

## ATR-600 COM

### VHF Transceiver



## User manual

Ver. 1.4, Date: August 01



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## 1 SECTION 1 GENERAL INFORMATION

### 1.1 INTRODUCTION

This manual contains information relative to the physical, mechanical, and electrical characteristics of the ATR 600 VHF Communications Transceiver. Installation and operating procedures are also included. Information relative to the maintenance, alignment, and procurement of replacement parts may be found in the ATR 600 Maintenance Manual.

### 1.2 DESCRIPTION OF EQUIPMENT

The ATR 600 COM Transceiver consists electrically of five sections: Receiver transmitter board, AF Stage board, Antenna board, display circuitry, and the microprocessor board.

The ATR 600 operates at 14VDC and features 6 Watts of transmitter power.

The ATR 600 has 25KHz receiver selectivity, and operating ranges of 118.000 to 136.975 MHz.

It is designed as a single block unit with 57 mm diameter for instrument panel or consul mounting.

The ATR 600 has the capability of programming up to 100 memory channel frequencies for later recall. Each frequency can be added 8 characters as name.

The unit also have the capability to store a data base for hole Europe. A fast access method enables to find quickly any frequency by name.

The data base is an add on feature and not a basic function of the ATR-600. If it is not installed or it has been erased by a special setup the ATR-600 operates like any standard COM radio using an active and stand by display pattern. The only additional is the user memory and the possibility to add names.

To prevent unintended long time transmission the transmitter turns off after two minutes automatically.



### 1.3 TECHNICAL CHARACTERISTICS

SPECIFICATION	CHARACTERISTIC
TSO COMPLIANCE:	
Transmitter: ATR 600	<i>TSO C37c, DO--186 Class 3</i> <i>TSO C37c, DO--186a Class 5</i>
Receiver: ATR 600	<i>TSO C38c, DO--186 Classes C &amp; D</i> <i>TSO C38c, DO--186a Class E</i>
ENVIRONMENTAL DATA:	<i>See TSO Appendix</i>
PHYSICAL DIMENSIONS:	
Height:	2.56 in (6,5 cm)
Width:	2.56 in (6,5 cm)
Depth (behind aircraft panel):	8.66 in (22 cm)
WEIGHT:	1,55 lbs (0,7 Kg),
MOUNTING:	Panel mounted, no shock mounting Required
TEMPERATURE RANGE:	-- 2 0 °C to +55°C with short time operation at +70°C
POWER REQUIREMENTS:	
ATR 600:	14VDC at 0.3A (Receive) 2.5A (Transmit)
FREQUENCY RANGE:	118.000 MHz to 136.975 MHz
FREQUENCY STABILITY:	0.0005% from --20°C to +55°C
DESIGN:	All solid state, Printed circuit board and point to point wiring.
<hr/> <b>TRANSMITTER</b> <hr/>	
POWER OUTPUT:	
ATR 600:	6 Watts 4 Watts minimum
MODULATION:	70% modulation capability with 98% limiting. Less than 10% distortion at 70% modulation.

**Filser Electronic GmbH**  
**ATR 600**  
**VHF COMMUNICATION TRANSCEIVER**



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SIDETONE OUTPUT:	100mW into 500Ω headphones
MICROPHONE:	Standard carbon dynamic mic. containing transistorized preamp. Must provide 100mVRMS into 100Ω load.
HARMONIC CONTENT:	Greater than 60dB down from carrier.
DUTY CYCLE:	2 minute on, 4 minutes off, auto-turn off

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**RECEIVER**

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RECEIVER SENSITIVITY:	1.5μV(hard) shall produce not less than 6dB S+N/N with 1KHz tone modulated 30%
RECEIVER SELECTIVITY: Class C, D	6dB bandwidth at not less than 8.0 KHz on each side. 40dB bandwidth with no more than 17.0 KHz on each side. 60dB bandwidth with no more than 22.0 KHz on each side.
RECEIVER OUTPUT:	4 W minimum into 4Ω.
AGC CHARACTERISTIC:	From 10 μV to 10,000 μV audio output will not vary more than 3dB.
SQUELCH:	Automatic squelch (adjustable carrier--to--noise setting) with manual disable.
SPURIOUS RESPONSES AND CROSS MODULATION PRODUCTS:	At least 80dB down.
INTERCOM INPUT:	The mic. is connected to the intercom input. The receiver is operational and mic. audio appears at the audio output along with receive audio. 100mVRMS of mic. audio is required for 100mW output.

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**Special features**

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BACK LIGHT FOR DISPLAY:	automatic adapting to the ambient light.
MEMORY FOR DATABASE:	max. 64 000 byte (EEPROM)
REMOTE CONTROL:	For use in tandem gliders a small remote control box can be connected to the radio.
DATA INTERFACE:	RS 232 for PC interfacing for download

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of a data base and remote control.

## 2 Operation Instructions

### 2.1 Turn on/off

The „ON-OFF“-button is mounted on the left-top of the unit. The radio is active, when the button is pressed for short (0,5 sec.). To turn off the button has to be pressed for more then 3 sec. Also a break in the master power (master switch) turns off the radio.

After turn on display appears type of unit and software version:



**ATR-600**  
VERS.1-1

In case if a database is loaded an additional indication appears with information about the last update:



**ATR-600**  
VERS.1-1  
DataBase  
16.03.2001

For erasing the database and setup all defaults hold pressed the button SAVE while turn on the radio.



**ERASE** MIC06  
MEMORY: sure ?  
YES press MODE  
NO any other

The indication MIC06 shows the general and actual microphone level (see “Microphone connection”).

To proceed press MODE, to skip erasing press any other button.

## 2.2 Volume control

Push the **SEL** button once to get into the Volume mode (Display shows **VOL: 01** to **32**). By turning the big knob (2) the Volume can be changed to the desired volume. The unit will leave the Volume mode, if an other frequency is selected by **MEM** or if the **SEL** push-button is pressed again. The selected level will be stored for the next turn on.

## 2.3 Squelch level control

Push the **SEL** button twice to get into the Squelch mode (Display shows **SQ: 01** to **10**). By turning the big knob (2) the Squelch setting can be changed to the desired level. The unit will leave the Squelch mode, if a another frequency is selected by **MEM** or if the **SEL** push-button is pressed again.

The selected level will be stored for the next turn on.

The normal Squelch setting is about 3to 5. With higher settings weak signals may not let be heard. The Squelch setting has no influence in the intercom mode.

## 2.4 VOX level control for Intercom

Push the **SEL** button three times to get into the Intercom mode (Display shows **VOX: 01** to **10**). By turning the big knob (4) the Intercom setting can be changed to the desired level. The unit will leave the Intercom mode, if an another frequency is selected by **MEM** or if the **SEL** push-button is pressed again.

The selected level will be stored for the next turn on.

The higher the selected value is, the louder you have to talk to open the Intercom path.

Note: The Volume control described in 3.2 adjusts only the received signal and not the Intercom level.

## 2.5 Frequency set

To set a new frequency just turn the knob (4) for MHz and (3) for kHz as indicated in the lower standby line. While setting, automatically the previous related name will be erased.

The index changes from **[nn]** to **>nn<** to indicate that the standby frequency may be different to the contents of the index.

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To make this frequency active press **CHANGE** for exchanging the new frequency with the previous active. The frequency in the upper window is always the active one.

## 2.6 Modes

There are basically two modes (**F** and **U**) and one extra mode (**D**), indicated on the right side of the display.

The normal operation mode is always **F** (for frequency). After termination of any operation in mode **U** or **D** an automatic reset to the **F** will occur.

The mode **F** is for the common use as any COM-radio.

The modes can be selected by the button **MODE**.

### 2.6.1 Mode F ( Memory selector)

In this mode the frequency in the stand by display can be changed.

Also the memory selector **MEM** (1) located in the upper left of the unit is used for selecting previous stored frequencies or for saving a frequency on one of the 100 memories. After using **MEM** the actual index number **[nn]** in use is indicated.

### 2.6.2 Mode U

In the mode **U** (user), the knobs (3) and (4) are used to set letters for generating a name for the previous frequency set in the stand by line. With the knob (3) a cursor can be set in the line of name and with (4) a letter can be selected.

The memory selector (1) is disabled.

#### 2.6.2.1 SAVE , use of Index

Before saving into the user memory attention is required to the previous contents represented by the index **[nn]** (nn = 0...99).

If **[nn]** is displayed the indication for standby shows the contents of nn.

If **>nn<** is displayed the standby indication may be different from the contents of nn.

By changing standby frequency or selecting the mode **U** the index will change to **>nn<** .

To save a new frequency + name into the memory (addressed by index) just press **SAVE** . For acknowledge "SAVE" will appear on the frequency display for 2 seconds. After save the mode **F** will be entered again and the index becomes **[nn]**.

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### 2.6.3 Mode D

The mode **D** can only be selected if a frequency data base is installed. To select any frequency by name use the knobs (3) and (4) for finding any name quickly.

With the knob (3) a cursor can be set in the line of name and with (4) a letter can be selected.

Start with the cursor position at very left:

By rotating (4) (generating the first letter of a name ) immediate the name in the alphabetic sequence and the related frequency will be displayed.

After changing the cursor to the next right position and selecting new letters at this position the next subsequent names and frequencies will appear. So with three or four steps the goal will be reached.

At any time with memory selector knob (1) the adjacent entries of the selected position in the data base can be selected.

To set the selected frequency to active just press **CHANGE**. The new frequency then appears in the active line, the old active will be in the passive line.

The index changes from **[nn]** to **>nn<** to indicate that the standby frequency may be different to the contents of the index.

The mode changes to **F**.

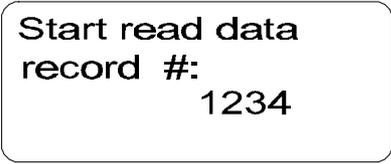
To store the selected frequency in the user memory select mode **F** (before **CHANGE**) and press **SAVE**.

## 2.7 Download

For download of the database any it needs to be used any PC or Notebook to run a special transfer software (LXe) with an updated database. The database and the transfer software (LXe) are provided on Internet.

For the download a special cable between the PC com port and the ATR-600 is required.

After starting the transfer software the display at the ATR-600 shows:



```
Start read data
record #:
      1234
```

Where the record number indicates the continuous received record of airfield. At the end of transfer the radio initialized automatically.

## 2.8 Low-battery

If the battery voltage falls below 10,5V a „**BAT**“ will be displayed. A save operation of the unit can not be guaranteed.

## 2.9 Automatic frequency control

If the actual used frequency has an intolerable frequency drift a "-" (12) will appear in the upper right corner of the display. Transmitter than can not be activated.

In this case the ATR-600 is not working properly and must be returned to the manufacturer.

Notice: Sometimes the "-" may be displayed, but it disappears when the frequency is changed or the device is switched off and on. This can be due to strong noise from outside the ATR-600. This is no malfunction of the ATR-600.



## **2.10 Transmitting**

By using the transmitting key (PTT), the ATR-600 will change to the transmit mode and transmit on the frequency shown on the upper position of the display. As long as the transmission takes place a "TX" will appear. To prevent unintended long time transmission the transmitter turns off after two minutes automatically.

If the auto turn off becomes active the indication changes from "TX" to "Te". To restart transmission release PTT and press again.

## **2.11 Receiving indication**

As long as a receiving signal takes place or the squelch is open a "RX" will be shown.

### 3 Remote control

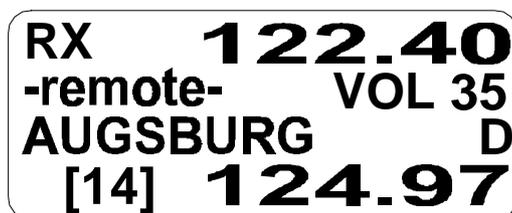
For the use in tandem aircrafts like gliders it is required to operate with a remote control from the second panel.

A small frequency selector unit has to be connected to the data interface (RS232, same as for the download) of the ATR-600.

With this unit any frequency can be set direct to the active area.

All the previous setups in the ATR-600 will not be changed. It is also not possible to lock out the operation of the ATR-600 by any fault of the remote unit.

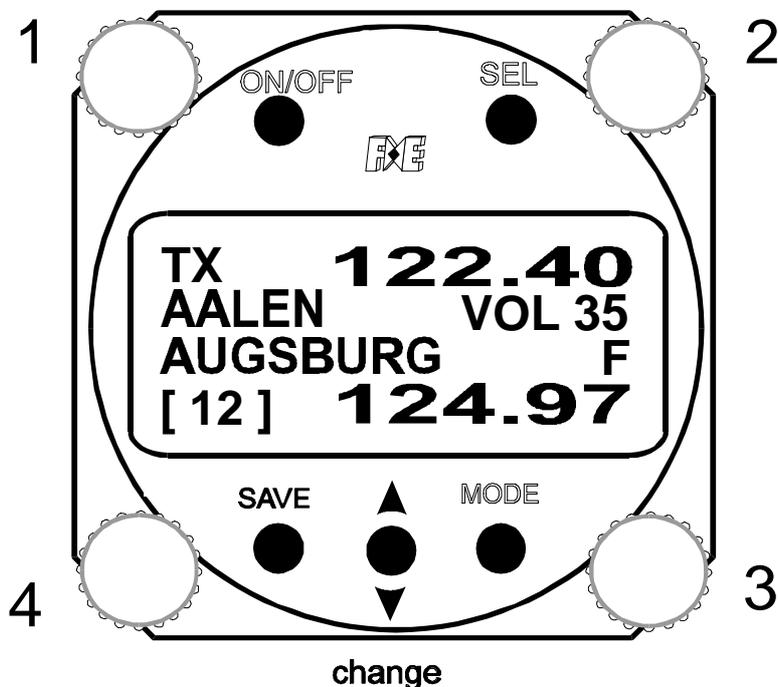
After a reception of an remote frequency request the display will show:



**RX 122.40**  
**-remote- VOL 35**  
**AUGSBURG D**  
**[14] 124.97**

In case of any transfer fault no frequency change will occur and an error flag left of VOL "Re" will appear.

## ATR-600 OPERATING CONTROLS



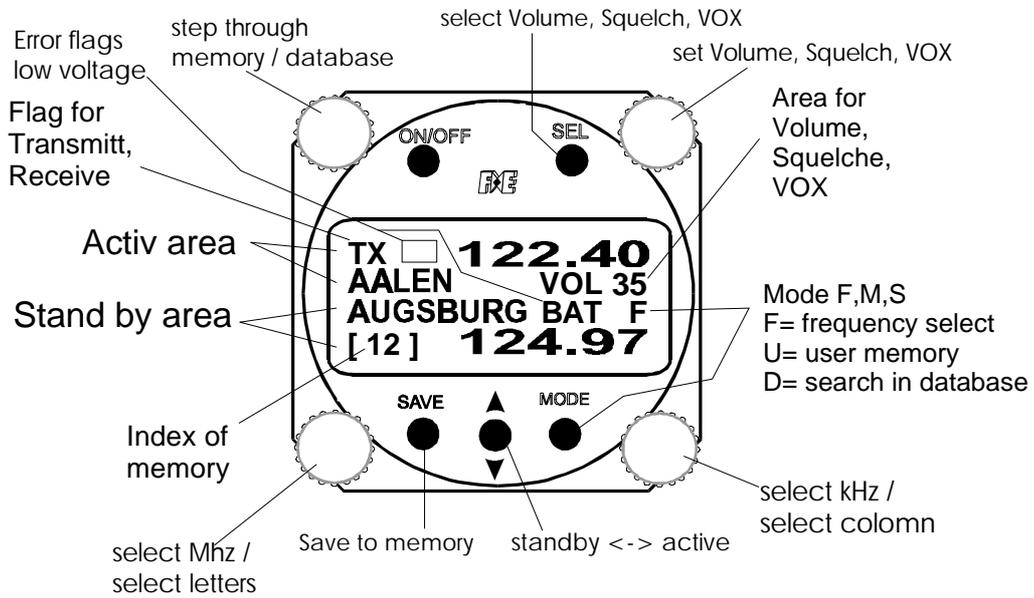
Rotating knobs:

1. Select for user memory
2. Volume / Squelch / VOX push-button
3. Select for kHz or cursor for name input
4. Select for MHz or letter for name input

Push buttons:

- ON/OFF: power on/off  
SEL: select volume, squelch, VOX level.  
CHANGE: exchange passive and active frequency  
MODE: select mode **F**, **U**, **D**  
SAVE: save for frequency or levels to memory

## ATR-600 DISPLAY



## DIMENSIONS

