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µMAX RM-1

RDS encoder plug-in upgrade for PCI MAX 2006+ and ST-1 µMAX ST-1

µMAX RM-1 (pronounced micro max RM-1) is a simple plug-in board for the PCI MAX 2006+ FM PC transmitter board or the µMAX ST-1 stereo encoder. Plug it in and enjoy full RDS functionality, with PS, RT, TA, MS, ECC, PT and many other RDS services fully supported. Digital over-sampled synthesis and an elaborate analogue modulation scheme with sharp band-pass filters ensure surprisingly clean RDS carrier and reliability you can depend upon. Compatibility with any RDS tuner out there is not a problem. Connection to the PC is either via a standard RS232 cable or PCI bus (PCI MAX transmitter).

PRODUCT AT A GLANCE:

40PS supported, RT, ECC, PTY, PI, ECC, TA, TP, AF, MS and many others
Sample VB windows application available free of charge for experimenting
Simple communication protocol, perfect for experimenting
Settings are retained for more than 10 years after power off
Communication either via RS232 or PCI interface (when used in pci max 2006+)
Opto-coupler isolated RS232 communications
High quality double-sided PCB
Clean signal, Extreme value for the price
Combines best of analogue and digital technology
Practically no setup, you can only set RDS carrier level
Parameter update rate: unlimited
Number of updates: unlimited

FEATURES:

Supply voltage: taken from host system (PCI MAX board or ST-1)
Galvanic separation from the PC via opto-coupler, eliminates ground loops (for RS232)
PC data connection: RS232 COM port or PCI bus
RDS pilot to 19 KHz stereo carrier synchronization circuit built-in
Sharp band-pass filters included
No soldering required, plug and play installation
RDS pilot level: adjustable with on-board trimmer
Retains all settings in power-off
On-board LED indication (blinks while operating)
Parameter update rate: unlimited
Maximum number of updates: unlimited

BRIEF INTRODUCTION TO RDS (RADIO DATA SYSTEM FOR VHF/FM BROADCASTING)

The use of more and more frequencies for radio programs in the VHF/FM range makes it increasingly difficult to tune a conventional radio to a desired program. This kind of difficulty is solved with the Radio Data System, that has been on the market since 1987, and whose spectacular evolution is still continuing. RDS has by now conquered all receiver price classes and one can easily imagine that it will soon be part of the standard equipment of any radio receiver.

The development of RDS started some 20 years ago in the European Broadcasting Union, EBU. The developers aimed at making radio receivers very user-friendly, especially car radios when these are used where a transmitter network with a number of alternative frequencies (AF) are present. In addition listeners should be enabled to see the program service name (PS) on an eight character alpha-numerical display and the transmitter frequency information, displayed on non-RDS radios, is then only used, in the background, by an RDS radio. All this has become possible by the using, for many years, microprocessor controlled PLL tuner technology, permitting a radio to be retuned within milliseconds. During this process the audio signal is muted which because of the short time is usually not detected by the ear. Thus, the radio is able to choose the transmitter frequency, among a number of alternatives that gives the best quality reception. It is also sure that the switch-over is made to exactly the same program service by performing a kind of identity check using the program identity (PI) code.

Travel information with RDS is possible using the Travel Program (TP) and Travel Announcement (TA) flags. Information is broadcast for motorists, identified in parallel with the ARI system with the corresponding RDS features TP/TA. But ARI is being replaced on a European scale, so it will cease after the year 2005. A more recent development of RDS is the digitally coded Traffic Message Channel (TMC) which is now planned to be introduced all over Europe, within projects funded by the European Union. However, present RDS radios are not yet suitable for RDS-TMC.

Once a radio is tuned to a program service broadcast within a network, using the RDS feature Enhanced Other Networks (EON) additional data about other programs from the same broadcaster will be received. This enables the listener, according to his choice, to have his radio operating in an automatic switch-mode for travel information or a preferred Program Type (PTY, e.g. News) and this information comes from a service that, at a given time, does not necessarily contain such travel information nor even broadcasts the desired program type.

Many of the Hi-Fi home tuners or receivers at this IFA implement, apart from the usual RDS features (PI, PS, TP,TA, AF), some of the newer features such as Program Type-PTY, Radiotext-RT and Clock-Time, displaying the time/date.

RDS is absolutely future proof and will not be replaced by DAB, at least until such time as when FM broadcasting ceases to exist and this, for sure, is not going to happen within the next 20 years, in spite of the breathtaking developments of the new era of digital broadcasting.

INSTALLLING THE μMAX RM-1 PLUG-IN BOARD INTO HOST SYSTEM

PCI MAX 2006+ or any future PCI MAX product
Just plug the RDS encoder plug-in board into PCI MAX, there are three 3-pin sockets on the board, arranged in a way which makes it impossible to insert the plug-in board in a wrong way. Align the pins and push the μMAX RM-1 firmly into position. Be careful not to bend the pins.

μMAX ST-1 stereo encoder
Just plug the RDS encoder plug-in board into the μMAX ST-1, there are three 3-pin sockets on the board, arranged in a way which makes it impossible to insert the plug-in board in a wrong way. Align the pins and push the μMAX RM-1 firmly into position. Be careful not to bend the pins.

FM EXCITER (TRANSMITTER)
It is currently not possible to use μMAX RM-1 without one of the above host systems.

SOFTWARE INSTALLATION

PCI MAX 2006+
Install the latest PCI MAX card driver from the installation CD or from our website. Drivers prior to 2006+ version do not support μMAX RM-1!
If you're using PCI MAX 2006+ in stand-alone mode without the PC observe instructions for use with our stereo encoders below.

μMAX ST-1 stereo encoder
DO NOT forget to connect your μMAX RM-1 to the COM port of your computer. Now, install the μMAX RM-1 driver from the provided CD or download the latest version from our website. Set the used COM port in the Setup dialog.
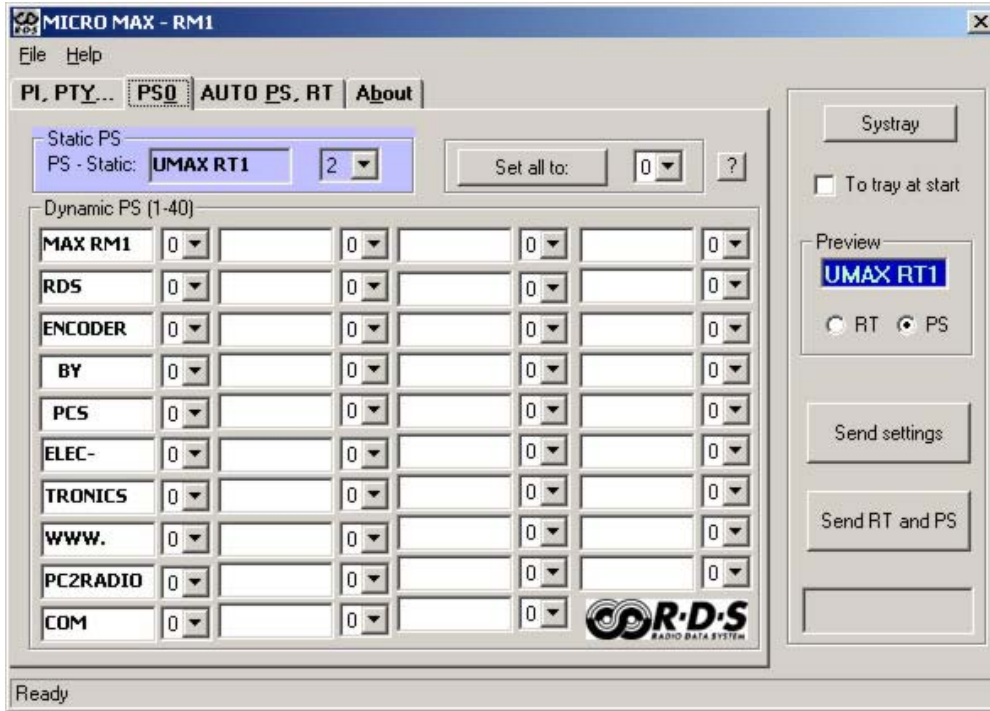

μMAX RM-1 splash screen
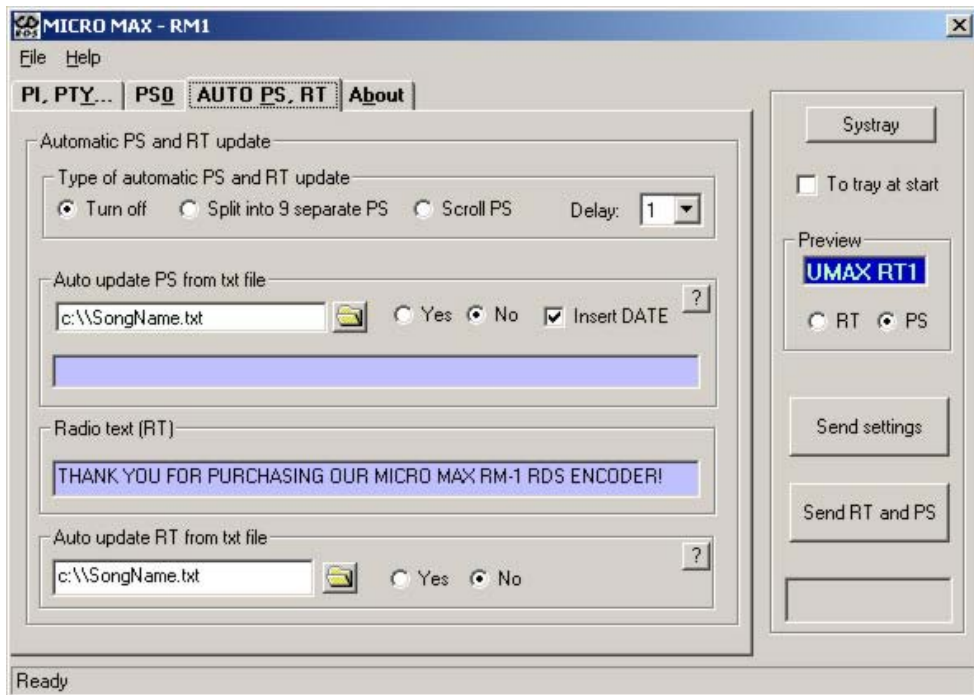
μMAX RM-1 pulling mp3 song name directly from WinAmp (can be configured to insert song name into PS or RT or both)
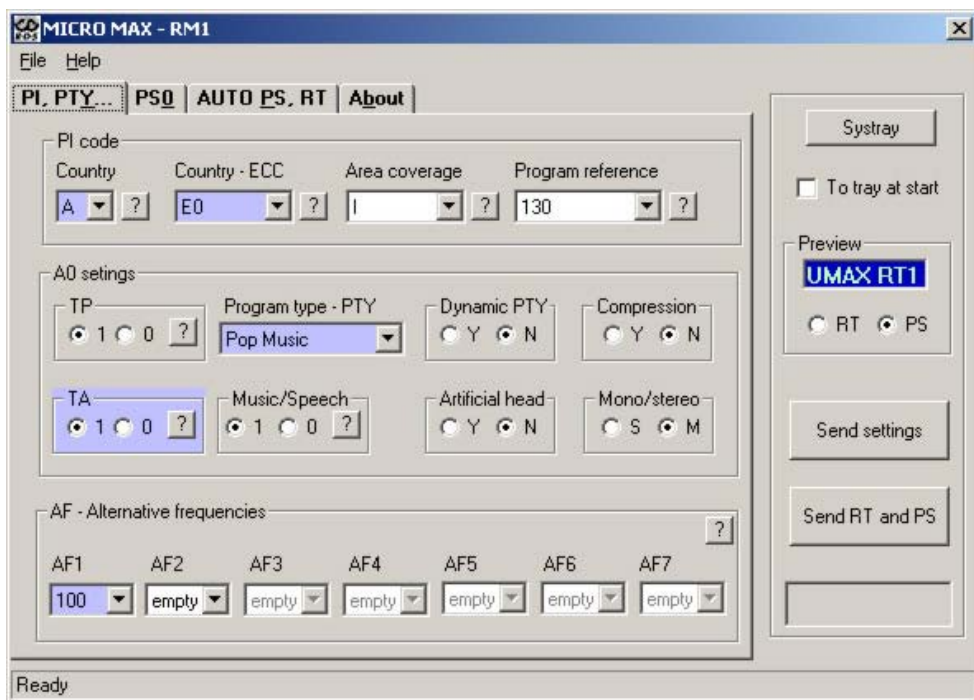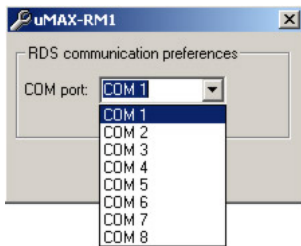

AF, MS, TA, TP, DI codes, ECC, PI....

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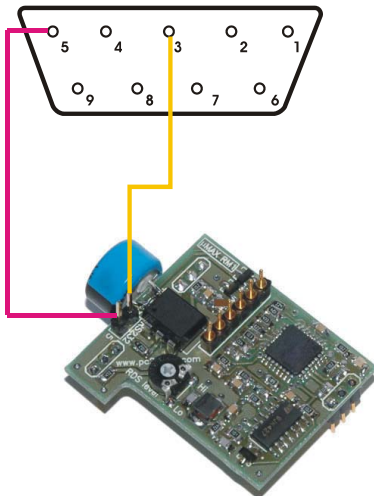info@pcs-electronics.com

40 PS, more than enough for 99.9% of broadcasters out there

Set your PC port to enable serial communication.

WIRING DIAGRAM - FOR ADVANCED USERS

Connecting RDS encoder to serial port. Please note that that pins are also marked on the PCB and as well on the connector.

THANK YOU FOR PURCHASING μMAX RM-1 PLUG-IN BOARD !

Please feel free to send us your comments via our website feedback form or post your experience in our forum.
Technical support is also available at our website (e-mail, forum, MSN messenger, fax or phone).
From all of us we wish you a lot of fun in assembling and using our products!

Your PCS Electronics team
www.pcs-electronics.com

LEGAL CONCERNS

If you have any legal questions concerning your μMAX RM-1 or any other our product, it is your responsibility
to study the regulations. It is best if you personally read the rules (and consult legal assistance when in doubt). It
is up to you to operate within local laws and PCS Elektronik d.o.o. cannot be held responsible for any violation
thereof.

ALSO AVAILABLE FROM PCS ELECTRONICS

We also carry a big range of:
- FM transmitters in assembled and KIT form
- 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 beginner's guides to get you started
- A large selection of free schematics is as well available at our website.

HOUSTON, WE'VE GOT A PROBLEM

We all know things can go wrong, it happens even to the best. Perhaps a more detailed look at the forum/board at our website will help. If not, let's look at some of the possible problems and solutions:

Problem: No RDS signal
Solution: increase RDS carrier level with on-board trimmer. If it does not help also ensure that:
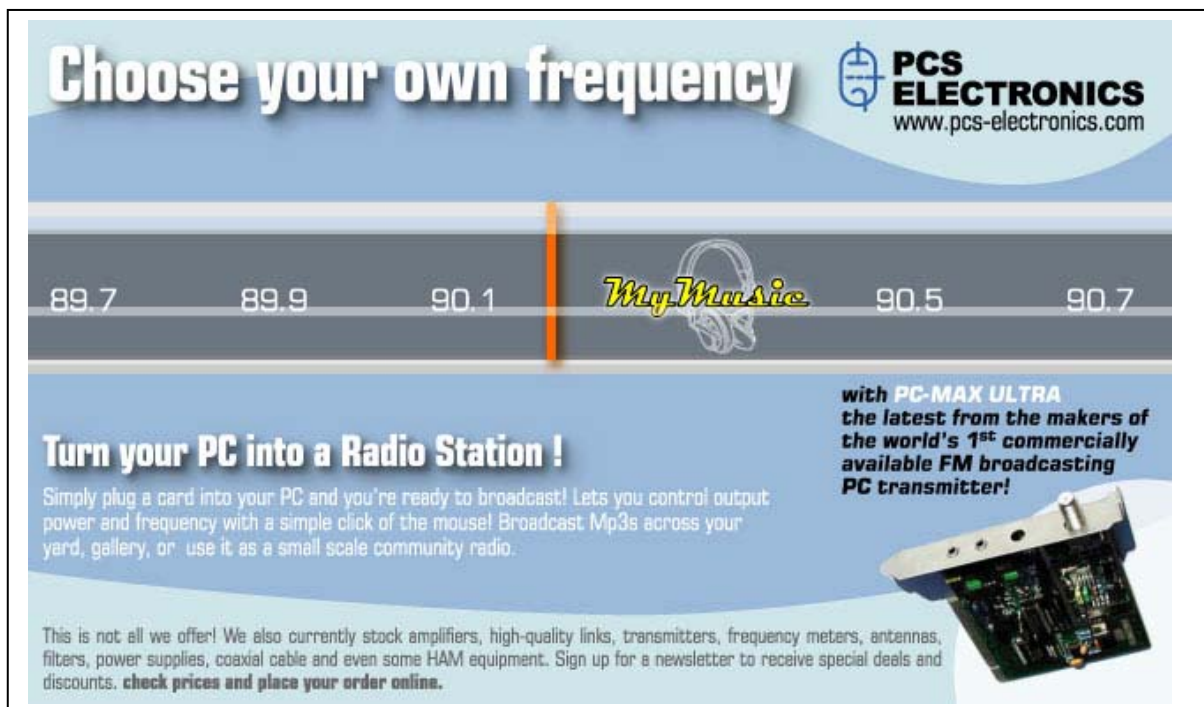-Board is fully and properly installed into the host system
-The LED diode is blinking at an even rate, around 1Hz
-Your host system is working correctly and your reception is otherwise solid, with no noise.
You should also try to send settings to the encoder with the included program and see if this helps. You can as well try to cycle power. Leave the unit disconnected for a couple minutes before trying again.

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