DAB Module DAB1-AD

- o   Works as stand-alone audio receiver board or module. Dimensions: 83 x 57 mm.
- o   **Band 3 on DAB and DAB+ streams up to 256 kBpS, channels 5A up to 13F supported.**
- o   Stores up to 100 presets. FM band support.
- o   **F-type antenna** socket (female) for DAB/FM aerial with F-type plug (screw-on male.)
- o   High quality **optical S/PDIF** out and line out connectors.
- o   Presets up/down with user buttons for stand-alone usage.
- o   Preset selection and volume control through RS232 command interface for audio module mode.
- o   Decodes station and artist info where available .
- o   No software or drivers needed.
- o   Optional LCD with station info.
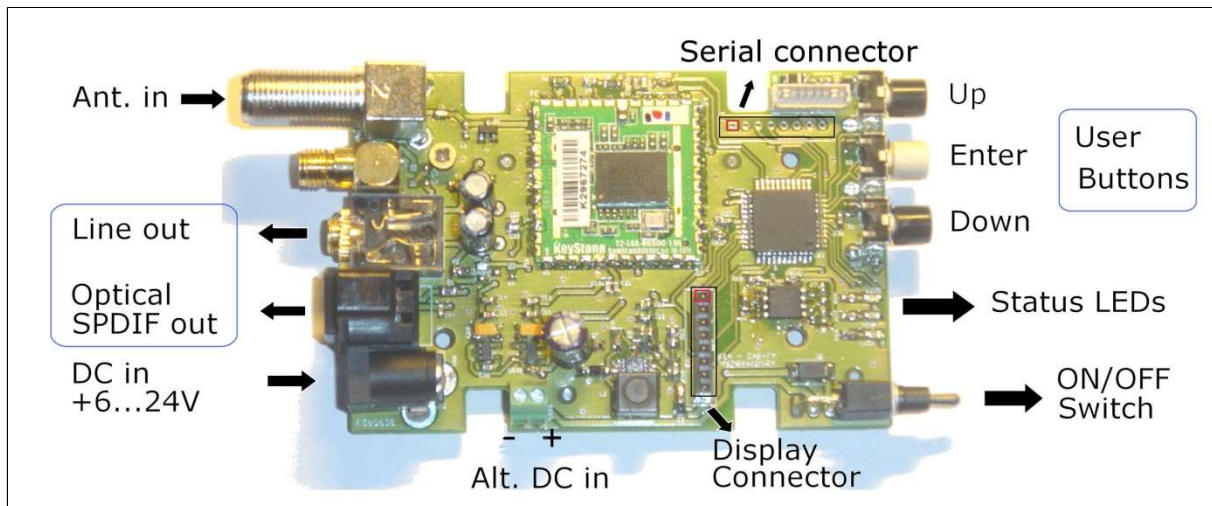- o   Fitting housing box blue or black available.

Fig. 1: DAB Module DAB1-AD: Connection overview.

Line out (audio): 3,5 mm stereo socket for 3,5 mm stereo jack. Analog audio Zero dB line out. Power on delay switching enabled for amplifier protection.

Optical SPDIF out (digital audio): 48 kHz, 16-bit right-justified. Driven directly from the DAB chip.

DC in +5…24V: power supply for standard 5mm jack. Supply positive is inner pin, ground is outer. Protected against reverse voltages.

Alternate DC in: spare connections for power supply. In case you don't use the 5mm jack.

Display connector: optional LCD or OLED module connector. Red square is pin 1. See detailed specs below.

ON/OFF switch: user toggle switch. Switches the complete circuit. No power consumption when OFF.

Status LEDs: three LEDs: Orange for boot (slow flash for normal operation); Yellow for tuning in; Steady Green for normal operation.

User Buttons: three user buttons;

- Black Left and Right buttons:
    - short press: DAB preset / FM tune: 1 station up or down. Yellow LED lights.
    - long press: DAB preset: 5 stations up or down.
    - press at boot: Diags and Rtext selectors. Leave off for normal operation. Cleared when doing a module reset (see below.)
- White Enter button:
    - short press: switch from FM to DAB mode, twice: store current FM station.
    - press at boot (hold before power on and release): module reset and rescan the whole DAB band for available stations.) Search/scans the entire DAB Band for 30 seconds (yellow LED flashes rapidly.)

Serial Connector: External RS232 command connector. See detailed specs below.

Technical Data:

Parameter	Min .	Typ.	Max.	Unit
Module Power consumption	100	130	150	mA @12V DC supply
DAB Analog line out S/N Ratio		81		dB
Optical SPDIF output		48		Ks/S sample rate
Power on to normal operation	2	4	6	Sec.
DAB/FM Aerial in impedance		50 Ω		

Table 1: Technical Data.

Module Function Block	Chip or Component
Switching power supply	LT1767
MicroController	PIC18F46K20-I/PT
DAB Stream Decoder Module	T1_L4A_8290C
SPDIF Transmitter	GP1FAV31TK0F

Table 2: Chip Data.

Display Connector:

2 mm pitch header HARWIN M22-2011846 and matching M22-7130842.
LCD connection for use with the optional LCD module (84x48 dots):

Pin number	Pin function
1 (red square)	RES
2	D/C
3	CS
4	SDA
5	VDD +3V3
6	SCLK
7	GND
8	CAP/BL (backlight)

Table 3: Display Connector pinout.

Note 1: the DAB1-AD retains its full functionality when no display is connected (connector remains open.)

Note 2: The LCD module is fully wired and functional to directly connect to the display connector.

Serial Connector:

2 mm pitch header HARWIN M22-2011846 and matching M22-7130842.
External interface for module control:

Pin number	Pin function
1 (red square)	PIC RS232 RX input
2	PIC RS232 TX output
3	RB3 (leave open, do not connect)
4	RB4 (leave open, do not connect)
5	RB5 (leave open, do not connect)
6	NC (leave open, do not connect)
7	GND
8	VDD +3V3

Table 4: Serial Connector pinout.

Note 1: The RS232 is at +3V3 level, you'll need a level converter to communicate with a PC COM port.

Note 2: The RS232 speed is 115200 bits per second, protocol 8N1. Use "type" to pass the commands as a text string.

Serial commands:

External commands received through pin 1 (RX) and pin 7 (GND) for module control:

Command string	Command description
p12<enter>	Tune to preset number x. E.g. "p12" tunes to preset 12. Valid for p1..p100
v16<enter>	Set volume. E.g. "v16" sets to max volume . Valid for v0..v16
u	Up: tune to next preset.
d	Down: tune to previous preset.
+	Increase volume with 1 unit (min..max scale: 0..16)
-	Decrease volume with 1 unit.
x	Reset all DAB presets and search.
r	Module Soft Reset.
m	DAB/FM mode switch. 2x this command stores the current FM station.

Table 5: Serial command specifications.

Note 1: After each successful command, the new setting is also stored internally. Last settings for station preset and volume are loaded upon module boot.

Mechanical Data:

Module Dimensions: 82,66 x 56,61 x 24 mm.

Weight: 38 grams.

4 mounting holes, diameter: 2,6 mm. Each at X 14,33 and Y 14,31 mm from each corner.

Fitting housing: Hammond Hand Held Instrument 1593L (black or blue.)

P.C. Board Size

17.58 [.692]	6.63 [.261]	17.58 [.692]

56.61 [2.229]   28.00 [1.102]

6.62 [.261]

P.C. Board

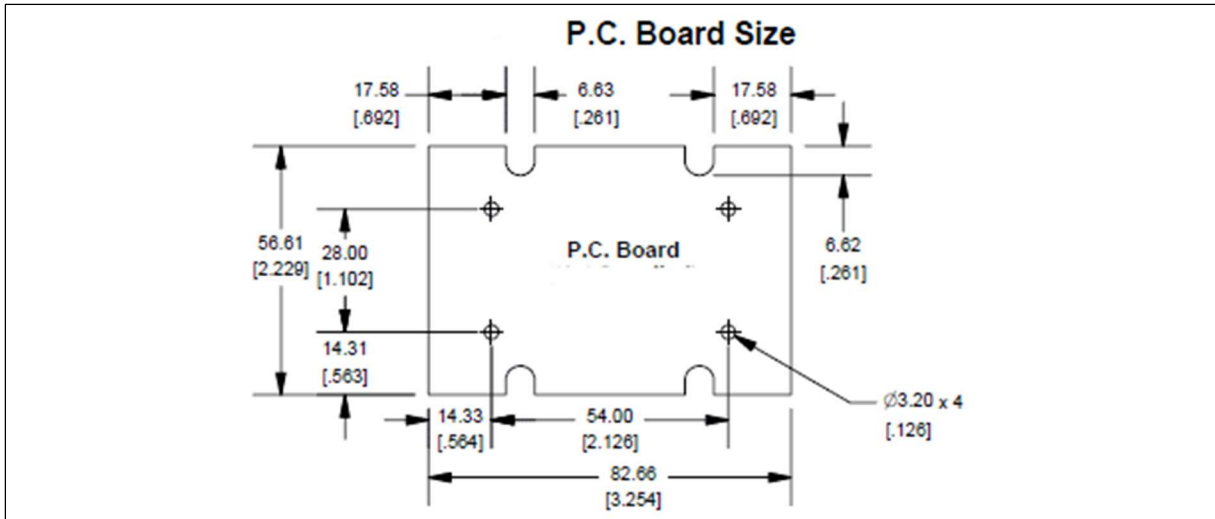14.31 [.563]

Ø3.20 x 4 [.126]

14.33 [.564]   54.00 [2.126]

82.66 [3.254]

Fig. 2: Module PCB dimension details in mm and [inches]