

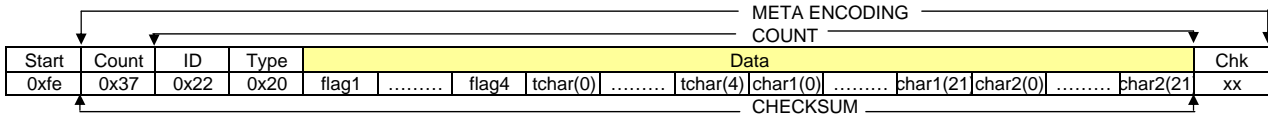
RT1084

1 byte waveform format

Baud Rate	Parity	Valid data bits	Stop bit value	Handshaking	Data Type
38400	n	8	1	none	string

1. RT1084 -> Other Controller

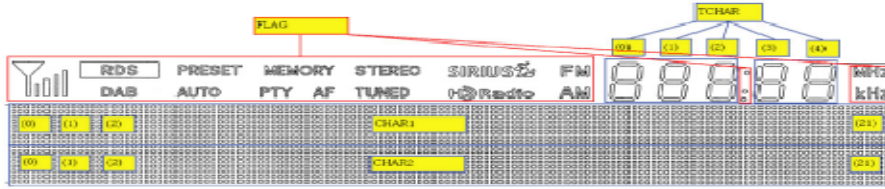
A. Display Data



FLAG1		FLAG2		FLAG3		FLAG4		DISPMODE1		
bit7		bit7		bit7		bit7		normal	FL off	
bit6	ANT	bit6	PRESET	bit6	SIRIUS	bit6	kHz	0	0	TUNER
bit5	ANTBAR0	bit5	AUTO	bit5	HDRADIO	bit5	POWER LED	0	1	SIRIUS1
bit4	ANTBAR1	bit4	MEMORY	bit4	FM	bit4	DISPMODE1	1	0	SIRIUS2
bit3	ANTBAR2	bit3	PTY	bit3	AM	bit3	ZONE1	1	1	SIRIUS3
bit2	ANTBAR3	bit2	AF	bit2	COL	bit2	ZONE2			
bit1	RDS	bit1	STEREO	bit1	DP	bit1	TEXTMODE2			
bit0	DAB	bit0	TUNED	bit0	MHz	bit0	TEXTMODE1			

0	Text 1 Line (Normal Large,13characters)
1	Text 1 Line (Special Lagre,13characters)
2	Text 2 Line (22characters)
3	

tchar	0-4
char1	0-21
char2	0-21



2. Other Controller -> RT1084

Start	Count	ID	Type	Key	Chk
0xfe	0x03	0x22	0x10	xx	xx

A. Key Data

Key:	Key:	Key:	Key:				
0x00	POWER(toggle)	0x10	3	0x20	HD RADIO	0x30	TUNING SELECT
0x01	POWER ON	0x11	4	0x21	SIRIUS/HD	0x31	PRESET SELECT
0x02	POWER OFF	0x12	5	0x22	DIGITAL/ANALOG	0x32	FREQ. UP
0x03	FM MONO	0x13	6	0x23	CAT+	0x33	FREQ. DOWN
0x04	PRESET SCAN	0x14	7	0x24	CAT-	0x34	
0x05	AUTO TUNING	0x15	8	0x25	AF	0x35	
0x06	FREQ. DIRECT	0x16	9	0x26	TP	0x36	LEFT
0x07	TUN/PRESET	0x17	0	0x27	TA	0x37	RIGHT
0x08	TUNE UP	0x18	MEMORY	0x28	PTY	0x38	ENTER
0x09	TUNE DOWN	0x19	PRESET UP	0x29	DISPLAY	0x39	PRESET LIST
0x0a	BAND	0x1a	PRESET DOWN	0x2a	SETUP	0x3a	CH LIST
0x0b	FM	0x1b	SIRIUS ID	0x2b		0x3b	CAT LIST
0x0c	AM	0x1c		0x2c		0x3c	
0x0d	DAB	0x1d	SIRIUS 1	0x2d	VFD(FL) ON/OFF	0x3d	
0x0e	1	0x1e	SIRIUS 2	0x2e	DIMMER	0x3e	
0x0f	2	0x1f	SIRIUS 3	0x2f		0x3f	

Key:	Key:
0x7f	NULL Key
0xff	Display Refresh

3. Other Controller -> RT1084 (select Direct key of Main[HD RADIO])

Start	Count	ID	Type	Key	Chk
0xfe	0x03	0x22	0x14	xx	xx

Key:		Key:		Key:		Key:	
0x00	POWER(toggle)	0x10	3	0x20		0x30	TUNING SELECT
0x01	POWER ON	0x11	4	0x21		0x31	PRESET SELECT
0x02	POWER OFF	0x12	5	0x22	DIGITAL/ANALOG	0x32	FREQ. UP
0x03	FM MONO	0x13	6	0x23		0x33	FREQ. DOWN
0x04	PRESET SCAN	0x14	7	0x24		0x34	
0x05	AUTO TUNING	0x15	8	0x25	AF	0x35	
0x06	FREQ. DIRECT	0x16	9	0x26	TP	0x36	LEFT
0x07	TUN/PRESET	0x17	0	0x27	TA	0x37	RIGHT
0x08	TUNE UP	0x18	MEMORY	0x28	PTY	0x38	ENTER
0x09	TUNE DOWN	0x19	PRESET UP	0x29	DISPLAY	0x39	
0x0a	BAND	0x1a	PRESET DOWN	0x2a	SETUP	0x3a	
0x0b	FM	0x1b		0x2b		0x3b	
0x0c	AM	0x1c		0x2c		0x3c	
0x0d		0x1d		0x2d	VFD(FL) ON/OFF	0x3d	
0x0e	1	0x1e		0x2e	DIMMER	0x3e	
0x0f	2	0x1f		0x2f		0x3f	

4. Other Controller -> RT1084 (select Direct key of SIRIUS 1)

Start	Count	ID	Type	Key	Chk
0xfe	0x03	0x22	0x15	xx	xx

5. Other Controller -> RT1084 (select Direct key of SIRIUS 2)

Start	Count	ID	Type	Key	Chk
0xfe	0x03	0x22	0x16	xx	xx

6. Other Controller -> RT1084 (select Direct key of SIRIUS 3)

Start	Count	ID	Type	Key	Chk
0xfe	0x03	0x22	0x17	xx	xx

Key:		Key:		Key:		Key:	
0x00	POWER(toggle)	0x10	3	0x20		0x30	
0x01	POWER ON	0x11	4	0x21		0x31	
0x02	POWER OFF	0x12	5	0x22		0x32	FREQ. UP
0x03		0x13	6	0x23	CAT+	0x33	FREQ. DOWN
0x04		0x14	7	0x24	CAT-	0x34	
0x05		0x15	8	0x25		0x35	
0x06	FREQ. DIRECT	0x16	9	0x26		0x36	LEFT
0x07		0x17	0	0x27		0x37	RIGHT
0x08	TUNE UP	0x18	MEMORY	0x28		0x38	ENTER
0x09	TUNE DOWN	0x19	PRESET UP	0x29	DISPLAY	0x39	PRESET LIST
0x0a		0x1a	PRESET DOWN	0x2a	SETUP	0x3a	CH. LIST
0x0b		0x1b	SIRIUS ID	0x2b		0x3b	CAT LIST
0x0c		0x1c		0x2c		0x3c	
0x0d		0x1d		0x2d	VFD(FL) ON/OFF	0x3d	
0x0e	1	0x1e		0x2e	DIMMER	0x3e	
0x0f	2	0x1f		0x2f		0x3f	

RT 1084 RS232 Controller Command List

Table: RT 1084 Waveform format expected:

Baud Rate	Parity	Valid Data Bits	Stop Bit Value	Handshaking	Data Type
38400	N	8	1	None	String

Table: RT 1084 expected format of a request by RS232 controller:

Start	Count	Device ID	Type	Key	Checksum
0xFE	0x03	0x22	0x10	0xXX	0xXX

Table 1: Command List

NOTE: The values in the table below show the exact byte sequence of all requests. The device will expect the bytes only - no spaces, no delimiter, etc. The controlling device may implement its own method to download each command sequence. The numerical values in the first column are Hexadecimal.

RT 1084 HEX	Command	Command Description
FE 03 22 10 00 35	Power	Power Toggle
FE 03 22 10 01 36	Power On	Power On
FE 03 22 10 02 37	Power Off	Power Off
FE 03 22 10 03 38	FM Mono	FM Mono
FE 03 22 10 04 39	Preset Scan	Preset Scan
FE 03 22 10 05 3A	Auto Tuning	Auto Tuning Mode
FE 03 22 10 06 3B	Frequency Direct	Frequency Direct
FE 03 22 10 07 3C	Tune / Preset Toggle	Tune / Preset Mode Toggle
FE 03 22 10 08 3D	Tune Up	Tune Up
FE 03 22 10 09 3E	Tune Down	Tune Down
FE 03 22 10 0A 3F	Band	Band
FE 03 22 10 0B 40	FM	FM
FE 03 22 10 0C 41	AM	AM
FE 03 22 10 0E 43	1	1
FE 03 22 10 0F 44	2	2
FE 03 22 10 10 45	3	3
FE 03 22 10 11 46	4	4
FE 03 22 10 12 47	5	5
FE 03 22 10 13 48	6	6
FE 03 22 10 14 49	7	7
FE 03 22 10 15 4A	8	8
FE 03 22 10 16 4B	9	9
FE 03 22 10 17 4C	0	0
FE 03 22 10 18 4D	Memory	Memory
FE 03 22 10 19 4E	Preset Up	Preset Up
FE 03 22 10 1A 4F	Preset Down	Preset Down
FE 03 22 10 1B 50	Sirius ID	Sirius ID
FE 03 22 10 1D 52	Sirius 1	Sirius Module 1
FE 03 22 10 1E 53	Sirius 2	Sirius Module 2

RT 1084 HEX	Command	Command Description
FE 03 22 10 1F 54	Sirius 3	Sirius Module 3
FE 03 22 10 20 55	HD Radio	HD Radio
FE 03 22 10 21 56	Sirius / HD	Sirius / HD Toggle
FE 03 22 10 22 57	Digital / Analog	Digital / Analog Mode
FE 03 22 10 23 58	Cat+	Category+
FE 03 22 10 24 59	Cat-	Category-
FE 03 22 10 25 5A	AF	AF
FE 03 22 10 26 5B	TP	TP
FE 03 22 10 27 5C	TA	TA
FE 03 22 10 28 5D	PTY	PTY
FE 03 22 10 29 5E	Display	Display
FE 03 22 10 2A 5F	Setup	Setup
FE 03 22 10 2D 62	Front Display On/Off	Front Display On/Off
FE 03 22 10 2E 63	Dimmer	Dimmer
FE 03 22 10 30 65	Tuning Mode	Manual Tuning Mode
FE 03 22 10 31 66	Preset Mode	Preset Tuning Mode
FE 03 22 10 32 67	Frequency Up	Tune Frequency Up
FE 03 22 10 33 68	Frequency Down	Tune Frequency Down
FE 03 22 10 36 6B	Left	Left
FE 03 22 10 37 6C	Right	Right
FE 03 22 10 38 6D	Enter	Enter
FE 03 22 10 39 6E	Preset List	Preset List
FE 03 22 10 3A 6F	Channel List	Channel List
FE 03 22 10 3B 70	Category List	Category List
FE 03 22 10 7F B4	NULL	Null Key
FE 03 22 10 FF 34	Refresh	Refresh

Table 2: Type 14 HD Radio Discrete Command List

RT 1084 HEX	Command	Command Description
FE 03 22 14 00 39	Power	Power Toggle
FE 03 22 14 01 3A	Power On	Power On
FE 03 22 14 02 3B	Power Off	Power Off
FE 03 22 14 03 3C	FM Mono	FM Mono
FE 03 22 14 04 3D	Preset Scan	Preset Scan
FE 03 22 14 05 3E	Auto Tuning	Auto Tuning Mode
FE 03 22 14 06 3F	Frequency Direct	Frequency Direct
FE 03 22 14 07 40	Tune / Preset	Tune / Preset Mode Toggle
FE 03 22 14 08 41	Tune Up	Tune Up
FE 03 22 14 09 42	Tune Down	Tune Down
FE 03 22 14 0A 43	Band	Band
FE 03 22 14 0B 44	FM	FM
FE 03 22 14 0C 45	AM	AM
FE 03 22 14 0E 47	1	1
FE 03 22 14 0F 48	2	2
FE 03 22 14 10 49	3	3
FE 03 22 14 11 4A	4	4
FE 03 22 14 12 4B	5	5

RT 1084 HEX	Command	Command Description
FE 03 22 14 13 4C	6	6
FE 03 22 14 14 4D	7	7
FE 03 22 14 15 4E	8	8
FE 03 22 14 16 4F	9	9
FE 03 22 14 17 50	0	0
FE 03 22 14 18 51	Memory	Memory
FE 03 22 14 19 52	Preset Up	Preset Up
FE 03 22 14 1A 53	Preset Down	Preset Down
FE 03 22 14 22 5B	Digital / Analog	Digital / Analog
FE 03 22 14 25 5E	AF	AF
FE 03 22 14 26 5F	TP	TP
FE 03 22 14 27 60	TA	TA
FE 03 22 14 28 61	PTY	PTY
FE 03 22 14 29 62	Display	Display
FE 03 22 14 2A 63	Setup	Setup
FE 03 22 14 2D 66	Display On/Off	Display On/Off
FE 03 22 14 2E 67	Dimmer	Dimmer
FE 03 22 14 30 69	Tuning Mode	Manual Tuning Mode
FE 03 22 14 31 6A	Preset Mode	Preset Tuning Mode
FE 03 22 14 32 6B	Frequency Up	Frequency Up
FE 03 22 14 33 6C	Frequency Down	Frequency Down
FE 03 22 14 36 6F	Left	Left
FE 03 22 14 37 70	Right	Right
FE 03 22 14 38 71	Enter	Enter

Table 3: Type 15 Sirius Module 1 Discrete Command List

RT 1084 HEX	Command	Command Description
FE 03 22 15 00 3A	Power	Power Toggle
FE 03 22 15 01 3B	Power On	Power On
FE 03 22 15 02 3C	Power Off	Power Off
FE 03 22 15 06 40	Frequency Direct	Frequency Direct
FE 03 22 15 08 42	Tune Up	Tune Up
FE 03 22 15 09 43	Tune Down	Tune Down
FE 03 22 15 0E 48	1	1
FE 03 22 15 0F 49	2	2
FE 03 22 15 10 4A	3	3
FE 03 22 15 11 4B	4	4
FE 03 22 15 12 4C	5	5
FE 03 22 15 13 4D	6	6
FE 03 22 15 14 4E	7	7
FE 03 22 15 15 4F	8	8
FE 03 22 15 16 50	9	9
FE 03 22 15 17 51	0	0
FE 03 22 15 18 52	Memory	Memory
FE 03 22 15 19 53	Preset Up	Preset Up
FE 03 22 15 1A 54	Preset Down	Preset Down

RT 1084 HEX	Command	Command Description
FE 03 22 15 1B 55	Sirius ID	Sirius ID
FE 03 22 15 23 5D	Cat+	Category+
FE 03 22 15 24 5E	Cat-	Category-
FE 03 22 15 29 63	Display	Display
FE 03 22 15 2A 64	Setup	Setup
FE 03 22 15 2D 67	Display On/Off	Front Display On/Off
FE 03 22 15 2E 68	Dimmer	Front Display Dimmer
FE 03 22 15 32 6C	Frequency Up	Frequency Up
FE 03 22 15 33 6D	Frequency Down	Frequency Down
FE 03 22 15 36 70	Left	Left
FE 03 22 15 37 71	Right	Right
FE 03 22 15 38 72	Enter	Enter
FE 03 22 15 39 73	Preset List	Preset List
FE 03 22 15 3A 74	Channel List	Channel List
FE 03 22 15 3B 75	Category List	Category List

Table 4: Type 16 Sirius Module 2 Discrete Command List

RT 1084 HEX	Command	Command Description
FE 03 22 16 00 3B	Power	Power Toggle
FE 03 22 16 01 3C	Power On	Power On
FE 03 22 16 02 3D	Power Off	Power Off
FE 03 22 16 06 41	Frequency Direct	Frequency Direct
FE 03 22 16 08 43	Tune Up	Tune Up
FE 03 22 16 09 44	Tune Down	Tune Down
FE 03 22 16 0E 49	1	1
FE 03 22 16 0F 4A	2	2
FE 03 22 16 10 4B	3	3
FE 03 22 16 11 4C	4	4
FE 03 22 16 12 4D	5	5
FE 03 22 16 13 4E	6	6
FE 03 22 16 14 4F	7	7
FE 03 22 16 15 50	8	8
FE 03 22 16 16 51	9	9
FE 03 22 16 17 52	0	0
FE 03 22 16 18 53	Memory	Memory
FE 03 22 16 19 54	Preset Up	Preset Up
FE 03 22 16 1A 55	Preset Down	Preset Down
FE 03 22 16 1B 56	Sirius ID	Sirius ID
FE 03 22 16 23 5E	Cat+	Category+
FE 03 22 16 24 5F	Cat-	Category-
FE 03 22 16 29 64	Display	Display
FE 03 22 16 2A 65	Setup	Setup
FE 03 22 16 2D 68	Display On/Off	Front Display On/Off
FE 03 22 16 2E 69	Dimmer	Front Display Dimmer
FE 03 22 16 32 6D	Frequency Up	Frequency Up
FE 03 22 16 33 6E	Frequency Down	Frequency Down

RT 1084 HEX	Command	Command Description
FE 03 22 16 36 71	Left	Left
FE 03 22 16 37 72	Right	Right
FE 03 22 16 38 73	Enter	Enter
FE 03 22 16 39 74	Preset List	Preset List
FE 03 22 16 3A 75	Channel List	Channel List
FE 03 22 16 3B 76	Category List	Category List

Table 5: Type 17 Sirius Module 3 Discrete Command List

RT 1084 HEX	Command	Command Description
FE 03 22 17 00 3C	Power	Power Toggle
FE 03 22 17 01 3D	Power On	Power On
FE 03 22 17 02 3E	Power Off	Power Off
FE 03 22 17 06 42	Frequency Direct	Frequency Direct
FE 03 22 17 08 44	Tune Up	Tune Up
FE 03 22 17 09 45	Tune Down	Tune Down
FE 03 22 17 0E 4A	1	1
FE 03 22 17 0F 4B	2	2
FE 03 22 17 10 4C	3	3
FE 03 22 17 11 4D	4	4
FE 03 22 17 12 4E	5	5
FE 03 22 17 13 4F	6	6
FE 03 22 17 14 50	7	7
FE 03 22 17 15 51	8	8
FE 03 22 17 16 52	9	9
FE 03 22 17 17 53	0	0
FE 03 22 17 18 54	Memory	Memory
FE 03 22 17 19 55	Preset Up	Preset Up
FE 03 22 17 1A 56	Preset Down	Preset Down
FE 03 22 17 1B 57	Sirius ID	Sirius ID
FE 03 22 17 23 5F	Cat+	Category+
FE 03 22 17 24 60	Cat-	Category-
FE 03 22 17 29 65	Display	Display
FE 03 22 17 2A 66	Setup	Setup
FE 03 22 17 2D 69	Display On/Off	Front Display On/Off
FE 03 22 17 2E 6A	Dimmer	Front Display Dimmer
FE 03 22 17 32 6E	Frequency Up	Frequency Up
FE 03 22 17 33 6F	Frequency Down	Frequency Down
FE 03 22 17 36 72	Left	Left
FE 03 22 17 37 73	Right	Right
FE 03 22 17 38 74	Enter	Enter
FE 03 22 17 39 75	Preset List	Preset List
FE 03 22 17 3A 76	Channel List	Channel List
FE 03 22 17 3B 77	Category List	Category List