



AUTOMATIC HF/VHF ARDF TRANSMITTER

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# TRAINER PLL

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instruction manual

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# FOREWORD

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The **TRAINER PLL** ARDF transmitter is designed for local and regional ARDF competitions and training of any level. The possibility of frequency, transmitted code, keying speed and timing schedule adjustments opens the new area in the ARDF competitions and allows using more transmitters on different frequencies.

The operation is very easy: just install the antenna, plug in the connector and transmitter automatically recognizes the proper band and starts operation.

This transmitter is extremely suitable for training use due to its low weight and small size.

## FEATURES:

- **PLL synthesizer provides 16 channels in 3,5 MHz band and 3 channels in 144 MHz band**
- **4 various timing schedules**
- **Various transmitted codes**
- **Keying speed adjustable in 4 steps**
- **Automatic band recognition**
- **Rugged plastic house**
- **Simple operation**

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# IMPORTANT!

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**READ ALL INSTRUCTIONS** carefully and completely before using the transmitter.

**SAVE THIS INSTRUCTION MANUAL** for future reference. This manual contains important operating instructions for the **TRAINER PLL**.

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# PRECAUTIONS

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- ! NEVER** apply AC or any voltage higher than 16V DC to any terminal of the transmitter. This could cause a fire or ruin the transmitter.
- ! NEVER** use other charger than the one supplied by the manufacturer. This can ruin the accumulator or even the whole transmitter.
- AVOID** using or placing the transmitter in areas with temperatures below -20°C or above +60°C.  
Use only accessories supplied by the manufacturer.

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# UNPACKING

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## Accessories included with the **TRAINER PLL**:

- 3,5 MHz antenna + counterpoise
- 144 MHz antenna +2+2 elements
- protecting case
- this manual



# 3 OPERATION, INSTALLATION

## ■ Unpacking

After unpacking, check carefully the transmitter and all accessories included. In the case of any damage do not use the transmitter and contact immediately the manufacturer.

## ■ Before operating

Before the first usage, charge the accumulator for 24 hours. Please, use this time for reading of this instruction manual..

## ■ Turning the transmitter ON:

Turn the FUNCTION selector to any position other than **OFF**. The green LED (accumulator indicator) starts flash and transmitter logic unit resets.

The green indicator shows the accumulator voltage: when the voltage decreases, the flashing slows down. If the accumulator is nearly completely exhausted, the indicator goes off. Recharge immediately the accumulator in this case.

**NOTE:** The normal accumulator voltage is 7,2V, indicator goes off at 6V. The transmitter works (with lower output power) even at 5,2V voltage

## ■ FUNCTION selector

There are 4 positions of the selector::

- **OFF** - transmitter turned OFF.
- **STBY** - transmitter does not transmit, the logic unit (clock) runs only. The time synchronization is kept. Transmitter turns to this status also when no antenna is connected.
- **REL** (relations) - transmitter operates according to the set parameters and antenna connected in relations
- **CONT** (continuous) - transmitter operates according to the set parameters and antenna connected continuously.

## ■ Clock synchronization

Adjust the time schedule. Turn on the transmitter exactly at the beginning of the interval of its scheduled operation. From this moment, transmitter will keep the synchronization regardless of the position or readjusting any switch (except for turning OFF or time schedule - DIP switches 8-9 - readjusting).

## ■ 3,5 MHz antenna installation

3,5 MHz antenna consists of a counterpoise (the wire ended by a DIN connector) and the radiator itself (the wire ended by a banana plug).

Lay the counterpoise wire on the ground, straight towards the competition starting point. In case of the 3-radial counterpoise, lay the radials to all directions.

The radiator shall hang, for instance, from the tree branch. Use the whole length of the radiator if possible. During dry weather, the radiator may lay even on the tree trunk surface. During rain, when the trees are wet, the radiator shall better hang in a free space.

Plug the banana plug into the socket at the counterpoise wire and the DIN connector to the socket on the top panel of the transmitter.

Avoid close vicinity of large metal objects such as fences, rails or wires, which disturb the electromagnetic field and makes the finding difficult.

**NOTE:** It is advisable to turn the counterpoise once around the tree in order to prevent the plugs against whipping out when the competitor catches the counterpoise wire.

## Antenna tuning

Turn the **FUNCTION** selector to the **CONT** position, then tune the antenna by the **ANT** button. Try to reach the maximum brightness of the indicator. Then eventually turn to the **REL** position.

## ■ 144 MHz antenna installation

The 144 MHz antenna consists of an antenna body with cable and four elements (two short and two long). Screw the elements into the antenna body - the shorter ones horizontally and the longer tilted. Hang the antenna on the tree branch by the string tied on the top of an antenna body. The coax cable shall lead vertically down.

Install the antenna as high as possible, 3 m at least. Plug the DIN connector to the socket on the top panel. The 144 MHz antenna needs no tuning. The ANT indicator shows only transmitted carrier.

## ■ Band selecting:

The transmitter recognizes connected antenna and selects automatically the appropriate band. If no antenna is connected, the transmitter turns to the **STBY** mode (regardless of the **FUNCTION** selector position).

## 4 MAINTENANCE

### ■ Charging

The charging period of the built-in accumulator is 15 hours (using N80 charger). Usually it is not necessary to recharge the transmitter after every training. Full discharge does not damage the accumulator, but deep discharge (below the 5V) or frequent overcharging shorten the lifetime of the accumulator.

You can check the accumulator voltage with the T10 tester.

Before the longer event, you can discharge the accumulator (until the indicator goes off) and then charge it for 15 hours.

### ■ Cleaning:

Keep the transmitter dry and clean. If the transmitter becomes wet, dry it by the clean cloth and let it dry in a room temperature. **Never** use strong heaters! If the transmitter becomes dusty or dirty, clean it with a brush or a dry, soft cloth. **Avoid** the use of strong chemical solvents such as benzine or alcohol to clean the transmitter.

The transmitter needs no maintenance above the mentioned procedures.

## 5 TROUBLESHOOTING

The following list is designed to help you correct problems which are not equipment malfunctions. If you are unable to locate the cause of a problem or solve it through the use of this list, contact the manufacturer.

### ■ **After turning on the indicator does not flash**

**Possible cause:** exhausted accumulator

**Solution:** recharge the accumulator immediately (see ch.5)

### ■ **Transmitter poorly audible (3,5 MHz)**

**Possible cause:** antenna not properly tuned or installed, radiator wire whipped out of the socket

**Solution:** check for the antenna installation and/or tuning

### ■ **Transmitter poorly audible (144 MHz)**

**Possible cause:** antenna too low or tilted, element(s) lost

**Solution:** check for the antenna installation

### ■ **Transmitter not audible (144 MHz), but antenna indicator flashes**

**Cause:** there is more than one switch in „ON“ position in the 144 MHz frequency adjustment area

**Solution:** check for the DIP switches adjustment

### ■ **Transmitter does not transmit even with connected antenna**

**Possible cause:** you used the antenna from the different transmitter

**Solution:** use the antenna supplied with the TRAINER PLL transmitter

**NOTE:** during 2003 all transmitting antennas connectors will be changed to the same pattern. After this, any antenna will work with any transmitter.

### ■ **Transmitter transmits wrong code or in wrong time**

**Possible cause:** wrong settings, clock start

**Solution:** check for the settings, restart the clock (see ch. 3)

## 6 SPECIFICATIONS

### ■ General

Supply	built-in NiCad accumulator 7,2V/0,8Ah	
Operating temperature range	-10...+ 60°C	
Storage temperature range	-20...+ 60°C	
Covering	IP54	
Dimensions	65(w)x36(h)x126(d) mm (projections not included)	
Weight	300 g	

Operating period	REL	CONT
3,5 MHz	25 hrs	8 hrs
144 MHz	30 hrs	10 hrs

### ■ 3,5 MHz transmitter

Carrier frequency	16 channels (3,52 ... 3,67 MHz)
Mode	CW
Output RF power @ 50 ohm	0,6 W
Spurious emissions:	Less than -66 dB
Antenna:	vertical wire 8 m + 8m counterpoise

### ■ 144 MHz transmitter

Carrier frequency	3 channels: 144,5 MHz, 144,85 MHz, 145,5 MHz
Mode:	AM, keyed carrier, AM 75%
Output RF power @ 50 ohm	0,6 W PEP
Spurious emissions:	Less than -60 dB
Antenna:	omnidirectional turnstile

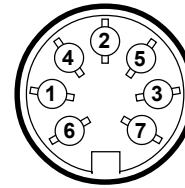
### ■ Logic unit

Transmitted codes:	MOE, MOI, MOS, MOH, MO5, MO, A ... Z
Keying speed:	35,50,70 or 100 PARIS
Timing schedules:	60 s transmit, 240 s space 30 s transmit, 120 s space 30 s transmit 270 s space 15 s transmit, 45 s space

Time stability	+/-20 ppm (approx. 2 s/day)
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## 7 TECHNICAL INFORMATION

Transmitter connector pin-out:



1	144 MHz antenna
2	common ground
3	3,5 MHz antenna
4	accumulator
5	nezapojeno
6	nezapojeno
7	nezapojeno

## 8 OPTIONS

- Automatic charger N80
- Foxoring antenna
- Various transmitting antennas
- cable lock

## 9 WARRANTY, SERVICE

Should this equipment malfunction under normal use, it will be repaired without charge for a period of one year from the date of purchase.

The customer shall not have any claim under this warranty for repair or adjustment expenses if the trouble is caused by improper, rough or careless treatment or mechanical damage, by a fire or other natural calamity or by improper repair or adjustment made by anyone other than manufacturer.

The warranty does not cover the accumulators.

After the first year of use manufacturer offers the free of charge adjustment and check of the equipment including the recalibration of clock and synthesizer.

Any other information, service or modifications are provided by the manufacturer:

**Jiří Mareček, OK2BWN, Obřanská 593, CZ-664 01 Bílovice nad Svitavou  
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