



CB RADIO AE 4190

OPERATING MANUAL



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Index

Important note	3
Introduction	3
Accessories included	4
Safety Precautions	4
Front view	5
Rear view	5
Country switch setting before Installation	5
Installation of the radio	6
Power supply	7
Antenna connection	8
Operation	8
Before switching on	9
Switching on and adjusting volume	9
Selecting the operating channel	9
Field intensity meter (S-meter)	9
Adjusting squelch (muting)	9
AM / FM mode switch	10
Special interest channels	10
Direct CH 9 Access button	10
Transmitting and correct use of microphone	11
External sockets	12
External loudspeaker	12
External S-meter	12
Microphone socket	12
Service and Warranty informations	13
Legal Information	13
Albrecht Radio Passport	13
Declaration of Conformity	16
Technical Details	15
Service contacts	15

Important Note

Your Albrecht AE 4190 corresponds to the latest European CB standards. As a unique feature, it has a country switch which allows selecting the operation mode according to the country, where You intend to use the radio. Please make sure that You apply for a licence depending on the country where You live or where You intend to use the radio, and put the country switch on the back side of the radio into the correct position **before installing and connecting** the power supply!

- | | |
|--------------|---|
| 40 FM | 40 channels FM / 4 Watt (former "CEPT" settings with 40 Channels FM according to EN 300 135-2). This mode is free of charges and licences in nearly all European countries (actual conditions for use can be found in our "Radio Passport"). |
| 80/12 | 80 channels FM / 4 Watt, 12 channels AM / 1 Watt (Germany). You need a licence to operate the radio in this mode, and in certain border regions of Germany transmitting on channels 41 to 80 in FM is not allowed. |
| 40/40 | 40 channels FM / 4 Watt, 40 channels AM / 1 Watt. Latest European Standard EN 300 433-2, not yet applied in all countries. In Belgium, France, Germany, Italy, Portugal, Spain and Switzerland You need a licence to operate the radio, while it is already free of charges and licence in Finland and Netherlands. |

Introduction

Your new Albrecht CB Radio AE 4190, developed and manufactured in accordance with the latest CB regulations, offers you:

- 40 channels FM / 4 watt or
- 80 channels FM / 4 watt / 12 channels AM / 1 Watt or
- 40 channels FM / 4 Watts / 40 channels AM / 1 Watt
- Channel selection knob on the radio set and UP/DOWN buttons on the microphone
- Channel scan up and down the frequencies
- Direct Access button to Channel 9
- Multifunction LC display
- 6-pole microphone socket, suitable for amplifier microphones, selective calling systems or Packet Radio modems/ TNC's
- Socket for external S-meter
- Socket for external loudspeaker

Please read this operating manual through carefully. This will enable you to make use of all the functions your new CB Radio has to offer as soon as possible.

Accessories included

Your AE 4190 comes operational with the following accessories:

- mobile mount
- fixed connected DC power cable with looped-in fuse
- Electret hand-held microphone with pre-amplifier and UP/DOWN buttons
- microphone hanger
- various screws to fasten the radio and microphone fixing devices
- User manual with circuit diagram and Radio Passport

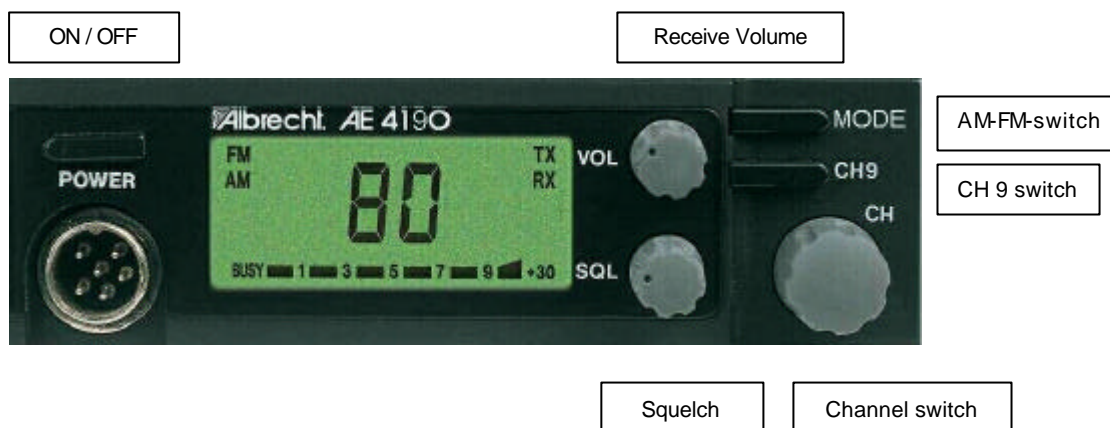
Safety Precautions

People with pacemakers are recommended as a precaution to consult their doctor before operating the CB radio. Not all types of pacemakers are sufficiently protected from radiation from a nearby transmitter, so do not assume it is safe to start operation without checking! Please remember that you are in the immediate vicinity of a transmitting antenna, particularly when used as a mobile radio or with indoor antenna. If your doctor, or the manufacturer of the pacemaker, has recommended keeping a certain safe distance from the antenna, then please follow their instructions!

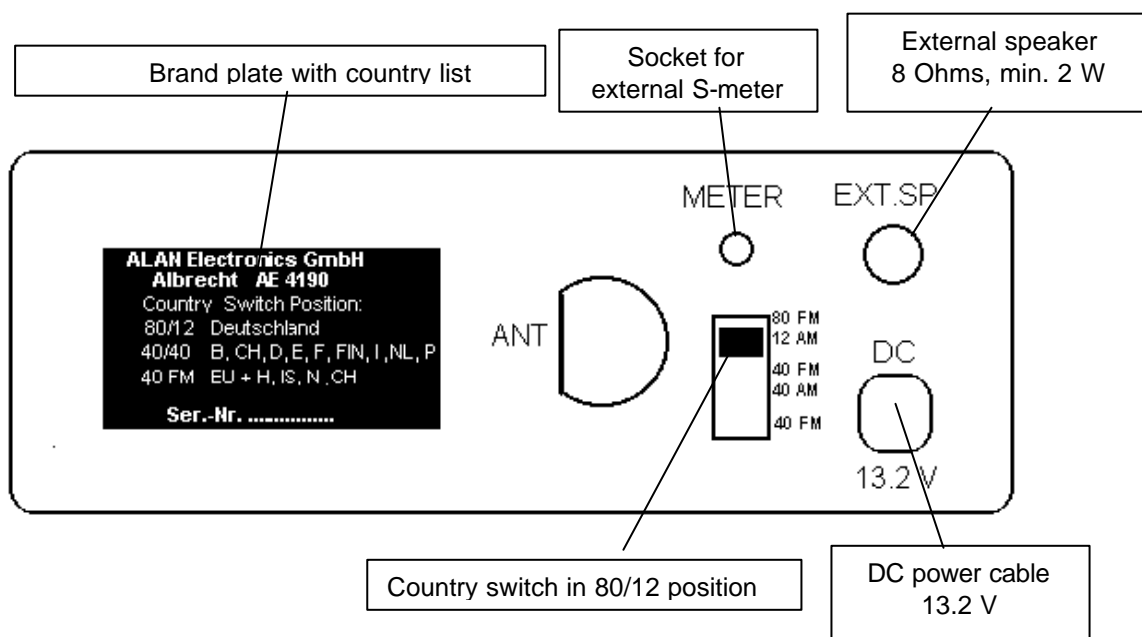
Do not transmit without connecting the antenna and never touch the antenna during transmission!

Please also take road safety into account! CB Radio (even when only receiving, particularly when volume is turned up) can divert your attention from the road! Road safety is of course to be given priority! Therefore only use your ALBRECHT AE 4190 when the traffic situation enables it to be used safely.

Front view



Rear view



Country switch setting before installation

Before You install Your new CB radio, You should preset the country switch on the rear side of the radio according to the local authority requirements. If You should not need any individual CB licence in Your home country or the country where You want to travel to, You should use the factory default setting of the switch: This is the lowest position on

the picture, 40 FM. Please note: the latest list of country specific requirements can be found in our "Radio Passport".

- 40 FM** This is former "CEPT" mode, the position which is allowed in most countries. Here the radio works on the international 40 Channels in FM mode. The Mode switch on the front side is disabled in this mode. (Caution: In some countries You may still need a licence, even for 40 CH FM!)
- 40/40** This medium position can be used in those countries, where already all 40 international channels are allowed to be used in AM and FM. AM was traditionally used by CB from the beginning in the early 60's in USA, and it is still the preferred mode of all truck drivers in the world. Please use this mode only in countries according to the list in the Radio Passport, and please apply for an individual licence where requested.
- 80/12** This position (the upper position) is only allowed to be used in Germany, and an individual licence is necessary. Restrictions are still in force in the border regions to other countries (except to Czechia), where transmitting on channels 41 – 80 is not allowed or only with a special licence.

Re-Programming to another country code

This is possible at any time, but You must

- disconnect the radio completely from power supply (disconnect the DC cable or take out the fuse!)
- wait about 10 seconds
- switch to the new position
- connect the radio again to power supply.

Note: never shift the country switch to another position while the radio is in use or connected to a power supply. Malfunctions may result!

Installation of the radio

You can either operate your ALBRECHT AE 4190 in the car or at home as a base station. For installation as a mobile station in the car, a mobile mount device is enclosed. Mount the set in such a way that it is not exposed to direct sunlight if possible, as this would lead to an increase in the temperature and can decrease the (set's) working life. The set should also not be installed near a heater. Mount the set in such a way that it is exposed to as little vibration as possible.

The mobile fixing device should be attached to the dashboard, the tunnel slot or to any other suitable place using the enclosed tapping screws. Do not install the set in a place where it could cause injuries in the case of an accident (be particularly careful to ensure free leg movement). Take care not to damage any underlying wires during installation!

Then insert the radio into the mobile mount. Secure the set with the large knurled screws (using the enclosed plastic washers) firmly at the required angle.

Also mount the microphone hanger using the enclosed screws in an easily-accessible place.

In order to prevent interference to the vehicle electronics from transmission in the vehicle, please make sure to take any mounting instructions from the vehicle manufacturer for radios and antennas into account.

Power supply

Your AE 4190 receives power from the fixed mounted 2 wire power cable.

The cable has a looped-in fuse in a plastic holder.

You can choose from two methods when connecting to the power supply (red and black):

Example 1

The channel and mode last used should be maintained after switching off; the set should be able to be switched on and off at any time using the POWER on/off switch.

Connect up the red coloured wire to the positive pole on the vehicle battery (or elsewhere in the vehicle's electrical system with permanent plus) or to a 12 volt external power supply unit.

Connect up the black wire to the negative pole on the vehicle battery or the power unit or to a well-conductive part of the car body.

Example 2

The set should be automatically switched on and off with the ignition. There is no last used mode and channel memory and the radio always re-starts on Channel 1 in FM.

Attach the red wire to a part of the vehicle electrical system which is interconnected to the ignition.

Note for all connecting methods:

For EMC reasons, the cable used to connect to the power supply should be no longer than 3 metres.

If you wish to operate your set at home from the mains supply then please only use a stabilized power pack with at least 2 amps permanent current-carrying capacity. Under no circumstances should you use a car battery charger, as these chargers are not stabilized and during open circuit reach such high voltage levels that your radio set could be destroyed.

In any case, please set the country switch on the rear side to the correct country position **before** You connect the DC cable! Do not change country switch position while radio is still connected to power supply.

If in base station use it is important to you that the last used mode and channel is kept in memory even after switching off and on again, then please do not switch the external power supply power unit off when you switch your set off for a short time. Only use the on/off switch on the set itself.

Never repair a blown fuse with “silver paper” or with aluminium foil! Use only “USA” type glass fuses with 2 to 2.5 Ampere. If the fuses keep blowing, check for correct DC polarity, and if necessary, please give your radio set to your servicing dealer to be repaired or hand it in to Albrecht’s service station. voltage variation for this radio is up to 15.6 volts. Never exceed this voltage under no circumstances! The transmitting stages for your AE 4190 are electronically stabilized, and therefore it is impossible to increase output by means of excessive supply voltage. Such attempts may lead to serious damage to the radio set but will never increase output power!

Antenna connection

Connect your CB antenna to the ANT socket on the rear side of your ALBRECHT AE 4190. Most CB antennas must be tuned to best radiation during installation to give highest effective communication range. CB specialists do that job with a standing wave meter to check and adjust the aerial. Tune the aerial to the best standing wave ratio (SWR) on an intermediate channel e.g. using Channel 1 in 80/12 mode (26.965 MHz) or Channel 20 in all other modes.

On this channel you should attain a SWR of approx. 1.5 or less. If the SWR deteriorates on the highest (Channel 40) and lowest (Channel 41) channels up to a value of 2.5, then your aerial is still acceptable. SWR above 3 is too bad for good communication range. A bad SWR may also indicate that there is perhaps an installation error or missing ground. Problems may be caused through missing ground, especially in boats and motor homes with fiber glass body. For these cases, Albrecht offers a special connecting cable with matching box as “artificial ground” (AKM 27)

Some antennas, like “Gamma II” are broadbanded and do not need any retuning during installations.

Even if your AE 4190 has a particularly robust transmitter high-level stage which can even withstand mismatching of SWR=3, you should still never transmit without an antenna!

Operation

Before switching on

- Turn **SQL** (squelch control) left as far as possible
- Turn **VOL** (Receiving volume) control from counter-clockwise position slightly right.

- Push **POWER** switch. Initially, all LC display icons and buttons are illuminated, while radio makes a short self-test. Then CH 1 will appear in FM.
- turn **VOL** further until desired volume is reached.

Selecting the operating channel

On the radio set:

- With the channel knob You can continuously select channels. The present channel is displayed.

On the microphone:

- Press the \wedge or \vee button on the microphone briefly, to switch up or down a channel.
- Press the respective button longer to run up or down through the channels. The present channel is displayed.

Field intensity meter (S-meter)

On the graded bar display You can see approximately how strong the receiving signal is.

The scale under the bar display (S1 to +30) helps with orientation for an input signal in the stages S1 to S9+30dB.

Please note: the field intensity meter only registers a signal when the muting control has opened.

Adjusting squelch (muting)

Particularly in FM, noise can be a nuisance on a free channel. With the muting control (SQL) You can suppress this noise - but also signals which are too weak to be received properly.

This is how to adjust the signal strength required to switch on the loudspeaker, using the SQL control knob:

The further the control knob is turned to the right, the stronger a signal has to be in order to be audible through the loudspeaker.

In order to adjust the set to be the most sensitive to incoming signals, switch to a free channel:

- Use the rotary switch or the microphone buttons to find a free channel, where no signal is displayed.
- Then turn the SQL control carefully to the right until the noise just about disappears.

Now the loudspeaker stays off when on a free channel but it switches back on when receiving even very faint signals.

The muting adjustment is particularly important when You intend to receive far away stations. Please do not tune the SQL knob too much into clockwise direction, unless You really intend only to receive local signals. Therefore you should test the various muting settings for various signal strengths and get to know this function.

AM / FM mode switch

In the two programming modes 40/40 and 80/12, FM modulation is available on all channels, but AM only on channels depending on country switch position. AM modulation is available on all 40 channels in 40/40 or only on 12 channels (CH 4 to 15) in 80/12 mode. On these channels you can switch between AM and FM using the **Mode** button. The display shows either AM or FM accordingly.

When you switch on the set the first time it operates on FM.

Please note that in 80/12 mode, on channels 1-3 and 16-80 it is not possible to operate on AM. If You should start in FM mode, the MODE button will not react on forbidden AM channels. Select an allowed channel for AM, then use Mode button to switch to AM. Your radio is set to AM (see Display Icon). When You leave the allowed AM range, the radio will automatically switch back to FM.

Special interest channels

There are a few channels which have established themselves for certain purposes:

Channel 1	Call channel on FM
Channel 9	Call and emergency channel, also Trucker channel on AM in Germany
Channel 16	Water sport channel
Channel 19	Trucker channel on AM in France, Spain and Italy
Channel 24/25	Data transfer (Packet Radio, Germany only)

Some recommendations have been worked out by the CB clubs for the new channels 41 to 80 in Germany. To find out which channels are suitable for special purposes, please get in touch with the respective groups or check in CB magazines.

Direct CH 9 access button

Using the CH 9 button You can switch at any time from the present channel (normal channel modus) to the international calling and emergency channel 9 and switch back again.

- After briefly pressing the **CH 9** button, the number CH 9 will appear instead of the previous working channel.
- If you briefly press the **CH 9** button again the set switches back to normal modus: you will again will be able to see the number of the channel last used.

Especially in Germany CH 9 is used by nearly all (!) truck drivers in AM for their traffic communication. This means: a large number of stations are listening in. If the worst comes to the worst (e.g. in case of accident etc.) there is a good chance that someone will be listening.

To call other stations, who you know are listening in on channel 9, you can also use this channel. Call up the desired station on channel 9. As soon as contact has been made, agree on a free channel for your conversation and then channel 9 will be free again for other calls.

An emergency channel can of course only work if as many stations as possible are listening in. Therefore listen in to this channel as often as possible; the MEMO button will help you. In some countries, (like Sweden) CH 9 is only allowed to be used for emergency traffic. Other countries use a different trucker channel:

- **Channel 19:** Trucker channel (in AM) in France, Spain and Italy.

Transmitting and correct use of microphone

With the transmission button (Push To Talk) on the side of the microphone you can switch between receiving and transmitting:

- Press PTT button to transmit.
The display shows TX .
- Release PTT button again to switch back to receiving.

When the transmission PTT button is depressed, you can speak from a distance of about 5-10 cm into the microphone. The modulation amplifier of your AE 4190 is sensitive enough and enables you in most cases to speak with even more distance, depending on how loud your voice is. An automatic regulator ensures that your partner always hears your signal at the same volume.

It is best to test the best distance from the microphone for yourself with the help of another station.

External sockets

External loudspeaker

Depending on the surrounding noise, it can be advisable to hook up an external loudspeaker. Usual commercial radio loudspeakers with 4-8 ohms impedance and 2-4 W minimum output can be plugged in.

The cable can be up to 3 metres long. For car loudspeakers, make sure to use a two-pin 3.5 mm jack plug and ensure that none of the loudspeaker connections are attached to the vehicle chassis.

External S-meter

On the back, your AE 4190 has an SMeter socket on the rear side, which allows you to connect up an external S-Meter to show the relative signal strength. This gives more exact information than the bar display. Please ask your authorized dealer about external S-meters. The S-meter should be installed near the radio set using a cable no longer than 3 metres. You need a 2.5 mm jack plug to connect it up. The polarity is positive, i.e. the positive pole of the S-meter is connected to the inner pin, and the negative pole is on the outside.

Microphone socket

The 6-pole microphone socket on the front side is wired according to the well-known Albrecht specifications, which also meet the recommendations issued by the German manufacturers of CB radios.

Apart from the hand microphone included in the package, you can also hook up other microphones and accessories.

The microphone socket has been tested and is suitable for nearly all kind of microphones, even those with amplifiers or selective calling devices. According to the latest regulations you are also allowed to plug in modems or so-called TNC's for data transfer (Packet Radio).

However, this type of data transfer is only permitted on certain channels and only for non-commercial use.

Special regulations apply to data transfer abroad. In Switzerland, for example, Packet Radio is permitted on channels 21-25, but only with a call signal granted by the authorities. In some other European countries Packet Radio is not allowed at all.

Service and Warranty informations

Troubleshooting

Check at first the power supply and the fuse(s). A problem may be caused through power supply, when no light appears after switching on. If the unit works in a strange way, disconnect the power supply cable, while the radio remains switched on, wait some time (minimum 10 seconds), and then reconnect power again.

Check the microphone and antenna connector. We think you cannot do more in case of a problem. Please ask your dealer or consult our service hints in the Internet. If you should return the radio to your dealer for repair, do not forget to describe the problem as exactly as possible.

European 2 years warranty

The distributor, dealer or retail shop where you bought the radio warrants to the original retail purchaser of this product that should this product or any part of it, under normal use and conditions, be proven defective in material or workmanship within 2 years from the date of original purchase, such defect(s) will be repaired or replaced with new or reconditioned product without charge for parts and repair labor. To obtain repair or replacement within the terms of this warranty, the product is to be delivered with proof of warranty coverage (e.g. a copy of your bill of sale), specification of defect(s), to the distributor, dealer or his authorized repair center.

Liability for communications range of this product is disclaimed. The warranty does not apply to any product or part thereof which has suffered or been damaged through alteration, improper installation, mishandling, misuse, neglect, accident, or by removal or defacement of the factory serial number label(s). The warranty does not apply to accessory parts or problems caused through not authorized or not recommended accessories like other than the supplied microphone, external antennas, external power supplies and overvoltage caused through external power supplies, lightning or overvoltage defects via antenna or other cables, broken or damaged acrylic glass windows and cabinet parts.

Please contact the dealer or person where you have purchased your CB radio.

Where to find service hints and service documentation

The complete technical documentation is updated regularly. You can download the latest versions of user manuals, technical documents and conformity declaration, as well as service hints or FAQ's any time from our server under

<http://www.albrecht-online.de/service>

If you should have a problem, please have a look to the service hints or frequently asked questions (FAQ) before you send your CB radio back to the service center.

Legal Information

The radio may be used in European countries only according to following informations, which we publish as "Radio Passport". Because the number of countries allowing the new AM standard is changing, the latest version of this radio passport is published on our Internet Web server and may be downloaded any time from www.albrecht-online.de/service



ALBRECHT RADIO PASSPORT AE 4190

This CB radio complies to the latest European regulations (R&TTE directive and European harmonised standards) and has been notified in the countries according to following table: (as of March 12, 2002):

Country	Country switch position	Licence and operating conditions
Operation only with individual licence		
Austria	40 FM	Individual licence requested ("Bewilligung")
Belgium	40/40 and 40 FM	Residents in Belgium need licence
Germany	80/12 or 40/40 Note: Using 40/40 is allowed, but transmitting on channels 1-3 and 16-40 in AM forbidden	Licence and yearly charges requested. Transmitting on channels 41-80 in certain border regions not allowed (special licence necessary)
France	40/40	Licence and one-time charges
Great Britain (UK)	40 FM	Residents of UK need CB licence
Italy	40/40 and 40 FM	Licence and regular charges for all CB radios
Portugal	40/40	Licence and one-time charges
Switzerland	40/40 and 40 FM	Licence and monthly charges
Spain	40/40 and 40 FM	Licence and regular charges
Operation without licence and charges allowed		
Belgium	40FM 40/40	Free for short-time travellers up to 1 month Home country licence accepted for travellers
Denmark	40 FM	Free of licence and charges for all users
Finland	40/40 and 40 FM	Free of licence and charges for all users
France	40 FM	Free of licence and charges for all users
Germany	40 FM	Free of licence and charges for all users
Greece	40 FM	Free of licence and charges for all users
Hungary	40 FM	Free of licence and charges for all users
Iceland	40 FM	Free of licence and charges for all users
Ireland	40 FM	Free of licence and charges for all users
Luxembourg	40 FM	Free of licence and charges for all users
Netherlands	40/40 and 40 FM	Free of licence and charges for all users
Norway	40 FM	Free of licence and charges for all users
Portugal	40 FM	Free of licence and charges for all users
Spain	40 FM	Free of licence and charges for travellers
Sweden	40 FM	Free of licence and charges for all users
Switzerland	40 FM	Free of licence and charges for travellers
United Kingdom UK	40 FM	Free of licence and charges for travellers

Important Note: Please respect the licence conditions in the above listed countries and do not use the radio without licence, where necessary. For travelling with Your radio, we recommend to provide a copy of Your home country licence document and this Radio Passport together with the radio. The above list is based on public available informations, while country specific requirements may change without notice during the harmonisation process in Europe, we recommend to ask local authorities before travelling.

Declaration of Conformity / Konformitätserklärung



We hereby declare that our product: / Wir erklären hiermit, dass unser Produkt

CB-Radio Albrecht AE 4190

satisfies all technical regulations applicable to the product within the scope of EU Council Directives, European Standards and national frequency applications:/ alle technischen Anforderungen im Geltungsbereich der EU Richtlinien, europäischer Normen und nationaler Frequenzanwendungen einhält:

73/23/EEC, 89/336/EEC and 99/5/EC
EN 300 135 -2 / EN 300 433-2
EN 301 489-1, EN 301 489-13, EN 60 950

All essential radio test suites have been carried out. /
 Alle für das Produkt vorgeschriebenen Funktestreihen wurden durchgeführt.

ALAN Electronics GmbH
Dovenkamp 11
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This declaration is issued under our sole responsibility. Basing on not harmonised frequency applications, the CB radio may be used only in listed countries according to selected channel programming. An individual licence for operating this radio in **AM + FM** (80/12 in D, 40/40 in B, CH, D, E, F, I, P) is requested. In Finland and Netherlands 40/40 operation is free of licence. If the radio is programmed to **40 FM only**, it may be used without license and free of charge in nearly all EU Countries + Island, Switzerland, Norway, Hungary (except Austria, Italy, where individual licence is requested). Residents of Belgium, Spain, Switzerland and Great Britain (UK) need a CB licence in their home country, while travellers from other European countries may use 40 CH FM during travelling in these countries free of licence and charges.

Diese Erklärung wird unter unserer alleinigen Verantwortung abgegeben. Dieses Funkgerät darf wegen der nicht harmonisierten Frequenzanwendungen in **AM + FM nur mit gültiger Einzelgenehmigung bzw -Zuteilung** in den Ländern B, CH, E, F, I, P (40 / 40 Kanäle) und D (80/12 oder 40/40 Kanäle) in Betrieb genommen werden. In den Niederlanden und Finnland ist der Betrieb auf 40/40 Kanälen anmelde- und gebührenfrei. In Deutschland ist mit der Programmierung **80/12** Sendebetrieb auf den Kanälen 41 - 80 in bestimmten Regionen entlang der Grenzen der Bundesrepublik Deutschland nicht oder nur mit Sondergenehmigung gestattet. Mit Programmierung 40/40 darf dieses Gerät auch in Deutschland betrieben werden, jedoch darf in AM (bis auf weiteres) nur auf den Kanälen 4-15 gesendet werden. Mit der Programmierung **40 FM** kann das Gerät in fast allen EU Staaten (ausser Italien und Österreich, dort ist eine individuelle Bewilligung des örtlichen Fernmeldebüros notwendig) anmelde- und gebührenfrei benutzt werden. Bewohner von Belgien, Grossbritannien, Spanien und der Schweiz benötigen in Ihrem Heimatland eine Genehmigung (CB Licence). Die vorübergehende Benutzung von 40 Kanälen FM durch Reisende aus anderen europäischen Ländern ist in diesen Ländern jedoch anmelde- und gebührenfrei erlaubt.

Point of contact/Ansprechpartner: Dipl.-Phys. Wolfgang Schnorrenberg

Place and date of issue:

Lütjensee, 12. 03. 2002

(Signature)

Dipl.-Phys. Wolfgang Schnorrenberg
 ALAN Electronics GmbH

Technical Details

Microphone socket wiring

Pin 1	Low frequency microphone
Pin 2	PTT-RX (on ground for reception)
Pin 3	PTT-TX (on ground for transmitting)
Pin 4	up/down
Pin 5	Ground
Pin 6	12 volt for pre-amplifier etc.

Packet Radio

Pin 1	Audio input transmitter
Pin 2	Audio output reception
Pin 3	PTT
Pin 5	Ground

Tip for specialists

Your AE 4190 package includes an electret microphone. In the microphone cover is a board on which the preset amplification can be adjusted with a small screwdriver. The Mic gain has been factory preset to medium. If required, the gain can be adjusted as desired. (turn to left = louder, turn to right = less loud)

Transmitter

Transmitting power	4 Watt FM 1 Watt AM
Modulation sensitivity	2.5 mV at 1 kOhm
Harmonic and spurious radiations	-90 dBc = 4 nW
Max. frequency deviation	2.0 kHz
AM modulation degree	90%

Receiver

Sensitivity (FM) (SINAD)	better + 2db mV EMK for 20 dB
Sensitivity (AM) (SINAD)	better + 4db mV EMK for 12 dB
Adjacent channel selection	better 66 dB mV EMK
Intermodulation rejection	better 60 dB mV EMK
Image rejection	better 48 dB (EN 300 433-1)
Audio output power	2 Watt to 8 Ohm load

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