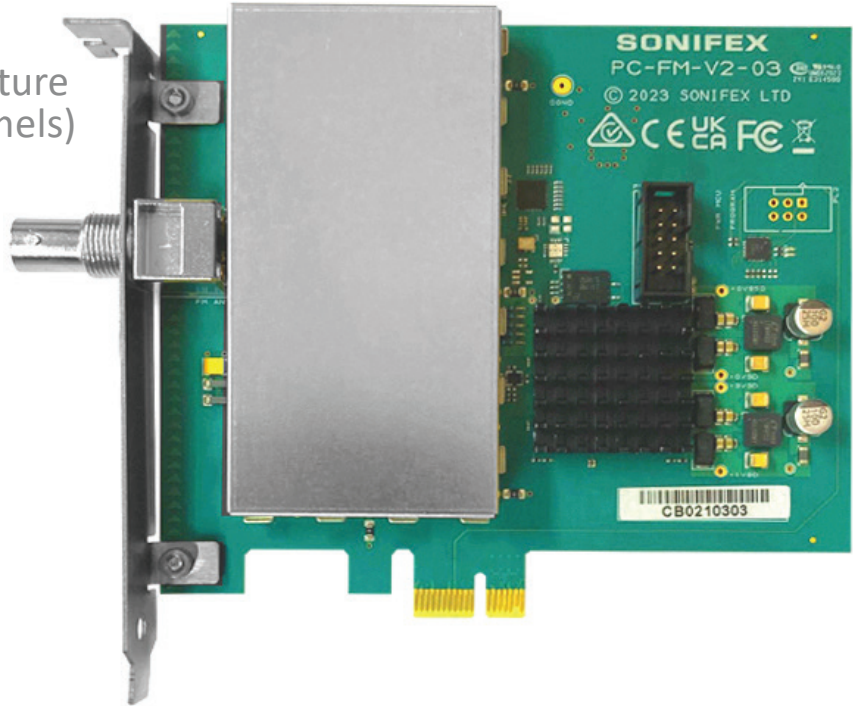# PC-FM6-32

FM PCIe Radio Capture
Card (6 to 32 Channels)

Manufacturers of audio & video
products for radio & TV broadcasters

SONIFEX

For the latest Sonifex handbook information please visit the Sonifex website at www.sonifex.co.uk

This handbook is for use with the following product:
PC-FM6-32 FM PCle Radio Capture Card (6 to 32 Channels)
Stock Code: 30-403
AW10680F

Made in the UK by **SONIFEX**

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SONIFEX

Register Online for an Extended 2 Year Warranty

As standard, Sonifex products are supplied with a 1 year back to base warranty.

If you register the product online, you can increase your product warranty to 2 years and we can also keep you informed of any product design improvements or modifications.

Product: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Serial No: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

To register your product, please go online to www.sonifex.co.uk/register

Product Warranty - 2 Year Extended

As standard, Sonifex products are supplied with a 1 year back to base warranty. In order to register the date of purchase and so that we can keep you informed of any product design improvements or modifications, it is important to complete the warranty registration online. Additionally, if you register the product on the Sonifex website, you can increase your product warranty to 2 years. Go to the Sonifex website at: www.sonifex.co.uk/register to apply for your 2 year warranty.

Note: For your own records the product serial number is recorded on the CE certification page of this handbook.

Sonifex Warranty & Liability Terms & Conditions

1. Definitions

'the Company' means Sonifex Ltd and where relevant includes companies within the same group of companies as Sonifex Limited.

'the Goods' means the goods or any part thereof supplied by the Company and where relevant includes: work carried out by the Company on items supplied by the Purchaser; services supplied by the Company; and software supplied by the Company.

'the Purchaser' means the person or organisation who buys or has agreed to buy the Goods.

'the Price' means the Price of the Goods and any other charges incurred by the Company in the supply of the Goods.

'the Warranty Term' is the length of the product warranty which is usually 12 months from the date of despatch; except when the product has been registered at the Sonifex website when the Warranty Term is 24 months from the date of despatch.

'the Contract' means the quotation, these Conditions of Sale and any other document incorporated in a contract between the Company and the Purchaser.

This is the entire Contract between the parties relating to the subject matter hereof and may not be changed or terminated except in writing in accordance with the provisions of this Contract. A reference to the consent, acknowledgement, authority or agreement of the Company means in writing and only by a director of the Company.

2. Warranty

a. The Company agrees to repair or (at its discretion) replace Goods which are found to be defective (fair wear and tear excepted) and which are returned to the Company within the Warranty Term provided that each of the following are satisfied:

    i. notification of any defect is given to the Company immediately upon its becoming apparent to the Purchaser;

    ii. the Goods have only been operated under normal operating conditions and have only been subject to normal use (and in particular the Goods must have been correctly connected and must not have been subject to high voltage or to ionising radiation and must not have been used contrary to the Company's technical recommendations);

    iii. the Goods are returned to the Company's premises at the Purchaser's expense;

    iv. any Goods or parts of Goods replaced shall become the property of the Company;

    v. no work whatsoever (other than normal and proper maintenance) has been carried out to the Goods or any part of the Goods without the Company's prior written consent;

vi.   the defect has not arisen from a design made, furnished or specified by the Purchaser;

vii.   the Goods have been assembled or incorporated into other goods only in accordance with any instructions issued by the Company;

viii. the defect has not arisen from a design modified by the Purchaser;

ix.   the defect has not arisen from an item manufactured by a person other than the Company. In respect of any item manufactured by a person other than the Company, the Purchaser shall only be entitled to the benefit of any warranty or guarantee provided by such manufacturer to the Company.

b.   In respect of computer software supplied by the Company the Company does not warrant that the use of the software will be uninterrupted or error free.

c.   The Company accepts liability:

(i)   for death or personal injury to the extent that it results from the negligence of the Company, its employees (whilst in the course of their employment) or its agents (in the course of the agency);

(ii)   for any breach by the Company of any statutory undertaking as to title, quiet possession and freedom from encumbrance.

d.   Subject to conditions (a) and (c) from the time of despatch of the Goods from the Company's premises the Purchaser shall be responsible for any defect in the Goods or loss, damage, nuisance or interference whatsoever consequential economic or otherwise or wastage of material resulting from or caused by or to the Goods. In particular the Company shall not be liable for any loss of profits or other economic losses. The Company accordingly excludes all liability for the same.

e.   At the request and expense of the Purchaser the Company will test the Goods to ascertain performance levels and provide a report of the results of that test. The report will be accurate at the time of the test, to the best of the belief and knowledge of the Company, and the Company accepts no liability in respect of its accuracy beyond that set out in Condition (a).

f.   Subject to Condition (e) no representation, condition, warranty or other term, express or implied (by statute or otherwise) is given by the Company that the Goods are of any particular quality or standard or will enable the Purchaser to attain any particular performance or result, or will be suitable for any particular purpose or use under specific conditions or will provide any particular capacity, notwithstanding that the requirement for such performance, result or capacity or that such particular purpose or conditions may have been known (or ought to have been known) to the Company, its employees or agents.

g.   (i)   To the extent that the Company is held legally liable to the Purchaser for any single breach of contract, tort, representation or other act or default, the Company's liability for the same shall not exceed the price of the Goods.

(ii)   The restriction of liability in Condition (g)(i) shall not apply to any liability accepted by the Seller in Condition (c).

h.   Where the Goods are sold under a consumer transaction (as defined by the Consumer Transactions (Restrictions on Statements) Order 1976) the statutory rights of the Purchaser are not affected by these Conditions of Sale.

Unpacking Your Product

Each product is shipped in protective packaging and should be inspected for damage before use. If there is any transit damage take pictures of the product packaging and notify the carrier immediately with all the relevant

details of the shipment. Packing materials should be kept for inspection and also for if the product needs to be returned.

The product is shipped with the following equipment so please check to ensure that you have all of the items below. If anything is missing, please contact the supplier of your equipment immediately.

Item	Quantity
Product unit	1
Handbook	1
Driver CD	1

If you require a different power lead, please let us know when ordering the product.

Repairs & Returns

Please contact Sonifex or your supplier if you have any problems with your Sonifex product. Email technical.support@sonifex.co.uk for the repair/upgrade/returns procedure, or for support & questions regarding the product operation.

CE Conformity

The products in this manual comply with the essential requirements of the relevant European health, safety and environmental protection legislation.

The technical justification file for this product is available at Sonifex Ltd.

The declaration of conformity can be found at: https://www.sonifex.co.uk/declarations

Safety & Installation of Mains Operated Equipment

There are no user serviceable parts inside the equipment. If you should ever need to look inside the unit, always disconnect the mains supply before removing the equipment covers. The cover is connected to earth by means of the fixing screws. It is essential to maintain this earth/ground connection to ensure a safe operating environment and provide electromagnetic shielding.

Voltage Setting Checks

Ensure that the machine operating voltage is correct for your mains power supply by checking the box in which your product was supplied. The voltage is shown on the box label. The available voltage settings are 115V, or 230V. Please note that all products are either switchable between 115V and 230V, or have a universal power supply.

Fuse Rating

The product is supplied with a single fuse in the live conducting path of the mains power input. For reasons of safety it is important that the correct rating and type of fuse is used. Incorrectly rated fuses could present a possible fire hazard, under equipment fault conditions. The active fuse is fitted on the outside rear panel of the unit.

Power Cable & Connection

An IEC power connector is supplied with the product which has a moulded plug attached.

The mains plug or IEC power connector is used as the disconnect device. The mains plug and IEC power connector shall remain readily operable to disconnect the apparatus in case of a fault or emergency.

The mains lead is automatically configured for the country that the product is being sent to, from one of:

Territory	Voltage	IEC Lead Type	Image
UK & Middle East	230V	UK 3 pin to IEC lead	
Europe	230V	European Schuko round 2 pin to IEC lead	
USA, Canada and South America	115V	3 flat pin to IEC lead	
Australia & New Zealand	230V	Australasian 3 flat pin to IEC lead	

Connect the equipment in accordance with the connection details and before applying power to the unit, check that the machine has the correct operating voltage for your mains power supply.

This apparatus is of a class I construction. It must be connected to a mains socket outlet with a protective earthing connection.

Important note: If there is an earth/ground terminal on the rear panel of the product then it must be connected to Earth.

CE and UKCA Conformity

The products in this manual comply with the essential requirements of the relevant UK and European health, safety and environmental protection legislation. The technical justification file for this product is held at Sonifex Ltd. Relevant declarations of conformity can be found at:

https://www.sonifex.co.uk/declarations

WEEE Directive

Directive 2012/19/EU of the European Parliament and of the Council of 4th July 2012 lays down measures to protect the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste from electrical and electronic equipment (WEEE).

The policy of Sonifex Ltd is to comply with all applicable laws of all jurisdictions having authority over Sonifex's business, including the WEEE directive. Accordingly, Sonifex has implemented a rigorous program designed to ensure compliance of its products with the WEEE directive. The latest statements can be found at:

https://www.sonifex.co.uk/company/recycling
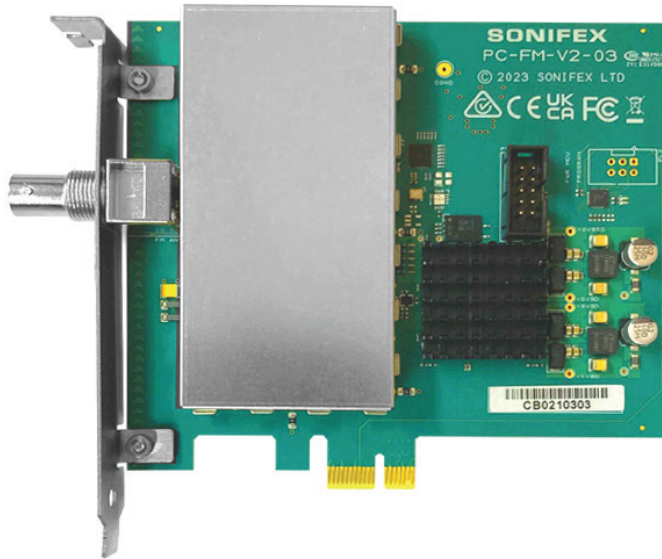
Atmosphere/Environment

This apparatus should be installed in an area that is not subject to excessive temperature variation (<0°C, >50°C), moisture, dust or vibration.

This apparatus shall not be exposed to dripping or splashing, and no objects filled with water, such as vases shall be placed on the apparatus.

Introduction

The FM Radcap PCIe is a radio capture card designed for simultaneous recording of multiple radio stations. The frequency of each station is set in software and its audio appears as a standard Windows audio input device. RDS decoding is also supported.

The card uses a high-speed A/D converter to digitise the entire FM band, with up to 32 individual tuners. The Radcap achieves exceptionally low audio distortion through the use of linear phase filtering and mathematically precise FM demodulation and stereo decoding. FM demodulation, stereo decoding and RDS decoding, are all performed in the FPGA, minimising the CPU overhead of the card.

A 64-bit WDM driver for Windows 10, Windows Server 2016, 2019 and Windows 11 is supplied as well as software for setting the tuner frequencies and monitoring the received audio. A programming API and DLL for software control and monitoring are also supplied. The Linux driver is Alsa based and supports Kernels from version 3.8.

The card can be configured to operate in stereo, mono or paired mono (two mono stations combined on a 2-channel audio stream) modes. Multiple cards can be used in a single PC, subject to available CPU bandwidth. The audio de-emphasis may also be set to either 50us or 75us. In Australia, New Zealand and Europe 50us is used, while in the USA and Canada 75us is used.

A utility called FMSpectrum is supplied. This displays the RF spectrum from 85MHz to 111MHz, using data from the card's front-end 256-point FFT and may be useful in selecting the best location for the antenna or resolving interference problems.

The card is factory-configured for 6 (PC-FM), 12, 18, 24 or 32 (PC-FM32) stations, but needs licensing on your PC hardware. It may be expanded in the field for an additional charge.

System Requirements

Platform:	64 bit Windows 10 & Server 2016, Windows Server 2019, Windows 11 Linux (Kernel 3.8 onwards)
Bus:	Windows - WDM Linux - Alsa
Processor:	2GHz or faster Processer
Memory:	2GB Minium
Other:	Sound card or motherboard sound port for monitoring

Specifications

No. of stations:	6, 12, 18, 24 or 32 (factory-configured but needs licensing on your PC hardware. End-user expandable)
Tuning range:	87.5MHz to 108.5MHz in 25kHz steps
Sensitivity:	10uV for 40dB S/N (mono)
Maximum input:	150mV RMS
RF input impedance:	75Ω
Audio bandwidth:	15kHz
De-emphasis:	Configurable as 50us or 75us
Audio distortion:	< 0.01%
Audio sampling rates:	48kHz native rate (other rates supported automatically through the Windows sampling rate converter)
RDS Decoding	Optionally enabled in driver configuration

Installation

The FM Radcap PCIe card uses static-sensitive components. Observe the usual precautions against static electricity when handling the card and do not touch the edge connector contacts.

The FPGA and regulators generate a significant amount of heat, especially when configured for a large number of stations. If possible, the cards should be mounted vertically, or alternatively placed where there is forced air flow over both sides of the card. Avoid placing the card close to other sources of heat (such as a high-performance video card).

Switch off the PC and unplug the power lead. Insert the card into any vacant PCI Express slot. While this is a single-lane card, it can be used in multi-lane sockets as the PCIe protocol automatically negotiates the lane width.

Restart the PC and allow Windows to boot up.

Windows 10, Server 2016 – Windows no longer searches removable media for drivers. Open **Device Manager**, where the PC-FM6-32 card will be shown under '**Other Devices**' as a **Multimedia Audio Controller**. Right-click on it, select **Update Driver Software**, then click on **Browse my computer for driver software** and click on the **Browse** button to navigate to the driver's location. Click on **Next** to install the driver.

Windows may warn that the driver being installed has not been certified by Microsoft, which is true. Click on **Continue** to complete the installation. The drivers are digitally signed by Sonifex ltd as required by 64-bit Windows 10 and later systems.

Installing on Windows Server – For any audio devices to function correctly on this platform, the following steps need to be performed.

- Open the *Add Roles and Features Wizard* and, under *User Interfaces and Infrastructure*, select *Desktop Experience* and install it.
- After rebooting, go to *Control Panel – System and Security – Administrative Tools – Services* and scroll down to *Windows Audio Service*. Right-click on this, select *Properties* and change the *Startup type* to *Automatic*.
- Do the same for the *Windows Audio Endpoint Builder*.
- Close the Service Manager and reboot the system. Check that the speaker symbol in the bottom right hand corner of the screen is enabled.

Antenna

The FM Radcap requires an external antenna to receive the stations. The type of antenna needed depends on the signal levels in the area in which it is being used. A splitter may be used to feed a single antenna into multiple cards, but a masthead amplifier may then be needed to compensate for the splitter losses. If using an amplifier, take care not to overdrive the cards as performance will be severely degraded. The minimum gain needed to provide good reception on the weakest station being monitored should be used, and in some applications one or more directional antennas may be required.

While the card has an input protection diode, we strongly recommend fitting an external lightning suppressor to minimise the risk of damage to the card.

The input impedance of the card is nominally 75Ω although a 50 ohm BNC connector is used (the mismatch loss is negligible at these frequencies). Adapters to suit other common connector types are readily available from electronics retailers.

A utility called FMSpectrum is supplied on the driver CD/download. This displays the RF spectrum from 85MHz to 111MHz, using data from the card's front-end 256-point FFT, and may be useful in selecting the best location for the antenna or resolving interference problems. The scales are 10dB per division vertically and 2MHz per division horizontally.
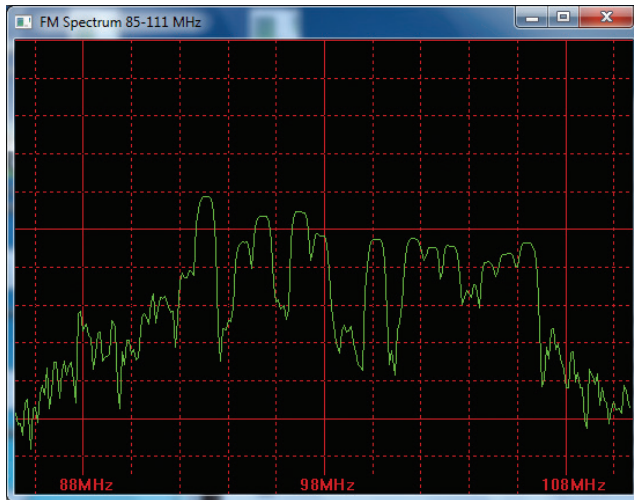
Fig 1-1: FM Spectrum Screen

Configuration

To change the configuration, open **Device Manager**, expand the **Sound, video and game controllers** section, right-click on **FM Radcap 3** and select **Properties**. The available options are under the **Configuration** tab.

Note that, due to a limitation in the current driver, the Hardware ID will not display if any applications are using the Radcap API. Please close any Radcap-related programs before changing the settings.
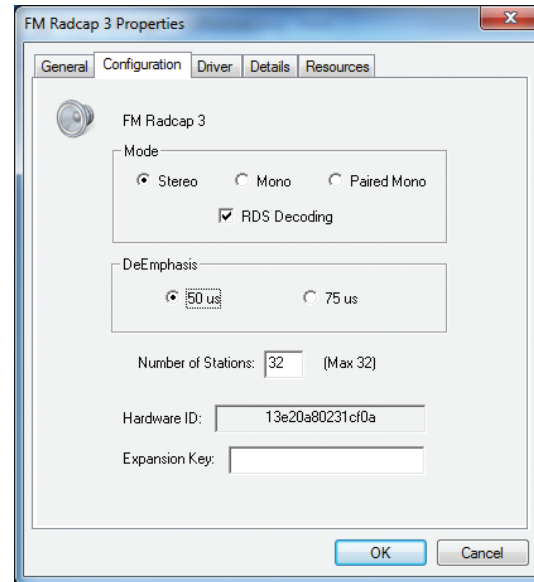
Fig 1-2: FM Radcap 3 Properties Screen

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Increasing the Number of Stations

The FM Radcap PCIe is factory-configured for 6, 12, 18, 24 or 32 stations but needs licensing on your PC hardware. For an additional charge, the number of stations can be increased in the field by entering the appropriate expansion key on this page. Contact Sonifex to obtain an expansion key, quoting the card's Hardware ID and the number of stations you require.

The number of stations can also be reduced if the full capabilities of the card are not required. This can be used to reduce the processing overhead if, for example, only twenty-six stations are needed on a thirty-two station card. The number of stations specified must be even, with odd numbers being rounded up.

The card can be configured to operate in stereo, mono or paired-mono modes. Paired-mono mode combines two stations together as the left and right sides of a two-channel audio stream. Which mode is best will depend on the application software being used.

The audio de-emphasis may also be set to either 50us or 75us. In Australia, New Zealand & Europe 50us is used, while in the USA & Canada it is 75us.

Once the configuration has changed it may take up to a minute for Windows to reconfigure itself – be patient, it hasn't crashed! If multiple cards are installed in the PC, each card can be configured independently (for example one card could be set to stereo while the other is set to mono or paired-mono).

Setting Station Frequencies

A utility program called Tuner is supplied on the driver disc/download. This can be used to set the frequency of each station and also to monitor each station through the PC's standard sound card or motherboard sound port. Note that this application can also be used with the AM Radcap and the older-style two-channel FM Radcap cards, replacing the AmTune and FMTune applications previously supplied. A minimum screen resolution of 1024x768 is recommended for use with this application.

To run the program, insert the driver CD, or go to the download directory and run \AM & FM Radcap\Tuner.exe. To set the frequency of a station, click on the Set button for that station, type in the frequency (in MHz) and click on OK. For FM stations, it is also possible to force mono reception or additionally reduce the audio bandwidth.

To monitor a station, click on the Monitor button for that station. Note that there is a delay of about one second in the audio heard via this monitor, due to the audio buffering used. Stereo reception is indicated by a blue backlight in the stereo indicator (this is inoperative when the card is configured as mono or paired-mono).

If RDS decoding is enabled, the RDS indicator will light when the decoder is locked, and the transmitted Program Service Name will be displayed on the surrounding box. When the station being monitored is broadcasting Radiotext, the text is shown at the top of the main window, along with the transmitted date/time information if this is available.

The Tuner application also provides relative signal strength indicator bars on each station, which may be useful when orientating antennas. Note however that due to hardware limitations, this function is not available with the older 2-channel FM Radcap cards.

The frequencies set are stored in the Windows Registry by the driver and are automatically restored whenever the PC is started. It is not necessary to rerun Tuner or to leave it running once the frequencies are set.

Alternatively, if you write your own software, there is a DLL supplied on the driver disc that can be used for setting and retrieving the station frequencies. Refer to Appendix A for details. This DLL (Radcap.dll) is compatible with the AM Radcap and older-style two-channel, six-channel and twenty-four channel FM Radcap cards as well, and should be used in place of the earlier versions supplied with those cards.

Fig 1-3: FM Radcap Monitor Screen

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Recording

Any application that records from standard wave input devices can be used to record the audio streams from the FM Radcap PCIe.

Make sure the recording software you are using allows you to select the audio input devices. The Radcap virtual devices have names such as "FM Radcap Ch. 1" and "FM Radcap Ch. 2" (or "FM Radcap Ch. 1/2" if stations are paired).

A recording level control, mute control and peak meter are provided for each station (or pair of stations) through the devices' mixer ports (peak meters are not supported under Windows 2000, and are only accessible through the mixer API on Windows Vista if the application is set to XP-compatible mode – new applications written for Windows Vista should use the Core Audio APIs to access the peak meters).

If recording a large number of channels using any form of audio compression, be sure to allow sufficient processing power to both capture the audio and compress it. The Performance Monitor in Windows' Task Manager can provide a useful guide to CPU loading.

RDS Decoding

RDS decoding can be enabled in the driver configuration, and the received information is available through the Radcap API. Refer to the API description in Appendix A for details.

Support

For all support matters, go to www.sonifex.co.uk and click on Technical Support, then Software Downloads. Software and driver updates will be made available from time to time and will be placed on this website.

Technical Specification For PC-FM6-32

Operating Systems Supported

Platform:	64-bit windows 10 & Server 2016, Windows Server 2019, Windows 11 Linux (Kernel 3.8 onwards)
Processor:	2GHz or faster processer
Memory:	2GB minimum
Bus:	PCI Express™ x1 (Gen 2)
Other:	Sound card or motherboard sound port for monitoring

Specification

Tuning Range:	87.5MHz to 108.5MHz in 25kHz steps
Sensitivity:	10uV for 40dB S/N
Maximum Input:	150mV RMS
RF Input Impedance:	75Ω
De-emphasis:	Configurable as 50us or 75us
Audio Distortion:	<0.01%
Audio Sampling Rate:	48kHz (all other rates automatically supported via Windows sampling rate converter)
Number of Stations:	6, 12, 18, 24 or 32 (factory-configured but needs licensing on your PC hardware. End-user expandable)
RDS Decoding:	Optionally enabled in driver configuration

Equipment Type

PC-FM	6 Channel FM PCIe Radio Capture Card
PC-FM12	12 Channel FM PCIe Radio Capture Card
PC-FM18	18 Channel FM PCIe Radio Capture Card
PC-FM24	24 Channel FM PCIe Radio Capture Card
PC-FM32	32 Channel FM PCIe Radio Capture Card
PC-FMUP6	Radcap FM 6 Channel Upgrade
PC-FMUP8	Radcap FM 8 Channel Upgrade

Physical Specification

Dimensions (Raw):	14cm (L) x 12.5cm (H) x 2cm (D) 5.5" (L) x 4.9" (H) x 0.8" (D)
Dimensions (Boxed):	27cm (L) x 22.5cm (H) x 6cm (D) 10.6" (L) x 8.9" (H) x 2.4" (D)
Weight:	Nett: 0.10kg Gross: 0.20kg Nett: 0.2lbs Gross: 0.4lbs

Appendix A – Programming the PC-FM6-32

On the driver CD under **\AM & FM Radcap\lib** you will find Radcap.dll, Radcap.exp, Radcap.lib and Radcap.h, which can be used to read and set the frequency of each station and to read the received signal strength indicator, stereo indicator, FM deviation, pilot level and RDS transmissions where available. The DLL exports the following functions:

enum RadcapTunerType { RadcapAM, RadcapFM };

UINT __stdcall RadcapStationCount (
enum RadcapTunerType Mode);

Parameters

Mode
Specifies AM or FM tuners.

Return value

The return value is the number of stations available.

Comments

This function will fail if the monitor program (Tuner.exe) is running.

BOOL __stdcall RadcapGetID (
UINT DeviceID,
enum RadcapTunerType*pType,
int *pTunerID,
BOOL *pPaired);

Parameters

DeviceID
waveIn device ID
pType
Pointer to RadcapTunerType variable to receive the returned device type
pTunerID

Pointer to int variable to receive the returned Tuner ID number
pPaired
Pointer to BOOL variable to receive the returned tuner configuration

Return value

If the function succeeds the return value is TRUE.

If the function fails, the return value is FALSE. To get extended error information, call GetLastError ().

Comments

This function takes the Device ID number of a waveIn audio stream and returns the tuner type, identifier and configuration information for the corresponding tuner. If the audio stream does not correspond to a Radcap tuner the function returns FALSE.

UINT __stdcall RadcapGetFrequency (
enum RadcapTunerType Mode,
int TunerID);

Parameters

Mode
Specifies AM or FM tuner.
TunerID
Index of the station to be read, beginning at zero for the first station.

Return values

If the function succeeds the return value is the frequency in kilohertz.

If the function fails, the return value is zero. To get extended error information, call GetLastError ().

Comments

This function will fail if the monitor program (Tuner.exe) is running.

BOOL __stdcall RadcapSetFrequency (
    enum RadcapTunerType Mode,
    int TunerID,
    UINT Kilohertz);

Parameters
    Mode
        Specifies AM or FM tuner.
    TunerID
        Index of the station to be set, beginning at zero for the first station.
    Kilohertz
        The frequency (in kilohertz) that the station is to be set to. For AM, this must lie between 500 and 1700, and for FM this must lie between 87500 and 108500.

Return values
    If the function succeeds the return value is TRUE.

    If the function fails, the return value is FALSE. To get extended error information, call GetLastError ().

Comments
    This function will fail if the monitor program (Tuner.exe) is running.

UINT __stdcall RadcapGetRSSI (
    enum RadcapTunerType Mode,
    int TunerID);

Parameters
    Mode
        Specifies AM or FM tuner.
    TunerID
        Index of the station to be read, beginning at zero for the first station.

Return values
    If the function succeeds the return value is the received signal strength indicator.

    If the function fails, the return value is zero. To get extended error information, call GetLastError ().

Comments
    The received signal strength indicator is not available on the original 2-channel FM Radcap cards. This function will succeed with those cards but will always return 0.

    The received signal strength indicator is a relative indication only and should not be taken as an absolute measurement of signal strength.

    This function will fail if the monitor program (Tuner.exe) is running.

BOOL __stdcall RadcapGetStereo (
    enum RadcapTunerType Mode,
    int TunerID);

Parameters
    Mode
        Specifies AM or FM tuner.
    TunerID
        Index of the station to be read, beginning at zero for the first station.

Return values
    The return value is TRUE if the station is being received in stereo.

Comments
    The stereo indicator is only available on the FM Radcap cards, and then only if the card is configured for stereo reception. This function will fail if the monitor program (Tuner.exe) is running.

UINT __stdcall RadcapGetDeviation (
    enum RadcapTunerType Mode,
    int TunerID);

Parameters
    Mode
        Specifies AM or FM tuner.
    TunerID
        Index of the station to be read, beginning at zero for the first station.

Return value
    The return value is the peak FM deviation in Hertz of the station being tuned, or zero if this information is unavailable.

Comments
    The deviation is only available on the FM Radcap cards. This function will fail if the monitor program (Tuner.exe) is running. The peak detector of the specified channel is reset to zero each time this function is called.

UINT __stdcall RadcapGetPilotLevel (
    enum RadcapTunerType Mode,
    int TunerID);

Parameters
    Mode
        Specifies AM or FM tuner.
    TunerID
        Index of the station to be read, beginning at zero for the first station.

Return value
    The return value is the deviation in Hertz of the 19kHz pilot tone, or zero if this information is unavailable.

Comments
    The pilot level is only available on the FM Radcap cards, and then only if the card is configured for stereo reception. This function will fail if the monitor program (Tuner.exe) is running.

UINT __stdcall RadcapGetMonoOverrideLevel (
    enum RadcapTunerType Mode,
    int TunerID);

Parameters
    Mode
        Specifies AM or FM tuner.
    TunerID
        Index of the station to be read, beginning at zero for the first station.

Return value
    The return value is the current mono override level, or zero if this is not supported by the hardware. See RadcapSetMonoOverrideLevel for a description of possible values.

Comments
    The mono override level is only available on the FM Radcap cards. This function will fail if the monitor program (Tuner.exe) is running.

BOOL __stdcall RadcapSetMonoOverrideLevel (
    enum RadcapTunerType Mode,
    int TunerID,
    UINT Level);

Parameters
    Mode
        Specifies AM or FM tuner.
    TunerID
        Index of the station to be set, beginning at zero for the first station.

Level

This parameter can take the following values:

0 : no override action

1 : the specified channel is forced to mono reception

2 : the specified channel is forced to mono reception with narrow audio bandwidth

Return values

If the function succeeds the return value is TRUE.

If the function fails, the return value is FALSE. To get extended error information, call GetLastError ().

Comments

This function is only available on the FM Radcap cards and will fail if the monitor program (Tuner.exe) is running. It provides the ability to set individual channels to mono and optionally reduce their audio bandwidth.

The following functions provide access to RDS transmissions carried by some FM stations.

BOOL __stdcall RadcapRDSPresent (
enum RadcapTunerType Mode,
int TunerID);

Parameters

Mode

Specifies AM or FM tuner.

TunerID

Index of the station to be read, beginning at zero for the first station.

Return value

The return value is TRUE if RDS is present on the received signal, otherwise FALSE.

Comments

RDS decoding is only available on the FM Radcap cards, and only when RDS is enabled in the driver configuration.

BOOL __stdcall RadcapRDSGetProgramInformation (
enum RadcapTunerType Mode,
int TunerID,
RDSProgramInformation *pInfo);

Parameters

Mode

Specifies AM or FM tuner.

TunerID

Index of the station to be read, beginning at zero for the first station.

pInfo

Pointer to an RDSProgramInformation structure into which the information is written.

Return value

The return value TRUE if the function succeeds, otherwise it is FALSE. To obtain extended error information, call GetLastError ().

Comments

This function can fail with ERROR_DEVICE_NOT_READY if the RDS signal is not being received or the Program Service Name is in the process of being changed.

The RDSProgramInformation structure is defined as follows:

typedef struct {
    unsigned ProgramIdentificationCode;
    unsigned ProgramTypeCode;
    unsigned Music;
    unsigned Traffic;
    unsigned Decoder;

```
        char ProgramServiceName[9];
    } RDSProgramInformation;
```

ProgramIdentificationCode : See RDS specification NRSC-4-A Annex D.

ProgramTypeCode : See RDS specification NRSC-4-A Annex F.

Music : 0 = Speech, 1 = Music

Traffic : 0 = This program does not carry traffic announcements

1 = This program contains EON information about another program that carries traffic announcements

2 = This program carries traffic announcements but none are being broadcast at present

3 = A traffic announcement is being broadcast on this program at present

Decoder :   Bit 0 set = Stereo, cleared = Monaural

Bit 1 set = Artificial head, cleared = Not artificial head

Bit 2 set = Compressed, cleared = Uncompressed

Bit 3 set = PTY code dynamically switched, cleared = PTY code static

ProgramServiceName : Null-terminated string identifying the program

BOOL __stdcall RadcapRDSGetRadiotext (

```
    enum RadcapTunerType Mode,
    int TunerID,
    char *Buffer,
    size_t BufferSize);
```

Parameters

Mode

Specifies AM or FM tuner.

TunerID

Index of the station to be read, beginning at zero for the first station.

Buffer

Pointer to an array of at least 65 chars into which the function writes the Radiotext as a null-terminated string.

BufferSize

Size in bytes of Buffer.

Return value

The return value TRUE if the function succeeds, otherwise it is FALSE. To obtain extended error information, call GetLastError ().

Comments

This function can return an empty string if updated text is only partially received or if no Radiotext is being broadcast.

BOOL __stdcall RadcapRDSGetLocalDateTime (

```
    enum RadcapTunerType Mode,
    int TunerID,
    SYSTEMTIME *pLocalTime );
```

Parameters

Mode

Specifies AM or FM tuner.

TunerID

Index of the station to be read, beginning at zero for the first station.

pLocalTime

Pointer to a SYSTEMTIME structure into which the broadcast date and time are written using the local timezone offset.

Return value

The return value TRUE if the function succeeds, otherwise it is FALSE. To obtain extended error information, call GetLastError ().

Comments

This function will fail with error code ERROR_NOT_FOUND if no date time information has been received, or ERROR_DEVICE_NOT_READY if no RDS signal is being received.

BOOL __stdcall RadcapRDSGetUtcDateTime (
    enum RadcapTunerType Mode,
    int TunerID,
    SYSTEMTIME *pLocalTime);

Parameters
    Mode
        Specifies AM or FM tuner.
    TunerID
        Index of the station to be read, beginning at zero for the first station.
    pLocalTime
        Pointer to a SYSTEMTIME structure into which the broadcast date and time are written in UTC timezone.

Return value
    The return value TRUE if the function succeeds, otherwise it is FALSE. To obtain extended error information, call GetLastError ().

Comments
    This function will fail with error code ERROR_NOT_FOUND if no date time information has been received, or ERROR_DEVICE_NOT_READY if no RDS signal is being received.

For other RDS applications not covered by the preceding functions, the raw data groups can be streamed directly to an application using the following functions.

RDSStreamingHandle __stdcall RadcapRDSOpenRawStreaming (
    enum RadcapTunerType Mode,
    int TunerID,
    RDSRawStreamingCallback *pCallback,
    unsigned short Mask);

Parameters
    Mode
        Specifies AM or FM tuner.
    TunerID
        Index of the station to be read, beginning at zero for the first station.
    pCallback
        A pointer to a caller-supplied callback function of the form
        void __stdcall MyCallbackFunction (RDSRawData const *pData)
    Mask
        A 16-bit value to select which of the 16 RDS group types to stream. Setting a mask bit to 1 enables the corresponding group type, where the least-significant-bit corresponds to Group Type 0 and the most significant-bit corresponds to Group Type 15. Set Mask to 0xffff to receive all groups.

Return value
    If the function succeeds, the return value is a handle for use in subsequently calling RadcapRDSCloseRawStreaming (), otherwise it is NULL. To obtain extended error information, call GetLastError ().

Comments
    Applications should call RadcapRDSCloseRawStreaming () with the returned handle to terminate streaming.

    The callback function can be called at a rate of up to 11.4 times per second and must not block for any appreciable time otherwise data will be lost. The RDSRawData pointer passed to this function is only valid until the function returns, and must not be retained outside this function.

void __stdcall RadcapRDSCloseRawStreaming (
    RDSStreamingHandle hStreaming);

Parameters

hStreaming

    The handle returned by RadcapRDSOpenRawStreaming.

Comments

    This function must only be called from within the same thread that
    called RadcapRDSOpenRawStreaming (). In particular, this function
    must never be called from within the streaming callback function,
    otherwise a deadlock will occur.

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