UNIVERSAL EMBEDDED MP3 MODULE

WITH COMPACT FLASH CARD SLOT

AND USB INTERFACE

Table of contents:

1.Overview

The Electway high quality MP3 module is an untiversal and compact embedded module in credit-card size for playing compressed audio data (MP3) and WMA format files. The module was designed for use in embedded systems and for integration in customer specific environment. It is a versatile audio module for working in rough industrial applications.The module has a Compact Flash (CF) card slot for using with CF cards type I or II.Controlling the module could be done either by button or remote control. The internal firmware of the module could be adapted to the customer needs.

This pre-assembled PCB contains the electronics needed to play MP3 files from hard drives, CDROMs or compact flash cards. Just plug in a spare drive & power supply, put it in a project box, hook it to an amp, and you have a 10000 track MP3 player suitable for the car or home. Alternatively, use our compact flash adaptor with a 1GB+ card for a portable low-power solution.

The player provides a line-out signal, suitable for connecting to the auxiliary input of an amplifier or head-end unit. A high-resolution 24-bit DAC and dedicated decoder DSP produce a quality sound even at low bitrates.

The player also has some additional features, such as support for FAT16 or FAT32 file systems, ID3 tag support, and the ability to 'learn' different VCR and CD remote controls. There is also digital volume, bass and treble controls, shuffle play, and a directory navigator for playlist selection. The graphical LED display shows all playback information on the screen at the same time.
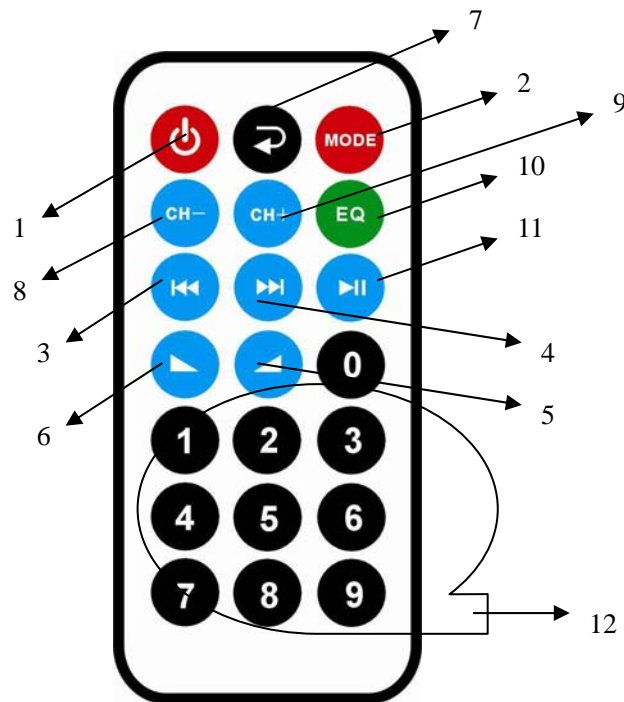
The features are:

- Supports outer inlet signal shift USB/SD card,AUX state accept outer amplifier signal input.
- FM Radio available,multi-color LED display
- MP3 decoder slot on board.
- USB,SD,MMC card supported，8G max supported.
- NEXT,PREV,VOL+,VOL-,EQ(4 options),PLAY/PAUSE Supported.
- FAT12,FAT16 files system supported.
- MP1 Layer3、MP2 Layer3、MP3 Layer3,WMA format files supported.
- Supports 32~320kbp rates mp3 files.
- Remote controllable, effective range 10 m.
- Single 5V/12V DC power supply input.
- Low power consumption 25 mA typical (with LED display).
- Your music file can be stored anywhere of the flash memory which can be sorts according some smart rules.

Operation panel introduction

-MODE bottom :To play this bottom shift from USB→SD/MMC→AUX→FM.1)The red LED flash when applying USB port ,LED stop flashing when pause;2)The Green LED flash when applying SD/MMC, LED stop flashing when pause;3)The yellow LED ON when apply FM ,fast flashing when searching channel, slow flashing when manual searching.

-Press VOL+ bottom the volume get higher (N.A in AUX mode)

-Press VOL- bottom the volume lower get higher (N.A in AUX mode)

-In USB/SD mode return the previous song , In FM mode
 Return the previous channel, press this bottom for 3 seconds turn in frequency decrease searching ,it will stop when some channel have been found.(N.A in AUX mode)

-In USB/SD mode return the previous song , In FM mode
 enter the next channel, press this bottom for 3 seconds turn in frequency increase searching ,it will stop when some channel have been found.(N.A in AUX mode)

-PLAY/PAUSE bottom act as PLAY or Pause function when on USB/SD mode ;On FM mode act as auto searching (N.A in

AUX mode)

Remote panel introduction

1、POWER:（STANDBY）ON/OFF

2、MODE :Press this bottom to cycle -select USB→SD/MMC→AUX→FM. The red LED flash when applying USB port,LED stop flashing when pause; 2)The Green LED flash when applying SD/MMC, LED stop flashing when pause;3)The yellow LED ON when apply FM ,fast flashing when searching channel ,slow flashing when manual searching.

3、PREV：Return the previous song(USB/SD mode),on FM mode, press this bottom for 3 seconds turn in frequency decrease searching ,it will stop when some channel have been found.(N.A in AUX mode)

4、NEXT：Return the previous song(USB/SD mode), on FM mode, press this bottom for 3 seconds turn in frequency decrease searching ,it will stop when some channel have been found.(N.A in AUX mode)

5、Press VOL+ bottom the volume get higher (N.A in AUX mode)

6、Press VOL- bottom the volume lower get higher (N.A in AUX mode)

7、REP :On USB/SD mode :REP 1/REP ALL.(default mode :RPE ALL. Press 3 second enter RPE 1)

8、CH-:Select last channel
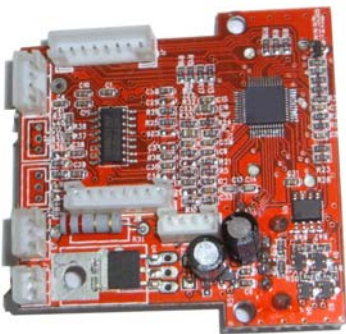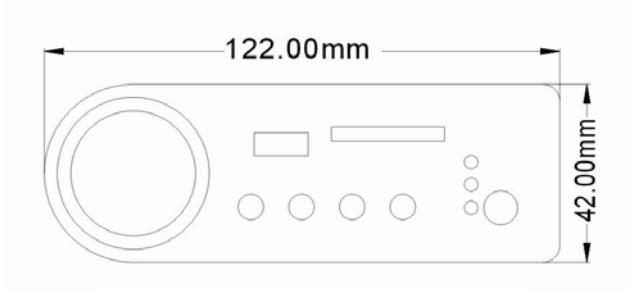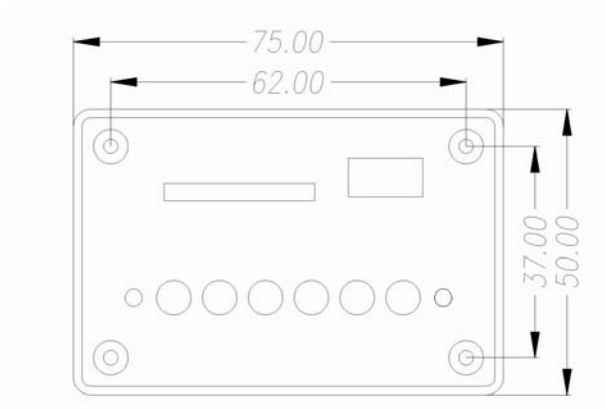
9、CH+ :Select next channel

10、 EQ :Audio Equalization. NORMAL→JAZZ→ROCK→POP→CLASSIC→COUNTRY

11、PLAY/PAUSE bottom act as PLAY or Pause function when on USB/SD mode ;On FM mode act as auto searching (N.A in AUX mode)

12、 The 0~9 bottom :on USB mode you can select the songs directly via theses 0~9 bottom ,rang from 1~999

On FM mode you can select the channel NO. you have stored.

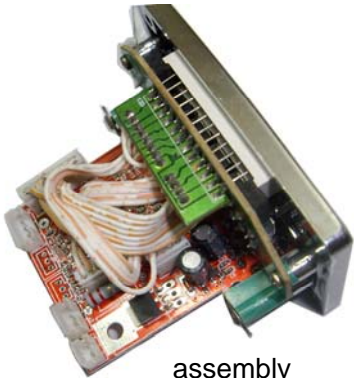| Item	EWM-654	EWM-653	Option term
Operation Panel Image	Digital Audio Player D SD/MMC CARD USB I◀◀ ▶▶I ▶II ▶ ◢ ○ ○ ○ ○ ○ ○ ○ ○ IR MODE PREV NEXT PLAY/ VOL− VOL+ LED PAUSE	Digital Audio Player D SD/MMC CARD USB IR LED ▶II ○ I◀◀ ▶▶I PLA/PAU MODE PREV/V− NEXT/V+	☐ silver background black font ☐ black background silver font ☐ blue background black font

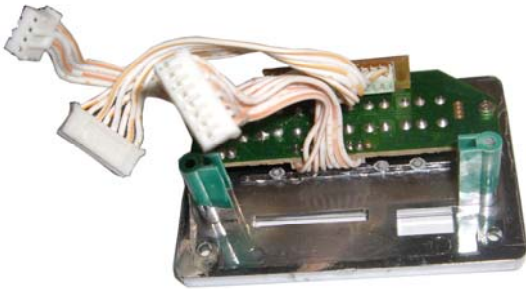- *Dimension compact surface mounted construction*

front view

rear view

assembly

panel

2. Technical data

Microcontroller:

- 16-Bit microcontroller MC9S12A64 with 25 MHz
- 64 kByte flash memory for the internal firmware
- 4 kByte RAM
- 2 kByte EEPROM memory for non volatile configuration data

MP3-Decoder:

- Hardwaredecoder (DSP) STA013
- Decodes MPEG1, MPEG2 and MPEG2.5 Layer III (MP3) with up to 320 kbit/s or variable bitrate
- Volume and equalizer control

Audio-D/A-Converter:

- High quality 24 bit / 96 dB D/A converter CS4334

Compact Flash slot:

- Compact Flash cards from 64 MB up to 128 GB
- FAT32 file format
- Playback length (example) with 4 GB memory and 128 kbit/s MP3 encoding about 72 hours

Network:

- Lantronix XPort
- 10/100 Mbit
- Protocol : TCP/IP, DHCP
- Configurable through web browser or serial interface

Operating temperature:

- -20 °C to +85 °C

Operating voltage:

- 7.5 V (DC) unstabilised
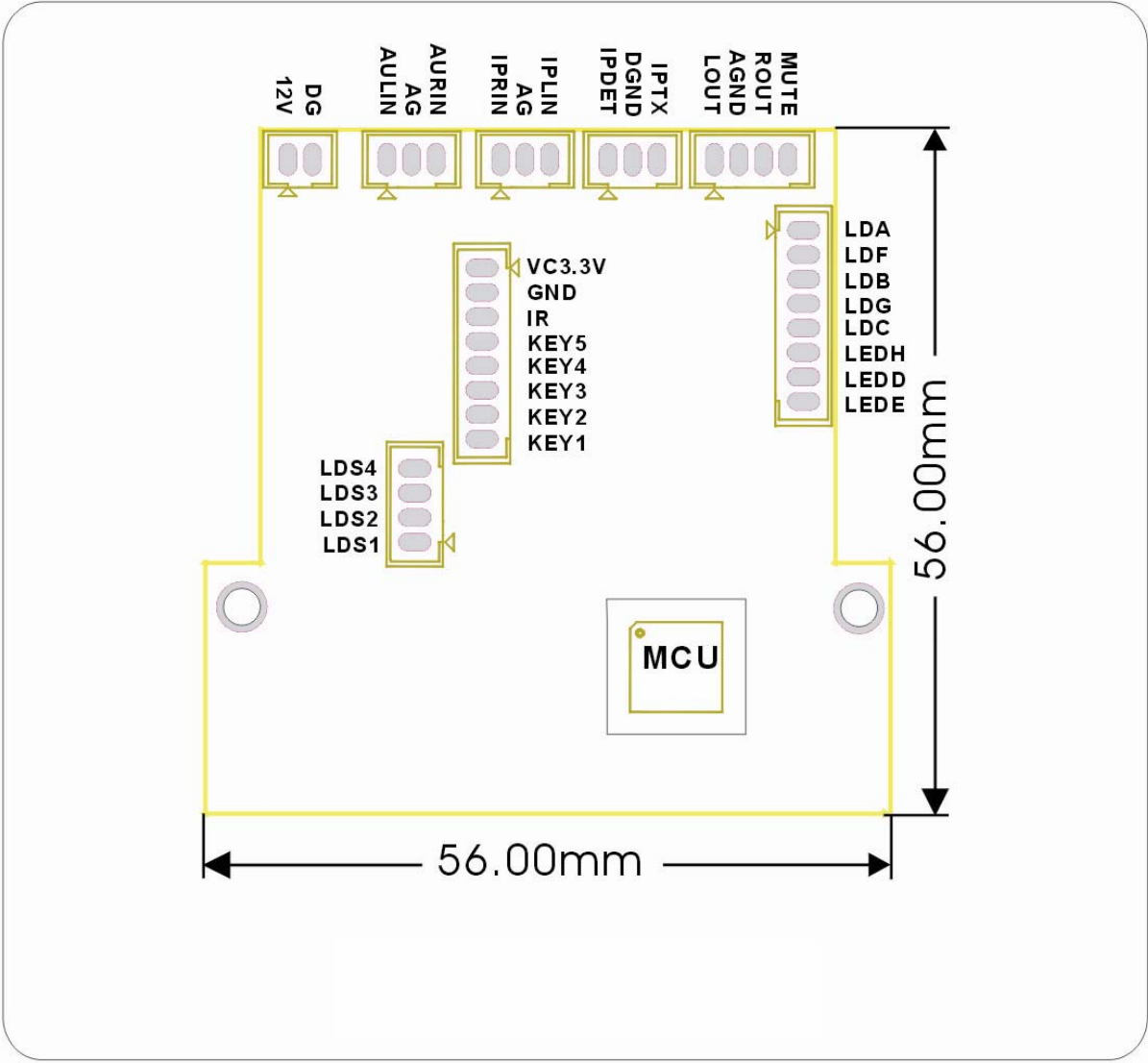
Current consumption:

- 350 mA (typical) with CF card

Interfaces:

USB host,SD,MMS

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3.Connection possibilities

J_CASE

· The J_CASE interface integrates all important connections in one socket. The MIGHTY module could be easily connected to the following casing elements when assembling it into a casing:

- Socket for power supply (5/12V Volt DC)

- Socket for audio output – Stereo line level

- Two buttons (Button 1 and button 2 correspond to the inputs from the interface J_BUTTONS

- Four status LEDs (270 Ohm resistors in series are integrated on the MIGHTY module)

1、PCB Jacks defination(△notes first pin of the jack)：

POWER 2P	+5/12 V	
Pin NO.	Defination	function
J1(△)	12V(V5)	Power plus （12V 7805　）
J2	GND	GND
LINE （Audio signal input）3P	Line in	
Pin NO.	Defination	function

J1(△)	AULIN	Left channel
J2	AG	GND
J3	AURIN	Right channel
IPOD（Audio signal input）3P		
Pin NO.	Defination	function
J1(△)	IPRIN	Right channel
J2	AG	GND
J3	AULIN	Left channel
IPOD（control pin）3P		
Pin S.N.		
J1(△)	IPDET	IPOD detect pin
J2	DGND	IPOD GND
J3	IPTX	IPOD data control pin
OUT（Audio signal input）4P		
Pin S.N.	Defination	function
J1(△)	LOUT	Left channel
J2	AGND	GND
J3	ROUT	Right channel
J4	MUTE	Void
LED control line		
Pin S.N.	Defination	function
J1(△)	LDS1	LED LDS1control
J2	LDS2	LED LDS2 control
J3	LDS3	LED LDS3 control
J4	LDS4	LED LDS4 control
Key1（bottom/remote/LED）8P		
Pin S.N.	Defination	function
J1(△)	VC3.3V	3.3V
J2	GND	GND
J3	IR	Remote control
J4	KEY5	Key 5 data wire
J5	KEY4	Key 4 data wire
J6	KEY3	Key 3 data wire
J7	KEY2	Key 2 data wire
J8	KEY1	Key 1 data wire
LED control pin		
Pin S.N.	Defination	function
J1(△)	LDA	LED LDA lights control
J2	LDF	LED LDF lights control
J3	LDB	LED LDB lights control
J4	LDG	LED LDG lights control
J5	LDC	LED LDC lights control
J6	LEDH	LED LEDH lights control

J7	LEDD	LED LEDD lights control
J8	LEDE	LED LEDE lights control

2、LED instruction：

Mode	U disc play	SD card play	AUX	FM	Pause
LED display	Red light flash	Green light flash	Blue light flash	Yellow light flash	Static light