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RDS MAX V2.0

Many customers have requested RDS encoder in the past. RDS MAX v2.0 is our first RDS encoder, a slightly improved version of RDS MAX 1.0. The cool thing about this little baby is that it can pick up MP3 ID tag from Winamp and transmit it as radiotext on your RDS-enabled receiver. In short, if you're using your PC and WinAmp to play your audio over the transmitter, now you'll finally be able to send the song and artist name to your listeners! Among other features are dynamic PS (also in stand alone mode, without a PC), PTY, TA, RT and others. RDS MAX comes with MPX feedthrough function, meaning all you have to do is connect it between the stereo encoder and the transmitter. Suitable RCA connectors are already on the PCB board. Connection to the PC is via standard RS232 cable. Version 2.0 now sports improved PCB layout, on-board RDS carrier adjustment trimmer and finally also comes in a cheaper KIT version (for all you "do it yourself" blokes). Really easy to assemble, too. Another improvement is an additional RDS carrier filter.

Technical specifications:
- MPX input: 6K
- MPX output: 75 ohms
- Supply voltage: 12V-16V/100mA DC
- Input connector: RCA
- Output connector: RCA
- Output level: 1Vpp max
- RDS pilot: 57KHz, PLL locked to stereo pilot
- RDS groups supported: 0A, 2A
- Functions: PS, AF, RT, TA, DI, PTY, TP, PI
- Galvanic separation from the PC via optical coupler, eliminates ground loops (hum)
- PC data connection: RS232 COM port
- RDS pilot to 19KHz synchronization circuit

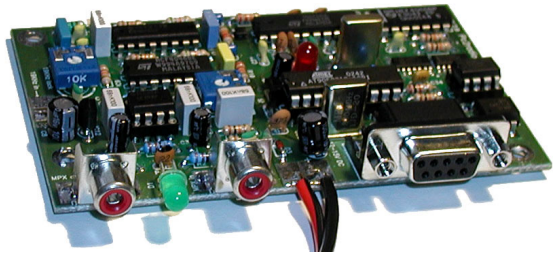

Fig. 1; RDS MAX v2.0 without the enclosure

THANK YOU FOR PURCHASING RDS MAX V2.0!

We hope you will enjoy it as much as we do and remember to tell your friends about it. If you found a bug perhaps have an idea for improvement of this product please don't hesitate to contact us. From all of us we wish you happy broadcasting! Now go get that soldering iron :-)

Your PCS Electronics team
http://www.pcs-electronics.com

BEFORE YOU START

Here is what you need to use RDS MAX V2.0

- SOLDERING IRON; 30 watt soldering iron. Weller and ERSA make excellent soldering tools. Radio Shack stuff is horrible, but will do if that's your only option. This may not be needed with some configurations (enclosed).
- FM EXCITER (a transmitter); You will need a transmitter which will transmit the RDS signal. RDS MAX 2.0 has been designed specifically for the MAX family of transmitters, but can be used with any other FM exciter.

USING THE RDS MAX v2.0

STEP 1: UNWRAPPING THE PACKAGE

Clean-up that desk and carefully unwrap the package. Depending on the configuration of the purchased RDS encoder you will either find just the PCB with the CD or the encoder mounted into an enclosure with encoder and cable. We do not always send the CD since some countries have strict regulations pertaining to import of CDs (Mexico is a good example). If your CD is missing simply download your driver from our website. You will find it under Support.
Quickly check the PCB for any defects inflicted by the shipping. If all checks out fine, proceed to the next step.

STEP 2: CONNECTING TO THE TRANSMITTER, PC AND STEREO ENCODER
This is the most difficult part of the job. Still, with little patience, good instructions and steady hand it should be a breeze with most users. If you're stuck at some point, don't hesitate to contact us with your questions. Note that we have a Forum on our website; you can post your questions there also. Let's look at the typical scenario with RDS MAX v2.0.

SCENARIO 1: MAX PRO FM exciter (MAX PRO I, II or III), RDS MAX v2.0 and SE stereo encoder

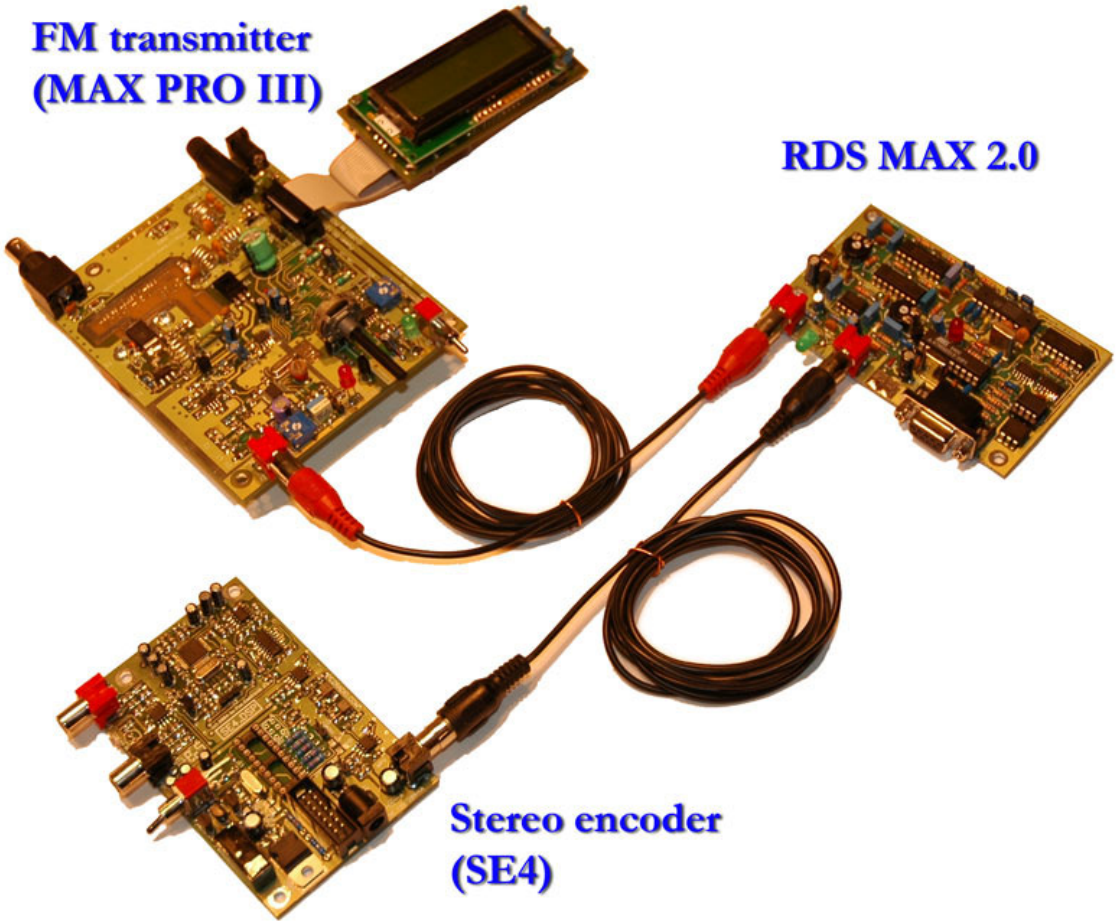

Fig. 2; RDS MAX v2.0 in a serious professional setup with SE4 and MAX PRO 3 (15W of clean FM signal)

This is the most typical setup, stereo encoder, fm transmitter and RDS encoder. The only recommended connection not shown is the 19KHz pilot cable. This cable should be connected between the 19KHz input on the RDS MAX 2.0 board and the 19KHz pilot output on the SE-4 stereo encoder board. On SE3 you can connect the cable to either C23 or pin 16 of the ATMEL chip. Make sure you use coaxial (microphone) shielded cable. Connect center conductor to ground.

We'd like to point out here that you should keep the wires short and mount this setup in enclosure or separate enclosures. Also connect COM port to your PC and connect all power connections to the power supply.

STEP 3: SOFTWARE
Install the RDS MAX 2.0 driver from the provided CD or download the latest version from our website. Set the used COM port in the Setup dialog. Please send us any bug reports or suggestions for improvement. We will take your comments and suggestions into consideration.

Fig.3; RDS MAX v2.0 splash screen

Fig.4; RDS MAX v2.0 pulling mp3 song name directly from WinAmp (can be configured to insert song name into PS or RT

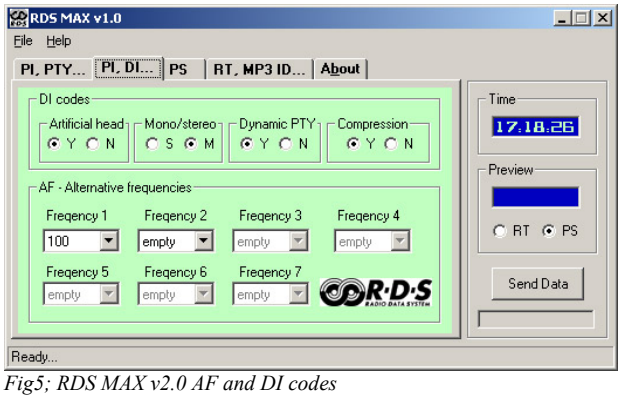

Fig5; RDS MAX v2.0 AF and DI codes

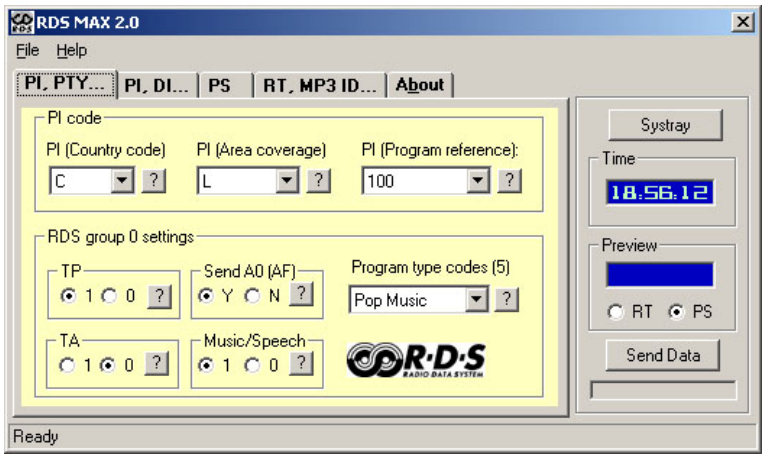

Fig6; RDS MAX v2.0 PI code and PTY

STEP 4: POWER UP AND USE

If you're using stereo encoder and you have connected the 19KHz pilot cable as suggested, adjust P1 until D2 goes off. That's pretty much all there is to it. If you're using another FM transmitter and stereo encoder, you may need to increase/decrease the level of RDS data signal. This can be done with the help of P2 on the RDS MAX 2.0 board.

TROUBLESHOOTING

We hope you'll never get to this step. We all know bad things happen. But do not despair! If you have problems that you cannot solve yourself, please contact us directly, our email is at the website**.** Feel free to post questions to our forum and discuss matters with other users.

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Bill of Materials **RDS MAX V2.0**

Qty	Value	Reference	Checklist (√)
1	NE5532P	IC10	
2	4046	IC8, IC9	
1	4013 SMD	IC3	
1	4030 SMD	IC4	
1	TDA7330D	IC6	
1	4066	IC5	
1	90S2313 – 10	IC7	
1	CNY17	IC1	
1	24C64 (24C32) ATMEL	IC2	
1	78L05	IC12	
1	78L09 or 78L10	IC11	
2	RCA connector for PCB	J1, J2	
1	DB9F connector, PCB, 90 degrees	J3	
1	Pilot input, optional	J4	
1	DC power supply input, 12-15V DC 50mA	J5	
1	4.332 MHz	Q1	
1	9.8304 MHz	Q2	
1	LED Green	D1	
1	LED RED – Pilot lock to stereo encoder (off when locked)	D2	
1	BAT85	D3	
1	75 Metal	R1	
2	6K8 Metal	R2, R3	
9	10K	R4, R5, R8, R13, R19, R21, R22, R24, R25	
1	39K	R6	
1	100 metal	R7	
3	22K	R10, R15, R16	
1	12K	R11	
4	1K	R20, R23, R26, R27	
2	5K6	R9, R14	
1	2M2	R18	
1	330	R17	
1	680 ohms (681 SMD) under the PB (under D1)	Rx	
1	33 ohms (330 SMD)	R12	
1	1000uH (brown black red silver on green body)	RFC1	
1	10K (103 or 1002 SMD)	R28	
2	10K trimmer (P1 = PLL lock, P2 = RDS level)	P1, P2	
4	100nF 5mm polyester capacitor	C4, C5, C6, C17	
10	47-100nF 2.5mm ceramic	C12, C18, C19, C20, C22, C25, C28, C30, C32, C34	
1	10nF 5mm polyester capacitor	C16	
3	10nF 2.5mm ceramic capacitor	C2, C26, C37	
6	1nF 2.5mm ceramic capacitor	C9, C10, C15, C21, C36, C35	
1	1nF 5mm polyester capacitor	C13	
1	3n3 5mm polyester capacitor	C11	
1	330pF 2.5mm ceramic	C14	
5	22pF 2.5mm ceramic	C1, C23, C24, C29, C31	
3	10uF	C3, C7, C27	
2	100uF/16V	C8, C33	
1	DIL8 socket for IC2		
1	DIL20 socket for IC7		
1	PCB		