

Major 4a

Software Option
Kenwood NEXEDGE



Major 5a

Software Option
Kenwood NEXEDGE



FunkTronic
Kompetent für Elektroniksysteme

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Order Information

Order No.	Description
681000.NX	Major 4a incl. Option Kenwood NEXEDGE
714000.NX	Major 5a incl. Option Kenwood NEXEDGE
903050	Distribution Frame (Überleitverteiler) DMR, 2-fold
903051	Distribution Frame (Überleitverteiler) DMR, 3-fold
	Distribution Frame (Überleitverteiler) DMR, available on demand up to 9-fold
	Attention: If needed, a power supply unit is available separately:
900012	Power Supply Unit 230V/12V for Major 4a + Major 5a

General Information

In order to allow direct connection to a digital radio of the Kenwood NEXEDGE series, **Major 4a** and **Major 5a** can be equipped with the **software option Kenwood NEXEDGE**.

General Features :

- alphanumeric LC display with background lighting
- gooseneck microphone with high dynamic range
- plaintext menu structure for simple programming via the keypad
- all buttons are freely programmable
- two functions can be assigned to each button
- A Kenwood NEXEDGE radio can be directly connected
- A Kenwood NEXEDGE radio can be remotely connected (Audio-USB Interface-Box)
- Two sockets for control via headset, one of those for connection of a PTT foot switch
- 7 digital In/Outs for channel switching or other purposes
- operates via an external 12V-DC power supply

Control Elements Major 4a



Control Elements Major 5a



LC Display

All alphanumeric readouts are presented by a LC display with background lighting.

Status LEDs

Carrier Display (Squelch) ▼

The carrier display LED ▼ can be controlled by voice (2-wire connection) or via squelch input (using the radio set). If the light is on, the radio circuit is occupied, that is, a carrier signal (carrier is keyed) is present.

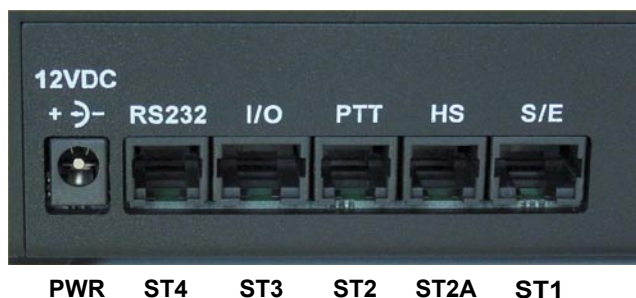
PTT Display (Push-to-Talk) ▲

The PTT display LED ▲ is on, if the transmitter is keyed. Keying of the transmitter is achieved by pressing the PTT button during telephony or by sending a call.

Loudspeaker Display (Incoming Call) 🔊

The loudspeaker display LED 🔊 is on, if the loudspeaker or the earphone capsule in the handpiece are switched on.

Rearview Major 4a/5a



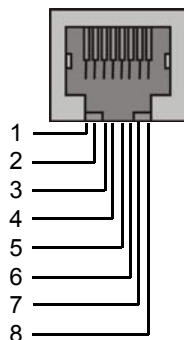
PWR operating voltage 12V, max. 1,5 A
inside: positive terminal, outside: GND

Sockets Pinout Major 4a/5a

All of the schemes show the sockets as viewed from the rear of the Major.

Pinout S/E Radio Circuit (ST1)

AF input B
AF input A
Squelch input
GND
output +12 V, max. 200 mA
PTT active, low
AF output A
AF output B

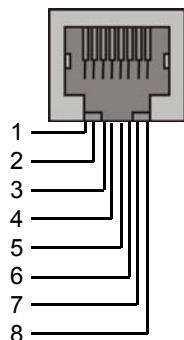


All AF in/outputs are equipped with transformers and, hence, potential-free. PIN 5 is for supply (+12V) of external devices (LIM-AC, FT634C).

Attention: Do not use PIN 5 to supply a radio set. 200 mA output current is not sufficient.

Pinout I/O Digital In/Outputs (ST3)

IN/OUT 0
IN/OUT 1
IN/OUT 2
IN/OUT 3
IN/OUT 4
IN/OUT 5
IN/OUT 6
GND

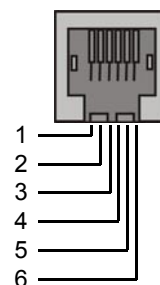


The digital connections can be configured as inputs or outputs, respectively. Usually, these are used as outputs for remote channel select.

There are two sockets for connecting a headset. One is for connecting the headset, the other for the use of an external PTT button (e.g. foot switch)

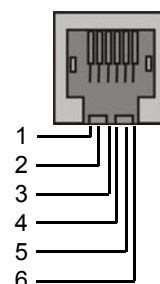
Pinout HS Headset (ST2A)

GND
AF input (mic. +)
AF earphone
GND earphone
GND AF input (mic. -)
PTT, active GND



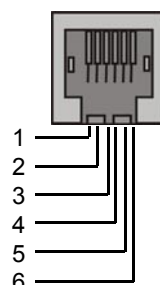
Pinout PTT Headset (ST2)

GND
GND AF input (mic. -)
NF earphone
GND earphone
AF input (mic. +)
PTT, active GND

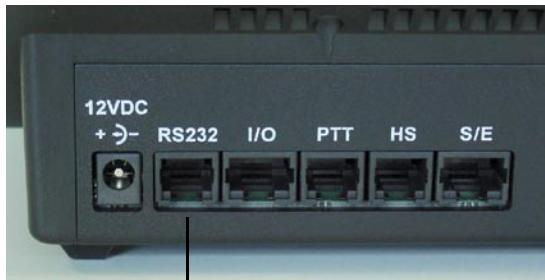


Pinout RS232 (ST4)

NC
NC
TxD
RxT
GND
NC



RS232 Interface

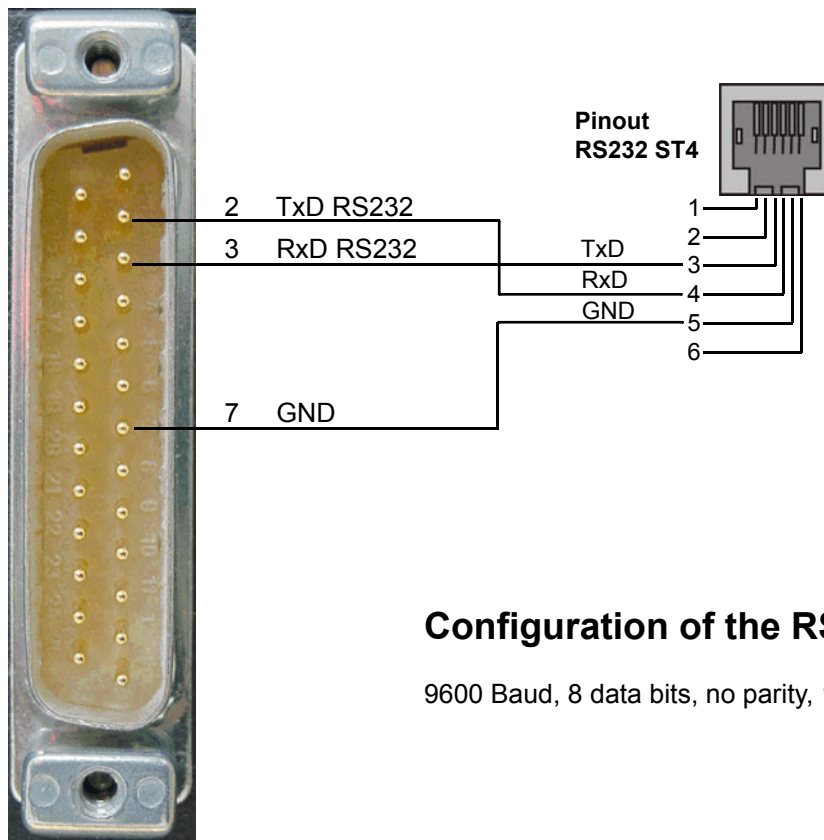


ST4 RS232 Interface

RS232 Cable for Flashing/Printing/Monitoring

RS232 25pin connector on computer

RS232 socket on Major

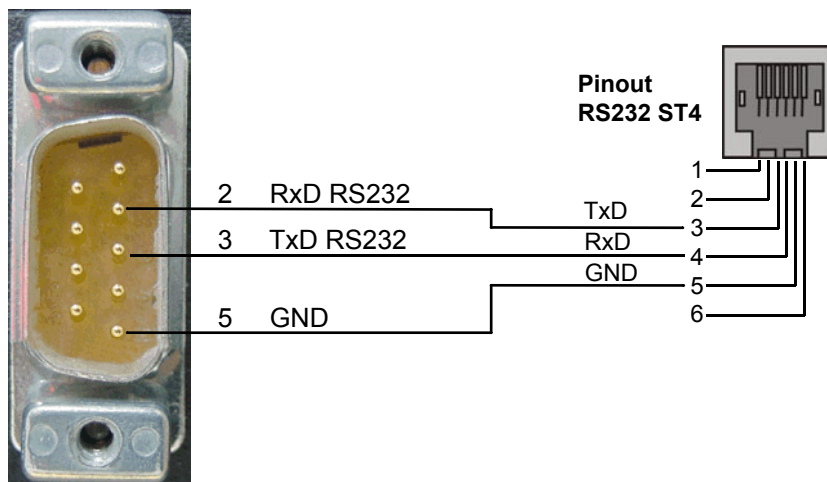


Configuration of the RS232 Interface

9600 Baud, 8 data bits, no parity, 1 stop bit, no protocol

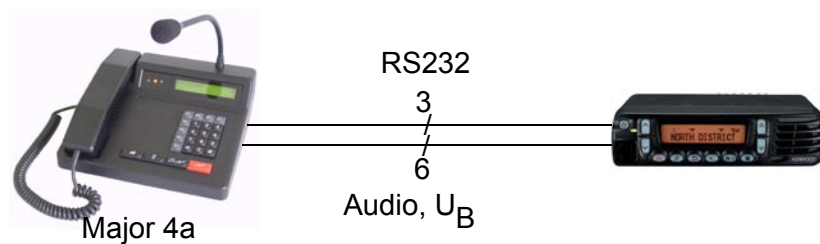
RS232 9pin connector on computer

RS232 socket on Major

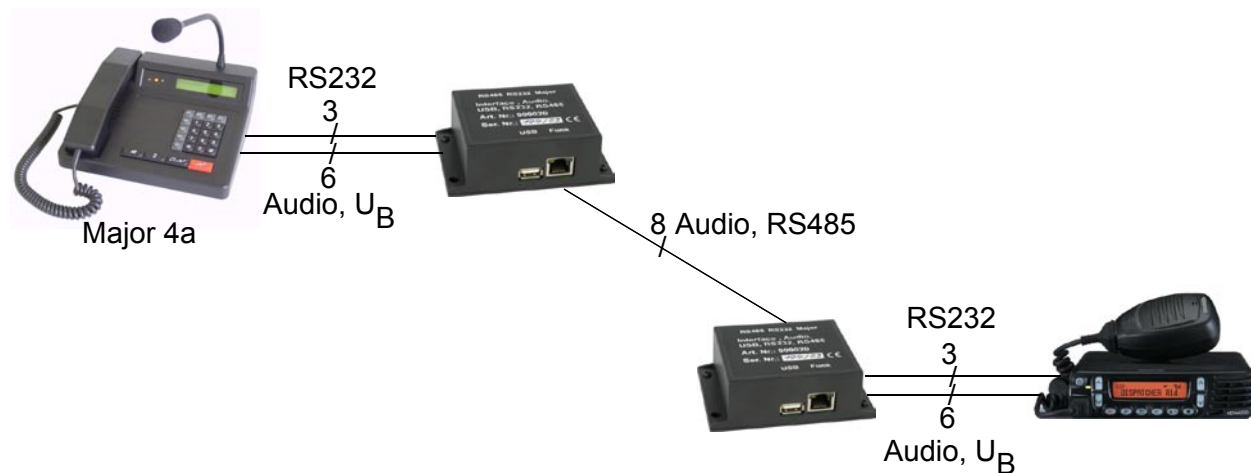


Example Configurations

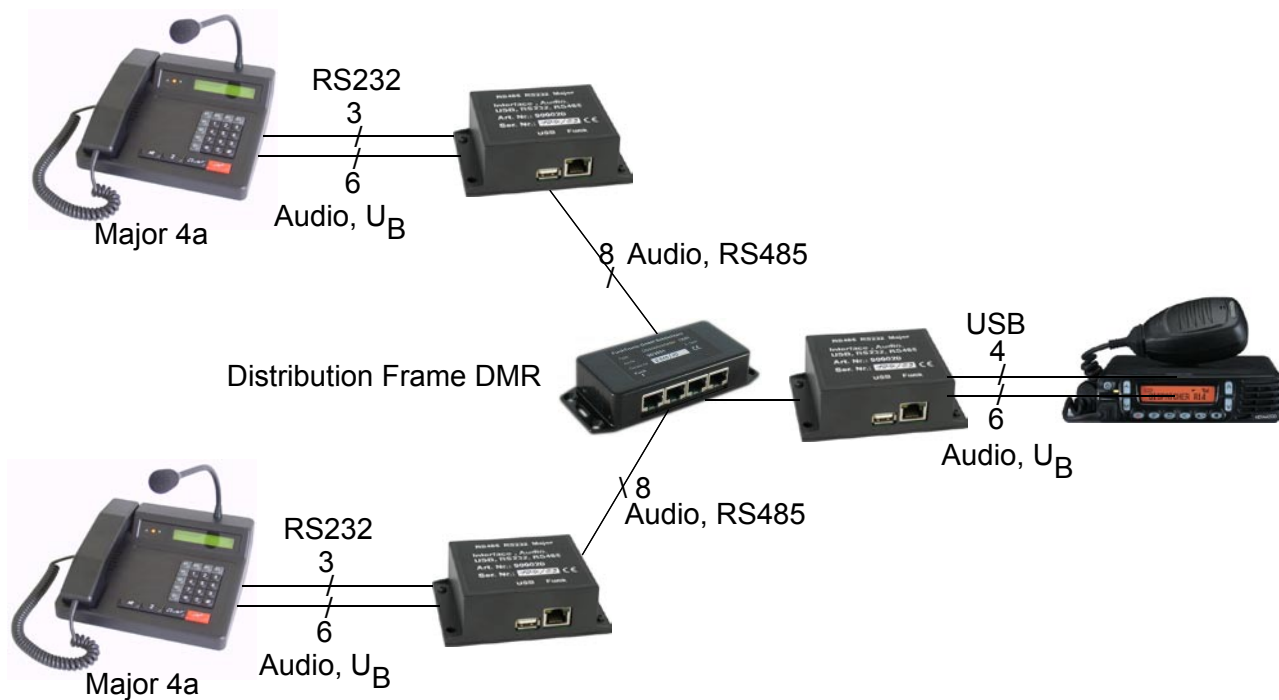
Direct Connection to the Radio



Remote Control of the Radio

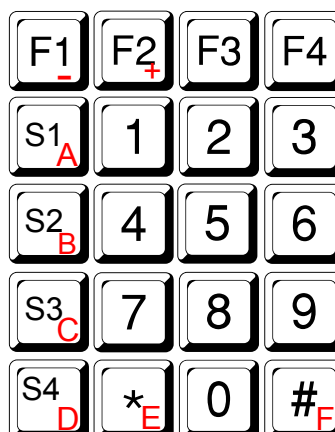


Several Control Panels, remotely Connected to the Radio



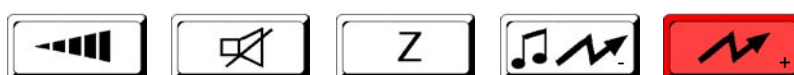
Standard Keypad Assignment Major 4a

- ... : number input (call, channel, status...)
- short : delete last number
- long : delete whole call input
- short : scroll through ID-code memory
- long : delete ID-code from memory
- : channel input
- : PTT gooseneck mic / status
- : toggle selective call / group call
- : switch to status input (if a complete call is entered in the display)
- : volume control



Standard Keypad Assignment Major 5a

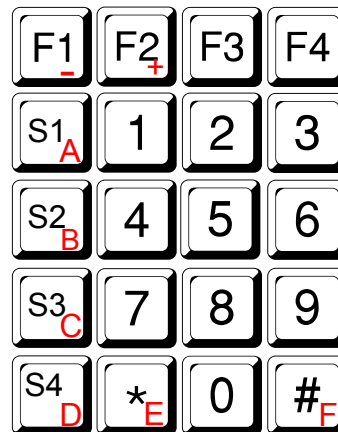
Comparable to Major 4a, but without the additional buttons S1...S4 and F1...F4.



Keypad Assignment Major 4a in Programming Mode

Button  reduces by 1, button  increases by 1.

The values A - F are assigned to the buttons S1...S4,  and .



Keypad Assignment Major 5a in Programming Mode

Long pressing of buttons 1 to 6 results in the additional values A-F..

The call button reduces by 1, and the red PTT button increases by 1.



Differences Major 4a - Major 5a

The Major 4a is different from the Major 5a in the following points:

1. different keypads
2. Major 4a has a handset, Major 5a has none
3. differences in the software, mainly resulting from point 1+2

Menu Structure

Simultaneous pressing of the buttons  and  opens the menu.

Due to the different keypad designs, for the same operations different keys are used in Major 4a and Major 5a. In the following, the handling of Major 4a is described. For the respective keys that have to be used in Major 5a please consider the table below.

Function	Major 4a	Major 5a
next menu		
select menu item		
escape discarding changes		
save changes and escape		
increase value by 1		
reduce value by 1		

select number:

 and 



EEPROM programming : F4
Next menu : F3



Software version : F4
Next menu : F3



Level settings : F4
Next menu : F3



Register:

- enter the register number to be programmed
- with 222 the factory default values are programmed

Register: 000
Code 12345

- overwrite the code with the desired values

 = escape menu
discarding changes
 = save changes,
escape menu



Software: Major 4a v1.24
Date : 23.09.04

- displayed 3 seconds

*

GN = gooseneck
HP = handpiece
HS = headset



Poti-Nr. (1-6):

- 1 = input level
nominal value: 300mV
indicated on the display
- 2 = output level
as required
- 3 = GN microphone level *
- 4 = HA microphone level *
- 5 = HS microphone level *
- 6 = DTMF output level

- the potis can be adjusted from 0 to 255

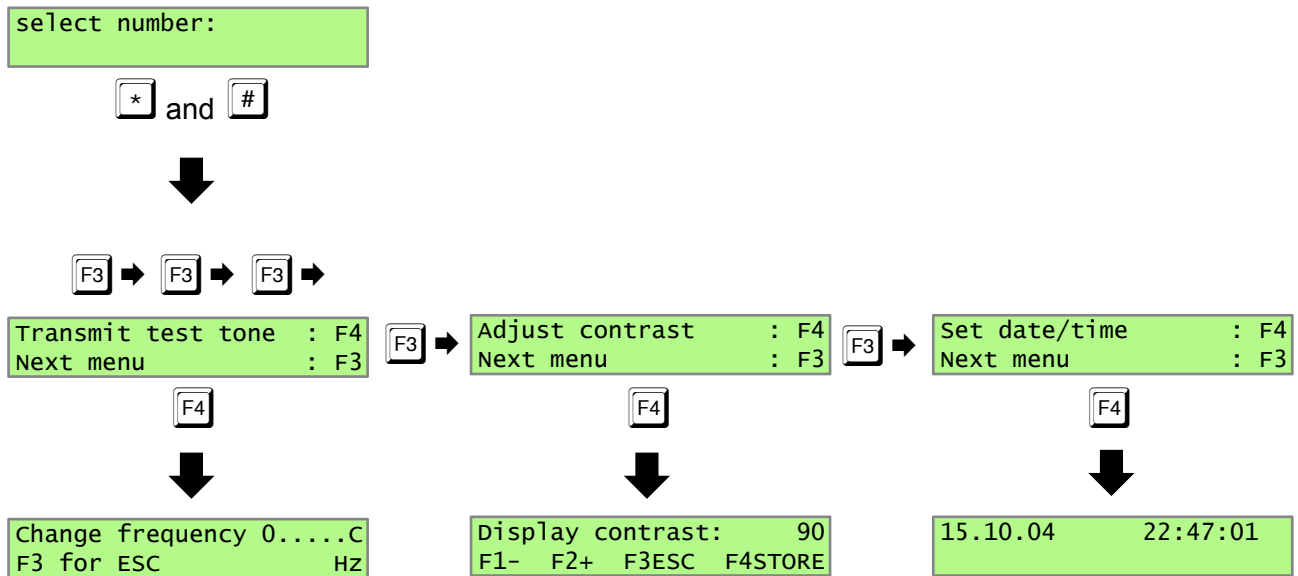
- input directly via keypad or

 = increase value by 1
 = reduce value by 1

 = escape menu
discarding changes
 = save changes,
escape menu

Menu Structure

continued



0	=	200 Hz
1	=	300 Hz
2	=	400 Hz
3	=	600 Hz
4	=	800 Hz
5	=	1000 Hz
6	=	1600 Hz
7	=	2400 Hz
8	=	3400 Hz
9	=	4000 Hz
S1	=	2900 Hz
S2	=	3000 Hz
S3	=	3100 Hz
S4	=	3300 Hz
*	=	1200 Hz
#	=	1800 Hz

- = reduce contrast by 1
- = increase contrast by 1
- = escape menu
discarding changes
- = save changes,
escape menu

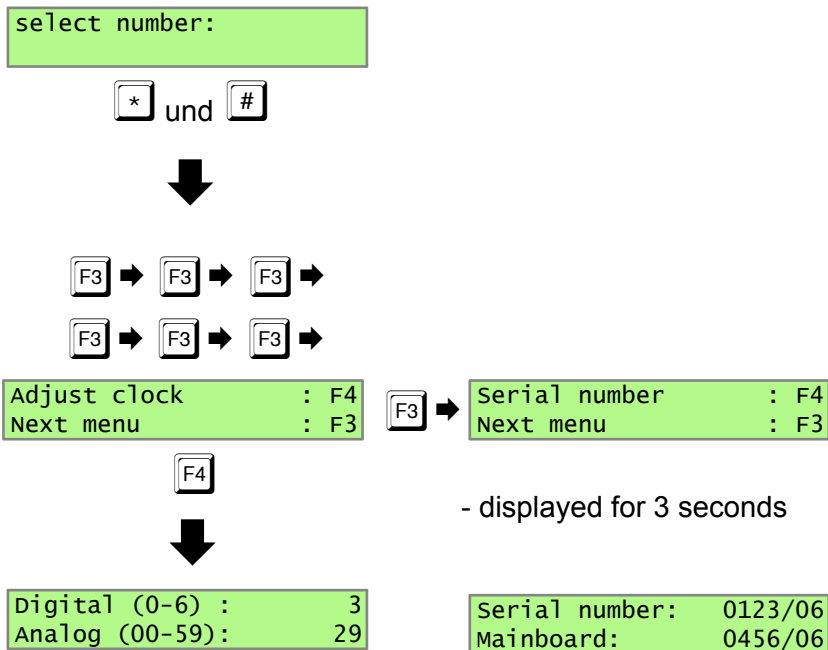
- = one digit to the left
- = one digit to the right
- = escape menu
discarding changes
- = save changes,
escape menu

The values can be changed directly using the buttons 0 to 9.

= escape menu

Menu Structure

continued



- displayed for 3 seconds

= one digit to the left

= one digit to the right

The onboard clock is factory calibrated. Before changing the values please note down the current values. Higher values accelerate the clock, while lower values slows it down. Changes made in digital have more effect than changes made in analog. Fine adjustment must be done in analog, step by step.

= escape menu
discarding changes

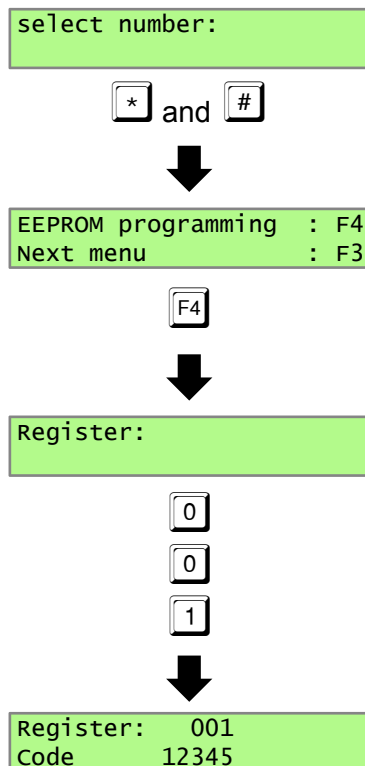
= save changes,
escape menu

Configuration of the Software

Programming Short Call

In the following a programming example of the Major's registers is shown. The procedure is always the same. Depending on the desired effects, however, the programming of several registers can be necessary.

This example illustrates the programming of short call 1 in register 001 with the tone sequence 12345.



The line „Code“ shows the present programming of the register. The displayed value can be overwritten with the new value.

With button **F3** the menu can be quit any time discarding the changes.

With button **F4** the displayed value is programmed.

As every button of the Major 4a/5a is freely programmable, the registers 174 and 175 for the Z-button have to be programmed with the right values. As this already is the case in the factory defaults, this step is not necessary.

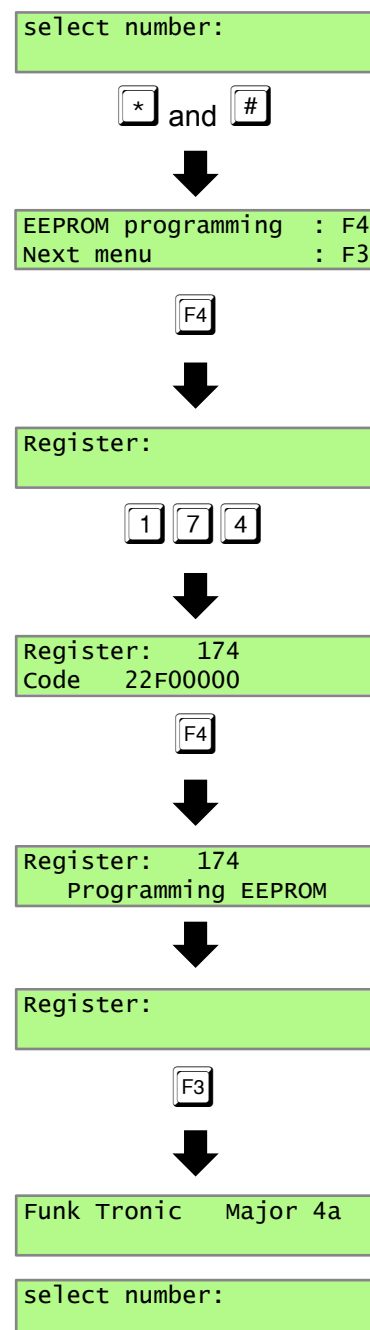
Hence, register 174 (function Z-button, short press) usually is programmed with 22F01 and register 175 (function Z-button, long press) with 00000. The first 0 in register 175 defines that no

additional function of the button is exercised upon long pressing.

The digits of register 174 have the following functions:

1. digit = 2 --> function 2 - transmit call
2. digit = 2 --> enter short call
3. digit = F --> awaiting input

Here are the steps that are necessary to check if the programming in register 174 is suitable for short call selection.



Changing the Assignment of Button Functions

All buttons of the Major 4a/5a are freely programmable. The numeric keys, the * and # keys as well as the function buttons for volume (only Major 5a), loudspeaker, short call, call and PTT are programmed ex factory for the respective tasks.

Every button can be assigned two different functions. One is achieved by pressing the button shortly and the other by pressing it for a longer time.

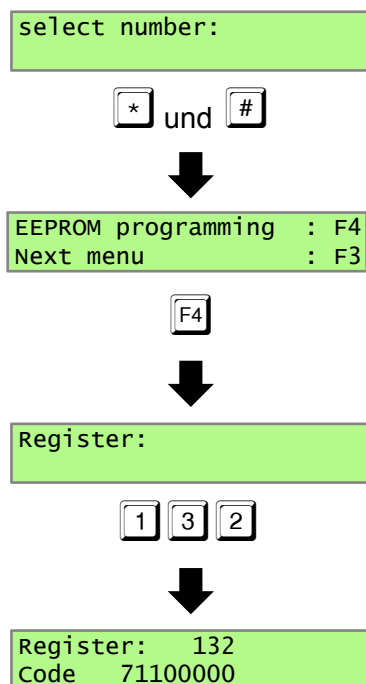
If the button is pressed for less than a second, the function programmed for „short press“ is executed. For longer pressing the function programmed for „long press“ is executed. If no function is programmed for long press, the „short press“ function is executed immediately.

Programming of the button's functions is done in registers 130-179. For every button 2 registers are reserved, the first one for short press, the second one for long press (see Table of Registers, registers 130-179). Every register contains 8 digits. For details on all function see section **Programmable Functions**.

The function of the LEDs in buttons F1 to F4 is defined in registers 180-183.

Here's an example for programming button .

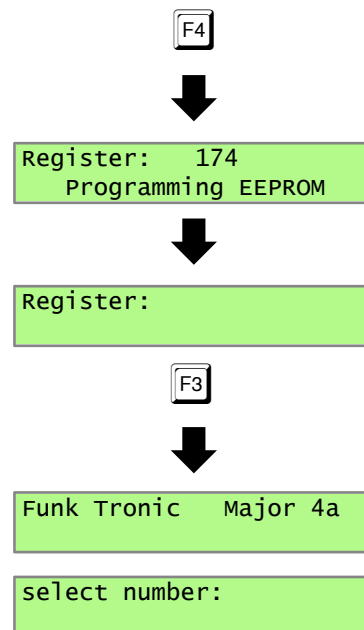
Programming „short press“:



- 1. digit 7 = function --> number input
- 2. digit 1 = number input --> new input
- 3. digit 1 = value 1 (0...F possible)

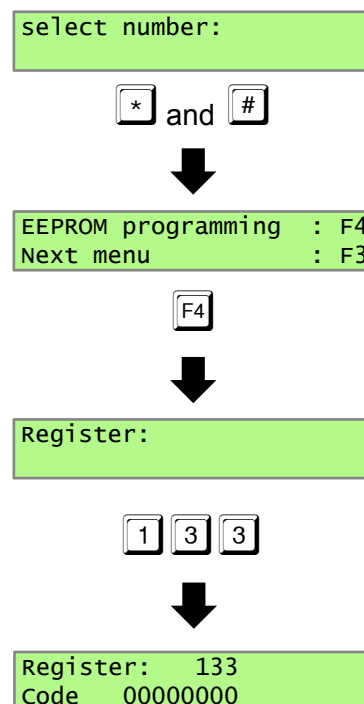
4.-8. digit 0 = not regarded

For saving, the following actions are necessary:



Ex factory, no function is programmed for long press of button . As an example, we are programming the button to set the volume to "1". wird hier die Lautstärke Stufe 1 programmiert.

Programming „long press“:



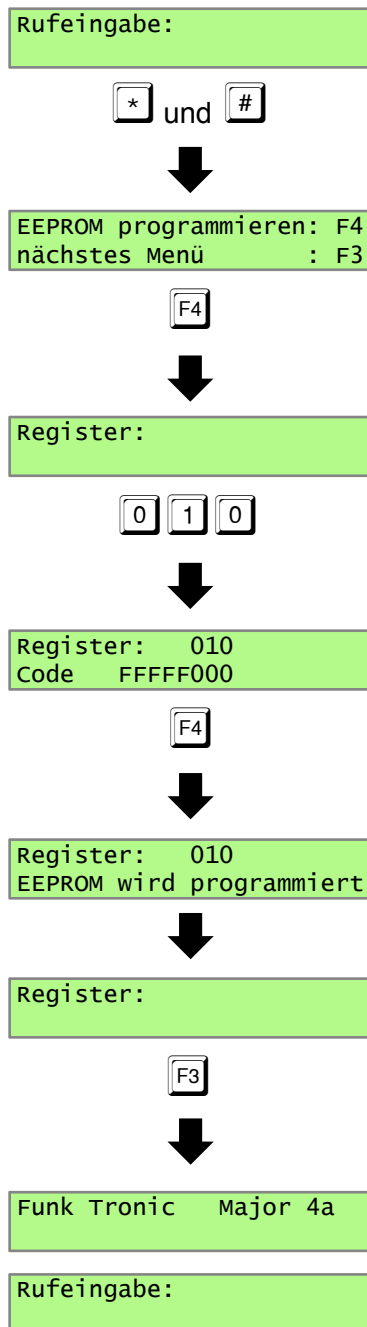
Customizing the Call Input

In **reg. 010** you can define the variable digits for **selective call input**.

If **reg. 010** is **FFFFF000**, all 5 digits must be entered via the keypad. If digits 1-3 should be fixed and only digits 4+5 are to be entered, **015FF000** must be programmed.

The **group call input** is configured accordingly in reg. 012.

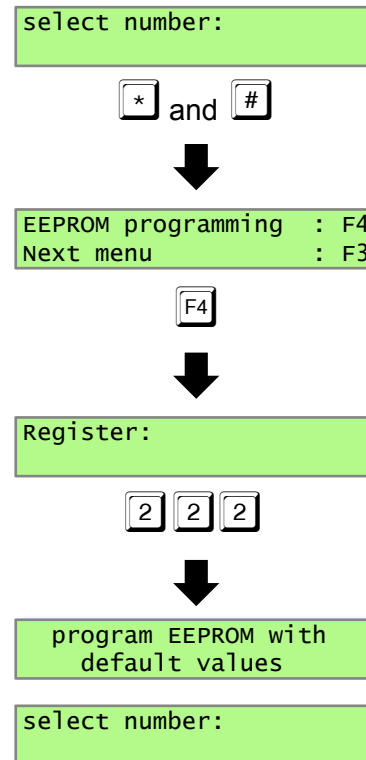
Example: Input of all 5 digits via the keypad



Reset to Factory Defaults

Using the following steps, Major 4a can be reset to factory defaults.

Attention! All parameters are reset to the default values without further confirmation.



When entering register 223 the potentiometers are also reset to factory defaults.

Transmit/Receive SDS

Transmit SDS

The Major can send 10 different SDS messages with lengths of up to 24 characters, each. These messages are transmitted to the currently displayed group call number or selective call number. To achieve this, a suitable button must be programmed with the respective function (e.g. **253F0000**, see section **Programmable Functions**).

In order to program your customized SDS texts, the Major 4a/5a must be connected to a PC using a RS232 connection cable. If your PC does not have a real COM port (9-pin SUB-D socket) a USB-to-COM adapter can be used.

In order to read-out the texts you have to enter the following 6 characters into your terminal program:

Ctrl-B + "SDS?" + Ctrl-C

To program the texts you have to enter the following 30 characters:

Strg-B + "SDSxyyy...y" + Strg-C,
where x is the SDS number (0-9), the y's are the characters of the text (24 in total).

Receive SDS

Received SDS messages are stored in the ID-code memory. Here, a single SDS consists of max. 14 characters for the originator's name and max. 2x14 characters text. The display alternately switches through the name and the 2 text lines. As in the Kenwood radios, no alias is available, the originator's call ID is displayed. For configuration of SDS display and ID-code see **reg. 087**.

Analog Channels

For software version 3.05 and newer up to 4 channels can be defined as analog channels. However, the functions are limited to the most essential ones (e.g. 5-tone encoder/decoder and PTT). In contrast to the digital channels, a call is transmitted using the call button, like in the standard software of Major 4a/5a.

The following registers are used for configuration:

Reg. 013: 5-tone encoder

Reg. 067: channel numbers of the analog channels

Reg.184/185: function of the call button in analog mode

ACK Request

For SW version 3.06 and newer the acknowledge (ACK) request is supported for the more recent NEXEDGE radios (SW version 4.40.00 and newer), too. To send ACK requests with the PTT, **digit 8 in reg.050** must be programmed to **1**.

Default Group Call (since V3.06)

It is now possible to define a standard group call, to which the display is reset after a certain idle time. Thus, your standard group does not have to be entered, but is usually available just by pressing the red PTT button (see **Reg. 060**).

Table of Registers Major 4a/5a

reg. function	reg. function
000 short call 0-9	8 th digit: 0 = decoder off 1 = decoder on
-009 1 st digit: 0 = group call, 1 = selective call 2 nd -6 th digit: variable digits, that must be entered	
010 selective call register 1 st -5 th digit: digits for selective call variable digits are coded as F 6 th digit: display the programmed group call if digits 1-5 are not programmed y/n (1/0)	030 configuration 1 for decoder 1 031 configuration 1 für decoder 2 032 configuration 1 für decoder 3 033 configuration 1 für decoder 4 034 configuration 1 für decoder 5 035 configuration 1 für decoder 6 036 configuration 1 für decoder 7 037 configuration 1 für decoder 8 038 configuration 1 für decoder 9 039 configuration 1 für decoder 10 030-039:
011 general configuration 1 st digit: language 0 = German 1 = English 2 = French 3 = Dutch 4 = Italian 5 = Czech 4 th digit: RS232 monitor is on/off (1/0) at power-on 5 th digit: pressing *+# (or F1+F4) is necessary for n*1s to enter programming mode 0 = immediately F = disabled	1 st digit: alarm tone type 2 nd digit: alarm tone duration n*200ms 3 rd digit: alarm tone volume (0-9, A..F=Offset +0...5) 4 th digit: call volume duration n*200ms 5 th digit: call volume
012 group call register 1 st -5 th digit: digits for group call variable digits are coded as F 6 th digit: display the programmed group call if digits 1-5 are not programmed y/n (1/0)	040 configuration 2 für decoder 1 041 configuration 2 für decoder 2 042 configuration 2 für decoder 3 043 configuration 2 für decoder 4 044 configuration 2 für decoder 5 045 configuration 2 für decoder 6 046 configuration 2 für decoder 7 047 configuration 2 für decoder 8 048 configuration 2 für decoder 9 049 configuration 2 für decoder 10 040-049:
013 5-tone encoder (analog channels) 1 st -5 th digit: e-tone sequence, variable digits are coded as F 6 th -8 th digit: must be coded as 0	1 st digit: ID-mode of call 0 = 5-tone sequence 2 nd digit: switching output: number: 0 (none), 1-7 3 rd digit: switching output: 0(off) F(on) for a variable time: 1-D (0-13)s 4 th digit: acknowledgement: 0 = no acknowledgement 1 = acknowledgement 2 = single tone 3 = own ID-code 4 = received ID-code 5 th digit: Loudspeaker / LED: 0 = no action 1 = LS on 2 = LED fashes 3 = LS on + LED flashes
020 decoder 1 021 decoder 2 022 decoder 3 023 decoder 4 024 decoder 5 025 decoder 6 026 decoder 7 027 decoder 8 028 decoder 9 029 decoder 10 020-029: 1 st -7 th digit: decoder, program unused digits with an F	

reg. function	reg. function
050 loudspeaker (LS) configuration 1st-3rd digit: LS timer: nnn * 1s (000=no timer, FFF=open mode) 4thdigit: LS on taking earphone (only M4a) 0 = off 1 = on 2 = unchanged 8thdigit: send ACK Request with PTT y/n (1/0) 051 general configuration 1st-3rd digit: transmission time limit nnn * 1s. 4thdigit: 0 = 4-wire simplex 1 = 4-wire duplex 2 = 2-wire simplex 3 = 2-wire duplex 5thdigit: 0 = LS is off after call tone sequence is not heard 1 = LS is on after call tone sequence is not heard 2 = LS is off after call tone sequence is heard 3 = LS is on after call tone sequence is heard 052 display lighting 1st-3rddigit: lighting is active for nnn *1s 000 = lighting disabled 001 = lighting is always on 053 PTT buttons are blocked, if: 1stdigit: 0 = never 1 = carrier is present 2 = muted externally 3 = muted externally or carrier present 054 status configuration 1stdigit: number of status digits (1-3) 2nd-4th digit: status after power-on 5th digit: status is offset by 10 input 0 - 9 => status 10 - 19 y/n (1/0) 055 general configuration 3rddigit: key beep (on/off = 1/0) 060 timer for reset to default group 1st-3rd digit: time until reset nnn*1s 000 = deactivated 6th-8th digit: default group FFFFF: reset deletes group	066 configuration for channel select 1st digit: 0 = ne channel select 1 - 3 = channels of 1-3 digits 5 - 7 = channels of 1-3 digits which are displayed permanently 2nd digit: 0 = numeric channel display 1 = display channel name (if available) 067 analog channels digits 1+2, 3+4, 5+6, 7+8: numbers of the analog channels e.g.: 01FFFFFF = channel 01 is analog 083 configuration for radio mute 1stdigit: output for radio mute 0=off 1-7,8=TX 2nd digit: logics of radio mute function 1=RX 2=TX 3=RX+TX 1-3=active low if criteria are met 5=RX 6=TX 7=RX+TX 5-7=active low if criteria are not met 3rd digit: after-run time (n*1s) 087 ID-code display 1st+2nd digit: display time ID-code/SDS nn*100ms 3rd+4th digit: display time of one SDS part nn*100ms 5th digit: no flashing of the LS LED upon incoming: 1: ID-code 2: SDS 3: ID-code or SDS 095 configuration I/O 1-5 (digits 1-5) 096 configuration I/O 6-7,TX (digits 1-3) 095-096: 0: none 1: output 2: input, active low 4: input, active high 8: output, outside switching 9: output, inverted 097 service password (master password) 099 customer password

reg. function	reg. function
100 volume 1 st digit: save last volume y/n (1/0) 2 nd digit: volume at power-on 103 short call A 104 short call B 105 short call C 106 short call D 107 short call E In registers 108 to 129 the functions of the inputs are programmed. Every input has two functions: one upon activation (passive => active) and one upon deactivation (active => passive). 108 function PTT2 passive > active 109 function PTT2 active > passive 110 function IN1 passive > active 111 function IN1 active > passive 112 function IN2 passive > active 113 function IN2 active > passive 114 function IN3 passive > active 115 function IN3 active > passive 116 function IN4 passive > active 117 function IN4 active > passive 118 function IN5 passive > active 119 function IN5 active > passive 120 function IN6 passive > active 121 function IN6 active > passive 122 function IN7 passive > active 123 function IN7 active > passive 124 function TX passive > active 125 function TX active > passive 126 function RX (SQL) passive > active 127 function RX (SQL) active > passive 128 function DC passive > active 129 function DC active > passive In registers 130 to 179 the functions of the buttons are programmed. Every button has two functions, too: one for short pressing of the button and one for long pressing. 130 function 0 -button short 131 function 0 -button long 132 function 1 -button short 133 function 1 -button long 134 function 2 -button short 135 function 2 -button long 136 function 3 -button short	137 function 3 -button long 138 function 4 -button short 139 function 4 -button long 140 function 5 -button short 141 function 5 -button long 142 function 6 -button short 143 function 6 -button long 144 function 7 -button short 145 function 7 -button long 146 function 8 -button short 147 function 8 -button long 148 function 9 -button short 149 function 9 -button long 150 function S1-button short 151 function S1-button long 152 function S2-button short 153 function S2-button long 154 function S3-button short 155 function S3-button long 156 function S4-button short 157 function S4-button long 158 function * -button short 159 function * -button long 160 function # -button short 161 function # -button long 162 function F1-button short 163 function F1-button long 164 function F2-button short 165 function F2-button long 166 function F3-button short 167 function F3-button long 168 function F4-button short 169 function F4-button long 170 function PTT-button short 171 function PTT-button long 172 function RUF-button short 173 function RUF-button long 174 function Z-button short 175 function Z-button long 176 function LS-button short 177 function LS-button long 178 function VOL-button short (only Major 5a) 179 function VOL-button long (only Major 5a) 184 CALL-button in analog mode short 185 CALL-button in analog mode long In registers 180 to 183 the meaning of the LEDs in the F-buttons is programmed. 180 function LED in F1 181 function LED in F2 182 function LED in F3 183 function LED in F4

180-183: 1st digit: function

- 0: no function
- 1: display switching output status
- 2: display channel
- 3: display telephone mode
- 4: display decoder status

if 1st digit = 1: display status of switching output2nd digit: 1-7: number of the switching output (1-7)3rd digit:

- 0: display, if active low (normal)
- 1: display, if active high (inverted)

if 1st digit = 2: display channel2nd+3rd digit: 00-99 (channel 00-99)if 1st digit = 5: display monitor status

- 2.Stelle: 0 = LED on if monitor is on
- 1 = LED on if monitor is off

189 headset configuration

1st-3rd digit: threshold voltage (analog-digital converter for headset detection nnn (000-999) * 5mV, headset is present if voltage is lower

222 restore factory defaults

223 restore factory defaults including potentiometer settings

Attention: factory defaults are restored without further confirmation directly after input of the register number

Programmable Functions

Programmable functions for buttons and inputs: The first digit of the respective register contains one of the following functions. The additional digits define the function in detail.

1st digit: function

- 0: no function
- 2: transmit call
- 3: PTT
- 4: volume
- 5: channel selection / switching output
- 6: ID-code memory
- 7: calling number/tone input
- 9: ext. inputs

Function 2 (transmit call):

1st digit: 2: transmit call2nd digit: 2: transmit short call3rd digit: 0-9: transmit short call n

F: manual input of short call number

1st digit: 2: call2nd digit: 5: switch call mode3rd digit: 0: activate group call

1: activate selective call

2: status input on/off

3: activate SDS

E: toggle group call / selective call

1st digit: 2: call2nd digit: 5: switch call mode3rd digit: 3: activate SDS4th digit: 0-9: SDS 0-98th digit: 0: send SDS immediately

1: send SDS whenn PTT is pressed

1st digit: 2: call2nd digit: 7: send SDS to group3rd digit: 0-9: SDS 0-9

4th-8th digit: 00000-99999: group number, to which the SDS is sent

Function 3 (PTT):

1st digit: 3: PTT2nd digit: 0-3: button starts PTT

(ends when button is released)

4-7: input starts PTT

(ends with function PTT off)

0,4: gooseneck mic.

1,5: headset mic.

2,6: handset mic.

3,7: gooseneck- or headset mic.

8: switching of GN / HS mic.

F: PTT off

(if started with input)

1st digit: 3: PTT2nd digit: 8: switching of GN / HS mic.3rd digit: 0: GN microphone is on

1: HS microphone is on

2: automatic HS detection

(Standard after power-on)

E: toggle GN/HS

F: input

4th digit: 0: no text display

1: n*100ms text display

Programmable Functions

Function 4 (volume):

- 1stdigit: 4: volume
2nddigit: 0: toggle loudspeaker (on/off)
1: volume
3: toggle monitor function
1stdigit: 4: volume
2nddigit: 1: volume
3rddigit: 0-9: volume
A: increase by 1 step
B: decrease by 1 step
F: input
4thdigit: 0-9: minimum volume 0-9
5thdigit: 0-9: maximum volume 0-9

1stdigit: 4: volume
2nddigit: 3: toggle monitor function
3rddigit: when idle and monitor active, LS-LED
0= is off 1= flashes slowly
2= flashes fast 3= is on

Function 5 (channel selection / switching outputs):

- 1stdigit: 5: channel selection
2nd-4thdigit: 000-999: channel nnn
FFF: input

1stdigit: 5: switching outputs
2nddigit: E: set status of switching output
3rddigit: 1-7: number of the switching output (1-7)
F: manual input of the number
4thdigit: 0: switching output off (passive, high)
1: switching output on (active, low)
3: switching output on for defined time
E: toggle switching output (on/off)
F: manual input of the status
6th-8thdigit: 001-255: n*100ms (if 4thdigit = 3)

Function 6 (ID-code / SDS memory):

- 2nddigit: 0: delete ID-code
1: display next ID-code
2: display most recent ID-code
5: copy ID-code to call input
(for call-back)

Function 7 (input calling number/tone):

- 1stdigit: 7: input of calling tone
2nddigit: 0: delete input
1: new input
2: input of complete call

1stdigit: 7: input of calling tone
2nddigit: 0: delete input
3rddigit: 0: delete call completely
1: delete last input
2: call +1 (see 4thdigit)
3: call -1 (see 4thdigit)

- 1stdigit: 7: input of calling tone
2nddigit: 1: new input
3rddigit: 0-E: calling tone 0-E
F: break

1stdigit: 7: input of calling tone
2nddigit: 2: input of complete call
3rddigit: 1-5: number of digits
4th-8thdigit: 1-5 digits

Function 9 (ext. inputs):

- 1stdigit: 9: external inputs
2nddigit: 1: external muting
3rddigit: 0: muting off
1: muting on
4thdigit: 0: TX-LED is off during silence
1: TX-LED flashes during silence

Technical Data

Operating Voltage	12 V
Current Consumption	max. 800 mA
Weight	1,5 kg
Dimensions WxDxH (without gooseneck)	245 x 220 x 95 mm
input impedance 2-wire/4-wire	600 Ohm
input level 4-wire	50 mV (-24 dBm) bis 775 mV (0 dBm)
input level 2-wire	70 mV (-21 dBm) bis 1050 mV (+2,5 dBm)
output impedance 2-wire/4-wire	600 Ohm
output level at 600 Ohm	
AF without additional pilot-tone	30 mV (-28 dBm) to 550 mV (-3 dBm)
AF with additional pilot-tone	30 mV (-28 dBm) to 450 mV (-5 dBm)
Set ex factory to	450 mV

Tone Table				
Tone	ZVEI 1	CCIR	ZVEI 2	EEA
0	2400 Hz	1981 Hz	2400 Hz	1981 Hz
1	1060 Hz	1124 Hz	1060 Hz	1124 Hz
2	1160 Hz	1197 Hz	1160 Hz	1197 Hz
3	1270 Hz	1275 Hz	1270 Hz	1275 Hz
4	1400 Hz	1358 Hz	1400 Hz	1358 Hz
5	1530 Hz	1446 Hz	1530 Hz	1446 Hz
6	1670 Hz	1540 Hz	1670 Hz	1540 Hz
7	1830 Hz	1640 Hz	1830 Hz	1640 Hz
8	2000 Hz	1747 Hz	2000 Hz	1747 Hz
9	2200 Hz	1860 Hz	2200 Hz	1860 Hz
A	2800 Hz	2400 Hz	886 Hz	1055 Hz
B	810 Hz	930 Hz	810 Hz	930 Hz
C	970 Hz	2247 Hz	740 Hz	2247 Hz
D	886 Hz	991 Hz	680 Hz	991 Hz
E	2600 Hz	2110 Hz	970 Hz	2110 Hz
Duration	ZVEI 1	CCIR	ZVEI 2	EEA
min.	52.5 ms	75 ms	52.5 ms	30 ms
typ.	70 ms	100 ms	70 ms	40 ms
max.	87.5 ms	125 ms	87.5 ms	50 ms

Important Settings at the Kenwood Radio

Menu: Edit

==> Additional Functions ==> Additional Functions 1 ==> General Page 3

- COM-Port 1: Data, Normal, Stop bits: 2, 9600 Baud
- COM-Port-Priority: Serial Data
- PC-Interface Protocol: Version 2

Zusatzfunktionen 1

Allgemeine Seite 1 | Allgemeine Seite 2 | **Allgemeine Seite 3** | Allgemeine Seite 4

Batterie/ Akku

Batterie-/ Akkusparbetrieb: Aus

Batterie-/ Akkuanzeige: LCD & LED

Batterie-/ Akkuwarnung: Immer

☒ Batterie-/ Akkuwarnton

LEDs

☒ Senden-LED

☒ Belegt-LED

☒ Monitor-LED

COM-Port-Priorität: Serielle Daten

PC-Schnittstellenprotokoll: Version 2

COM-Port-Nummer	Funktion	Polarität	Stopp-Bit	Baud-Rate
COM-Port 0	Keine	Normal	2	9600
COM-Port 1	Daten	Normal	2	9600
COM-Port 2	Keine	Normal	2	9600

CVW-ID Erweiterungsschalter

Schließen Hilfe

==> General Page 4

- Serial Input: Data Priority

Zusatzfunktionen 1

Allgemeine Seite 1 | Allgemeine Seite 2 | Allgemeine Seite 3 | **Allgemeine Seite 4**

PTT-ID (Analog)

PTT-ID-Typ: DTMF

Senden Anfang:

Senden Ende:

PTT-ID-Pausendauer [s]: 1

Meine ID

Meine ID-Töne: 1 2 3 4 5 6 7 8

Meine ID:

☐ Meine ID bei Inbetriebnahme Bearbeiten

Stapel

☒ Statusnachrichten-Stapel

☒ Kurznachrichten-Stapel

☐ Anrufer-ID-Stapel

☒ Stapel zuletzt empfangener Nachrichten

☐ Nachrichtenspeicher

☐ ID-/ Nachrichtenstapel mit Zeitstempel

Serieller Ausgang

☒ Statusnachricht an Serieller Ausgang

☒ Kurznachricht an Serieller Ausgang

☒ Geräte-ID an Serieller Ausgang

☐ J-Befehl an Serieller Ausgang

☐ Transparenter Kopf

Serieller Eingang

☒ Datenvorrang

Status Halten: Ausgewählt

Schließen Hilfe

Menu: Edit ==> Advanced Function ==> Modulation Line
- Mic-PTT: MI2-Line: Connect

Erweiterte Funktion

Zusatzkarte | AUX | Entfernte Zone-CH/GID | **Modulationsleitung** | Mobilfunktion

PTT	Mit Modulationsleitung Verbinden			Mit QT/DQT	Mit STE
	Mik-Leitung	MI2-Leitung	DI-Leitung		
Mik-PTT	Verbinden	Verbinden	Freigeben	Ja	Ja
Externe PTT (Sprache)	Freigeben	Verbinden	Freigeben	Ja	Ja
Externe PTT (Daten)	Freigeben	Freigeben	Verbinden	Ja	Ja
Daten-PTT	Freigeben	Freigeben	Verbinden	Ja	Ja

Modulationsleitung durch Mik-PTT

```
graph LR; Mik((Mik)) -- "Verbinden" --> AP[Audio-Prozessor]; MI2((MI2)) -- "Verbinden" --> AP; DI((DI)) -- "Freigeben" --> AP; AP --> MK[Modulationskreis]; MK --> ANT[ANT];
```

The diagram illustrates the signal flow for the 'Modulationsleitung durch Mik-PTT' function. It features three input lines on the left: 'Mik' (represented by a D-shaped symbol), 'MI2' (represented by a circle), and 'DI' (represented by a circle). Each line has a switch labeled 'Verbinden' or 'Freigeben'. The 'Mik' and 'MI2' lines are connected to the 'Audio-Prozessor' block. The 'DI' line is connected to the 'Modulationskreis' block. The 'Audio-Prozessor' block outputs to the 'Modulationskreis' block, which then connects to the 'ANT' (antenna) output.

General Safety Information

Please read the operating instructions carefully before installation and setup.

The relevant regulations must be complied to when working with 230V line voltage, two-wire-lines, four-wire-lines and ISDN-lines. It is also very important to comply to the regulations and safety instructions of working with radio installations.

Please comply to the following safety rules:

- All components may only be mounted and maintained when power is off.
- The modules may only be activated if they are built in a housing and are scoop-proof.
- Devices which are operated with external voltage - especially mains voltage - may only be opened when they have been disconnected from the voltage source or mains.
- All connecting cables of the electronic devices must be checked for damage regularly and must be exchanged if damaged.
- Absolutely comply to the regular inspections required by law according to VDE 0701 and 0702 for line-operated devices.
- Tools must not be used near or directly at concealed or visible power lines and conductor paths and also not at and in devices using external voltage – especially mains voltage - as long as the power supply voltage has not been turned off and all capacitors have been discharged. Electrolytic capacitors can be still charged for a long time after turning off.
- When using components, modules, devices or circuits and equipment the threshold values of voltage, current and power consumption specified in the technical data must absolutely be complied to. Exceeding these threshold values (even if only briefly) can lead to significant damage.
- The devices, components or circuits described in this manual are only adapted for the specified usage. If you are not sure about the purpose of the product, please ask your specialized dealer.
- The installation and setup have to be carried out by professional personnel.

Returning of Old Equipment

According to German law concerning electronic devices old devices cannot be disposed off as regular waste. Our devices are classified for commercial use only. According to § 11 of our general terms of payment and delivery, as of November 2005, the purchasers or users are obliged to return old equipment produced by us free of cost. FunkTronic GmbH will dispose of this old equipment at its own expense according to regulations.

Please send old equipment for disposal to:

FunkTronic GmbH
Breitwiesenstraße 4
36381 Schlüchtern

>>> Important hint: freight forward deliveries cannot be accepted by us.

2 February, 2006

Subject to change, Errors excepted

Release Notes

Oct-09, 2014 - Translation of German manual dated from Oct-08, 2014