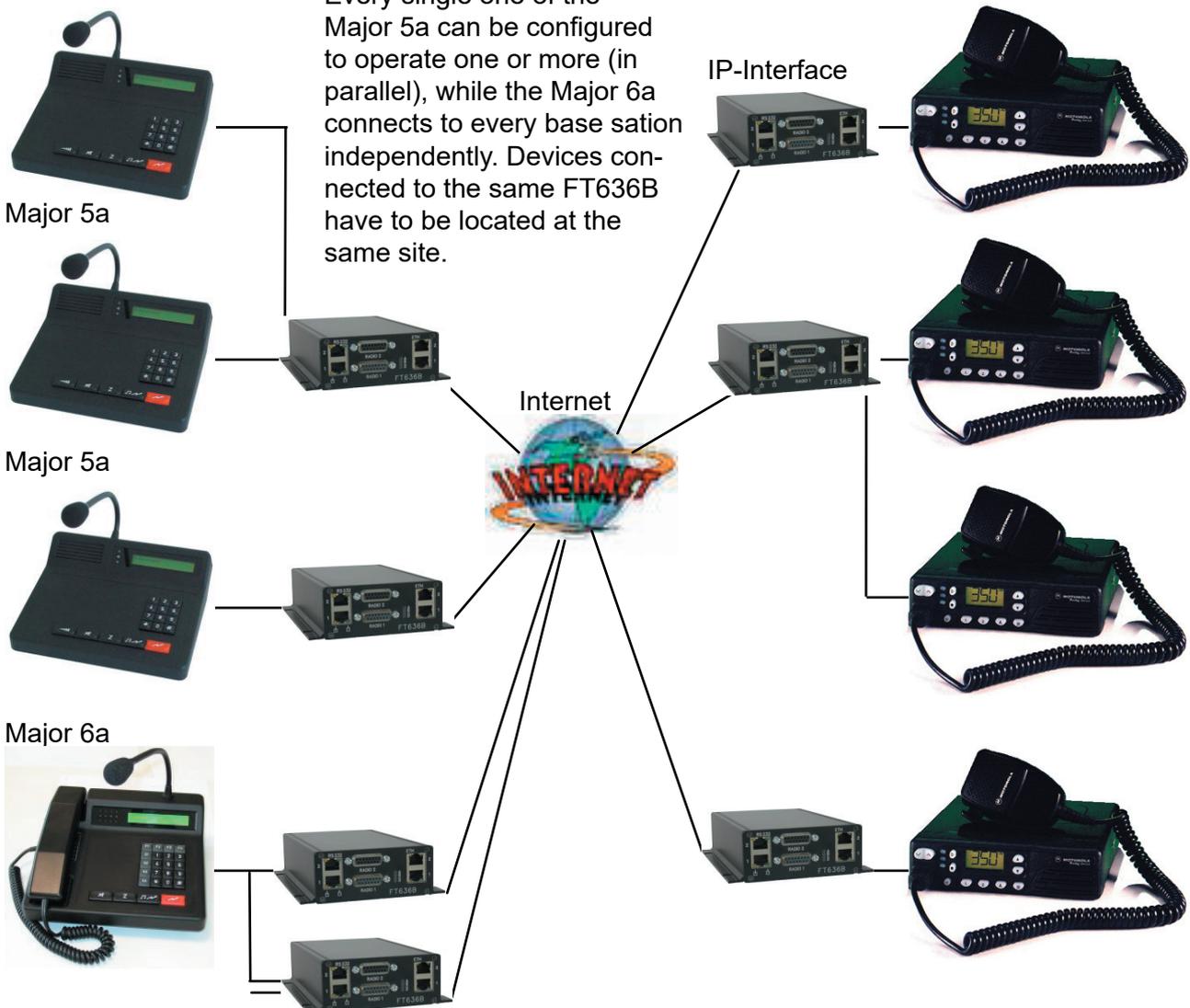
Major 5a



Internet (WAN, DSL)

e.g. four base stations, four desktop consoles, different locations

Major 5a



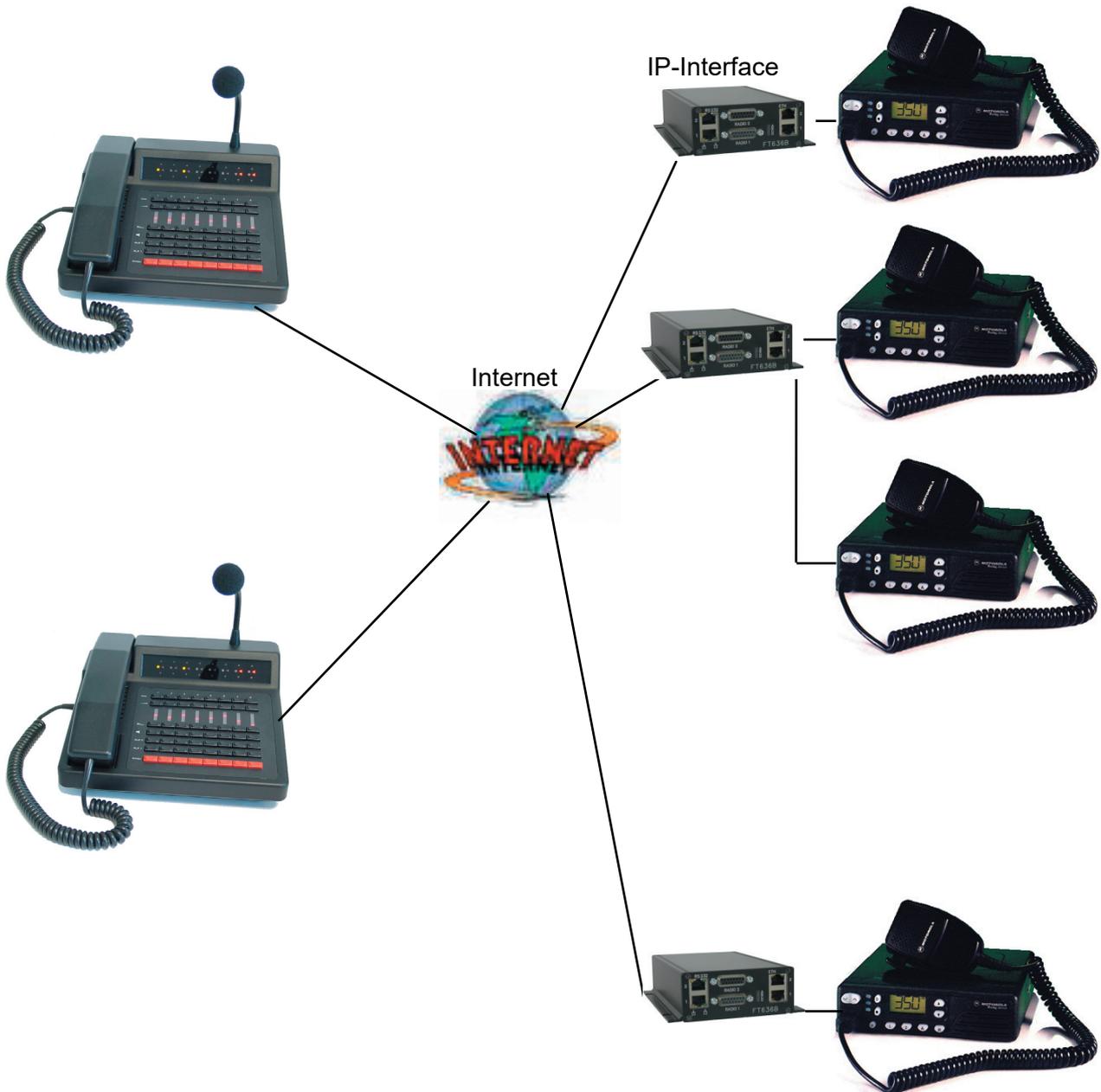
Every single one of the Major 5a can be configured to operate one or more (in parallel), while the Major 6a connects to every base station independently. Devices connected to the same FT636B have to be located at the same site.

Operation of Major BOS V (VoIP, built-in network interface) and FT636B

The Major BOS 1V, 4V and 8V provide a built-in ethernet / IP interface. Depending on the type (1V, 4V, 8V) it can connect to one or more FT636B IP interfaces. As an example the following schema shows the use of two Major BOS 8V with up to eight FT636B/base stations.

The radios can be situated at the same or at different locations. Two radios at the same location can share one FT636B.

In addition it is possible to set up more Major BOS 8V at different locations and connect them to the same radios.



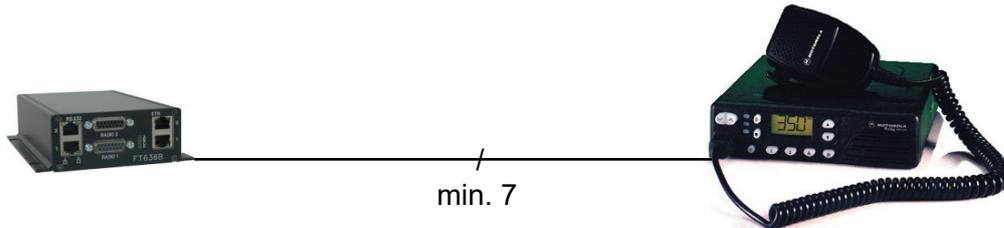
The manuals of the Major BOS1V, 4V und 8V can be found at:
<http://www.funktronic.de> -> Produkte -> mbosv.pdf or
<http://www.funktronic.de/pdf/mbosv.pdf>

Connectivity options

All presented radio connections can be realized as 2-wire as well as multi-wire technology. Therefore it is possible to integrate the FT636B in existing environments.

Multi-wire interfacing the FT636B

The FT636B IP interfaces are factory preset to support the multi-wire interface. For this, 7 conductors will be used: 4 x AF In/Out, 1 x PTT, 1 x Squelch, 1 x Ground). If radio channel switching, alarm or signalling inputs are to be used up to 16 more input-/output conductors will be necessary..

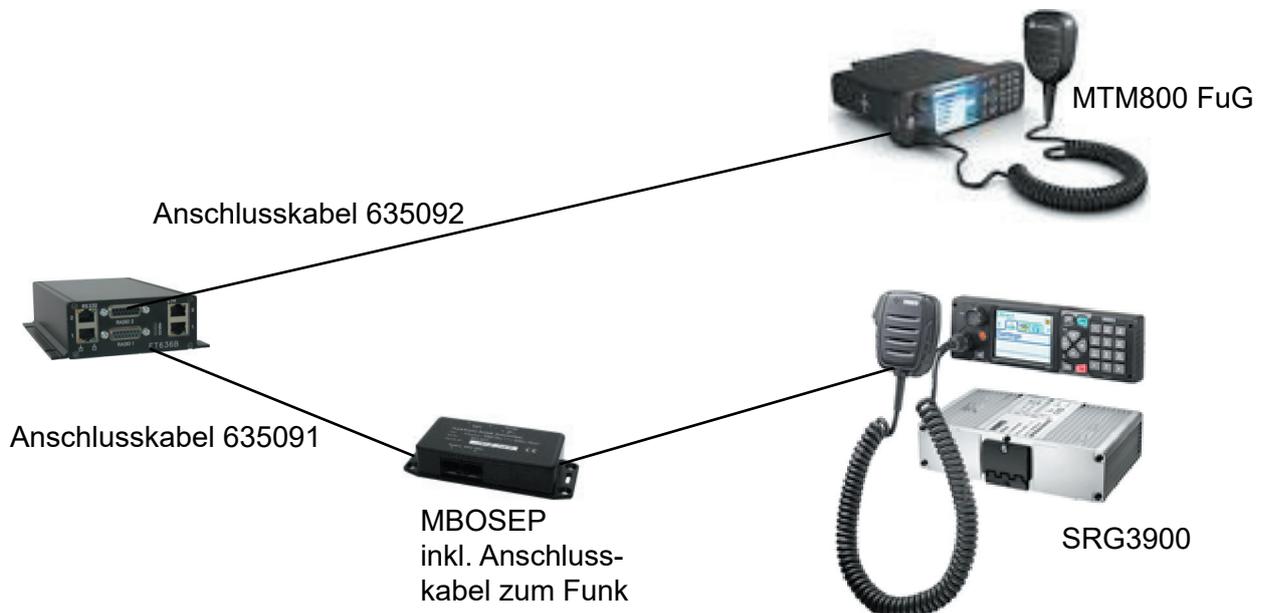


Connection to TETRA radios

if major BOS V are to be connected to remote rbase stations, FT636B have to be set up at the radios.

A Motorola MTM 800 Fug can directly connect to a FT636B radio plug. The pins to be used are the AF-In/AF-Out (11/12 and 4/5), PT-Out (2/3) and GND. The squelch signal to the Major BOS V will be derived by AF detection of the FT636B.

A Sepura SRG3900 must connect via an „Interface Major BOSx Sepura SRG 3900“ (MBOSEP). The interface registers the FT636B at the radio and generates the squelch signal to the FT636B, which in turn sends it to the major BOS V



2-wire interfacing the FT636 IP Interface

For use in existing installations that use 2-wire interfaces, it is possible to configure the FT636B to support this type of interface. In 2-wire operation the pins 4 and 5 of the 15-pin-D-Sub connector are used as common in- and output. PTT will be keyed as pilot signal (standard: 3300Hz tone).



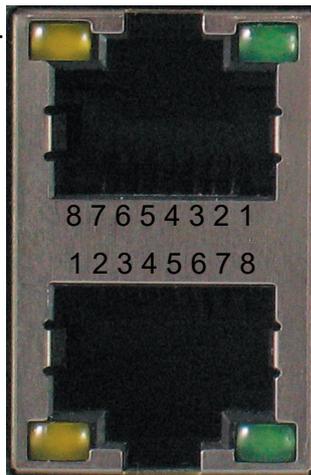
The following description of the connectors shows the pin out for the multi-wire operation. In 2-wire mode the pins 4 and 5 serve simultaneously as AF input and output. If a Major 4a/5a desktop console is to be connected, it has to be configured appropriate. The pins 7 and 8 are the Major's common AF input/output, then. They have to be interconnected to the FT636B's pins 4 and 5. The operation mode of the FT636B then should be set to simplex.

Connectors

RS232, switching in-/outputs - 8-pin RJ45-socket

RS232-2

LED
 Squelch input active or
 Pilot signal decided or
 AF decoded



LED

PTT relias on

RS232-1

Pinout RS232 1

- 1 - RS232 TxD (Output)
- 2 - RS232 RxD (Input)
- 3 - GND (In/Out)
- 4 - I/O 09 (In/Out)
- 5 - I/O 10 (In/Out)
- 6 - I/O 11 (In/Out)
- 7 - I/O 12 (In/Out)
- 8 - I/O 13 (In/Out)

Pinout RS232 2

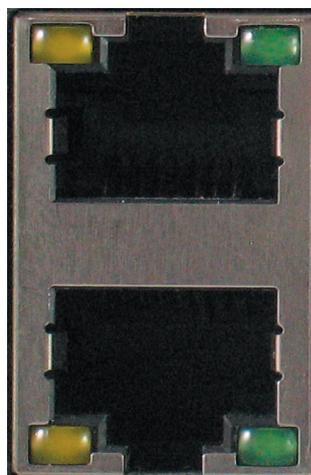
- 1 - RS232 TxD (Output)
- 2 - RS232 RxD (Input)
- 3 - GND (In/Out)
- 4 - I/O 17 (In/Out)
- 5 - I/O 18 (In/Out)
- 6 - I/O 19 (In/Out)
- 7 - I/O 20 (In/Out)
- 8 - I/O 21 (In/Out)

I/O 09 - 19 and I/O 17 - 21 are
 configured with Pull Up resistors by
 default.

Network connector, Ethernet - 8-polige RJ45-socket

A standard patch cord is used to connect the FT636B to the network..

ETH-2
 Network 2

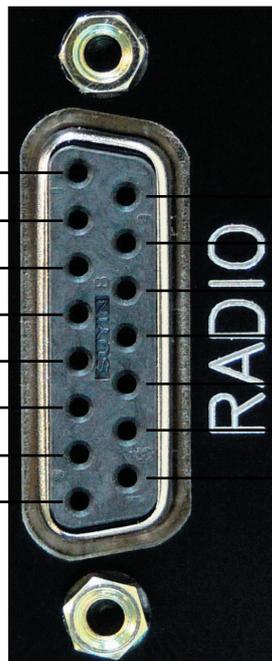


ETH-1
 Network 1

15-pin Sub-D-socket (RADIO 1 und RADIO 2)

IN : + 12 V
 OUT: PTT Relais
 OUT: PTT Relais
 OUT: Radio, AF out
 OUT: Radio, AF out
 I/O: I/O 0 (o.C.) / 4
 I/O: I/O 1 (o.C.) / 5
 I/O: GND

1
2
3
4
5
6
7
8



Both sockets have an identical pin out. The lower one connects to radio 1 and provides I/O 1 - 4, the upper one to radio 2. and provides I/O 5 - 8.

9 IN: + 12 V
 10 IN: Squelch
 11 IN: Funk, NF in
 12 IN: Funk, NF in
 13 I/O: I/O 2 (o.C.) / 6
 14 I/O: I/O 3 (o.C.) / 7
 15 I/O: GND

I/O 0 - 8 are factory pre set Open Collector outputs.

Pin assignment Major 4a --> FT636, FT635, FT634

Major	RJ45	Color	15-pol. Sub-D, male	FT636
Description	Pin		Pin	Description
AF In, floating	1	white/orange	5	AF Out, floating
AF In, floating	2	orange	4	AF Out, floating
Squelch In	3	white/green	3	PTT Out
GND	4	blue	2 / 8 / 15 jumpered in connector housing	GND
Ub +12V	5	white/blue	1 / 9 jumpered in connector housing	Ub +12V
PTT Out	6	green	10	Squelch In
AF Out, floating	7	white/brown	11	AF In, floating
AF Out, floating	8	brown	12	AF In, floating

Pin assignment S/E-Gerät --> FT636

PTT low active (to ground / GND)

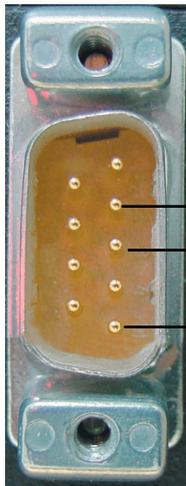
Funk – Gerät	offenes Ende	Color	15-pol. Sub-D, male	FT636
Description			Pin	Description
AF In, floating	-	white/orange	5	AF Out, floating
AF In, floating	-	orange	4	AF Out, floating
PTT - In	-	white/green	3	PTT Out
GND	-	blue	2 / 8 / 15 jumpered in connector housing	GND
Ub +12V	-	white/blue	1 / 9 jumpered in connector housing	Ub +12V
Squelch Out	-	green	10	Squelch In
AF Out, floating	-	white/brown	11	AF In, floating
AF Out, floating	-	brown	12	AF In, floating

Important: The shielding must be connected to ground. This happens in the 15-pol. Sub-D plug where the shielding is soldered to the casing.

If PTT high active (to +12V) is required, the jumper 2 / 8 / 15 has to be removed and a jumper 2 to 1 / 9 must be applied.

RS232 cable

RS232 9-pin socket in PC

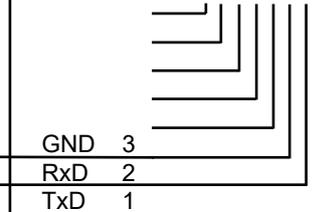
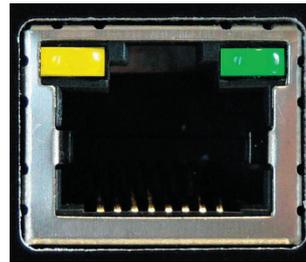


2 RxD RS232

3 TxD RS232

5 GND

RS232 socket in FT636B



Default interface settings:

- 9600 Bit/s
- 8 Data bits
- noParity
- 1 Stop bit
- no Handshake

ATTENTION:
The TxD and RxD lines are to be crossed

64-poliger Busstecker, 19 Zoll Ausführung

Pin	A	C
1	IN : + 12 Volt	IN: + 12 Volt
2	IN : Analog 1 (0-7V)	IN: Analog 2 (0-7V)
3	I/O: I/O 09 (Pull-up 5V)	
4	I/O: I/O 10 (Pull-up 5V)	IN : Radio, AF in 2
5	I/O: I/O 11 (Pull-up 5V)	OUT: Radio, AF out 2
6	I/O: I/O 12 (Pull-up 5V)	OUT: Radio, AF out 2
7	I/O: I/O 13 (Pull-up 5V)	IN: Radio, AF in 2
8	I/O: I/O 14 (Pull-up 5V)	OUT: Bus, AF FUNK>BUS
9	I/O: I/O 15 (Pull-up 5V)	
10	I/O: I/O 16 (Pull-up 5V)	IN : Radio, AF in 1
11	I/O: I/O 1 (o.C.)	IN : Radio, AF in 1
12	I/O: I/O 2 (o.C.)	I/O: I/O 17
13	I/O: I/O 3 (o.C.)	I/O: I/O 18
14	I/O: I/O 4 (o.C.)	I/O: I/O 19
15	I/O: I/O 5 (o.C.)	OUT: Radio, AF out 1
16	I/O: I/O 6 (o.C.)	OUT: Radio, AF out 1
17	I/O: I/O 7 (o.C.)	I/O: I/O 8 (o.C.)
18	I/O: I/O 20	I/O: I/O 21
19	I/O: I/O 22	I/O: I/O 23
20	I/O: I/O 24	IN : Bus, AF BUS>FUNK
21		I/O: DATA
22	IN : RXD (RS232_ext 1)	OUT: TXD (RS232_ext 1)
23	I/O: SDA (I2C)	I/O: SCL (I2C)
24	OUT: PTT-Relais Radio 1	OUT: PTT-Relais Radio 1
25	OUT: PTT-Relais Radio 2	OUT: PTT-Relais Radio 2
26	IN : Squelch Radio 1	IN: Squelch Radio 2
27	IN : RXD (RS232_ext 2)	OUT: TXD (RS232_ext 2)
28		
29		
30		
31	OUT: +3,3V	OUT: +5V
32	I/O: GND	I/O: GND

Configuration

The FT636B IP interface uses TCP/IP for transmission of the radio traffic and radio's control signals. The characteristics of this type of data transmission have to be taken into consideration. The relevant terms and definitions will be explained with the help of a basic example. More complex set ups follow.

The most basic case is given, when both IP interfaces (or one IP interface and one major BOS 1V) is situated within the local network within the same network segment. This means, the interfaces are connected just through a switch or hub and no routing takes place.

If both IP interfaces are alone in this network, all settings can freely be chosen. Are there other devices in the network neighbourhood attention is necessary to not create collisions with the existing infrastructure (IP addresses for example).

IMPORTANT: In any TCP/IP network every device is addressed by a distinct IP address. Those addresses can only exist once within a network. IP addresses can be set in automatic mode (DHCP) or manually. The FT636B only supports manual assignment of IP addresses. Within the network the existing addresses must be known, if automatic address assignment is used, it is necessary to know the range of addresses that is reserved for this purpose. In most cases responsible network administrator should provide this information. If this is not possible one can use IP scanner software (e.e. Free IP Scan) to find the active IP devices within the network. Of course this works only with powered on devices.

For configuration of the FT636B any of the unused IP addresses can be used.

The default values of the network settings are:

Anmeldung:

username:	ft636
password:	radio

Netzwerk 1 / ETH1

local IP address:	192.168.16.191
Target IP-Addr Console 1:	192.168.16.181
Netmask:	255.255.255.0
Ports:	
Audio/AF	10000, Protokoll UDP
Control data	10001, Protokoll TCP
Web Server	80, Protokoll TCP

Netzwerk 2 / ETH2 (planned)

local IP address:	192.168.17.191
Target IP-Addr Console 1:	192.168.17.181
Netmask:	255.255.255.0
Ports:	
Audio/AF	10000, Protokoll UDP
Control data	10001, Protokoll TCP
Web Server	80, Protokoll TCP

The following is necessary:

The IP addresses must be unique.

Ports must be identical within a distinctive remote connection.

If a Major BOS V is used to connect to a FT636B both devices are configured to connect immediately. If two IP interfaces are to be connected, one of them has to be reconfigured to use another IP address.

In the following example on FT636B shall keep its address, the other one should use 192.168.16.192. Only network 1 will be used.

Additional equipment:

- One PC
- One Switch or Hub with at least three free Ethernet/LAN ports

alternativly

- Existing network
- One PC, connected to the network
- Two unused Ethernet/LAN ports connected to this network

In the second case it must be ensured, that no conflicting addresses occur. Because of this the first variant is to be preferred because of simplicity.

The PC must be configured to use an IP address within the range of 192.168.16.1 to 192.168.16.254 but not 192.168.16.191/192. Usually this IP address can be set in addition to an existing address. Netmask is 255.255.255.0.

Now the first FT636B can be connected to the network and turned on. The default IP address of the FT636B is to be entered into the address field of the web browser (Internet Explorer, Firefox, Opera, ...) as „http://192.168.16.191“. The „System Page 1“ (see below) shows up. Now the „Local IP Address“ can be changed to 192.168.16.192 and the button „Submit“ has to be hit.

IMPORTANT: Because the FT636B's IP address has changed now, the new „http://192.168.16.191“ address has to be entered to the browser's address field. The configuration then can be continued.

After switching to „System Page 2“ the remote station/console 1 Target IP Address has to be changed to 192.168.16.191. Click „Submit“ and wait for reboot to finish.

After this the second system can be attached to the network and turned on.

The web interface can be opened by its address „http://192.168.16.191“. If it will not be found (error message in browser) the PC's ARP cache has to be cleared.

Windows: Open command prompt, enter „arp -d **“

Linux: Open terminal, enter ip neigh flush all

In both cases administrator privileges are necessary.

The established connection between the interfaces is displayed by the according green connection indicator on „System Page 1“. Further information can be found on „System Page Info“.

The devices now have the following configuration:

	1. FT636B	2. FT636B
Local IP adresse:	192.168.16.191	192.168.16.192
Target IP adresse:	192.168.16.192	192.168.16.191
Netmask:	255.255.255.0	255.255.255.0
Ports:		
Audio/AF	10000	10000
Control data	10001	10001
Web Server	80	80

The devices are now ready to operate within a single local network segment. They connect immediately and transmit audio and control information.

Are the port numbers to be changed the following limitation are valid.

Web server port 80 is the default http port. Browsers connect this port on web servers by default.

Is this port to be changed, e.g. to 10025, this port number has to be included in the browser's address field. The complete address changes to „http://192.168.16.191:10025“. Further, no port number below 1024 should be used because those so called „well known ports“ are settled and are used by operating systems, network services and programs like FTP clients, for example.

The max. portnumber is 65535.

Further more complex examples of configurations can be found at:

<http://www.funktronic.de> -> Service -> Ethernet-Verbindungen.pdf or

<http://www.funktronic.de/pdf/Ethernet-Verbindungen.pdf>

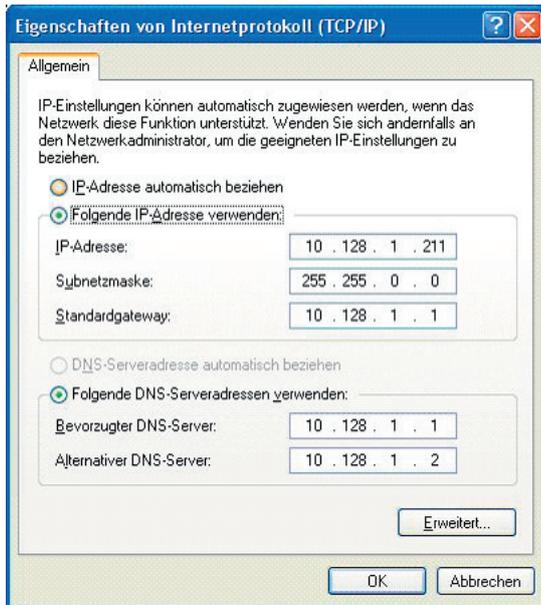
Preparation of a PC for the configuration tasks

As remarked previously, the configuration of the FT636B is carried out with a web browser. Neither the operation system of the PC (Windows, Linux, Apple OS X) nor the manufacturer of the browser (Firefox, Internet Explorer, Opera, Safari...) are of any importance. Important are the IP network settings of the PC, so that the IP interfaces can be found.

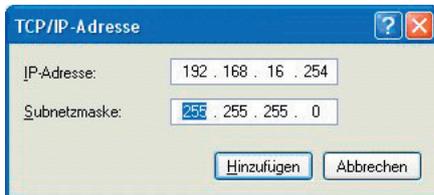
Windows PC

The example configuration is explained by using a Windows XP PC and works analog on Windows 98, ME, 2000, Vista, Windows 7 or Windows 8.

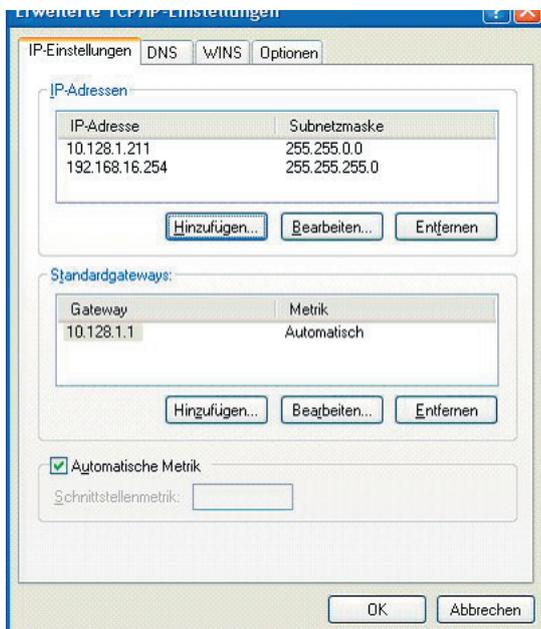
Open Start->System Settings->Network Connections. A double click on LAN connection opens the LAN status window. Via the button „Properties“ the Internet Protocol (TCP/IP) can be opened.



If not connected to an existing network any address within the range of 192.168.16.1 to 254 (without 191, 192) can be used and the next steps are not applicable. All devices are then connected to a switch or hub. If the Windows PC is already connected to an existing network the automatic IP assignment (DHCP) must not be active. Instead the IP addresses must be set manually. The values must be set to match the settings of the existing network, so that the PC is still a member of the network.



A click onto the „Advanced“ button opens the IP settings window. Click add to enter the additional IP address and netmask. Close any window with ok.



The PC now are assigned two IP addresses. One that makes it part of the existing network and a second one that sets up a different network segment together with the FT636B IP interfaces. The devices are to be connected to available RJ-45 network sockets.

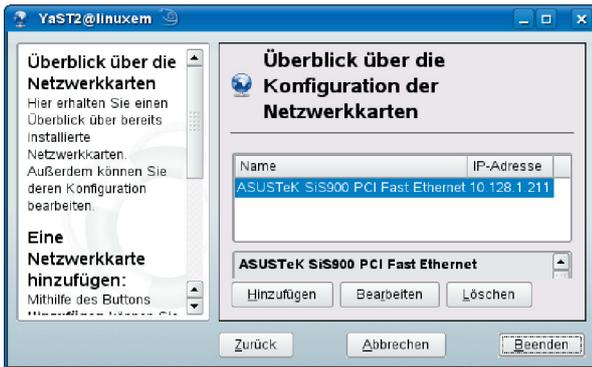
Linux PC

The set up of a Linux PC follows the same principles as the set up of a Windows PC. The various windows look different and depend on the Linux version (Debian, Suse, Ubuntu, ...) and the window manager they use.

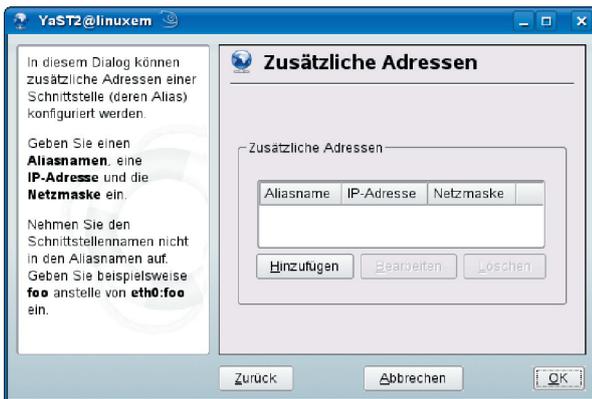
The same is valid:

If the PC is already configured for an existing network, a second IP address has to be assigned. Without running the PC in an existing network, simply configure the necessary settings (e.g. IP address 192.168.16.254, netmask 255.255.255.0, that's all). The following example configuration is made with the help of Suse Linux 10.1 and will work in a similar way on other Linuxes.

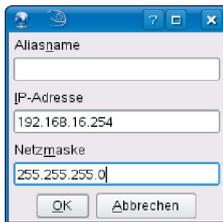
The dialog can be started via Start->System->Yast. Within Yast network devices will be selected and then the NIC. The configuration window appears.



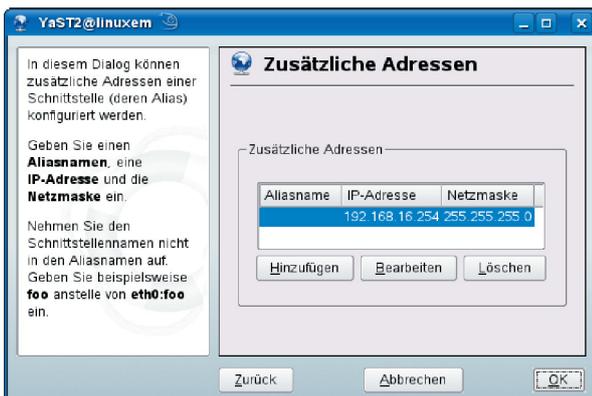
Select the network interface card and open the configuration dialog. After clicking the Advanced button a new ID address can be added to the list.



The add button opens the dialog to enter the new IP address.



The new IP address can be entered here.



The PC now own two different IP addresses. It connects to its regular network and in addition to network segment of the FT636B IP interfaces.

Depending on the Linux variant this set up also works with automatic addressing (DHCP).

Front LEDs A ... D

Die LEDs A ... D display the FT636B's IP address after power up: Every digit is shown in BCD coding for two seconds. The triplets are separated via the „all LEDs on“ signal. A „0“ (zero) is displayed with all LEDs off.

		1	9	2		1	6	8		0	1	6		1	9	1	
8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

While in regular operation, the LEDs can be set to reflect the state of connections and/or errors (Menu Application Page 4).

The FT636B Web Interface

The FT636B provides a web interface for configuration of the device. The FT636B has to be connected to the network and the PC has to be properly set up. A browser must be started and in the address field the following has to be entered:

http://192.168.16.191 for the ethernet port 1

Password request is to be answered:

Username: ft636

Password: radio

The start page of the configuration web interface shows up.

FunkTronic Manufacturer "FunkTronic GmbH" Type "FT 636 B" MAIN SW "FT 636 B M" SW Version "V1.06 28.05.15" LAN1 SW "FT 636 B L1" SW Version "V1.07 01.06.15" LAN2 SW "FT 636 B L2" SW Version "V1.06 27.04.15" Web Version 01.06.EN Web Date 15.06.15 Serial No. "0219"

System **Applikation** **Reboot** **Update**

FunkTronic FT636B

System Page: 1 2 3 Info | Sitemap

CONNECTION STATE

VoIP Connection 1 - 8

State ● ● ● ● ● ● ● ●

NETWORK SETTINGS

Local Ethernet Ports

	ETH - 1	ETH - 2 (N/A)
Host Name	FT636B-L1	N/A
Local IP Address	192.168.16.191	
Netmask	255.255.255.0	
Gateway IP Address	192.168.16.99	
Primary DNS Server	192.168.16.99	
Alternative DNS Server	0.0.0.0	
Time Server (SNTP)		
Web Server Port	80	
LS Port	9999	

SERIAL PORT SETTINGS

Local RS232 Ports

	RS232 - 1	RS232 - 2 (N/A)
Bit/s	9600	9600
Data Bits	8	8
Parity	None	Noe
Stop Bits	1	1
Flow Control	None	None
Start Delimiter	None	None
End Delimiter	None	None
Wait State	10 ms	10 ms

GLOBAL SETTINGS

Fuer alle NF-Wege gemeinsam

RTP Payload Size 20 ms -> RTP Packet Size 160 + 12 Byte 50 Packets/Second

Jitter Buffer Delay 80 ms

Debug/Syslog Medium

Ping Check On

Submit Cancel

This page is displayed by default but also can be addressed by the menu „System“. Customized settings must be stored by clicking the button „Submit“. This stores the settings and causes a restart to instantiate the new values.

The status line provides information about the connection state of the various connections:

- Green: Connection established to the according remote station
- Red: Connection lost, remote station not available
- White: Connection inactive,
- Yellow: Ping Timeout, if configured

IMPORTANT: If the local IP address has changed, the new one has to be entered into the browser's address field.

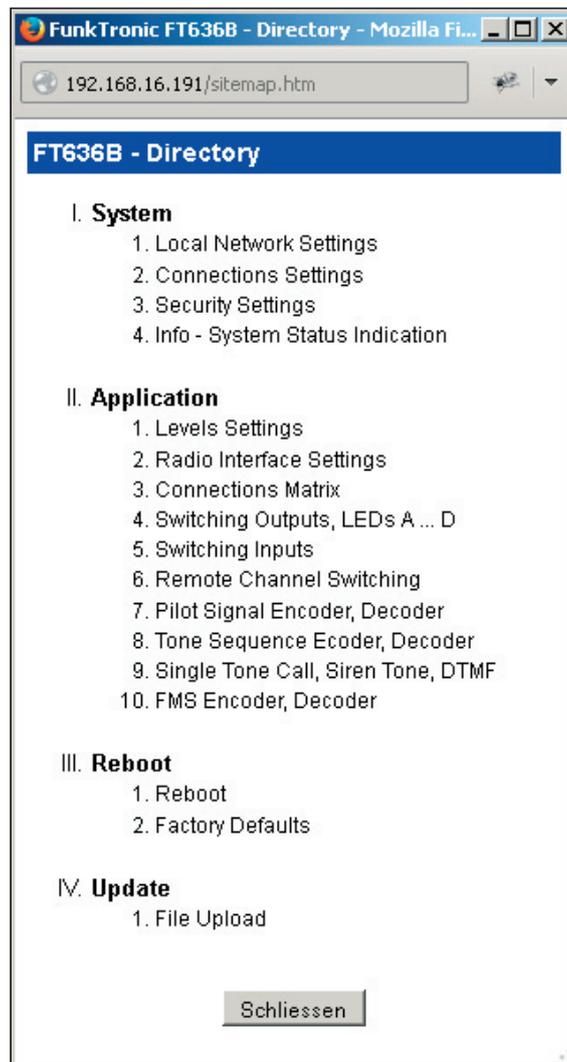
IMPORTANT: If more than one FT636B is attached to the network (of course the IP address of the former had been changed) the last one can possibly not be accessed by the browser. In this case the PC's ARP cache has to be cleared.

Windows: Open command prompt and enter `arp -d *`

Linux: Open terminal and enter `ip neigh flush all`

The different pages of the web interface can be accessed by the menu items „System“, „Applikation“, „Reboot“, „Update“.

Also the Link „Sitemap“ can be used.



A direct addressing of the desired menu or sub menu is possible by clicking the according entry. The various pages are mostly self explaining and have an included help in addition.

The Page System Info

This page delivers more detailed information about the state of the VoIP connections. The following picture is of successfully established VoIP connection.

The screenshot displays the FunkTronic FT636B system information page. At the top, the FunkTronic logo is on the left, and system details are on the right. Below the logo is a navigation bar with buttons for System, Applikation, Reboot, and Update. The main content area shows the system page number (1) and a Sitemap link. A 'CONNECTION STATE' section shows 'Remote Station' 1 with '+' and '-' buttons. Below this, connection statistics are listed: UDP IN (50 RX/sec), UDP OUT (50 TX/sec), TCP IN (incoming ok), and TCP OUT (outgoing ok). A 'DEBUG AND SYSLOG MESSAGES' section with a 'Reset List' button shows 20 messages, including initialization, listening, and connection events.

Manufacturer "FunkTronic GmbH" LAN1 SW "FT 636 B L1" Web Version 01.06.EN Host "FT636B-L1"
Type "FT 636 B" SW Version "V1.07.01.06.15" Web Date 15.06.15 IP Address "192.168.16.19"
MAIN SW "FT 636 B M" LAN2 SW "FT 636 B L2" Serial No. "0219" MAC Address "00:04:A3:CA:
SW Version "V1.06.28.05.15" SW Version "V1.06.27.04.15"

System Applikation Reboot Update

FunkTronic FT636B

System Page: 1 2 3 **Info** | Sitemap

CONNECTION STATE Remote Station

UDP IN Channel No: 1, UDP RX/sec: 50, avg packet size: 172, seqNo: 18752, timeStamp: 122960321, ssrcIdRx: 2445848827 decBufLev: 660
UDP OUT Channel No: 1, UDP TX/sec: 50, avg packet size: 172, seqNo: 1883, timeStamp: 137921, ssrcIdTx: 0
TCP IN TCPRx-0: Incoming TCP ok from 192.168.16.181, on Socket 8
TCP OUT TCPTx-0: Outgoing TCP ok to 192.168.16.181, on Socket 1
Ping RTT N/A

DEBUG AND SYSLOG MESSAGES (latest twenty)

#1 UDPTx-1: INIT
#2 UDPRx-0: Listening for 192.168.16.181, Port 10000, on Socket 3
#3 UDPTx-1: INIT
#4 TCPRx-1: Incoming TCP ok from 192.168.16.182, on Socket 9
#5 CIRCUIT 0 error state: No error (0x0000)
#6 CIRCUIT 0 connect state: Connected (0x0001)
#7 UDPRx-0: INIT
#8 TCPRx-0: Incoming TCP ok from 192.168.16.181, on Socket 8
#9 UDPTx-0: Outgoing RTP sending to 192.168.16.181:10000, on Socket 2
#10 UDPTx-0: INIT
#11 TCPTx-0: Outgoing TCP ok to 192.168.16.181, on Socket 1
#12 TCPTx-0: INIT outgoing TCP, trying to connect to 192.168.16.181, on Socket 1
#13 TCPTx-1: INIT outgoing TCP, trying to connect to 192.168.16.182, on Socket 0
#14 TCPRx-1: INIT incoming TCP, waiting for 192.168.16.182, on Socket 9
#15 CIRCUIT 1 connect state: Disconnected (0x0000)
#16 CIRCUIT 0 connect state: Disconnected (0x0000)
#17 TCPRx-0: INIT incoming TCP, waiting for 192.168.16.181, on Socket 8
#18 ---- AF-Port loc-10014 rem-10014, Ctrl-Port loc-10015 rem-10015, RXSSRC: 0, TXSSRC: 0, Codec: 0
#19 ---- Channel No 8 Activation: 0
#20 Target-Name: N/A, IP: 192.168.16.188, Status: Inaktiv, Typ: FT636B

UDP IN receives 50 packets per second, UDP out transmits 50 packets per second. The inbound TCP connection is ok, also the outbound.

Depending on the setting of „Debug/Syslog“ on System Page 1, a number of messages can be found in the list of „DEBUG AND SYSLOG MESSAGES“.

IMPORTANT: This information is frequently updated (multiple times per second) and is therefore always up to date. Of course this adds to the network traffic and the network interfaces of the FT636B and its network interfaces have to deal with a higher load. Because of this, this page should not be left open while regular operation, especially if disturbance of the audio signal can be observed.

Example of an System Info Page with a failed VoIP connection.

Manufacturer "FunkTronic GmbH" LAN1 SW "FT 636 B L1"
 Type "FT 636 B" SW Version "V1.07.01.15"
 MAIN SW "FT 636 B M" LAN2 SW "FT 636 B L2"
 SW Version "V1.06.28.05.15" SW Version "V1.06.27.04.15"

System Applikation Reboot Update

FunkTronic FT636B

System Page: 1 2 3 **Info** | Sitemap

CONNECTION STATE Remote Station 2 + -

UDP IN Channel No: 2, UDP RX/sec: N/A
UDP OUT Channel No: 2, UDP TX/sec: N/A
TCP IN TCPRx-1: INIT incoming TCP, waiting for 192.168.16.182, on Socket 9
TCP OUT TCPTx-1: Outgoing TCP trying to connect to 192.168.16.182, on Socket 0
Ping RTT N/A

DEBUG AND SYSLOG MESSAGES (latest twenty) [Reset List](#)

1 TCPTx-0: Outgoing TCP trying to connect to 192.168.16.181, on Socket
 # 2 TCPTx-1: Outgoing TCP trying to connect to 192.168.16.182, on Socket 0
 # 3 TCPTx-0: Outgoing TCP trying to connect to 192.168.16.181, on Socket 1
 # 4 TCPRx-1: INIT incoming TCP, waiting for 192.168.16.182, on Socket 9
 # 5 CIRCUIT 1 connect state: Disconnected (0x0000)

There are neither inbound UDP packets nor outbound.

The incoming TCP port awaits a connection request from the remote station.

The outgoing tries to connect to the remote station. This message can be found multiple times in DEBUG AND SYSLOG MESSAGES list because the outgoing connection request is regularly repeated.

Example of a System Info Page with inactive connection.

Manufacturer "FunkTronic GmbH" LAN1 SW "FT 636 B L1"
 Type "FT 636 B" SW Version "V1.07.01.06.15"
 MAIN SW "FT 636 B M" LAN2 SW "FT 636 B L2"
 SW Version "V1.06.28.05.15" SW Version "V1.06.27.04.15"

System Applikation Reboot Update

FunkTronic FT636B

System Page: 1 2 3 **Info** | Sitemap

CONNECTION STATE Remote Station 3 + -

UDP IN Channel No: 3, UDP RX/sec: N/A
UDP OUT Channel No: 3, UDP TX/sec: N/A
TCP IN
TCP OUT
Ping RTT N/A

DEBUG AND SYSLOG MESSAGES (latest twenty) [Reset List](#)

1 TCPTx-1: Outgoing TCP trying to connect to 192.168.16.182, on Socket
 # 2 TCPTx-0: Outgoing TCP trying to connect to 192.168.16.181, on Socket 1
 # 3

There are no incoming or outgoing UDP packets.

As no connection request is waited for and no connection request is sent, the corresponding entries are empty.

Applikation Page 3, Connections Matrix

The interconnection between the inputs (from VoIP, from Radio) of the FT636B to its outputs (to VoIP, to radio) is configured on this page.



Manufacturer "FunkTronic GmbH"
 Type "FT 636 B"
 MAIN SW "FT 636 B M"
 SW Version "V1.06.28.05.15"

LAN1 SW "FT 636 B L1"
 SW Version "V1.07.01.06.15"
 LAN2 SW "FT 636 B L2"
 SW Version "V1.06.27.04.15"

Web Version 01.06.EN
 Web Date 15.06.15
 Serial No. "0219"

Host "FT636B-L1"
 IP Address "192.168.16.191"
 MAC Address "00:04:A3:CA:F7:87"

System
Applikation
Reboot
Update

FunkTronic FT636B

Application Page: 1 2 3 4 5 6 7 8 9 10 | Sitemap

FUNCTIONS 3 - Connections Matrix

Connections

Inputs																Outputs			
from VoIP Network / Remote Station TX																from Radio RX			
↓																↓			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1	2		
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1														
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2														
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9	⇒ to VoIP Network / Remote Station RX
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	⇒ to Radio TX													
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2														

Submit
Cancel

Example:

The checked check boxes are the default setting. This leads to the following interconnection:

- console 1 input to radio 1 output/transmitter
- console 2 input to radio 2 output/transmitter
- radio 1 input/receiver to console 1 output/VoIP network
- radio 2 input/receiver to console 2 output/VoIP network

In this case radio 1 is remote controlled by console 1, radio 2 by console 2.

In addition a console no 3 is to be included. This one shall simultaneously talk and listen on radio 1 and radio 2. Besides this console shall hear the voice of console 1 and console 2 and at last shall be heard by console 1 and console 2.

The interconnection:

- console 3 to radio 1 and radio 2, transmission (gelb)
- radio 1 and radio 2 to console 3, reception (magenta)
- console 1 to console 3, monitoring of console 1 on console 3 (grün)
- console 2 to console 3, monitoring of console 2 on console 3 (grün)
- console 3 to console 1 and 2, monitoring fo console 3 on console 1 and 2 (cyan)

Basically, every column is an input busbar from the corresponding input and every row is an output busbar to the corresponding output.

This means:

- console 3 to radio 1 -> Input 3 is connected to the output busbar to radio 1 (yellow)
- console 3 to radio 2 -> Input 3 is connected to the output busbar to radio 2 (yellow)
- radio 1 to console 3 -> Input radio1 is connected to the output busbar to console 3 (magenta)
- radio 2 to console 3 -> Input radio 2 is connected to the output busbar to console 3 (magenta)
- console 1 to console 3 -> Input 1 to the output busbar to console 3 (green)
- console 2 to console 3 -> Input 2 to the output busbar to console 3 (green)
- console 3 to console 1 -> Input 3 to the output busbar to console 1 (cyan)
- console 3 to console 2 -> Input 3 to the output busbar to console 2 (cyan)

Technical Data

Supply Voltage	12 V
Current draw	ca. 300 mA
Weight	ca. 525 g
Dimensions W x H x D	104 x 44 x 175 mm
Input Impedance	600 Ohm
Output Impedance	600 Ohm
Output Level	-30 ... +3 dBm, preset to -10 dBm
Input Level	-22 ... +4 dBm, preset to -17 dBm
AF codec	PCM, 8Bit, 64kBit/s, A-Law, μ -Law, G.711

Ordering Information

Part.-No.	Description
636050	FT636B Network Interface
636060	FT636B Network Interface 19"
635092	Cable fot Motorola MTM800 FuG
635092	Cable fot MBOSEP for Sepura SRG3900
903060	MBOSEP, Interface für Major BOS and Sepura SRG3900
636900	Cable set for 636 (635) to Major 4a/5a and two way adio

Change history

Durchgeführte Änderungen sind in diesem Abschnitt nur stichwortartig aufgeführt. Für detaillierte Informationen lesen Sie bitte die entsprechenden Kapitel.

- 19.03.2014 - First version
- 19.06.2015 - English translation
- 15.01.2016 - Update product pictures
- Update 64 pin rear connector
- 03.03.2016 - Translation of cable description
- 23.05.2016 - Connection to TETRA radios
- Ordering information