

Operating instructions

ASI Transmodulator

ASI MPEG RADIO → FM-RADIO



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ATR 221

Part N°: 9860.01

1. Safety and operating instructions



When assembling, starting-up and adjusting the modules, it is necessary to consider the system specific references in the manual instruction!



The modules may only be installed and started up by authorized technical personnel!



When assembling the modules into the receiving points, the adherence of the EMC regulations is to be secured!



The assembly and wiring have to be done without voltage!



All active modules may only be operated with the Headend Controller HCB x00 or Bus Extender BEB x00!



The main voltage and the operating voltage of the modules working by DC have to be in compliance to the operating parameters described in the technical data.



With all work the defaults of the DIN EN 50083 have to be considered! Especially the safetyrelevant execution of the DIN EN 60728-11 [3] is necessary!

2. Device variants

ATR 221 9860.01 2 x ASI (TS) → 6 x FM [87,5 ... 108 MHz]

Minimum software requirements for HCB x00:

9650.03: version 2.34*

9650.04/.05: version 3.18*

9652.01: version 3.23*

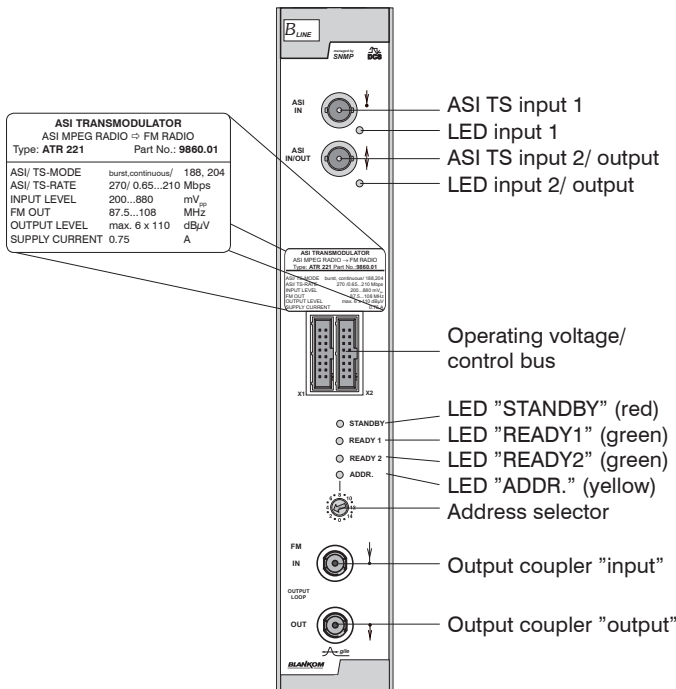
*) updates: www.blankom.de

3. General

The ASI transmodulator ATR 221 is a module of the head end system B-LINE, which is conceived as a complete system for middle sized networks. The ATR 221 makes it possible to produce up to 6 radio programmes coded as MPEG2 from two ASI transport streams in the FM range.

All the components are programmed via a central control unit and will function independently thereafter. The status of the modules are displayed via LED's (see chapter 7.2 „LED`s on front panel“).

4. Front view



managed by
SNMP

5. Functional description

The transport streams (TS) passed on by the input section are processed on entering the system. The SI data are extracted and sent on to the control system so that the services to be decoded can be displayed and selected. At the same time, the audio streams to be decoded are filtered out of the transport streams, as are the RDS data, and these are passed to the DSP. The DSP decodes the MPEG data streams which it receives. The RDS data received from the TS processing stage and are sent on, together with the decoded MPEG data streams, to the FPGA of the modulator. 6 complete FM modulators for VHF are implemented in the FPGA. The audio signals are subjected to 19-kHz filtering in these. Next comes the stereo processing: the audio signals are added or subtracted and are modulated to match the 38-kHz carrier; to the audio signal a 19-kHz pilot tone and the RDS data are added. The MPX signal produced in this way is then modulated by FM. The FM signals are combined and passed through a D/A converter. They are then available either via a directional coupler or, simply, direct at the component output port. Each FM channel produced can be configured individually and independently of the others.

6. Adjustments

6.1 Adjustment with the Headend Controller

- Adjustment of the addresses at the Bus Extender BEB x00 and at the modules
- Activation of the programming mode on each module by selecting the line (BEB x00) and the module position (01... 15) at the Headend Controller(HCB x00)
→ yellow LED illuminates until the beginning of the parameter adjustment
- Adjustment of the ATR 221 parameters (see chapter 9)
→ green LED is switched on
- After the programming the ATR 221 will be automatically switched into the operating mode
→ yellow LED flashes shortly/ green LED is switched on

6.2 Adjustment with the PC/ laptop

- Prerequisite for the remote programming is an "online-connection" according the IP standard and an ethernet connection at the PC/ laptop
- Adjustment of the line/ position addresses at the Bus Extender BEB x00 as well as at the modules
- At the Headend Controller HCB x00 input IP address (e.g. 192.168.001.001)
- For "direct connection" between a PC and HCB x00 use crossover cable (RJ 45)
- For connection over a HUB use a normal straight through patch cable
- Start-up HTML browser and put in IP address as target address
- If connected correctly the web interface will be opened on the pc and a blue LED (LINK) at the HCB x00 will be lit up.
- All adjustments of the modules are specified on the web interface.

The manual instructions of the Headend Controller HCB x00 and the Bus Extender BEB x00 have to be considered!

7. Meaning of the status LED`s

7.1 LED`s for the ASI ports

Colour	Status	Meaning of display
green	permanently on	ASI channel has been configured as input
	flashing	no ASI signal
yellow	permanently on	ASI channel has been configured as output
	flashing	no ASI signal

7.2 LED`s on front panel

Designation (Colour)	Status	Meaning of display
STANDBY (red)	permanently on	Module is in standby
	flashing	Module faulty (hardware)
READY 1 (green)	permanently on	Module working (ASI input 1), everything ok
	flashing	Error warnings depending on signal: - ASI without sync (e.g. when there is no input signal) - at least one of the adjusted Audio-PID`s can not be decoded
READY 2 (green)	permanently on	Module working (ASI input 2), everything ok
	flashing	Error warnings depending on signal: - ASI without sync (e.g. when there is no input signal) - at least one of the adjusted Audio-PID`s can not be decoded
	off	ASI channel 2 is configured as output
ADDR (yellow)	illuminated/ flashing	remote control connection/ data being exchanged

8. Programming by web server*

8.1 Main menu

ASI-AUDIO TRANSMODULATOR, ATR 221						
(9860.01 / 00), Address 00 / 02						
Description	ATR221					
ASI-Channel	1			2		
Status	SYNC			Configures as output		
ASI-Channel 2	Configure					
FM-Channel	1	2	3	4	5	6
Channel name	sunshine live	ROCK ANTE	ANTENNE B	sunshine live	ERF Radio	2255 Gewinnr:
Program settings						
Program listing	only radio programmes <input type="button" value="Load"/>					
ASI-Channel	1	1	1	1	1	1
Audio PID	336	304	352	336	320	528 dez
FM-Output						
RF-Signal	On	On	On	On	On	On
Output frequency	92000	92500	93000	93500	94000	94500 kHz
RF-Level correction	0	0	0	0	0	0 dB
Output attenuation						10 dB
RF-Output mode	Only output					
Audio settings						
Audio mode	Stereo	Stereo	Stereo	Stereo	Stereo	Stereo
Audio gain	0	0	0	0	0	0 dB
RDS-Settings						
Data source / mode	RDS-PID	RDS-PID	RDS-PID	RDS-PID	RDS-PID	RDS-PID
RDS-PID	0	0	0	0	0	0 dez
<input type="button" value="Configuration static RDS"/>						
Operating status						On [On]
SNMP-Trap message						On
Factory settings						Load
<input type="button" value="Extended settings"/> <input type="button" value="Softwareversion"/> <input type="button" value="Status"/>						
<input type="button" value="Update"/> <input type="button" value="Transmit"/>						
<input type="button" value="Back"/>						

Description	Module name, editable (max. 30 characters)
ASI-Channel	displays the ASI channel (1 or 2) currently in use
Status	If there is a channel input (there will always be channel 1, and after configuration channel 2), this shows whether there is SYNC hronisation or noSYNC hronisation at input port. If channel 2 has been configured as output, the message will be "Configures as output".
ASI-Channel 2	configuration button for the ASI channel 2 (see menu 5)
FM-Channel	displays the settings for the FM output channel(s) (1 to 6)
Channel name	name of programme of the respective FM channel, editable (max. 25 characteres)
Program settings	
Program listing	loading of the list with available programmes with pre-selection: all programmes or only radio-programmes (see menu 2)
ASI-channel	selection: 1/ 2
Audio PID	Audio PID of the programme, adjustment range: 0 ... 16383
FM-Output	
RF-Signal	selection: On/ Off
Output frequency	adjustment range: 87500 ... 108000 kHz
RF-Level correction	adjustment range: +3 ...-3 dB in 0.5-dB steps (per channel)
Output attenuation	adjustment range: 0 ... 31 dB in 1-dB steps (module)
RF-Output mode	selection: loop/ only output

* For further details see the HCB manual

Audio settings

Audio mode selection: Mono/ Mono1/ Mono2/ Stereo/ Auto
 Audio gain adjustment range: +6 ... -10 dB in 0.5-dB steps

RDS-Settings

Data source/ mode selection: RDS-PID/ Audio-PID/ Static/ Off
 RDS-PID adjustment range: 0 ... 16383
 Routing to the adjustment menu: configuration static RDS (see menu 6)

Operating status selection: On/ Off/ reset
 SNMP-Trap messages selection: On/ Off, if SNMP option in HCB x00 enabled, otherwise „locked“ displays
 Factory settings setting the default values (see menu 4)

Routing to the respective adjustment menus:

Extended settings see menu 3
 Status see menu 7
 Software versions see menu 8

8.2 Load programme list (menu 2)

ASI-AUDIO TRANSMODULATOR, ATR 221											
(9860.01 / 00), Address 00 / 00											
Input channel 1		FM-Output channel						Program info			
Audio ID	Program name	1	2	3	4	5	6	Service	Language	RDS	CA
702	Inselradio	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	---		
353	radio top40	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	DEU	*	
354	ffn digital	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	GER		
355	Paloma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	UND		
356	WRN Deutsch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	DEU		
357	PEPPERMINT fm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	GER		
358	ffn Comedy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	GER		
359	Radio Gloria	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	---		
1024	HIT RADIO FFH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	DEU		
1030	planet radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	DEU		
1036	harmony fm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	DEU		
363	Radio Regenbogen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	UND		
Input channel 2		FM-Output channel						Program info			
Audio ID	Program name	1	2	3	4	5	6	Service	Language	RDS	CA
702	Inselradio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	---		
353	radio top40	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	DEU	*	
354	ffn digital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	GER		
355	Paloma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	UND		
356	WRN Deutsch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	DEU		
357	PEPPERMINT fm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	GER		
358	ffn Comedy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	GER		
359	Radio Gloria	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	---		
1024	HIT RADIO FFH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	DEU		
1030	planet radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Radio	DEU		
1036	harmony fm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Radio	DEU		
363	Radio Regenbogen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radio	UND		
Disable program		FM-Ausgangskanal						Programm Info			
Audio ID	Program name	1	2	3	4	5	6	Service	Language	RDS	CA
0	empty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
<input checked="" type="checkbox"/> Use program name for static RDS											
								Update		Transmit	
										Back	

In this menu, all of the input stream contained services are listed. Depending on the preselection only radio-services or all services appear. For every of the 6 FM channels a service can be chosen. The assumption/settings of the services occurs by pressing the "Transmit" button.

8.3 Extended settings (menu 3)

ASI-AUDIO TRANSMODULATOR, ATR 221 (9860.01 / 00), Address 00 / 02						
FM-Channel	1	2	3	4	5	6
Preemphasis	50 µs	50 µs	50 µs	50 µs	50 µs	50 µs
Modulation settings						
Pilot signal	On	On	On	On	On	On
Pilot deviation correction	0	0	0	0	0	0 kHz
RDS-Signal	On	On	On	On	On	On
RDS-Deviation correction	0	0	0	0	0	0 kHz
						Update
						Transmit
						Back

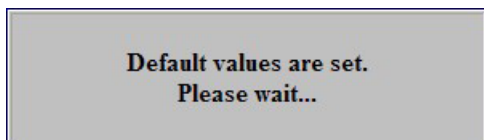
FM-Channel displays the adjustments of the FM-channels (1...6)
Preemphasis selection: 50 µs/ 75 µs/ Off

Modulation settings
Pilot Signal selection: On/ Off
Pilot deviation correction adjustment range: +2 ... -2 kHz in 0.1-kHz-steps
RDS-Signal selection: On/ Off
RDS-Deviation correction adjustment range: +2 ... -2 kHz in 0.1-kHz-steps

8.4 Factory settings (menu 4)



When this menu item is requested, at first a security query whether it really set all parameters to the factory default settings pops up.



Affirming the query, all settings stored in the EEPROM will be deleted and replaced by the default settings. The module will go back to these default values. Once the setting process is over, there will be an automatic return to the main menu. It takes about one minute.

8.5 Configuration of ASI channel 2 (menu 5)

ASI-AUDIO TRANSMODULATOR, ATR 221 (9860.01 / 00), Address 00 / 02	
Configure ASI channel 2 as:	Output
Back Transmit	

In this menu, the ASI channel 2 can be separately configured as an input or as an output to loop through the ASI input stream.

8.6 Configuration of static RDS (menu 6)

ASI-AUDIO TRANSMODULATOR, ATR 221						
(9860.01 / 00), Address 00 / 02						
Configuration static RDS						
FM-Channel	1	2	3	4	5	6
Output frequency	92000	92500	93000	93500	94000	94500
Audio PID	336	304	352	336	320	528
PI-Code	D220	D923	D592	D377	D116	D341
PS-Name	sunshine	ROCK ANT	ANTENNE	sunshine	ERF Radi	2255 Gew
Radio text	Dies ist eine Te					
PTY-Code	POP M	ROCK M	LIGHT M	INFO	JAZZ M	POP M
EON	On	On	On	On	On	On
M/S-Code	Music	Music	Music	Music	Music	Music
DI-Code	1	1	1	1	1	1
TP-Signal	On	On	On	On	On	On
TA-Signal	Off	Off	Off	Off	Off	Off
CT-Signal	On	On	On	On	On	On
UTC-Time	08:51:27 29.01.2009					
Local time offset	+1 h					
CEST-Correction	On					
<input type="button" value="Update"/> <input type="button" value="Transmit"/>						
<input type="button" value="Back"/>						

- FM-Channel** displays the settings for the FM output channel(s) (1 to 6)
- Output frequency** displays the frequencies set for the FM channel (in kHz)
- Audio PID** shows the audio PID of the selected service
- PI-Code** adjustment range: 0000 ... FFFF (hexadecimally)*
- PS-Name** 8 characters of the name of the transmitted programme or service
- Radio text** max. 64 characters, which can be transmitted statically
- PTY-Code** selection of the programme type
- EON** selection: On/ Off
- M/S-Code** selection: music/ language
- DI-Code** decoder identification control code, entered decimally. Default setting: 1 (stereo)
- TP-Signal** selection: On/ Off
- TA-Signal** selection: On/ Off
- CT-Signal** selection: On/ Off
- UTC-Time** displays the UTC time transmitted in the RDS
- Local Time offset** relection + 12 ... - 12 h input of the offset between local and UTC time
- CEST-Correction** enable/ disable automatic CEST correction

* The current list of PI codes for German radio broadcasters can be found on the following website:
www.irt.de/de/themenangebote/digitaler-hoerfunk/radio-daten-system-rds.html

8.7 Device status (menu 7)

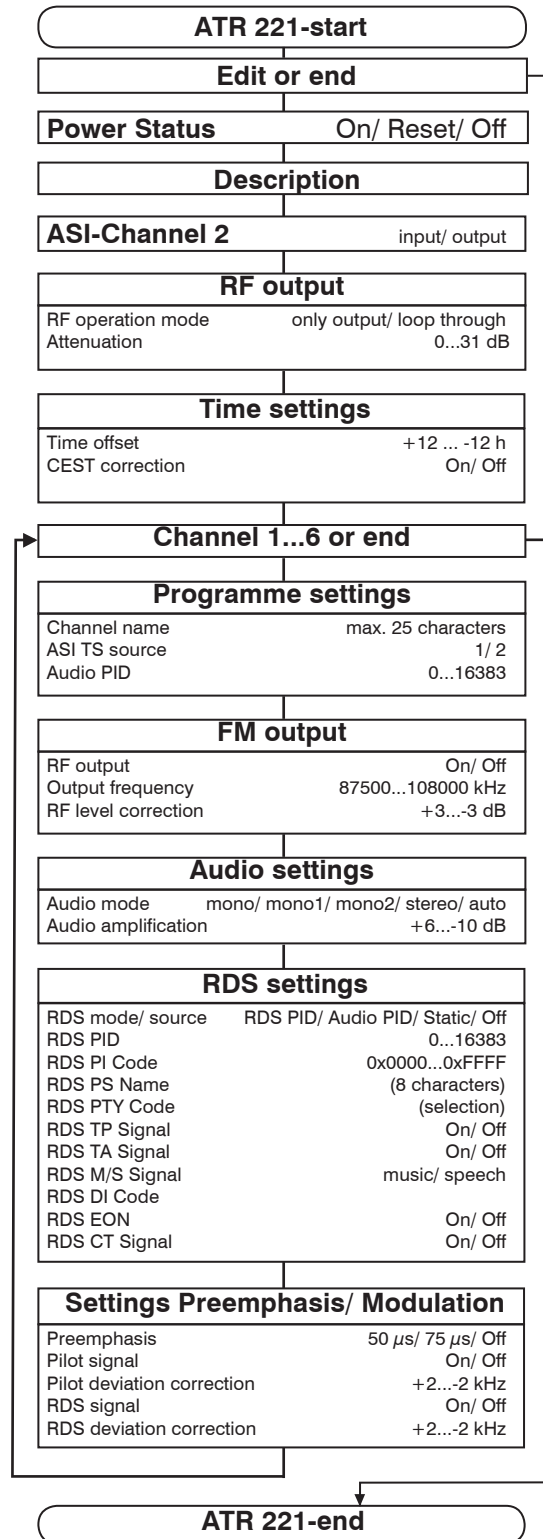
ASI-AUDIO TRANSMODULATOR, ATR 221						
(9860.01 / 00), Address 00 / 02						
ASI-Channel	1		2			
Status	SYNC		Configures as output			
Datarate	38.015104 Mb/s		---			
Workload	4.36 %		---			
TS-ID	7		---			
FM-Channel	1	2	3	4	5	6
Output frequency	92000	92500	93000	93500	94000	94500
Audio status	Layer2 48kHz 192 kbps Frame0= 576 CRC 1 Emph 0 stereo	Layer2 48kHz 256 kbps Frame0= 768 CRC 0 Emph 0 stereo	Layer2 48kHz 256 kbps Frame0= 768 CRC 1 Emph 0 stereo	Layer2 48kHz 192 kbps Frame0= 576 CRC 1 Emph 0 stereo	Layer2 48kHz 192 kbps Frame0= 576 CRC 1 Emph 0 stereo	Layer2 48kHz 192 kbps Frame0= 576 CRC 1 Emph 0 stereo
dynamically RDS data						
PI-Code	---					
PS-Name	---					
Radio text	---					
Information						
Error memory	empty					
Temperature	102 °F					
Device number	0000000					
Device index	00					
<input type="button" value="Update"/> <input type="button" value="Back"/>						

ASI-Channel	displays the ASI channel (1 or 2) currently in use
Status	synchronization status
Data rate	data rate of ASI channel
Workload	...payload of this data rate in %
TS-ID	displays TS-ID
FM-Channel	displays the details for the FM output channel(s) (1 to 6)
Output frequency	displays in kHz
Audio status	audio status informations
dynamically RDS data	
PI-Code	displays the sender's PI code as contained in the data stream
PS-Name	displays the service name as contained in the data stream
Radio text	displays the radio text as contained in the data stream
Information	
Error memory	displays the errors arising in internal communication between the controllers
Temperature	temperature of the front circuit board
Device number	displays the device number
Device index	displays the device index

8.8 Software overview (menu 8)

ASI-AUDIO TRANSMODULATOR, ATR 221 (9860.01 / 00), Address 00 / 02		Name of device, item number, address in head end
Version		Software versions
		displays the software versions for the controllers as follows:
AP-Controller	9860.01-81.01 Steuercontroller Anschluß-LP V1.07 26.01.2009 JR	Controller of the front circuit board
TS-Manager	9085.01-88.03 TS_Aufbereitung V1.03f 22.01.09 SS	Transport stream manager
UKW-Bootcontroller	9085.01-88.01 UKW-FPGA download Ctrl(2) V1.02 17.10.08 JR	Boot controller of the FM modulator FPGA
UKW-Modulator-FPGA	9085.01-87.01 6x UKW modulator V1.01 25.08.2008 PK	FM modulator FPGA
RDS-Encoder	9085.01-90.01 RDS-Encoder V1.03 20.01.2009 JR	RDS encoder
MPEG-Decoder	9085.01-88.02 MPEG-Decoder V0.01 23.05.2008 SS	MPEG decoder
ASI-Bootcontroller	9850.02-88.01 FPGA Download Controller V1.35 08.09.2008 MF,PK	Boot controller of the ASI input FPGA
ASI-FPGA	9850.02-87.01 ASI Input FPGA V1.44 11.12.2008 WE,MF	ASI input FPGA
<input type="button" value="Update"/> <input type="button" value="Back"/>		

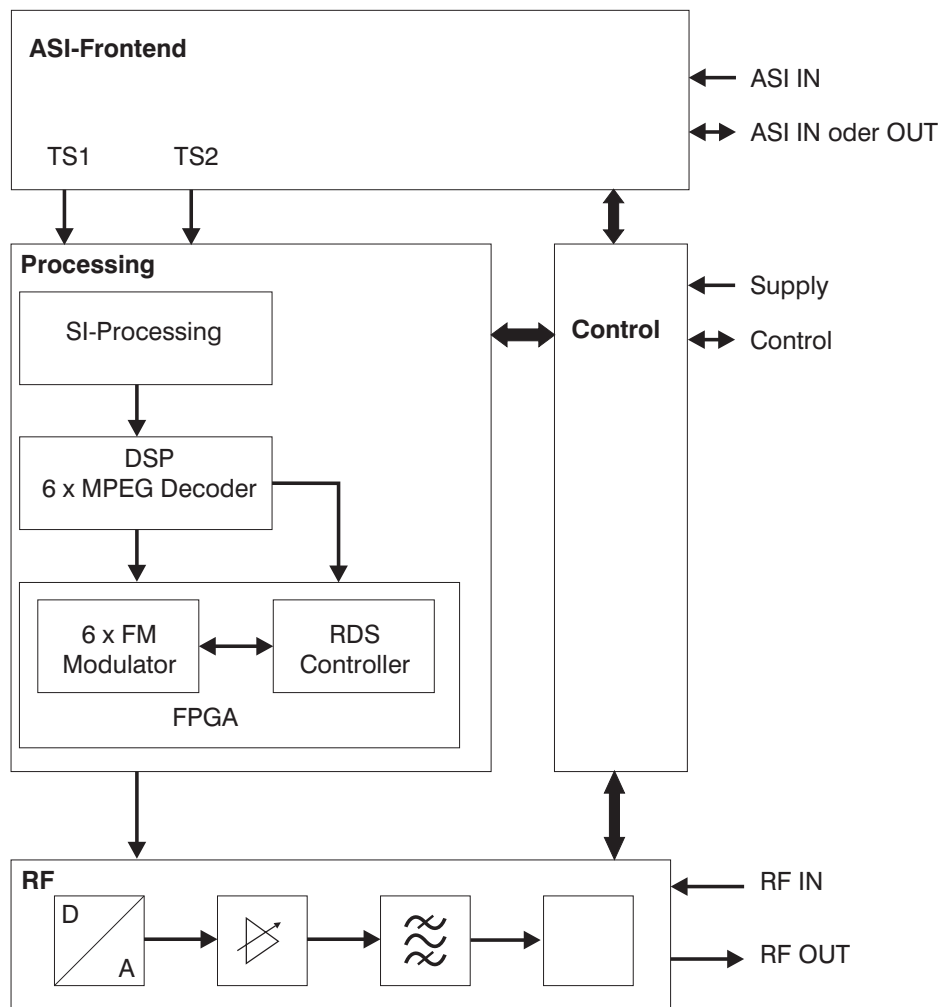
9. Manual menu control at the Headend Controller (HCB x00)



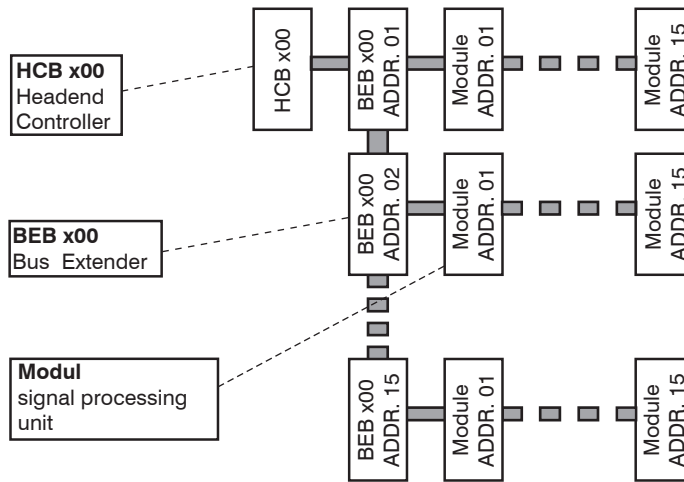
10. Trap messages

Item	Message	Type	Explanation
01	Signal OK	INFORMATION	Module works correctly.
02	Input not sync	WARNING	Input is not synchronized.
03	MPEG: Open Error	CRITICAL	Access error MPEG decoder
04	System reset	WARNING	Reset after internal error
05	MPEG-Decoder not sync	WARNING	MPEG decoder is not synchronized.
06	Power fail	CRITICAL	Error on supply voltage
07	MPEG-Decoder sync	INFORMATION	MPEG decoder is synchronized.
08	ATMEGA: Open Error	CRITICAL	Access error FM boot controller
09	NIOS: Open Error	CRITICAL	Access error RDS encoder

11. Block diagram

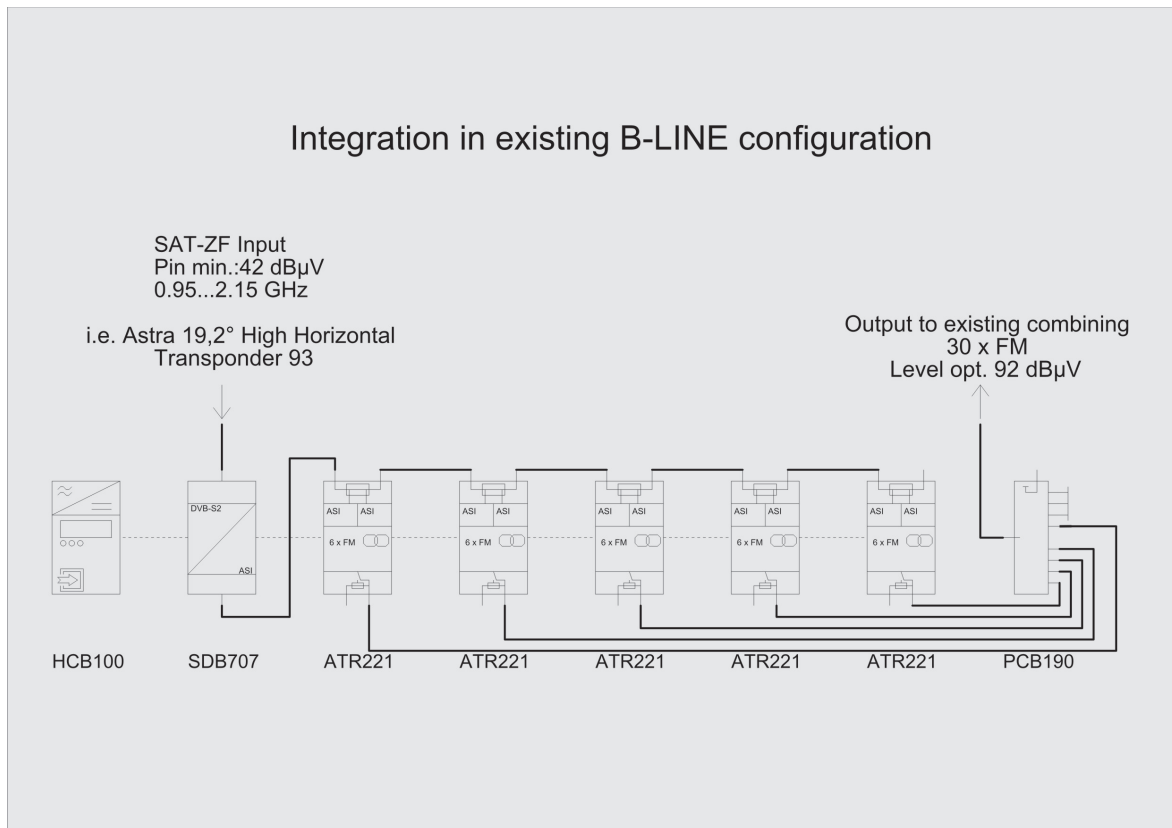


12. Head end bus structure



The number of the possible module connections (00 ... 15) to a BEB x00 depends on the total power consumption of this line!

13. Application example



14. Technical data

ASI input

Level range	200 ... 880 mV _{pp}
Data rate	270 Mbps
Connector	BNC socket
Impedance	75 Ω
ASI polarity	regular/ inverted

ASI output

Level	800 mV _{pp} (± 10 %)
Data rate	270 Mbps
Connector	BNC socket
Impedance	75 Ω
ASI polarity	normal

ASI signal processing

Data rate	0.625...78 Mbps
ASI transfer format	
Input	continuous, burst
Output	burst
TS transfer format	
Input	188, 204 Byte
Output	188, 204 Byte
Signal processing	EN 50083-9 [1]

FM modulator/ FM output

Max. FM deviation	75 kHz
LF level range (deviation correction)	-10 ... +6 dB
Frequency range	87.5 ... 108 MHz
Frequency step	50 kHz
Output impedance	75 Ω
Output return loss	> 16 dB
Amplitude response 40 Hz...15 kHz, reference 400 Hz, preemph. 50 μs	< ± 0.5 dB
Rejection of modulation frequencies between 18.9...19.1 kHz and 23...100 kHz	> 40 dB
Total harmonic distortion between 40 Hz...15 kHz bei 40 kHz Hub	> 66 dB at 400 Hz
40 Hz...15 kHz bei 75 kHz Hub	> 60 dB at 400 Hz
Difference-tone-attenuation D2 between 40 Hz...15 kHz	> 70 dB
SNR weighted (pre- and deemphase 50 μs, R, L)	> 66 dB (Quasi-Peak-Detector, CCIR weighted)
SNR unweighted (pre- and deemphase 50 μs, R, L)	> 72 dB (Quasi-Peak-Detector, CCIR unweighted)
Cross-talk attenuation in range 40 Hz...100 Hz	> 38 dB (- 26 dBFS)
100 Hz...15 kHz	> 40 dB (- 26 dBFS)

Output frequency inaccuracy after
24 hours on 25 °C < ± 2 kHz

Temperature depended
frequency inaccuracy < ± 2 kHz

Spurios between
47...87.5 MHz and 111...862 MHz ≥ 64 dB
87.5...111 MHz ≥ 60 dB

Frequency error ≤ 3 kHz

Output level (switchable)
direct output (w/o direct. coupler) max. 6 x 110 dBμV
with directional coupler max. 6 x 100 dBμV

Total level 1 dB (0 ... 31 dB)

Individual level 0.5 dB (± 3 dB)

Connector F socket

Stereo coder

Processing Multiplex, CCIR
Deviation pilot 6.7 kHz

RDS coder

Processing EN 62106:2001 [2]
Deviation 2.4 kHz
Supported services PS, PTY, TP, TA, EON,
PI, RT, MS, CT, DI

Operating parameters

Current/ voltage 12 V (± 0.2 V)/ 750 mA
Residual ripple of
supply voltage ≤ 10 mV_{pp}

Environmental conditions

Temperature range -10 ... +55 °C
Temperature range
for data keeping 5 ... 45 °C
Relative humidity ≤ 80 % (non condensing)
Method of mounting vertical
Location of mounting splash-proof and
drip-proof

Miscellaneous

Dimensions (l x w x h)
without 19" adapter 50 x 276 x 148 mm
with 19" adapter 50 x 301 x 148 mm
Weight 1,200 g

Delivery content

1 x Bus connector
1 x F connecting cable 140 mm

15. Bibliography

- [1] EN 50083-9: Cabled distribution systems for television, sound and interactive multimedia signals, part 9: Interfaces for CATV/ SMATV head ends and similar professional equipment for DVB/MPEG-2 transport streams
- [2] EN 62106:2001 : Specification of the radio data system (RDS) for VHF/ FM sound broadcasting in the frequency range from 87.5 to 108.0 MHz (IEC 62106:2000); German version
- [3] EN 60728-11: Cable network for television signals, sound signals and interactive services Part 11: safety (IEC 607278-11: 2005). German version EN 60728-11: 2005
- [4] RFC 1157 Request for Comments (RFC): RFC Database; url: <http://www.rfc-editor.org/rfc.html>

16. Glossary

AM	Amplitude m odulation
AP	Anschluss pl atte (front circuit board)
ASI	Asyn ch ronus S erial Interface
ATV	Analog T ele v ision
AV	Audio/ V ideo
CCIR	Comité C onsultatif International R adiocommunication
CEST	Central E uropean S ummer T ime
CT	Clock T ime
C/N	Carrier to N oise ratio
D/A	Digital/ A nalog
DI	Decoder-Identification-Control code
DSP	Digital S ignal P ro z essor
DVB	Digital V ideo B roadcasting (-C Cable, -S Satellite, -S2 Satellite 2, -T Terrestrial)
EON	Enhanced O ther N etwork
ETSI	European T elecommunications S tandards I nstitute
FIFO	First I n-First O ut
FM	Frequency m odulation
FPGA	Field P rogrammable G ate A rray
HTTP	H ypertext T ransfer P rotocol
ID	I dentifier
IF	Intermediate F requency
IIC	Inter-Integrated C ircuit (I ² C bus, data bus within device)
IP	Internet P rotocol
LED	Light E mitting D iode
MC	M icro c ontroller
MIB	M anagement I nformation B ase
MPEG	M oving P icture E xperts G roup
MS	M usic/ S peech
NIM	N etwork I nterface M odule
PCR	Program C lock R eference
PI	Programm I dentification
PID	Program I dentifier
PLL	Phase L ocked L oop
PMT	Program M ap T able
PS	Program S ervice N ame
PTY	Program T ype
RDS	Radio D ata S ystem
RF	Radio F requency
RT	Radio T ext
SNMP	Single N etwork M anagement P rotocol
SPI	Serial P eripheral I nterface
SPTS	Single P rogram T ransport S tream
TA	Traffic A nnouncement
TP	Traffic P rogram
TS	Transport S tream
UTC	Universal T ime C oordinated

17. History

Version	Date	Modification	Author
1.00	28.10.2008	Basic document	Häußer, Poch
1.01	24.11.2009	Revision	Häußer

Options available upon request! Subjects to changes due to technical progress.

CE Declaration of Conformity

The Manufacturer

BLANKOM Antennentechnik GmbH · Hermann-Petersilge-Str. 1 · 07422 Bad Blankenburg · Germany

herewith declares the conformity of the product

Product name: ASI Transmodulator

Type: ATR 221

Product number: 9860.01

according to the following regulations

EN 50083-2

EN 60728-11 (as far as relevant)

and additional device-specific regulations, enclosed above, which this product is subjected to.

Date: 03.11.2009

Signature:



(Managing Director)