VHF Transceiver AR6201-(X0X)

<u>Software Versions:</u>
SCI1050S305 Version 3.05
SCI1051S305 Version 1.49
and upwards

Operating Instructions

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Table of Contents

1. Introduction

Before use of the VHF Transceiver it is recommended to study this instruction manual carefully because it contains safety as well as operating instructions.

Include this Operation Instruction to the documentation carried on board the aircraft.

In case of additional questions concerning the AR6201 contact any local BECKER DEALER or forward your request direct to BECKER "Product Support Department".

The terms WARNING, CAUTION and NOTE should be understood as follows:

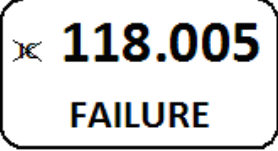|	
WARNING	Failing to comply with the referenced instruction may lead to injuries or fatal accidents.
CAUTION	Failing to comply with the referenced instruction may lead to malfunction or damage on the AR6201.
NOTE	Referenced instruction or information to which particular attention should be paid.

2. General Operation Instructions

The following instructions are recommended to be followed for safe and normal operation of VHF transceiver:
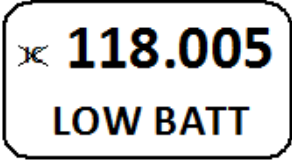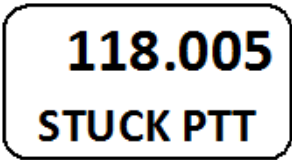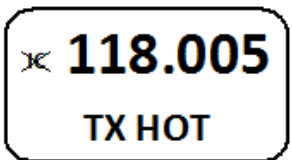
A voice communication test shall be performed before take-off and it should be noted that, if the communication test is carried out close to the ground station, the results may be positive even if the antenna cable is broken or short-circuited. In such a case, at a distance of 5 to 10 km and above, communication might not be possible.

Speak always loud, clear and not too fast for optimal voice communication. Keep the microphone always close to the lips otherwise a special suppressing circuit in the AR6201 will not be capable to suppress normal cabin noise with the foreseen strength for keeping the voice signal in the foreground.

Only microphones or headsets which are suitable for use in an aircraft shall be used. In aircraft made of wood or synthetic materials or in gliders or helicopters, incoming radiation can affect the integrated amplifier of the microphone (feedback), noticeable in the ground station by whistling and/or heavy distortion. The described disturbances can occur in different ways and on different transmission frequencies.

Display Contents	Description
118.005 **FAILURE** Reappear every 5 seconds.	The transceiver has detected an internal failure during normal operation. Depending on failure reason, the device may still operates with a degraded performance or not operate at all. <u>Possible reasons for indication:</u> - Out of specified environmental conditions - HW or SW failure inside the transceiver. Contact maintenance shop for assistance.
FAILURE **PRESS ANY KEY**	The transceiver has detected an internal failure during start up. Depending on failure reason, the device may still operates with degraded performance or not operate at all. <u>Possible reasons for indication:</u> - Out of specified environmental conditions - HW or SW failure inside the transceiver. Contact maintenance shop for assistance.

4.13 Warning and Failure Indications

Display Contents	Description
✕ 118.005 **LOW BATT** Reappear every 5 seconds.	"LOW BATT" appears after the supply voltage of the transceiver dropped below the threshold defined in the Installation Setup. Transceiver still operates. Depending on the aircrafts supply voltage the transceiver may have a reduced performance. Below 10 volts the speaker output is switched "OFF"! Possible reasons for indication: - Problems with battery capacity (gliders), - Power interrupts, - General problem of power supply, - Wrong (too high) adjusted threshold in Installation Setup.
118.005 **STUCK PTT** Reappear every 5 seconds.	"STUCK PTT" indication appears after 120 seconds of continues transmitting. The transceiver return to Receive Mode even if the /PTT line is still active (GND). For initiating a new transmission, the /PTT line needs first to become inactive (open). Possible reasons for indication: - Transmitting more than 120 seconds. - PTT-key stuck. - /PTT line permanently grounded (short circuit in installation).
✕ 118.005 **TX HOT** Reappear every 5 seconds.	"TX HOT" indicates the internal device temperature exceeds + 90°C. The AR6201-(X0X) still operates, but the transmitter has reduced RF output power. Possible reasons for "TX HOT" indication: - Too hot environmental temperature, excessive long transmissions times in insufficient airflow conditions.

WARNING

For power supply voltages below 10 V the speaker output of the transceiver is automatically switched off, without dedicated notification of the user!

For power supply voltages below 10 V pilots have to use the headphone output. Depending on settings of installation setup "LOW BATT" may be indicated if supply voltage drops below predefined threshold.

If this threshold is adjusted in range of 10.2 … 10.5 VDC this "LOW BATT" warning may be used to take steps against the coming loss of communication.

CAUTION

Avionics equipment, e.g. the VHS transceiver, should not be switched ON during engine(s) being started or shut-down.
Reason: Excessive pulses on the DC bus of the aircraft during start-up and shut-down phase may cause damage on electrical circuit of any installed instrument.

3. Purpose of Equipment

The VHF transceiver enables voice communication in the very high frequency band between 118.000 MHz to 136.9916 MHz (radio communication part of air-band) with a selectable channel spacing of 25 kHz or 8.33 kHz.

4. Operation

> **NOTE 1:** **In this section the figures for illustrating display content mainly show a transceiver working in 8.33 + 25 kHz mixed mode. Dedicated pictures for 25 kHz mode are not explicitly shown as the display content is very similar (They differ only in the number of digits for the displayed frequency).**

> **NOTE 2:** **The following graphics of the VHF COM display content show the 8.33 kHz channel spacing for all possible operation modes.**

The panel brightness for display illumination and pushbuttons can be changed from 0 to 100 by turning the "ROTARY ENCODER". Adjustment 0 means illumination is turns "OFF" completely and 100 means the illumination is at maximum.

> **Note:** **This page is not available if in Installation Setup the dimming input is set to 14 V or 28 V. Dimming control by the aircrafts dimming circuit is at this selection performed.**

Another press on the "MDE" key change to SQUELCH and by means of the "ROTARY ENCODER", the setting can be changed. The Active Frequency stays indicated in the top line of the display and on the bottom line "SQUELCH" label appears together with a bar graph and a figure showing the current value.
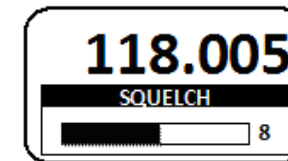

The squelch threshold can be changed from 6 to 26 by means of the "ROTARY ENCODER".
Adjustment 6 makes very week and noisy signals audible. Squelch opens at about -105 dBm.
Adjustment 26 makes only quite strong signals with low noise content audible. Squelch opens at about -87 dBm.

Note: **In installation with the second controller, AR6201-(X0X) adjusts VOX threshold for Microphone 1 only, RCU6201 adjusts VOX threshold for Microphone 2 only.**

An adjustment of the VOX threshold level is not possible if VOX forced to be "OFF" (due to Enabled speaker in current Audio Configuration).

By changing the VOX threshold level to above +10, VOX can be switched "OFF". In this case, "OFF" replaces the numerical value indication (see figure below):
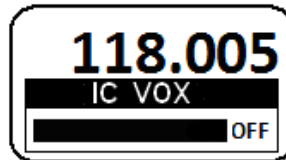
If VOX switched "OFF", activation of intercom operation by the external intercom switch (/IC discrete input) is possible at any time.

4.12.2 Pilots Menu

Make a two seconds press on the "MDE" key to enter the Pilots Menu.
The Pilots Menu can be left by a two seconds press again on the "MDE" key, or left automatically after a few seconds, or after a short push on the "ROTARY ENCODER" when SQUELCH setting page is visible.
The Pilots Menu consists of two pages:
- BRIGHTNESS (first page)
- SQUELCH (second page)

Toggling between the pages is provided by a short press on the "MDE" key, or by a short press on the "ROTARY ENCODER".

BRIGHTNESS
The Active Frequency stays indicated in the top line of the display.
Underneath the Active Frequency, the "BRIGHTNESS" label appears in combination with a bar graph including a figure for the selected value.

4.1 Controls and Indicators

Figure 4-1 controls and indicators

Controls

|	Symbol	Description	Main Function
1		IC/SQL (Intercom/Squelch)	"Short press" during normal operation toggles the RX -SQL ON/OFF. "Long press" during normal operation activates Intercom Menu.
2	MDE	MDE (Mode)	"Short press" during normal operation changes the frequency selection mode. "Long press" during normal operation activates the pilots menu.
3	STO	STO (Store)	"Short press" during normal operation activates storage procedure.
	8/25	Change of Channel Spacing	Keeping the MOD and STO button pressed simultaneously for more than 2 seconds changes from 8.33 kHz to 25 kHz channel spacing and vice versa.
4	↕/SCN	↕/SCN (Exchange/SCAN)	"Short press" during standard mode or scan mode toggles between preset active frequency. "Long press" activates scan mode.
5		Volume Knob	Turning the transceiver ON/OFF and adjusts volume level of received signal.
6		„ROTARY ENCODER"	Turning "ROTARY ENCODER" changes the settings of several parameters (frequency, IC-volume, VOX …). Pushing the "ROTARY ENCODER" toggles between the digits and acts as an enter key.
7		Display	
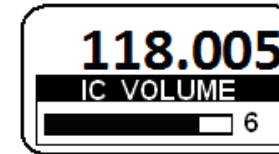
By means of the "ROTARY ENCODER" the intercom volume can be changed from 0 to 46, 0 means minimum intercom volume, 46 means maximum intercom volume. Intercom volume setting affects the Intercom audio signal and side tone signal routed to the headphone.

Note: **In installation with the second controller, adjustment of Intercom Volume by means of the RT6201 has no effects. IC VOLUME can be regulated only by means of AR6201-(X0X).**

A short press on the "IC/SQL" key activates the Intercom VOX page.
- Intercom VOX Menu

The Active Frequency stays indicated in the top line of the display. On the next two lines the label "IC VOX" and a bar graph with numerical value are indicated.
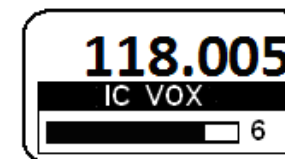
By means of the "ROTARY ENCODER", Intercom VOX threshold can be set. Setting -30 means VOX is most sensitive and even a very low microphone signal already triggers the VOX threshold for Intercom operation, +10 means that VOX is less sensitive and only high microphone signals trigger the VOX threshold for Intercom operation.

Note: **At a setting for VOX threshold of -15 a convenient behaviour of the VOX should be achieved in most aircrafts. This requires that mike sensitivity had been correct adjusted. If the mike sensitivity is incorrect adjusted, VOX may work not satisfying.**

Activation of Intercom operation provided by an external intercom switch independent of VOX or speaker status (enabled/disabled). The external intercom switch has priority. During intercom operation the Speaker output is disabled

4.11 VOX & speaker operation

The AR6201-(X0X) disables VOX if enabling speaker in active Audio Configuration.

With active speaker, enabled in Audio Configuration, VOX is always "OFF" and intercom via VOX is not possible. This prevent from oscillation of VOX due to acoustical feedback.

Speaker output is switched "OFF" even if speaker is enabled in current Audio Configuration in one of the following cases:
- Transceiver is in Transmission Mode,
- Intercom is activated by external intercom switch (/IC input),
- Power supply is below 10 Volt.

4.12 Menus

During normal operation in one of the Frequency Selection Modes the following menus can be activated:
- Intercom Menu for adjustment of intercom volume and VOX threshold,
- Pilots Menu for adjustment of panel brightness and squelch threshold.

4.12.1 Intercom Menu

A long press on "IC/SQL" key activates the Intercom Menu.
Another long press on MDE key terminates Intercom Menu, or leaves the menu automatically after 5 s timeout.

The Intercom Menu consists of two pages:
- Intercom Volume (first page),
- Intercom VOX (second page).

A short press on "IC/SQL" key provides toggling between the pages.
- Intercom Volume Menu

The Active Frequency stays indicated in the top line of the display, while "IC VOLUME" label appears in the bottom lines. Below the label "IC VOLUME" a bar graph with numerical value is displayed.

When the user presses and holds down a key for at least 2 seconds, the AR6201-(X0X) detects a "Long press" otherwise a "Short press" is assumed.

The whole content of the AR6201-(X0X) display is inverted for a short time, if any action is done by the user, e.g. pressing a key, and the operation is not allowed at this time.

Beside the main functions, described in the table on previous page, the controls have additional functions. Description for these functions will follow in the chapters below.

4.1.1 Symbols shown on the Display

Symbol	Meaning
IC	Intercom operation is active (triggered by VOX or external IC key).
✕	Intercom operation via VOX is disabled.
◁ ◁	Speaker enabled in Installation Setup and not muted. During Transmission and Intercom, the Speaker automatically is muted.
TX	The transceiver is in Transmission Mode
SQL	The squelch function is active. Receiver noise <u>only</u> suppressed.
SCAN	Transceiver operates in Scan Function.
►	In "Scan" function, an arrow is visible. The arrow points to the active or standby frequency from which the audio is deriving (see chapters 4.5.4 and 4.7)
STO	The transceiver performs a storage operation
LOW BATT	
128.2**25**	Inverted figures or letters on display ready to edit

4.2 Start–Up

CAUTION: **Do not turn "ON" the VHF transceiver when engines are being started or shut down.**

Note: **Excessive pulses on the DC bus of the aircraft may cause damage on electrical circuits of any installed instrument.**

a. Turn "ON" the VHF transceiver by turning the volume knob clockwise.

b. During PBIT (Power-On Built In Test) the display indicates the message "WAIT", the software version of "Control Head" (CH) and the software version of "Chassis Module" (CM) are indicated.

c. If the PBIT has detected an error, the display indicates "FAILURE" (for details see chapter 4.13)

d. If no error has been detected the transceiver starts in the Frequency Selection Mode last time used before switching "OFF" the unit.

4.3 Receive and Transmission Operation

The VHF transmitter provides operation in two modes:

- Receive Mode
- Transmission Mode

4.3.1 Receive Mode

If /PTT input is inactive and PTT key is not pressed, the transceiver stays in Receive Mode.

Automatic aux attenuation functionality is coupled with the auxiliary audio input. The level of the auxiliary input signal attenuates if intercom is activated by VOX or by /IC discrete input. The auxiliary input signal reverts to its previous value after intercom deactivation. The attenuation value can be adjusted within the range from 0 to 40dB.

The auxiliary audio input signal is, if enabled and not muted, mixed with the received signal from antenna and the intercom signal (if squelch triggered and intercom activated).
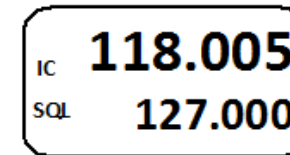
4.10 Intercom Operation

The transceiver has an internal built in intercom. With activated intercom the signals from the microphones are mixed and amplified to become audible on headphone output. This enables internal communication via headsets between both pilots.

Intercom operation in Receive Mode is also possible:
- Automatically via VOX (threshold adjustable in the Intercom Menu),
- Externally via intercom switch (pin P1-7).

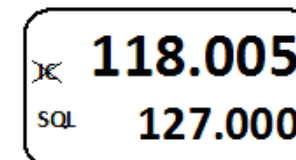If intercom operation is activated the "IC" sign is displayed.

Intercom operation is not possible in Transmission Mode.

Intercom activation via VOX is not possible if:
- Speaker is enabled,
- VOX is disabled by the user (refer Intercom Menu, chapter 4.12.1).

In both cases, the display shows the ✖ sign to indicate that activation via VOX is not possible.

After storing labels, the transceiver returns back to the previous Frequency Selection Mode (Standard Mode / Direct Tune Mode / Scan Function).
If no action occurs in label editing mode, the transceiver returns after 7 seconds to the previous Frequency Selection Mode without storing the frequency and label information.
Recalling labels associated to the stored frequencies is possible in Channel Mode (see chapter 4.4.3).

4.8.2 Automatic Storage Function

Transceiver automatically updates Last Channels Database only if STORE LAST CHANNEL option selected in MEMORY OPTIONS page in the Installation Setup. The Transceiver provides possibility to store 9 recently selected VHF frequencies.
The Last Channels Database of the transceiver updates automatically only when operated in Standard Mode, Direct Tune Mode or Scan Function.
When a new Active Frequency stay selected for at least 10 seconds, the VHF frequencies stored in LAST1, LAST2 … LAST8 shift to LAST2, LAST3 … LAST9 and the current Active Frequency is stored as LAST1.
In Channel Mode the automatically stored frequencies "LAST" can be recalled (see chapter 4.4.3).

4.9 Auxiliary Audio Input

The transceiver has an auxiliary audio input. In the Installation Setup, enabling or disabling the auxiliary audio is provided.
Is the input enabled, the audio signal applied to this input is transferred to the audio output(s) while the transceiver is in Receive Mode.
Is the input disabled, the adjacent input signal will be ignored.

AUX AUTO MUTE function depends on the AUX INPUT is selected on CONFIGURATION page in the Installation Setup. AUX AUTO MUTE function will mute the audio signal from the auxiliary audio input automatically, as long as the AR6201-(X0X) detects (based on squelch evaluation) a RX from the signal or user deactivates the squelch manually.
If this function is disabled the signal from the auxiliary audio input is permanently audible on the audio output, independently of the received signal or the squelch status.

In Receive Mode the headphone output, if enabled, can provide a mixed signal consisting of:
- received signal from antenna,
- intercom signal from intercom circuit (if intercom is active),
- signal from auxiliary input (if enabled).

In Receive Mode the speaker output, if enabled, can provide a mixed signal consisting of:
- received signal from antenna on operating frequency,
- signal from auxiliary input (if enabled).

The signal from the auxiliary input can be automatically muted under specific conditions.
Refer to chapter 4.9 for details.

4.3.2 Transmission Operation

If /PTT input is active (PTT key is pressed) the transceiver switches into Transmission Mode. Microphone(s) signals can modulate the transmitter.

The "TX" symbol in the left upper corner of the display indicates the AR6201-(X0X) is in Transmission Mode.

In Transmission Mode, the most user actions (changing Frequency Selection Mode, Channel Spacing Mode etc.), normally allowed in Receive Mode, are blocked. As an exception, in Standard Mode the "Preset" Frequency may still be changeable, even during transmission.

No intercom operation is possible in Transmission Mode.

The side tone (demodulated audio of the transmitted signal) is available on the headphone output. The Transmit Mode automatically deactivates the Speaker.

Note: **Transmission Mode is automatically terminated (return to Receive Mode) after 120 seconds of continuous transmitting even if PTT is still pressed. In this case "STUCK PTT" is indicated (refer chapter 4.13). For initiation of a new transmission, /PTT line needs first to become inactive.**

4.4 Frequency Selection Modes

The following Frequency Selection Modes can be available on AR6201-(X0X):
- **Standard Mode** (only this mode provides the **Scan Function**)
- **Direct Tune Mode**
- **Channel Mode**

The three modes (Standard Mode, Direct Tune Mode and Channel Mode) provide different user pages on the display for convenient selection of the operating frequency.

A consecutive short press on "MDE" key provide toggling between the three pages, which appear in the flowing order: **Standard Mode** *and* **Direct Tune Mode** *and* **Channel Mode** *and back to* **Standard Mode**…etc.

The Scan Function is a sub-mode of the Standard Mode, providing monitoring of two frequencies (Active Frequency and Preset Frequency) at the same time.
A 2 seconds press on "↕/SCN" key activates/deactivates the Scan Function.

Out of the three pages from the Frequency Selection Modes any page can be enabled or disabled in the Installation Setup but at least <u>one page must remain selected</u>.

selected by means of the "ROTARY ENCODER". The label "FREE" appear in front of "CHXX" if the selected channel number is vacant, but if the selected channel number contains an already stored frequency "USED" appears.
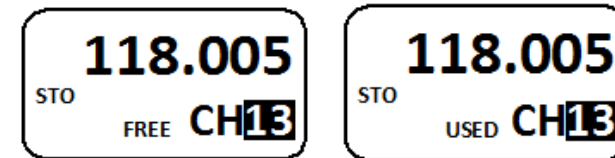
"FREE" and "USED" channel indication.

By entering the storage procedure, the transceiver proposes the first free channel for storing the Active Frequency. Beside the proposed channel, also every other channel within the range 1 to 99 is selectable by turning the rotary knob. For every selected channel, "USED" or "FREE" appears respectively.

Pushing on the "STO" key once again assigns the Active Frequency to the selected channel number, regardless of the channel is "FREE" or "USED". Afterwards the transceiver automatically activates storing of alphanumeric label assigned to the Active Frequency.
If the frequency has no label attached, ten underscore signs become visible, otherwise directly indicating the current label.
Cursor appears on the first position (see figures below).
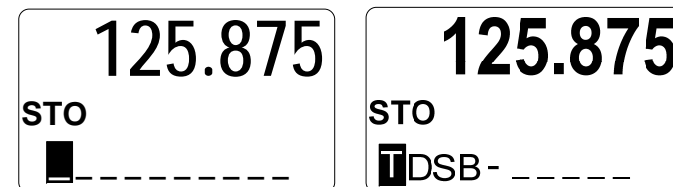
By turning the "ROTARY ENCODER characters can be selected ". Selection works in both directions (example: from "blank → A → B → C" by turning clockwise and from "C → B → A → blank" by turning counter clockwise). Each push on the "ROTARY ENCODER" shifts the cursor to the next position.
A short push on "STO" key stores the label and a long press on "STO" key clears currently edited label.

In the "8.33 and 25 kHz Mixed Mode" the displayed frequency consist of 6 digits. The transceiver tunes to all possible frequencies within the aviation VHF frequency band. The channel spacing and operating frequency is derived automatically from the selected and displayed frequency.

4.8 Storage Function

The VHF transceiver provides three databases:
1. User Channels Database
2. Last Channels Database
3. Labels Database

The **"User Channels Database"** provides 99 channels identified as CH01 to CH99 and to each channel, the user can assign any frequency within the VHF-COM range from 118.000 MHz to 136.9916 MHz by simply pressing the "STO" button. All 99 channels are editable, when selected, after the "STO" button is pressed.
The "User Channels Database" can be edited manually or uploaded/edited by using a PC-application connected to an interface port on connector J1 of the AR6201.
The transceiver automatically stores nine last used frequencies into the "Last Channels Database", identified and easy to recall as LAST1 to LAST9.
The **"Labels Database"** allows attaching a text label to each of the 99 stored VHF frequencies. To a particular VHF frequency, only one label is assignable and the label length is limited to 10 characters. The "**Labels Database"** can be edited or uploaded/edited by using a PC-application connected to an interface port on connector J1 of the AR6201.

4.8.1 Modification of User Channels Database and Labels Database

The User Channels Database and Labels Database can be modified (new entry added or existing entry edited) only, if CHANNEL STORE option is selected in the MEMORY OPTIONS page in Installation Setup.
Pushing on "STO" key activates Database modification in Standard Mode, Direct Tune Mode, or Channel Mode.
During this procedure, the display looks similar to the Channel Mode with the difference "STO" appear on the left side of the display. In the display top line the Active Frequency appears and the bottom line shows the already assigned or next vacant channel number. The channel number can be

4.4.1 Standard Mode

Push on "MDE" key until the Standard Mode page appears.
In Standard Mode page, the display indicates the Active Frequency in the top line and Preset Frequency in the bottom line.

Direct editing of the Active Frequency is not available like in the Direct Tune Mode. On this page, only editing of the Preset Frequency is possible. By the first push on the "ROTARY ENCODER", the MHz digits are inverted and turning the "ROTARY ENCODER" clock- or counter clockwise change the frequency. Two further pushes on the "ROTARY ENCODER", the first inverts the 100 kHz and the second selects the 25 / 8.33 kHz digits, enable for

modification of the frequency.

A short press of the "↕/SCN" key exchanges the Active and Preset Frequency. While the transceiver is in Transmission Mode, the Exchange between the frequencies is disabled.
Pressing the "STO" key activates storing of the Active Frequency into the next vacant memory place in the User Channels Database. (see chapter 4.8.1 for more details)

4.4.2 Direct Tune Mode

Push on "MDE" key until the Direct Tune Mode page appears.
If BATTERY VOLTAGE is deselected in the Installation Setup, this mode is ***not*** accessible! Only "Standard" or "Channel" mode are accessible.

The Active Frequency, indicated in the top line, in Direct Tune Mode is editable by means of the "ROTARY ENCODER" as described in chapter 4.5.1. The battery voltage, indicated in the bottom line shows the current value of the supply voltage.
Direct editing of the Active Frequency is available in the Direct Tune Mode. By the first push on the "ROTARY ENCODER", the MHz digits are inverted and turning the "ROTARY ENCODER" clock- or counter clockwise change the frequency. Two further pushes on the "ROTARY ENCODER", the first inverts the 100 kHz and the second selects the 25 / 8.33 kHz digits. The changes become active immediately.


Changing the Active Frequency is possible only when the transceiver is not transmitting.
Pressing STO key activates storing of Active Frequency in User Channels Database (see chapter 4.8.1)

4.6 RX Field strength indication

The RX field strength, represented inside the triangle "►" appearing in front of the currently receiving frequency, fills the triangle not, half or fully, depending on the strength of the signal. The field strength symbol is available in all three Frequency Selection Modes.

- **poor signal**, signal just passing squelch level (triangle empty)
- **good signal**, signal include a minor level of noise (triangle half filled)
- **strong signal**, very clear signal (triangle filled completely)
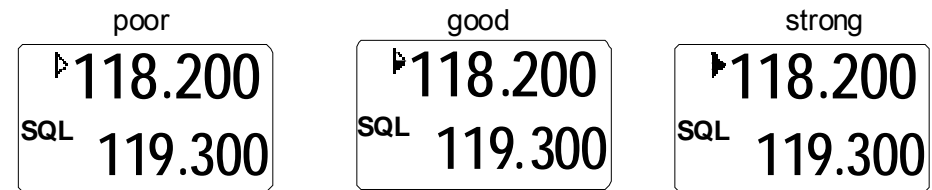
4.7 Channel Spacing Mode

The transceiver provide two frequency channel spacing operation modes, selectable by means of pressing "STO" and "MDE" keys simultaneously for at least 2 seconds.

8.33 kHz channel spacing (left) / 25 kHz channel spacing (right)

Toggling of frequency channel spacing Mode is only available for AR6201-(0XX) variants. The AR6201-(1XX) variants cannot be toggled. The AR6201-(1XX) variants are operating in 25 kHz Mode only.

In 25 kHz Mode 5 frequency digits are shown. Only operating frequencies with a channel spacing of 25 kHz are selectable. If 8.33 kHz channels are not in use this mode provides the advantage of faster tuning since skipping all 8.33 kHz frequencies.

If Preset Frequency detects an RX signal while on the Active Frequency no signal is present, the transceiver automatically switches over to the Preset Frequency. The arrow sign now appear in front of the Preset Frequency and the signal is audible. A sample display shows the picture below.

Reception on Preset Frequency in Scan mode

Disabling Squelch in Scan Function provides audio of the Active Frequency to the audio output all the time, regardless of the presence of RF signal on Active Frequency or Preset Frequency).
A short push on "↕/SCN" key exchange, without leaving the Scan Function, the Preset- with Active Frequency. While the transceiver is in Transmission Mode this function is disabled.
A short push on the "ROTARY ENCODER" activates editing the Preset Frequency (for details refer to 4.5.1 Standard Mode).
Note: **Transmission always executes on the Active Frequency, even if the monitored frequency is currently audible.**

4.5 Squelch

Independent of the selected operation menu, squelch can be toggled between "ON" and "OFF" by a short push on "SQL/IC" key.
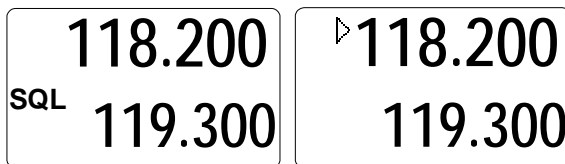
Squelch "ON"   Squelch "OFF"

If the squelch function is active ("ON") the Receivers noise is muted.
In the Pilots Menu, the Squelch threshold is adjustable to a convenient trigger level.
If the Squelch is "OFF" the arrow sign "►" in front of the Active Frequency stays visible all the time.

4.4.3 Channel Mode

Push on "MDE" key until the Channel Mode page appears.
The Channel Mode provides selection of stored VHF frequency by means of channel number (CH01 to CH99 or LAST1 to LAST9). The channel number appears in the bottom line of the display, either CH01 to CH99 or LAST1 to LAST9. The top line shows the corresponding VHF frequency assigned to the specific channel number. The bottom line contains a text label assigned to the displayed VHF frequency. Any label already stored to a VHF frequency will automatically assign to any new channel number when the same frequency is stored.
The Channel Mode shows data from User Channels Database, or Last Channels Database and Labels Database on the display. (For a detailed database description, refer to chapter 4.8.)

The both pictures below show identification of the database in use by means of prefix "CH" or "LAST" in front of the channel number.
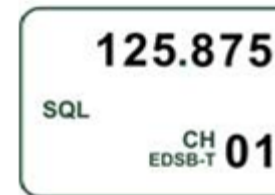
Channel Mode   Last Channel Mode

Toggling between the three Modes the Active Frequency always stays the same.
After selecting Channel Mode, the channel number is indicated, e.g."CH03", if the frequency has already an assigned channel number in User Channels Database, otherwise the indication will be "CH--".
In order to select a new channel number from **USER** Channels Database make a short press or one clockwise turn on the "ROTARY ENCODER". The Channel Number is now inverted and the desired Channel is selectable turning either clockwise or counter clockwise the "ROTARY ENCODER".
Each step the receiver tunes immediately to the displayed VHF frequency.
The Mode of channel number selection can be left manually by consecutive short press of the "ROTARY ENCODER", or leaves the Mode automatically after 5 s timeout.

In order to select the new channel number from **LAST** Channels Database make a counter clockwise turn on the "ROTARY ENCODER". The Channel Number is now inverted and the desired last used frequency, which is related to one of the last nine channels, is selectable turning either clockwise or counter clockwise the "ROTARY ENCODER". The mode of channel number selection can be left manually by a consecutive short press of the "ROTARY ENCODER", or leaves the Mode automatically after 5 s timeout.
When leaving the LAST Channels Database and the last shown frequency is not stored in one of the **USER** cannels Database, "CH--" will appear on the display.
Accessing the "Last Channels Database" will be possible if "STORE LAST CHANNEL" selected on MEMORY OPTIONS page in the Installation Setup, otherwise the recently stored VHF frequencies are not available.

Note: If the device operates in the 25 kHz Mode a selection of an earlier stored 8.33 kHz channel is not possible. For Selection of 8.33 kHz channels, the device has to operate in the 8.33/25 kHz Mixed Mode.

4.4.4   Scan Function

In all Frequency Selection Modes, a long press of "↕/SCN" key activates the Scan Function and change to STANDARD MODE if activated from CHANNEL or DIRECT TUNE Mode.
A short push on the "MDE" key or a long press on "SCN" key terminates Scan Function. After leaving Scan Function, the device will remain in Standard Mode.
Simultaneously indicated on the display appears the Active Frequency on the top line and the Preset Frequency on the bottom line. The SCAN sign in the display indicates that Scan Function is active.

SCAN Mode

While Active Frequency and Preset Frequency detected a signal simultaneously, the Preset Frequency inverts and blinks. The Active Frequency has priority. The arrow sign "►" in front of the Active Frequency indicates audio from Active Frequency is audible. A sample display shows the picture below.

Blinking

An audio notification "Beep" tone, if selected in the Installation Setup, additionally to the blinking Preset Frequency notifies the presence of an RX signal on the Preset Frequency.