GSM REMOTE
GSM modem for remotely controlling CyberMax transmitters

Manual
IMPORTANT NOTE

Upon receiving your order inspect the packaging material and unit for apparent damage. Any damage should be reported immediately so we can make a claim with the shipping company. Take photos, if you can, they can be used as a proof.


Make sure to connect power to the card, it accepts the 3,5" power connector that used to serve for hard drives and CD ROMs before SATA came along. Several of these are usually available inside any PC. Also connect the USB jumper cable.

IMPORTANT!: If you want to connect an amplifier to this transmitter please first make sure that output power is set correctly and does not exceed maximum allowable input power of the amplifier.

Study local regulations and ensure that you are always operating in compliance, it is your responsibility to always comply with laws.
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Introducing the *GSM Remote modem*

*A perfect solution for remotely controlling CyberMax series transmitters*

The GSM Remote modem gives you opportunity of remotely controlling CyberMax transmitters. It can control many operating parameters like transmitting power, transmitting frequency, private service messages... It can read status of the transmitter on request and recognize different alarms states. Further more, it can automatically periodically check the status of the transmitter and send a warning SMS message to a predefined telephone number if something wrong. It has even the possibility of connecting external alarm contact and sending the warning SMS when detecting alarm state.

SMS messages (commands) have strictly predefined text form as described in this manual. To make our customers life easier we have developed an Android application for the smartphones. Its advantage is that the user doesn't need to know anything about the structure of SMS commands. He or she just fills graphical or text forms on this Android application and they are automatically converted into compatible SMS messages form.

**Technical specifications:**
- Power supply: 9-18VDC, 2A max. momentary, 150mA average, barrel connector 2.2/5.5mm, center positive
- Baudrate: 9600bps
- Dimensions: 115 x 33 x 113mm
- Temperature operating range: 0-40°C

**Thank you for purchasing GSM Remote modem**

We hope you will enjoy it as much as we do and remember to tell your friends about it. Please feel free to leave your comments at our website or post your experience in our forum. From all of us we wish you happy broadcasting!

Your PCS Electronics team
Front and back panel layout

**Fig. 1: Frontpanel**

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LED indicator: general power and GSM network</td>
</tr>
<tr>
<td>2</td>
<td>SIM card insertion slot</td>
</tr>
<tr>
<td>3</td>
<td>SIM card eject button</td>
</tr>
<tr>
<td>4</td>
<td>GSM external antenna connector</td>
</tr>
<tr>
<td>5</td>
<td>LED indicator (green): SMS message (command) executed OR Automatic status checking: okay</td>
</tr>
<tr>
<td>6</td>
<td>LED indicator (yellow): SMS message received OR Automatic status checking: in progress</td>
</tr>
<tr>
<td>7</td>
<td>LED indicator (red): SMS error (e.g., undefined command) OR Automatic status checking: failed</td>
</tr>
<tr>
<td>8</td>
<td>LED indicator: Bluetooth connection established</td>
</tr>
</tbody>
</table>

**Table 1:**

**Fig. 2: Backpanel**

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Power supply connector; 9-18VDC, barrel 2.2/5.5mm, center positive</td>
</tr>
<tr>
<td>10</td>
<td>Sliding switch: selection GSM or Bluetooth operation</td>
</tr>
<tr>
<td>11</td>
<td>External alarm connector (normally closed)</td>
</tr>
<tr>
<td>12</td>
<td>RS232 connection to CyberMax transmitter</td>
</tr>
</tbody>
</table>

**Table 2: Backpanel**
Table 3: Jumpers functions

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Description</th>
<th>Jumper missing</th>
<th>Jumper inserted</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Periodically checking status of the transmitter (every 5 minutes)</td>
<td>Enabled</td>
<td>Disabled</td>
</tr>
<tr>
<td>B</td>
<td>GSM module resetting every 24 hours</td>
<td>Disabled</td>
<td>Enabled</td>
</tr>
<tr>
<td>C</td>
<td>This jumper is paralleled to external alarm contact in order to disable external alarm function.</td>
<td>External alarm enabled</td>
<td>External alarm disabled</td>
</tr>
<tr>
<td>D</td>
<td>A notifying SMS is sent (alarmcode=97) after powerfail (resetting) of the modem</td>
<td>Disabled</td>
<td>Enabled</td>
</tr>
<tr>
<td>E</td>
<td>Factory test</td>
<td>leave open</td>
<td>leave open</td>
</tr>
<tr>
<td>F</td>
<td>Automatic clock update after reset</td>
<td>Disabled</td>
<td>Enabled</td>
</tr>
</tbody>
</table>

Fig. 3: PCB layout
What's inside the box?

There are two communication channels as from block diagram can be seen: GSM SMS and Bluetooth. Any GSM mobile phone can be used to send SMS messages to control the CyberMax transmitter. However, use of smartphone and our Android application provides much more user comfortability because the application takes care to convert Android's user interface into correct form of SMS messages.

Note that Bluetooth controlling flows without direct microcontroller support.

A smartphone can be used for Bluetooth controlling. Drawback of this operation mode is the fact that the operating range is limited to the Bluetooth range which is up to 10 meters.
Using GSM Remote modem

The following connections must be provided to use the modem:

- power supply 9-18VDC, 2A max. momentary, 150mA average, barrel connector 2.2/5.5mm, center positive
- GSM antenna (obligatory in most cases)
- RS232 connection line to the CyberMax transmitter (standard D-SUB9 RS232 male-female cable)
- active SIM card must be inserted into the slot

IMPORTANT: SIM card's PIN identification must be disabled. This can be done by inserting SIM card into your mobile phone through the menus. Similar, any other password protection must be disabled.

Every SIM card has its own calling number and this is number that SMS commands should be sent to.

Turn the power ON. Red LED indicator (7) turns on. After setting-up period (about 20 seconds) it turns off and the modem is ready to receive SMS commands.

Check the network red LED indicator (1) and see if the modem connects to the GSM network.

When the modem is connected to the network it is ready to receive SMS commands. If the GSM signal is weak, external GSM antenna is obligatory – in other case the modem never connects to the network.

MAINTANANCE

The user should take care about credit of his mobile account. There is one command dedicated to credit account checking (U). One of the following methods to fill the account should be used if needed: dedicated web service or appropriate command at any mobile phone. Please refer to your mobile operator.

BLUETOOTH OPERATION
Bluetooth connection can be used to control the Cybermax parameters too. An Android smartphone must be used together with our BlueCyber application to use this feature. Bluetooth controlling is similar to PC managing with the difference that you don't need a PC, but reduced set of parameters can be accessed only.

The selection switch on the modem must be switched to Bluetooth position.

See more details about Bluetooth in the chapter Android application.
# SMS commands description

## SUMMARY

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>DESCRIPTION</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>P=n%</td>
<td>set transmitting power</td>
<td>n=0-100</td>
</tr>
<tr>
<td>F=n</td>
<td>set transmitting frequency</td>
<td>n=87500-108000 or n=470000-855000 (step is 100/250)</td>
</tr>
<tr>
<td>PSn=&quot;TEXT&quot;m</td>
<td>set program service message</td>
<td>n=0-99, m=0-9</td>
</tr>
<tr>
<td>A=n1 n2 n3</td>
<td>set alarm tel. numbers</td>
<td>n=up to 3 telephone numbers, 15 characters maximum each</td>
</tr>
<tr>
<td>A=?</td>
<td>alarm tel. number request</td>
<td></td>
</tr>
<tr>
<td>A=E or A=D</td>
<td>erase (delete) alarm numbers</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>status request</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>modem info request</td>
<td></td>
</tr>
<tr>
<td>U=*123#</td>
<td>set ussd code</td>
<td></td>
</tr>
<tr>
<td>U=?</td>
<td>ussd code info request</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>execute ussd code and forward result</td>
<td></td>
</tr>
</tbody>
</table>

The commands are not case sensitive so you can use P=n% as well as p=n%, a=E etc.

## TRANSMITTING POWER

**P=n%** ; where n=0-100

Examples:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P=0%</td>
<td></td>
</tr>
<tr>
<td>P=55%</td>
<td></td>
</tr>
<tr>
<td>P=100%</td>
<td></td>
</tr>
</tbody>
</table>

## TRANSMITTING FREQUENCY

**F=n** ; where n=87500-108000 in 100 increments for CyberMaxFM

Example:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F=89600</td>
<td></td>
</tr>
</tbody>
</table>

**F=n** ; where n=470000-855000 in 250 increments for CyberMaxTV

Example:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F=613750</td>
<td></td>
</tr>
</tbody>
</table>

Use correct values according to your equipment.

It is possible to combine commands P and F in one single SMS message. Delimiting character is space, the order is not important.

Examples:
PROGRAM SERVICE MESSAGE
If your FM transmitter supports RDS features, PS messages can be set by SMS command:
PSn="text"m

\( n=0-99, \ m=0-9, \ \text{text}=0-8 \ \text{characters} \)

\( n \) is the serial number of PS message and \( m \) is the duration of this message (see Cybermax User's manual). If \( n \) and/or \( m \) are omitted, the default values are 0.
Example: PS4="RADIO M"3

GETTING TRANSMITTER'S STATUS
The status request is providing by sending SMS command S.
S

Returning SMS message contains information about transmitting frequency, transmitted power, reflected power and alarm status.
Example:
P fwd=1.2W Pref=0.3W Freq=93400 Alarm=00

The returning SMS is sent to the caller's telephone number.

<table>
<thead>
<tr>
<th>Alarm code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>OK</td>
</tr>
<tr>
<td>1</td>
<td>amplifier temperature alarm</td>
</tr>
<tr>
<td>2</td>
<td>swr alarm</td>
</tr>
<tr>
<td>4</td>
<td>exciter temperature alarm</td>
</tr>
<tr>
<td>8</td>
<td>current alarm</td>
</tr>
<tr>
<td>16</td>
<td>amplifier voltage alarm</td>
</tr>
<tr>
<td>32</td>
<td>standby</td>
</tr>
<tr>
<td>97</td>
<td>power-fail (see section Miscellaneous features)</td>
</tr>
<tr>
<td>98</td>
<td>external alarm (see section Miscellaneous features)</td>
</tr>
<tr>
<td>99</td>
<td>transmitter is not responding</td>
</tr>
</tbody>
</table>

Alarm code can be combination of more codes. In this case the specific codes are summed together.
Example: Alarm code 10; combination of current and swr alarms.

ALARM TELEPHONE NUMBERS
A=n; The modem can store up to 3 alarm telephone numbers. When Autostatus error or external alarm is detected, a warning SMS is automatically sent to all these numbers. Delimiting character between numbers is space. Each telephone number must not contain any other character but numbers with the exception of character ‘+’ (plus sign) at the begining of each number. Previously predefined numbers are deleted.

The modem sends message to these numbers in the case of any alarm. Other inquiry commands (Status request, USSD code request, Modej info request) return message to the caller's number.

If there is no predefined number at all, alarming SMS is not sent at any alarm condition.
Examples:
A=051123456 071123456 01987654
A=+38621123456 01234567

A=?; telephone number inquiry; returning SMS contains alarm telephone number(s)
A=e OR A=d: delete saved alarm telephone number(s)

MODEM INFO

I
The modem returns SMS message which consists of manufacturer's name and modem version number.
Example of returning message:
PCS Electronics GSM Remote Version 1.0.0  Subversion: 3

USSD CODE MANIPULATION

USSD code is a special purpose code. Typical use is inquiry about remaining credit on SIM card. This code may vary between different network operators.
Example:
U=*123#
This command sets the inquiry USSD code to *123#.
U=?
USSD code request. The modem returns SMS containing previously defined USSD code.
U
Execute USSD code. The modem first sends inquiry to the network operator and then the operator's answer is forwarded to you (see diagram below)

Illustration of USSD command
Miscellaneous features

**AUTOSTATUS**
Modem can periodically check the status of CyberMax transmitter. If any alarm condition or failure appears, the
notifying SMS is automatically sent to up to three predefined telephone numbers. The checking period is about 5
minutes.

The Autostatus in progress is indicated by the following:
- Yellow LED short blinking: checking in progress
- Green LED short blinking: positive response (everything OK)
- Red LED short blinking: error (and subsequently alarming SMS is sent)

Insert jumper to position A to disable this function.
See also different alarm codes bellow.

**EXTERNAL ALARM**
The modem has external alarm input. It is a simple NC (normally closed) contact. If the contact is open, the alarm SMS is
sent (ALARM=98). When the contact is closed back, the modem is ready to send another alarm message.

Jumper C is paralleled to external contact. So jumper C must be closed permanently if the user wants to disable external
alarm feature.

**POWERFAIL NOTIFICATION**
The modem can send SMS notification every time the power-fail or reset is detected (ALARM=97).

To enable this feature jumper D must be closed.

Powerfail notification is sent to up-to-three predefined telephone numbers. If there is neither one predefined number, SMS
is not sent.

**GSM MODULE AUTORESET**
Some users of GSM modems report that the connection may be unpredictable lost during long operation period. To prevent
this the modem has built-in an unique feature of autoresetting once a day.

To enable this feature insert jumper to position B.

**AUTOMATIC TIME SYNCHRONIZATION**
Modem has possibility of automatically correcting real time clock at RDS board. The modem updates its own real time clock
from the network right after resetting. User can enable daily autoreset as described above. By inserting additional jumper to
the position F modem sends timing command to the transmitter or RDS board some minutes after reset or power on.
<table>
<thead>
<tr>
<th>Alarm code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>OK</td>
</tr>
<tr>
<td>1</td>
<td>amplifier temperature alarm</td>
</tr>
<tr>
<td>2</td>
<td>swr alarm</td>
</tr>
<tr>
<td>4</td>
<td>exciter temperature alarm</td>
</tr>
<tr>
<td>8</td>
<td>current alarm</td>
</tr>
<tr>
<td>16</td>
<td>amplifier voltage alarm</td>
</tr>
<tr>
<td>32</td>
<td>standby</td>
</tr>
<tr>
<td>97</td>
<td>power-fail (see section Miscellaneous features)</td>
</tr>
<tr>
<td>98</td>
<td>external alarm (see section Miscellaneous features)</td>
</tr>
<tr>
<td>99</td>
<td>transmitter is not responding</td>
</tr>
</tbody>
</table>

Different alarm codes
Android application

A smartphone with our application SmartCyber installed can be used to control Cybermax transmitter in two ways: by GSM SMS or by Bluetooth controlling.

Features Overview

<table>
<thead>
<tr>
<th>Feature</th>
<th>SMS</th>
<th>Bluetooth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power setting</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Frequency setting</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>PS message setting</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Status read</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Autostatus checking</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>USSD code managing</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Modem info request</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Intruder alarm</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Powerfail alarm</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Auto time sync</td>
<td>Y</td>
<td>N</td>
</tr>
</tbody>
</table>

Installation

The option 'Install applications from unknown sources' on your smartphone must be enabled. After installation you can disable it back.

Application can be found on our website. There are many ways for installing:
1. Use your smartphone's browser and open our website. Find application and download it to your phone by clicking it.
2. If you have QR reader application installed, you can use PC and open our website. Find the QR code and scan it by your smartphone. Confirm downloading.
3. Scan the following QR code and confirm downloading:

![QR code](image)

After you have downloaded file, use the phone browser and find installation file GSMRemote.apk. Click on it and confirm the installation.

The first look

Launch the application by tapping the icon GSMRemote. There are five tabs.
**TX Parameters**
Transmitting power and frequency can be set here. Each of these items can be enabled/disabled by putting or removing ticks. Power setting only is enabled by default.

The frequency covers two bands: CyberMaxFM and CyberMaxTV, what is selected by radio button.

Be careful to select appropriate band according to your transmitter.

Beside slider there are two buttons for fine tuning.

The power and/or frequency parameters are sent by clicking *Send parameters*.

---

**RDS Parameters**
Here can be set any PS message (00-99) including displaying time (0-9 seconds), similar to PC control CyberMax application.
Status

Status inquiry SMS is sent to CyberMax transmitter by clicking Read button. The returning SMS contains information about transmitting frequency, power, reflected power and possibly error codes.

Settings

GSM modem call number is the number of SIM card which is inserted into GSM module

Messaging service
Select SMS to send and receive SMS messages by GSM network.
Select Bluetooth to send and receive commands locally by Bluetooth connection.

Alarm numbers
Up to 3 different telephone numbers can be predefined to receive warning messages in the case of any fault detected.

Write: Numbers are going to be send to modem (this is in fact command: A=nnn)
Read: This is inquiry command and returns predefined number(s) which are stored in the modem. This is in fact command A=?.
Maintanance

See chapter SMS commands description to learn about USSD codes.

USSD code: Type desired USSD code.
READ CODE: The application sends inquiry SMS (U=? ) to the modem and the answer is placed in the USSD CODE field.
WRITE CODE: The content of the field USSD CODE is sent to CyberRemote. It is then saved into nonvolatile memory to use it every time when SEND USSD INQUIRY function is used.
SEND USSD INQUIRY: The application instructs modem to send USSD inquiry to the mobile operator and then it forwards the answer to you.
INFO: The application sends Info inquiry to the modem (I). The answer contains manufacturers data and modem version number.

BLUETOOTH OPERATION

Bluetooth connectivity at your smartphone must be enabled.

How to establish Bluetooth connection:
1. Open the application
2. Open Settings tab
3. Select Bluetooth messaging service and save the selection
4. For the first use:
   Menu -> Search devices
   wait and select 'PCS'
   type password '1234' if asked
5. For consequential uses:
   Menu -> Connect
   select 'PCS'
6. Control red LED Bluetooth lits.

The following transmitting parameters can be set (or read):

transmitting power
transmitting frequency
PS messages
transmitters status (read)

When exiting from the application the Bluetooth connection is closed automatically.

It is recommended to disable Autostatus feature (insert jumper A) if you are using just Blutooth controlling (and not SMS messaging) to avoid confusing when indicating Autostatus checking in progress. Bluetooth service does not include automatic status checking – it can be done manually only.
Troubleshooting

We hope you'll never get to this step. We all know bad things happen but do not despair! First check power supply, connections, antenna and SIM card. Next check the troubleshooting table on the next page. If you have problems you cannot solve yourself, please see our website for contact information and support resources in our forum.

Fig 17: So, do you think you can handle it? We think you sure can!
<table>
<thead>
<tr>
<th>PROBLEM DESCRIPTION</th>
<th>POSSIBLE SOLUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don't get any modem's SMS response (e.g. from command 'I')</td>
<td>Check the network LED indicator. It must blink once every 3 seconds.</td>
</tr>
<tr>
<td></td>
<td>Make sure that the inserted SIM card is valid and active.</td>
</tr>
<tr>
<td></td>
<td>Make sure that SIM card's PIN checking is disabled.</td>
</tr>
<tr>
<td></td>
<td>Check the modems antenna.</td>
</tr>
<tr>
<td></td>
<td>Check the position of GSM/Bluetooth selection switch.</td>
</tr>
<tr>
<td>I don't get CyberMax's response (e.g. it doesn't change frequency)</td>
<td>Check the RS232 connection between modem and transmitter.</td>
</tr>
<tr>
<td></td>
<td>CyberMax must have RS232 port enabled (see CyberMax's documentation).</td>
</tr>
<tr>
<td>External alarm input does not work..</td>
<td>Set the internal jumper(s) to proper positions to enable these features.</td>
</tr>
<tr>
<td>I don't get alarm SMS when CyberMax is overheating.</td>
<td></td>
</tr>
<tr>
<td>I don't get alarm SMS when CyberMax has powerfailed.</td>
<td></td>
</tr>
<tr>
<td>Bluetooth controlling does not work.</td>
<td>Check the position of GSM/Bluetooth selection switch.</td>
</tr>
<tr>
<td></td>
<td>Check your smartphone: does it have installed application, does it have Bluetooth enabled, is it close enough to modem to establish BT connection (operating range is up to 10 meters)?</td>
</tr>
</tbody>
</table>
Appendix A – Firmware upgrade

There is a possibility of upgrading built-in low level program (firmware) in order to keep the GSM modem in its best condition. When the manufacturer involves some new features the user can replace old program with the new one by the following procedure.

1. Open the modem’s case on the side of LEDs.
2. Disconnect GSM module (smaller board) from the motherboard.
3. Connect the inner D-SUB connector to your PC using female-female crossed RS232 cable.
4. Place jumper to BOOT position.
5. Turn the power ON.
6. Launch the update program using command line: `update.exe gsm.bin -com1` use actual number of the COM port
7. Upgrading process starts. **Dont’ turn the power off until finish!**
8. Remove jumper BOOT. Assemble modem back again.
Appendix B – Warranty and legal info

Important notice!
Please remember to turn off the transmitter/amplifier when not in use! This goes especially for high powered transmitters. Remember that anything you broadcast through the transmitter can be heard by anyone tuning in to that frequency. Although it is unlikely certain weather conditions may allow the signal to go further than your immediate listening area so please don’t broadcast anything you don’t mind anyone else hearing.

Warranty and servicing!
Within one (1) year of receiving your order, if any product proves to be defective; please contact us via e-mail or our feedback form. Please DO NOT ship the product back to us without contacting us first and receiving return instructions. After we receive the defective merchandise, we will test it if need be, and we will ship back to you a non-defective replacement product. Please note that this doesn’t cover final RF transistor as it can be damaged by using defective or poorly matched antenna. An exception is as well any mishandling or abuse by the customer. If the product is defective, you will receive a replacement. If you choose to return the defective item, rather than replace it, we will charge a 20% restocking fee and your original shipping and handling charges will not be refunded. The return of the product is at your expense. We believe that this is a fair policy because lower overhead results in lower prices for all of our customers.

Legal info
It may be illegal to operate this device in your county. Please consult local authorities before using our products! PCS Elektronik d.o.o. is not responsible for any damage to your PC arising from use of this product and will not be held responsible for any violation of local laws pertaining to the use of this product. It is entirely your responsibility that you make sure you operate in accordance with local laws and/or regulations.

Limitation of liability
To the law, in no event shall PCS Elektronik d.o.o. or its suppliers be liable for any special, incidental, indirect, or consequential damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use the PRODUCT, even if PCS Elektronik d.o.o. has been advised of the possibility of such damages. In any case, PCS Elektronik d.o.o.´s entire liability under any provision of this agreement shall be limited to the greater of the amount actually paid by you for the PRODUCT or U.S. $5.00; because some states and jurisdictions do not allow the exclusion or limitation of liability, the above limitation may not apply to you.
Also available from www.pcs-electronics.com

We also carry a big range of:

- FM transmitters in assembled and KIT form
- TV transmitters in assembled and KIT form, VHF and UHF
- AM transmitters with extremely clear modulation (PWM design)
- Various accessories for professional and hobby FM radio stations
- A large assortment of hard to obtain RF components (RF transistors; MRF, 2SC, coils, silver plated wire, coaxial cable, capacitors, quartz crystals and many others)
- PC based FM transmitters (PCI MAX pc based FM transmitter turns your PC into a radio station)
- A large number of beginners guides to get you started
- A large selection of free schematics is as well available at our website.

If you can’t get much range with your homebrew antenna, have a look at these: http://www.pcs-electronics.com
Revisions and errata

V1.0 (April 2014): Release version

Please report any errors you see in this manual, you will be helping us and many other users out there. Thank you!

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