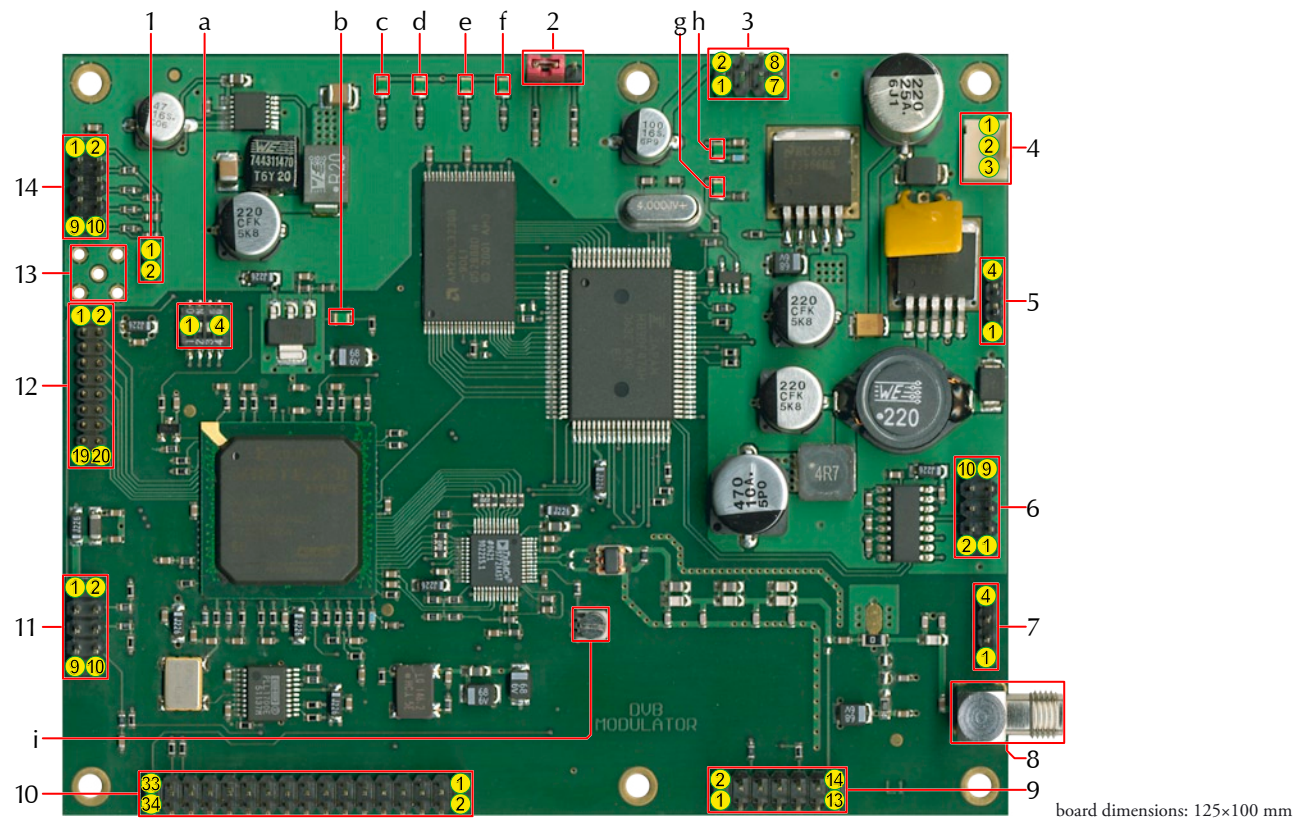


1 Connector description



Connectors	1	2pin Header	Optional battery 3.6 V
	2	3pin Jumper	MCU Prog. Jumper
	3	8pin Header	Power supply for Upconverter
	4	Power Input	7 V–24 V=
	5	4pin Header	Optional
	6	10pin Header	RS232
	7	4pin Header	Optional serial connector
	8	SMA	RF out 3.5–70 MHz, 75-90 dBμV
	9	14pin Header	Control for Upconverter
	10	34pin Header	TS input
	11	10pin Header	I ² C-Bus connector for display and key unit
	12	20pin Header	Optional FPGA-Bus
	13	SMB	Optional 10 MHz reference from GPS (not mounted in picture above)
	14	10pin Header	JTAG connector

LEDs and controls	a	4pin DIP switch	mode switch, see pin description part for details
	b	LED green	Power ok (2,5 V)
	c	LED green	on — DVB-T-Firmware ok
	d	LED green	on
	e	LED green	off : Encoder, on : Ext.Mux+int.TS-Clk., blink : Ext.Mux+ext.TS-Clk.
	f	LED green	Loading Firmware (flashes while loading, off after loading => ok)
	g	LED green	Power ok (3,3 V)
	h	LED green	Power ok (5,0 V)
	i	Potentiometer	IF output level

e+f blinking: NIM detected on TS

2 Pin description

1 – Optional battery

1	GND	2	+3.6 V=
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2 – Mode jumper

Picture shows **run** mode, other position is **program-mode**

3 – Upconverter power supply

1	GND	2	V _{IN}
3	GND	4	V _{IN}
5	GND	6	+5.0 V
7	GND	8	+5.0 V

4 – Power input

1	V _{IN} 7–24 V=
2	GND
3	GND

6 – RS232

1	con. with 4+6	2	TxD
3	RxD	4	con. with 1+6
5	GND	6	con. with 1+4
7	RTS	8	CTS
9	not connected	10	GND

7 – Optional serial con.

1	+3.3 V
2	GND
3	RxD FPGA
4	TxD FPGA

9 – Upconverter control

1	PLL Clk	2	PLL Data
3	PLL En2	4	PLL En1
5	PLL Lock	6	GND
7	Standby	8	GND
9	PTT	10	10 MHz Ref.
11	GND	12	GND
13	IF _{OUT}	14	GND

10 – Transport Stream Input

1	+5.0 V	2	+5.0 V
3	+5.0 V	4	+5.0 V
5	SDA	6	not connected
7	SCL	8	xReset
9	GND	10	GND
11	TSCLK in/out	12	PSYM
13	not connected	14	DVAL
15	TS 6	16	TS 7
17	TS 4	18	TS 5
19	TS 2	20	TS 3
21	TS 0	22	TS 1
23	GND	24	GND
25	SD Out (f. E.*)	26	PLL THR (f. E.*)
27	SDCLK (f. E.*)	28	SD In (f. E.*)
29	GND	30	GND
31	MCLK 27 MHz	32	ASCLK (f. E.*)
33	RST Vid. Codec	34	not connected

*f.E. = for Encoders

11 – I²C-Bus for controlpanel

1	+5.0 V	2	+5.0 V
3	SDA	4	SDA
5	SCL	6	SCL
7	Reset	8	IRQ
9	GND	10	GND

12 – optional

1	+3.3 V	2	CLK 0
3	Bit 1	4	Bit 2
5	Bit 3	6	Bit 4
7	Bit 5	8	Bit 6
9	Bit 7	10	Bit 8
11	Bit 9	12	Bit 10
13	Bit 11	14	Bit 12
15	Bit 13	16	Bit 14
17	Bit 15	18	Bit 16
19	CLK 1	20	GND

14 – JTAG Connector

1	GND	2	+3.3 V
3	GND	4	TMS
7	GND	8	TCK
9	GND	10	TDO
11	GND	12	TDI
13	GND	14	not connected
14	GND	16	not connected

a – Mode switch

	off	on
1	Encoder	Ext. TS Input
3	TS-CLK intern	TS-CLK extern
11	falling clock edge	rising clock edge
13	Normal spectrum	Inverted spectrum

For Tuner on TS (NIM-Support): 1+2 on

3 Specifications

board dimension	125×100 mm
board weight	<50 g
Voltage	7 V–24 V
Power consumption	~5 W
IF Frequency	3.5–70 MHz (in steps of 125 kHz)
TS Input	Clock direction and Clock edge switchable
Encoder support and BIZ encryption for encoder stream.	

DVB-S	Constellation	QPSK
	Modulation Error Rate (MER)	>28 dB
	FEC	$\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{8}$
	Symbolrate	1–27500 kSymbol/s in 1 kSymbol-steps
	IF_{out}	90–105 dBμV@50 Ω
DVB-C	Constellation	QAM16, QAM32, QAM64, QAM128, QAM256
	Modulation Error Rate (MER)	>45 dB
	Symbolrate	1000–7000 kSymbol/s in 1 kSymbol-steps
	IF_{out}	85–100 dBμV@50 Ω
DVB-T	Constellation	QPSK, QAM16, QAM64
	Modulation Error Rate (MER)	>43 dB
	FEC	$\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{8}$
	Guard Interval	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$
	IFFT Mode	2k, 8k
	Bandwidth	5, 6, 7 and 8 MHz
	IF_{out}	80–95 dBμV@50 Ω

Errata/corrections:

11.11.2008 First release.

The information in this manual was compiled with high care and to our best knowledge; nevertheless there might be some errors left in this document. We do not take legal or any other responsibility for the correctness of any information.

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