

# **RDS Softdecoder**

PC software for the decoding of RDS data

Instruction Manual

June 2007

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## 1. Introduction

The 2wcom RDS Softdecoder is a PC software for MS Windows and is a real-time logging and decoding software for RDS data. The RDS groups will be provided on an RS-232C- or TCP/IP port of one of our RDS decoders:

- Monitoring Decoder A20, A10T
- Decoder RD20, RD10

The software provides general RDS information and special customer data for RadioText Plus, Traffic Message Channel, Early Warning System and Personal Weather Station.

### Important

Please read the entire manual before you start to use the software. Keep this manual for future use as it contains important operating instructions.

## **Explicit definitions**

This software is developed for the use with the MS Windows operating system. Its usage is similar to MS Windows. Please see your MS Windows manual for details of windows operations. For necessary mouse operations, please place the mouse pointer on the specified display area and execute the following corresponding action.

"Mouse click" or "Click" Single push on left mouse button

Additional notes:

Some functions of the software depend on hardware options and are disabled if the corresponding option is missing. Please contact us if you would like to order a missing hardware option.

Configurations, functions and specifications may change without notice.

## 2. Manufacturer

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## 3. Software Installation

#### Installation of the program files

- Embedded use: If you use the RDS Softdecoder as part of A20Lab / A20Config, all program files are usually already installed as part of A20Lab / A20Config (in the same folder). In this case, no further installation is required. Just start the RDS Softdecoder via the main application (A20Lab / A20Config).
- Stand-alone use: If you want to use the RDS Softdecoder as a stand-alone application, just copy the RDS Softdecoder folder to your local hard disk (e.g. "c:\programs") and start the exe-file of the RDS Softdecoder.

## 4. Connection

#### Connection window - Data connection to the 2wcom RDS hardware

- 1.Connect to a serial RS-232C device by selecting the corresponding [COM-Port] and the [Baud rate] (default: 9600) or connect to an IP remote device by selecting either the [Host name] or the [IP-Address].
- 2.For a TCP/IP connection, enter now the [TCP-Port] (group-port) on which the device provides the RDS data (Default:6667 (A20) / Fix: 6666 (A10T).
- 3. Optionally click on [PortLog] to display the data flow between the RDS Softdecoder and the RDS hardware (Fig.4.2).
- 4.Click on the [RDS Soft-Decoder] button and in a few seconds the decoder-dialog will appear.

C Host name TCP-Pot  FOR Pot  C D0M-Pot  C D0M-Pot  C D0M-1  PotLog  RDS Solt-Decoder	2wcom Softdeco	der						>
seiial connection C COM-Pot COM1 × Device: Baud rate 9500 × PortLog RDS Solt-Decoder	C Host name IP-Address	192.168.14.250	TCP-Port	6667				
Baud rate 3500 r PortLog	serial connection	COM1 V			Device:			
RDS Soft-Decoder	Baud rate	9600			Device.	Port	.og	
		[	RDS Soft-Decoder					

Fig. 4.1 – Connection window

Receiving data by connecting to the configuration port of the A20 (default: 6666) instead of the group port (default: 6667) is only possible by using A20 Lab / A20-Config, which will start the RDS Softdecoder.

#### Port log - Display and log of transferred UECP frame data

All transmitted data will be logged in the port log dialog if opened before. The UECP-frames will be displayed and can be stored by a mouse-click on [Save].

The "<-" indicates received data by the software from the device. The "->" symbol stands for outgoing data.



#### Main RDS data - Basic data like PI, PS, CT, RT etc.

The [Main] tab provides the following RDS data:

PI - Program identification code PS – Program service name PTY – Program type code CT – Clock time MS – Music / Speech code DI – Decoder identification code PIN – Program item code TP – Traffic program TA – Traffic announcement Radio Text (in chronological order)

RDS Decode	r - PI=D382 - PS=	NDR 2			×
SyncStatus:					
Main G	roups   Group Seq.	AF EON	EWS RT+	TMC PWS	Log
PI: 0 PS: PTY: 1 CT: 1 MS: 1	0382 NDR 2 10 - Pop 15.05 2007 16:25 1	DI: 1 PIN: TP: 1 TA: 0			
Radio 1 Rock A NDR 2 NDR 2 NDR 2 NDR 2	fest and Roll (FGave The B - UND DAS LEBEN B - UND DAS LEBEN B - UND DAS LEBEN B	est Years EGINNT. www EGINNT. www EGINNT. www	undr2.de undr2.de undr2.de		

Fig. 5.1 – Main RDS data

The "SyncStatus" will be "green" as long as the device is "in sync" and RDS data is received. It changes to "red" if the device is "out of sync", caused by a bad/missing RDS signal. It will turn to "gray" if there is a connection problem to the device.

After 3 minutes of no RDS data, the connection will be closed.

#### Groups - Graphical statistic of the RDS group type distribution

The [Groups] tab provides the percentage distribution of the received group types.

The red indicator mark shows the maximum peak level of group counts.

By a mouse-click on [Reset] the count values will be restored to zero.

Group	Lount	Percent	
UA/B 14/D	36	35%	
1A/D 2A/B	19	19%	
34/B	3	3%	
4A/B	ŏ	0%	
5A/B	0	0%	
6A/B	27	27%	
7A/B	0	0%	
8A/B	8	8%	
39/B 104/P	0	0%	
114/B	8	8%	
12A/B	ŏ	0%	
13A/B	0	0%	
14A/B	0	0%	
15A/B	0	0%	
		F	Reset

Fig. 5.2 – Group statistic

#### Group sequence - List of the latest 100 RDS group types

The [Group sequence] tab shows the latest 100 group types received. It can be paused by selecting the [Stop]-select box.

It shows also the time in seconds that was necessary to read 100 RDS groups.



Fig. 5.3 – Group sequence

#### AF lists - List of the alternative frequencies

The [AF] tab displays the received lists of alternative frequencies (latest data on the top of the list).

A mouse click on the column headers changes the list sorting method alternatively to ascending by number or to ascending or descending by base frequency.

Depending on the method of the AF lists, the list will show pairs of alternative frequencies (method B) or just the comma separated lists of alternative frequencies (method A).

By a mouse-click on [Reset] the lists will be cleared and then refreshed by present data.

<mark>5 Dec</mark> yncSta	oder – P: itus: 📃	I=D382 - P5= NDR 2	×
Main	Groups	Group Seq. AF EON EWS RT+ TMC PWS Log	_
No	AF List	ts ( received order )	
21	92.1	[92.1, 96.4] [92.1, 94.1] [92.1, 96.2] [92.1, 96.1] [92.1, 96.0] [92.1, 102.6]	
7	96.2	[92.1, 96.2] [96.2, 102.6] [95.9, 96.2]	
5	i 94.1	[92.1, 94.1] [94.1, 96.1]	
11	96.4	[87.6, 96.4] [92.1, 96.4] [95.9, 96.4] [96.4, 107.0] [96.4, 98.5]	
7	89.2	[89.2, 97.8] [89.2, 99.8] [89.2, 102.6]	
7	97.8	[97.8, 98.1] [89.2, 97.8] [97.8, 99.8]	
9	97.9	[87.6, 97.9] [96.3, 97.9] [97.9, 98.1] [97.9, 99.8]	
	98.1	[97.9, 98.1] [97.8, 98.1] [98.1, 99.8]	
	98.7	[93.2, 98.7]	
	90.7	[90.7, 91.9] [90.7, 98.5]	
11	98.3	[87.6, 38.3] [91.9, 38.3] [93.2, 38.3] [96.3, 98.3]	
1 1	36.3	[87.6, 36.3] [31.3, 36.3] [33.2, 36.3] [36.3, 38.3] [36.3, 37.3]	
12	01.0	[33.2, 30.3][33.2, 30.3][33.2, 30.7] [07.0]01.0][01.0]00.2][03.2, 30.7]	
19	97.6		
	93.4	[93.4. 93.4]	
Ì	94.0	[94.0. 99.8][94.0. 99.1][93.5. 94.0]	
15	98.5	[87.6, 98.5] [91.9, 98.5] [90.7, 98.5] [96.4, 98.5] [98.5, 99.1] [93.5, 98.5] [	
11	107.0	[87.6, 107.0] [96.4, 107.0] [99.1, 107.0] [93.5, 107.0] [98.5, 107.0]	
13	93.5	[91.9, 93.5] [93.5, 99.8] [93.5, 99.1] [93.5, 107.0] [93.5, 98.5] [93.5, 94.0]	
11	99.1	[99.1, 99.8] [93.5, 99.1] [99.1, 107.0] [98.5, 99.1] [94.0, 99.1]	
	00.0		
Num	per of AF	Lists: 29 Reset	

Fig. 5.4 – AF lists (method B)

#### EON lists - List of the 'Enhanced Other Networks'

The [EON] tab shows the list of enhanced other networks referenced stations with their RDS data PI, PS, TP/TA and PTY.

By selecting a network the corresponding EON AF lists will be displayed.

RDS Deco	oder - PI	=D210 - PS=	= DLF		×
SyncSta	tus: 📃				
( Mada	1 C	1 c c 1		Invelor. Invelow	111
Main	Groups	Group Sed.	AF EUN	IEWS   HI +   IMC   PWS	
EON	Networks				
PI		PS	TP/TA	PTY	
D22	0	DKULTUR	0/1	0 - None	
EON.	AF Lists:				
#	EONA	F			
4	92.1,1	01.7, 104.2, 10 01 7: 104 2: 11	15.U 10.3.92.1		
, i i			0.0, 01.1		
_					

Fig. 5.5 – EON lists

#### **EWS - Display of Early Warning Messages**

The [EWS] tab shows alert messages sent by the 2wcom Early Warning System-Server or the 2wcom Alert Control LT software.

On the top of the dialog you will see the configuration data which were sent by using the 3A group:

- Encrypt the number of the encryption table (0 7) which was used to encrypt the data
- Customer the customer ID
- Application Group Type Code indicates in which group the alert messages will be sent





The list shows the received messages:

- No Unique message ID
- Received at time of reception
- Priority priority (0 7) for the message. Will result in different behaviours in the EWR (like a beeping or no beeping warning receiver)
- Linked indicates whether the message line belongs to another message line or not. This happens if the alert message has more than 90 characters
- Message text of message for display in the EWR (Early Warning Receiver)

Further information about the selected message is displayed at the bottom of the dialog:

- Date of reception
- Fragment message fragment number
- Customer customer ID
- Group group ID
- Priority priority (0 7)
- Length count of chars in the message text
- Type 0 = stop message, 1 = alert message, 2 = configuration message
- The message in full length

#### RadioText Plus (RT+) - Display of the content details

Only available with the A20 option 'RT+'.

The [RT+] tab shows the 3A group info for RT+ and the RT+ tags (type and content), taken from the current RadioText, in a list.

The 3A group details can be shown or hidden by a mouse click on the arrow next to the 3A group label.

The LED to the right side of the 3A group details indicates the current 3A group status – it is green if the 3A group with the AID for RT+ is received at least every 10 seconds, red otherwise.

The RT field shows the current RadioText. Tag1 and Tag2 show the RT+ content type according to the specification. Additionally, the transmitted start marker and the length marker (X/Y) is shown. In the second row, the resulting RT+ content string, taken from the current RadioText by using the transmitted start marker and length, is shown.

Each new RT+ content will be added to the list.

Decoder - PI=D392 - P5=WDR 2	ſ
:Status: 📕	
in Groups Group Seq. AF EDN EWS RT+ TMC PWS Log	
3A-Gruppe	
RT: WDR 2. Der Sender. ag1: PROGRAMME.STATIONNAME.LONG, 0/4 WDR 2 ag2: DUMMY_CLASS, 63/0	
<b>WDR 2. Der Sender</b> JUMMY_CLASS, 63/0 DUMMY_CLASS, 63/0	-
Cutting Crew - I've been in love before TEM.ARTIST, 0/11 Zufting Crew TEM.TITLE, 15/23 Tre Jean Dive before	
Schon gehoert? I've been in love before von Cutting Crew TEM.TITLE, 15/23 (Ve been hiove before TEM.ARTIST, 44/11 <i>Cuting Crew</i>	
'T've been in love before" von Cutting Crew TEM.TITE, 1/23 'Ve been in love before TEM.ARTIST, 31/11	•

Fig. 5.7 – RadioText (RT+)

#### Traffic Message Channel (TMC) - Display of the messages

Only available with the A20 option 'TMC'.

The [TMC] tab shows the transmitted TMC messages as decoded plaintext (provided that the national location code list is available) plus basic TMC details like SPN, LTN, SID, MGS and encryption parameters (ENCID, LTNBE, Test).

If the necessary national location database is not available, the list box will contain a corresponding message and no TMC messages will be shown.

Next to each TMC message, an icon may be shown; a red exclamation mark will be shown for extremely urgent messages, a yellow exclamation mark will be shown for urgent messages and no icon will be shown for messages with normal urgency.



Fig. 5.8 – traffic message channel (TMC)

A third possible icon (blue "chasing arrows") will be shown for messages that have been updated/changed.

A mouse-click on [Show details] will bring up a panel, showing all general TMC details including SPN, LTN, SID, MGS and encryption parameters (ENCID, LTNBE, Test).

A mouse-click on [Reset] clears the list of all received messages.

#### PWS (German only) - Display of the weather data list

Only available with the A20 option 'PWS'.

The [PWS] tab shows the current weather data and the forecast for all weatherregions that are provided by the device.

The data will be sent in an endless loop, so at first the RDS Softdecoder waits for the unique "update-frame" to find the first frame with weather data.

The frames will be collected until the "update-frame" is received again. Then the last frame is found.

Thereafter the complete data will be decoded and displayed in the "Decode"-screen.

Now it is possible to change between the Gruppen / Group- and the Decode-screen by a mouse-click on the [<-Gruppen] / [Decode->] button.

At the top, the remaining time (in minutes) until the next "Wetter/weather" and "Ort/town" data update is displayed.

The [Reset]-button will clear the list and start the frame-collecting and decoding process again.

3A Grup	ope mit P	WS-Kennung empfangen	Decode ->	Reset
Nr	ID	PWS Daten		
1	10	Warte auf UPDATE-Frame		

Fig. 5.9 – PWS waiting for update-frame

38 PW9	6-Frames	empfangen	Decode -> Reset
Nr	ID	PWS Daten	
1	22	12 34 D4 0B 00 20 ED A0	
2	3	12 34 D4 01 96 59 32 50	
3	4	12 34 D4 02 16 54 A3 A6	
4	5	12 34 D4 02 96 54 A3 B2	
5	6	12 34 D4 03 16 54 6B 92	
6	7	12 34 D4 03 96 4F 19 28	
7	8	12 34 D4 04 39 94 7B 62	
8	8	12 34 D4 04 16 58 6B 62	
9	9	12 34 D4 04 96 54 8B 92	
10	10	12 34 D4 05 16 54 9B 82	
11	11	12 34 D4 05 96 45 05 1E	

Fig. 5.10 – PWS receiving PWS data

eue Wetter/Ort-Da	ten in 844/1440 Min	I.	<- Gruppen	Reset	
Ort	Situation	Temp.	Wind	Regenw.	
München (N)					
HEUTE:		14-25 °C			
Morgens:	wolkig	15 °C	9 km/h NO	10%	
Mittags:	bedeckt	23 °C	17 km/h 0	30%	
Abends:	bedeckt	22 °C	13 km/h NO	20%	
MORGEN:		14-29 °C			
Morgens:	wolkig	17 °C	7 km/h N0	10%	
Mittags:	wolkig	27 °C	15 km/h NO	20%	
Abends:	bedeckt	25 °C	11 km/h NO	10%	
ÜBERMORGEN:		15-28 °C			
Morgens:	leicht bewölkt	18 °C	6 km/h SW	20%	
Mittags:	bedeckt	26 °C	9 km/h N	40%	
Abends:	wolkig	24 °C	7 km/h 0	30%	
Berlin (N)					
HEUTE:		16-26 °C			
Morgens:	bedeckt	18 °C	13 km/h 0	50%	
Mittags:	wolkig	24 °C	11 km/h 0	60%	
Alle and alle a	Gewitter	23 °C	13 km/h 0	40%	
· Abenas:					

Fig. 5.11 – Decoded PWS data

The list shows one block of each weather region grouped by towns. One weather block consists of situation, temperature, wind speed, wind direction, precipitation and the region ID (scroll right to show) for today, tomorrow and the day after tomorrow.

The caption at the bottom explains the regional type of the towns.

•(R) regional

- •(N) national
- •(I) international
- •(Z) additional region (zusätzliche Region)

#### Logging - Control of the RDS group data log

The [Log] tab will let you save the plain group data by a mouse-click on [Start Logging].

A new group log file will be created every hour in the same directory where the softdecoder.exe is located.

The filename specifies the time and date when it was created.

Every line of group data will be saved with a timestamp and the group type in brackets.

RDS Decoder - PI=D382 - PS= NDR 2
SyncStatus: 📕
Main Groups Group Seq. AF EON EWS RT+ TMC PWS Log
Log group data
Currently logged group data
D3820549E3554452 (UA)
Log RT+ data
Log TMC data
Show HTML Report

Fig. 5.12 – Logging

Filename: grlog\_2007-05-31-14.txt

... 2007-05-31 14:21:41 D3 82 25 54 65 64 20 20 (2A) 2007-05-31 14:21:41 D3 82 05 48 11 97 20 4E (0A) ...

By checking [Log RT+ data] a new RT + log file will be created every hour in the same directory where the softdecoder.exe is located (A20 option 'RT+' required).

Filename: RTPlusLog\_2007-05-31-14.txt

By checking [Log TMC data] a TMC log file will be created in the same directory where the softdecoder.exe is located (A20 option 'TMC' required).

Filename: TMCLog.txt

#### HTML export - Generates an RDS data report

By a mouse-click on the [Show HTML Report] button of the [Log] tab, the default HTML browser will open a HTML report of the current RDS data that is located in the directory "html\_report".

Dynamic HTML-Repo	rt of I	RDS-Data				
[Index][Group Statistic][Ra	adio Tex	t][AF-List][EON Dat	a]			2WCOM Wireless-World-Communication
		RDS Dat	a from '05/1	5/2007 04:27:16 PM'		
	PI:	D382			PS:	NDR 2
	PTY:	10 - Pop			CT:	15.05 2007 16:28
	MS: 1				DI:	1
	PIN:				TP/TA:	1/0
Group Sequence (100 Groups): 0A, 6A, 0A, 2A, 6A, 0A, 2 0A, 6A, 0A, 2A, 1A, 6A, 0A, 2 0A, 6A, 0A, 2A, 11A, 0A, 0A, 8A, 11A, 0A, 2A, 6A, 0A, 8A, 1A, 0A, 8A, 1A, 0A, 8A, 6A, 0A, 8A, 1A, 0A, 8A, 1A, 0A, 8A, 6A, 0A, 8A, 1A, 0A, 8A, 1A, 0A, 8A, 1A, 0A, 8A, 6A, 0A, 8A, 1A, 0A, 8A, 1A, 0A, 8A, 6A, 0A, 8A, 1A, 0A, 8A, 1A, 0A, 8A, 6A, 0A, 8A, 1A, 0A, 8A, 1A, 0A, 8A, 6A, 0A, 8A, 1A,			3A, 11A, 0A, 2A 0A, 2A, 6A, 0A, , 8A, 6A, 0A, 2A , 0A, 6A, 0A, 2A	, 6A, 0A, 8A, 6A, 0A, 2A, 11A, 0 3A, 0A, 2A, 6A, 0A, 8A, 6A, 0A, , 6A, 0A, 3A, 11A, 0A, 2A, 6A, 0 , 11A,	IA, 6A, 6 2A, 0A, IA, 8A, 6	A, 0A, 2A, 6A, 0A, 8A, 11A, 0A, 2A, 6A, 6A, 6A, 0A, 2A, 6A, 0A, 8A, 0A, 2A, 6A, A, 0A, 2A, 11A, 0A, 6A, 6A, 0A, 2A, 6A,
			Group §	Statistic		
Groups		Current/Peak		Currer	nt/Pea	k
0A		36 / 36				
1A		0/0				
2A		18 / 18				
3A		3/3				
4A		0/0				
5A		0/0				
6A		27 / 27				
7A		0/0				
8A		8/9				
9A		0/0				
10A		0/0				
11A		8/10				
12A		0/0				
13A		0/0				
14A		0/0				
15A		0/0				
			n- 2	Tauta		
P =0 Rook And Poll /T	Caue T	a Bact Years Of My Life)	Kadio	Texts		
n -1 Rock And Roll (I	Gave T	he Best Years Of My Life)	- Kevin Joh			
n -2 Rock And Roll (I	Gave Th	ne Best Years Of My Life)	- Kevin Joh			

Fig. 5.13 – html\_report/index.html