

Industriefunkuhren



Technical Manual

Frequency Output Board

Model 7530 with Remote Software

ENGLISH

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Valid for Devices 7530 with FIRMWARE Version: 02.xx

Version number (Firmware / Manual)

THE FIRST TWO DIGITS OF THE VERSION NUMBER OF THE TECHNICAL MANUAL AND THE FIRST TWO DIGITS OF THE FIRMWARE VERSION MUST **COMPLY WITH EACH OTHER**. THEY INDICATE THE FUNCTIONAL CORRELATION BETWEEN DEVICE AND TECHNICAL MANUAL.

THE DIGITS AFTER THE POINT IN THE VERSION NUMBER INDICATE CORRECTIONS IN THE FIRMWARE / MANUAL THAT ARE OF NO SIGNIFICANCE FOR THE FUNCTION.

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Symbols and Characters



Operational Reliability

Disregard may cause damages to persons or material.



Functionality

Disregard may impact function of system/device.



Information

Notes and Information.



Safety regulations

The safety regulations and observance of the technical data serve to ensure trouble-free operation of the device and protection of persons and material. It is therefore of utmost importance to observe and compliance with these regulations.

If these are not complied with, then no claims may be made under the terms of the warranty. No liability will be assumed for any ensuing damage.



Safety of the device

This device has been manufactured in accordance with the latest technological standards and approved safety regulations

The device should only be put into operation by trained and qualified staff. Care must be taken that all cable connections are laid and fixed in position correctly. The device should only be operated with the voltage supply indicated on the identification label.

The device should only be operated by qualified staff or employees who have received specific instruction.

If a device must be opened for repair, this should only be carried out by employees with appropriate qualifications or by **hopf** Elektronik GmbH.

Before a device is opened or a fuse is changed all power supplies must be disconnected.

If there are reasons to believe that the operational safety can no longer be guaranteed the device must be taken out of service and labelled accordingly.

The safety may be impaired when the device does not operate properly or if it is obviously damaged.

CE-Conformity



This device fulfils the requirements of the EU directive 89/336/EWG "Electromagnetic compatibility" and 73/23/EWG "Low voltage equipment".

Therefore the device bears the CE identification marking (CE = Communautés Européennes = European communities)

The CE indicates to the controlling bodies that the product complies with the requirements of the EU directive - especially with regard to protection of health and safety for the operator and the user - and may be released for sale within the common markets.

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1 General

This board generates frequencies between 1 KHz and 10 MHz in steps of 1 Hz. The pps-pulse of the GPS receiver in the system 7001 GPS or in the system 6841 controls the accuracy of the frequency.

2 Remote-Software

The board is pre-set to 2048 KHz. The frequency can be changed by means of the supplied remote software. Please copy the software onto your PC or laptop. Windows 95/98, NT40, 2000, XP are required.

2.1 Interface-Parameter

If required the board 7530 is connected to a free serial port in the PC by the supplied interface cable. The software supports COM1-COM8. The transmission parameter of the interface are fixed as follows:

settings:

- baud rate 9600
- 8 data bit
- no parity
- 1 stop bit

When the program is started the main menu appears in a window on the screen informing you which port is used with which serial parameter.

2.2 Set Functions

The set functions are called up by 'SET'. Three entries are possible:

2.2.1 Set Frequency

This function can be used to change the frequency on the board. Calling up this function displays the following:

	frequency	
clock	02048000	Hz
new		Hz

If the connection to the PC is not o.k. an error message is shown on the PC.

GPS-System did not accept parameter.

Please check the connection to the PC and check if the correct serial port at the PC is used.

A new frequency can be entered under 'new' and sent to the board by a mouse click on the 'send' switch.

The new frequency value is stored failsafe in an EEPROM .



The values must range between 1kHz and 10MHz.

2.2.2 Reaction time

The frequency is not put out unless the complete system works radio synchronously. The switch-on time can be delayed to give the system time to control the frequency. '**Switch-on**' is used to set the period between first radio synchronicity and the start of the frequency output. Once the voltage is supplied the oven stabilised crystal on the board needs some minutes to warm up. During this time the accuracy of the frequency does not meet the stated standard. The switch-on delay should therefore never be less than 10 minutes.

If the system does no longer work radio synchronously the frequency keeps running with the last controlled accuracy for some time. The '**switch-off**' function is used to set the time which may pass between loss of synchronisation and switch-off of the frequency.

The maximum period is 255 minutes.

2.2.3 System Byte

This setting is planned for future program upgrades but it is not used at present.

2.2.4 Show-Function

The show-functions are called-up via 'SHOW'. Three windows can be opened.

2.2.4.1 Time and Date

When this function is opened the current time information of the system can be viewed.

2.2.4.2 Error Control

Eight bits are shown in this window. Two bits are used at present. In case of a logical '0' there is no error. A logical '1' indicates an error.

Bit 0 Memory defect detected

This bit indicates an error in the EEPROM. In case of a wrong frequency output this bit should be checked as it is the memory for the frequency value.

Bit 1 Control out of range

This bit is set when the control of the oven controlled crystal is out of range. The board must be sent to **hopf** for calibration.

Bit 2-7

These bits have no function yet.

2.2.5 Firmware Revision

This function can be used to view the program revision of the board.

3 Frequency Output

The frequency is put out at the BNC connector in the front panel as sinusoidal oscillation.

The amplitude is fixed to $2 V_{SS}$ at 50Ω . The amplitude can be recalibrated slightly at the hidden potentiometer above the BNC-connector.



The frequency is not put out unless the system has been radio synchronous at least once.

4 Technical Data

Voltage supply	+ 5V DC / 0.5A
Temperature range	0 - 50°C
Warm-up time OCXO	5 min. at 25°C
Turn-on accuracy	$\pm 1 \times 10^{-7}$
Operating accuracy after 15 min	$\pm 5 \times 10^{-9}$ /100 sec.
When controlled by satellite after 45 min	$\pm 5 \times 10^{-9}$ /100 sec.
When controlled by satellite after 240 min	$< \pm 5 \times 10^{-10}$ /100 sec.
Long-term accuracy	
When constantly controlled by satellite	$\pm 1 \times 10^{-11}$ /day
Frequency output	
Amplitude	2 V _{SS} Sinus
Output impedance	50Ω
Time delay switch-on	0 - 255 min.
Time delay switch-off	0 - 255 min.