

# Radio Remote Control

Tx1 / Rx1 : Link-TRx1 für Scan-Betrieb

Tx2 / Rx2 : Lokal-TRx2 für Festfrequenz

## Datenstruktur RS232 und RF-Modem

UC	COM	LEN	DATA0	DATA1	...	CRCH	CRCL
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UC = 1 für UC1 (Modem-Controller mit festem Programm)

UC = 2 für UC2 (Controller mit veränderlichem Programm)

## Kommandostruktur UC1 (RS232 und RF-Modem)

<i>UC1-Function</i>	<i>Hex-Byte-Code: SYSOP → UC1</i>	<i>Hex-Byte-Code: UC1 → SYSOP</i>
Check Cable-Modem	00 00	00 01 01
Reset Cable-Modem	01 00	01 00
Reset UC1	02 01 00	02 01 00
Reset DSP	02 01 01	02 01 01
Get Sync Repeater Modem	03 00	03 01 SS
Set Sync Repeater Modem	03 01 SS	03 01 SS
Get Software-Version	04 00	04 02 VV WW VV : Version UC1 WW : Version UC2
Get Call	05 00	05 06 CC CC CC CC CC CC
Set Call	05 06 CC CC CC CC CC CC	05 06 CC CC CC CC CC CC
Get Sync RF Modem	06 00	06 01 SS
Set Sync RF Modem	06 01 SS	06 01 SS
Get ADCs	07 00	07 02 R1 R2 R1 : RSSI Rx1 R2 : RSSI Rx2

Ping DBORKS	10 00	10 06 DBORKS
Get Random	11 00	11 04 NN NN NN NN
Login	12 04 NN NN NN NN	12 01 LL
Logout	12 00	12 01 LL
Get System Mode	14 00	14 01 MM
Set System Mode	14 01 MM	14 01 MM
Get Frequency for Remote-Control and Repeater 1	15 00	15 08 TT TT TT TT RR RR RR RR
Set Frequency for Remote-Control and Repeater 1	15 08 TT TT TT TT RR RR RR RR	15 08 TT TT TT TT RR RR RR RR
Get Frequency for 2 <sup>nd</sup> Receiver	16 00	16 04 RR RR RR RR
Set Frequency for 2 <sup>nd</sup> Receiver	16 04 RR RR RR RR	16 04 RR RR RR RR
Get Frequency for Repeater 2	17 00	17 08 TT TT TT TT RR RR RR RR
Set Frequency for Repeater 2	17 08 TT TT TT TT RR RR RR RR	17 08 TT TT TT TT RR RR RR RR
Get Modem Tx Pwr	18 00	18 01 PP
Set Modem Tx Pwr	18 01 PP	18 01 PP
Get Digipeater Tx Pwr	19 00	19 01 PP
Set Digipeater Tx Pwr	19 01 PP	19 01 PP
Get Reference Dacs	1A 00	1A 04 D1 D1 D2 D2
Set Reference Dacs	1A 04 D1 D1 D2 D2	1A 04 D1 D1 D2 D2
Rep1 Get Carrier Hold Time	1B 00	1B 01 CH
Rep1 Set Carrier Hold Time	1B 01 CH	1B 01 CH
Rep1 Get Retrigger Time	1C 00	1C 01 CH
Rep1 Set Retrigger Time	1C 01 CH	1C 01 CH

<i>UCI-Function</i>	<i>Hex-Byte-Code: SYSOP → UCI</i>	<i>Hex-Byte-Code: UCI → SYSOP</i>
DSP: Select SERIAL-load + RESET-Pulse	20 01 00	20 01 00
DSP: Select parallel FLASH- load + RESET-Pulse	20 01 01	20 01 01
DSP: Serial-Code-Packet	22 LL PP SS ... SS  LL : Länge Datenfeld PP : Paket-Nummer	22 01 PP  PP : Paket-Nummer
DSP:	24 00	24 00

Release Upload		
UC2: Set Hardware Reset	30 00	30 00
UC2: Programming Enable	31 00	31 01 53 : Enabled
UC2: Chip Erase - Flash / EEPROM	32 00	32 00
UC2: Read Program Memory	33 03 AH AL NB  NB: Number uC-Bytes to read AH : Byte-Address High AL : Byte-Address Low	33 NB AH AL IH IL ...  NB : Number of uC-Bytes read + 2 IH : In High-Byte of Word IL : In Low-Byte of Word
UC2: Load Program Memory Page	34 NB AH AL OH OL ...  NB : Number of Bytes to load + 2 AH : Byte-Address High AL : Byte-Address Low OH : Out High-Byte of Word OL : Out Low-Byte of Word	34 02 AH AL
UC2: Write Program Memory Page	35 02 AH AL  AH : Byte-Address High AL : Byte-Address Low	35 02 AH AL
UC2: Read EEPROM Memory	36 03 AH AL NB  NB : Number of EEPROM-Bytes to read AH : Byte-Address High AL : Byte-Address Low	36 NB AH AL IE ...  NB : Number of EEPROM-Bytes read + 2 IE : In EEPROM-Byte
UC2: Write EEPROM Memory	37 NB AH AL OE ...  NB : Number of Bytes to write + 2 AH : Byte-Address High AL : Byte-Address Low OE : Out EEPROM-Byte	37 02 AH AL
UC2: Read Lock Bits	38 00	38 01 RL  RL : Read Lock Bits
UC2: Write Lock Bits	39 01 WL  WL : Lock Bits to write	39 01 WL

UC2: Read Signature Bytes	3A 00	3A 03 1E 94 03 : ATmega16
UC2: Write Fuse Bits	3B 01 WF WF : Fuse Bits to write	3B 01 WF
UC2: Write Fuse High Bits	3C 01 WF WF : Fuse High Bits to write	3C 01 WF
UC2: Read Fuse Bits	3D 00	3D 01 RF RF : Read Fuse Bits
UC2: Read Fuse High Bits	3E 00	3E 01 RF RF : Read Fuse High Bits
UC2: Read Calibration Byte	3F 00	3F 01 RC RC : Read Calibration Byte
UC2: Load Write Verify Program Memory Page	40 NB AH AL OH OL ... NB : Number of Bytes to load + 2 AH : Byte-Address High AL : Byte-Address Low OH : Out High-Byte of Word OL : Out Low-Byte of Word	40 03 AH AL EF EF : Error Flag 0: ok, 1:Prog Error
UC2: Write Verify EEPROM Memory	41 NB AH AL OE ... NB : Number of Bytes to write + 2 AH : Byte-Address High AL : Byte-Address Low OE : Out EEPROM-Byte	41 03 AH AL EF
UC2: Clear Reset	42 00	41 00

Rep1 Opening Methode Get	50 00	50 01 MM
Rep1 Opening Methode Set	50 01 MM	50 01 MM
Rep1 Tx Power Get	51 00	51 01 PP
Rep1 Tx Power Set	51 01 PP	51 01 PP
Rep1 CW Get	52 00	52 05 SP TT TT DV DV
Rep1 CW Set	52 05 SP TT TT DV DV SP : Cw-Speed [Bpm] TT : Cw-Tone-Frequency [Hz] DV : Cw-Tone-Deviation [Hz]	52 05 SP TT TT DV DV
Rep1 CW Tone Frequency Get	53 00	53 02 TF TF
Rep1 CW Tone Frequency Set	53 02 TF TF	53 02 TF TF
Rep1 Call Tone Freq Dev Get	54 00	54 04 FF FF DD DD
Rep1 Call Tone Freq Dev Set	54 04 FF FF DD DD	54 04 FF FF DD DD

Rep1 Sub Tone Frx Drx Ftx Dtx Get	55 00	55 08 FR FR DR DR FT FT DT DT
Rep1 Sub Tone Frx Drx Ftx Dtx Set	55 08 FR FR DR DR FT FT DT DT	55 08 FR FR DR DR FT FT DT DT

Rep2 Opening Methode Get	56 00	56 01 MM
Rep2 Opening Methode Set	56 01 MM	56 01 MM
Rep2 Tx Power Get	57 00	57 01 PP
Rep2 Tx Power Set	57 01 PP	57 01 PP
Rep2 CW Speed Get	58 00	58 01 SS
Rep2 CW Speed Set	58 01 SS	58 01 SS
Rep2 CW Tone Frequency Get	59 00	59 02 TF TF
Rep2 CW Tone Frequency Set	59 02 TF TF	59 02 TF TF
Rep2 Call Tone Get	5A 00	5A 04 FF FF DD DD
Rep2 Call Tone Set	5A 04 FF FF DD DD	5A 04 FF FF DD DD
Rep2 Sub Tone Frx Drx Ftx Dtx Set	5B 00	5B 08 FR FR DR DR FT FT DT DT
Rep2 Sub Tone Frx Drx Ftx Dtx Set	5B 08 FR FR DR DR FT FT DT DT	5B 08 FR FR DR DR FT FT DT DT

LinkScan Sub Tone Frx Drx Ftx Dtx Get	5C 00	5C 08 FR FR DR DR FT FT DT DT
LinkScan Sub Tone Frx Drx Ftx Dtx Set	5C 08 FR FR DR DR FT FT DT DT	5C 08 FR FR DR DR FT FT DT DT

LinkScan Scan Speed Get	5D 00	5D 02 SP SP
LinkScan Scan Speed Set	5D 02 SP SP	5D 02 SP SP

LinkScan Sql Get	5,00E+000	5C 08 FR FR DR DR FT FT DT DT
LinkScan Sql Set	5E C 08 FR FR DR DR FT FT DT DT	5C 08 FR FR DR DR FT FT DT DT

Error: UC1 nicht im SPI-Master- Mode	xx yy	FE 01 CC CC : Falsches Kommando zurück
Error: Invalid Command	xx yy	FF 01 CC CC : Falsches Kommando zurück

## Kommandostruktur UC2 (RS232 und RF-Modem)

<i>UC2-Function</i>	<i>Hex-Byte-Code: SYSOP → UC2</i>	<i>Hex-Byte-Code: UC2 → SYSOP</i>
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DSP: ComSetSqlThRx1	25 03 TL TM TH  TH : High-Byte of 24-Bit-Word TM : Mid-Byte of 24-Bit-Word TL : Low-Byte of 24-Bit-Word	25 03 TL TM TH
DSP: ComSetSqlAvgNRx1	26 03 AL AM AH  AH : High-Byte of 24-Bit-Word AM : Mid-Byte of 24-Bit-Word AL : Low-Byte of 24-Bit-Word	26 03 AL AM AH
DSP: ComSetSqlMobileHoldNRx1	27 03 HL HM HH  HH : High-Byte of 24-Bit-Word HM : Mid-Byte of 24-Bit-Word HL : Low-Byte of 24-Bit-Word	27 03 HL HM HH
DSP: ComSetSqlMobileThRx1	28 03 TL TM TH  TH : High-Byte of 24-Bit-Word TM : Mid-Byte of 24-Bit-Word TL : Low-Byte of 24-Bit-Word	28 03 TL TM TH

DSP: ComRep1Sql SetSqlTh	29 0C TL TM TH AH AM AL TL TM TH AH AM AL HH HM HL TH : High-Byte of 24-Bit-Word TM : Mid-Byte of 24-Bit-Word TL : Low-Byte of 24-Bit-Word	2A 0C TL TM TH AH AM AL TL TM TH AH AM AL HH HM HL
SetSqlAvgN	AH : High-Byte of 24-Bit-Word AM : Mid-Byte of 24-Bit-Word AL : Low-Byte of 24-Bit-Word	
SetSqlMobileThRx1	TH : High-Byte of 24-Bit-Word TM : Mid-Byte of 24-Bit-Word TL : Low-Byte of 24-Bit-Word	
SetSqlMobileAvgN	AH : High-Byte of 24-Bit-Word AM : Mid-Byte of 24-Bit-Word AL : Low-Byte of 24-Bit-Word	
SetSqlMobileHoldN	HH : High-Byte of 24-Bit-Word HM : Mid-Byte of 24-Bit-Word HL : Low-Byte of 24-Bit-Word	

DSP: ComRep1Sql GetSqlTh GetSqlAvgN GetSqlMobileHoldN GetSqlMobileThRx1	2A 00	2A 0C TL TM TH AH AM AL HH HM HL TH TM TL
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DSP: ComRep2Sql SetSqlTh	2B 0C TL TM TH AH AM AL HH HM HL TH TM TL TH : High-Byte of 24-Bit-Word TM : Mid-Byte of 24-Bit-Word TL : Low-Byte of 24-Bit-Word	2C 0C TL TM TH AH AM AL HH HM HL TH TM TL
SetSqlAvgN	AH : High-Byte of 24-Bit-Word AM : Mid-Byte of 24-Bit-Word AL : Low-Byte of 24-Bit-Word	
SetSqlMobileHoldN	HH : High-Byte of 24-Bit-Word HM : Mid-Byte of 24-Bit-Word HL : Low-Byte of 24-Bit-Word	
SetSqlMobileThRx1	TH : High-Byte of 24-Bit-Word TM : Mid-Byte of 24-Bit-Word TL : Low-Byte of 24-Bit-Word	

DSP: ComRep2Sql GetSqlTh GetSqlAvgN GetSqlMobileHoldN GetSqlMobileThRx1	2C 00	2C 0C TL TM TH AH AM AL HH HM HL TH TM TL
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DSP: ComLinkScanSql GetSqlTh GetSqlAvgN GetSqlMobileHoldN GetSqlMobileThRx1	2D 00	2D 0C TL TM TH AH AM AL HH HM HL TH TM TL
DSP: ComLinkScanSql SetSqlTh	2D 0C TL TM TH AH AM AL HH HM HL TH TM TL TH : High-Byte of 24-Bit-Word TM : Mid-Byte of 24-Bit-Word TL : Low-Byte of 24-Bit-Word	2D 0C TL TM TH AH AM AL HH HM HL TH TM TL
SetSqlAvgN	AH : High-Byte of 24-Bit-Word AM : Mid-Byte of 24-Bit-Word AL : Low-Byte of 24-Bit-Word	
SetSqlMobileHoldN	HH : High-Byte of 24-Bit-Word HM : Mid-Byte of 24-Bit-Word HL : Low-Byte of 24-Bit-Word	
SetSqlMobileThRx1	TH : High-Byte of 24-Bit-Word TM : Mid-Byte of 24-Bit-Word TL : Low-Byte of 24-Bit-Word	

DSP: ComDspTx1SendCw	2D	2D 0C TL TM TH AH AM AL HH HM HL TH TM TL
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DSP: ComDspTx1Rbeep	2E	2E 0C TL TM TH AH AM AL HH HM HL TH TM TL
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Ungültig: DSP: ComDspTx1CwSpeed	2F	2F 0C TL TM TH AH AM AL HH HM HL TH TM TL
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DSP: ComDspTx1CwSettings	60	60 0C TL TM TH AH AM AL HH HM HL TH TM TL
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## Datenstruktur UC1/UC2-Übertragung

COM	LEN	DATA0	DATA1	...			
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## Kommandostruktur UC1/UC2-Übertragung

<i>Function</i>	<i>Hex-Byte-Code: SYSOP → UC1</i>	<i>Hex-Byte-Code: UC1 → UC2</i>	<i>Hex-Byte-Code: UC2 → UC1</i>
TX2 on/off	Kein Fernsteuerkommando	Kein Fernsteuerkommando	80 01 TT TT : 0 = off, 1 = on
TX2 PWR	Kein Fernsteuerkommando	Kein Fernsteuerkommando	81 01 PP PP : Leistung
TX1 on/off	Kein Fernsteuerkommando	Kein Fernsteuerkommando	82 01 TT TT : 0 = off, 1 = on
TX1 PWR	Kein Fernsteuerkommando	Kein Fernsteuerkommando	83 01 PP PP : Leistung
Get Repeater Modes	84 00	84 00	84 01 MM MM - Bit 0 : 0 : Local Repeater Mode 1 : Link Scan Mode
Set Repeater Modes	84 01 MM MM - Bit 0 : 0 : Local Repeater Mode 1 : Link Scan Mode	84 01 MM MM - Bit 0 : 0 : Local Repeater Mode 1 : Link Scan Mode	84 01 MM MM - Bit 0 : 0 : Local Repeater Mode 1 : Link Scan Mode
Set Frequency Rx2	Kein Fernsteuerkommando	Kein Fernsteuerkommando	86 04 RR RR RR RR
Set Frequency Tx2	Kein Fernsteuerkommando	Kein Fernsteuerkommando	87 04 TT TT TT TT

Send RSSI	Kein Fernsteuerkommando	Kein Fernsteuerkommando	88 04 R1 R1 R2 R2
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## Kommandostruktur DSP → UC2-Übertragung

<i>Bit</i>	<i>DspStatusWord</i>	<i>Function</i>
0	0	Kennung 0x90
1	0	
2	0	
3	0	
4	1	
5	0	
6	0	
7	1	
8	Rx1_DSW_Squelch	
9	Rx1_DSW_CT	
10	Rx1_DSW_ST	
11	Rx1_DSW_CwSeq	
12	Rx2_DSW_Squelch	
13	Rx2_DSW_CT	
14	Rx2_DSW_ST	
15	Rx2_DSW_CwSeq	

## Status Trx1 (Link)

<i>Bit</i>	<i>Trx1StatusWord</i>	<i>Function</i>
0	TRx1_Mode	0 : Local Repeater Mode 1 : Link Scan Mode
1		
2		
3		

4		
5		