



HANDBOOK

Redbox RB-FS42

Audio Failover Switcher,
4 Main I/O, 2 Standby I/O

Redbox RB-FS82

Audio Failover Switcher,
8 Main I/O, 2 Standby I/O



Manufacturers of audio & video
products for radio & TV broadcasters



This handbook is for use with the following product:

RB-FS42 Audio Failover Switcher, 4 Main I/O, 2 Standby I/O

RB-FS42DC Audio Failover Switcher, 4 Main I/O, 2 Standby I/O, DC Version

RB-FS82 Audio Failover Switcher, 8 Main I/O, 2 Standby I/O

RB-FS82DC Audio Failover Switcher, 8 Main I/O, 2 Standby I/O, DC Version

Stock Code: 30-283

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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.

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

Product Warranty - 2 Year

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 within 30 days of purchase, you can increase your product warranty to 2 years. Go to the Sonifex website at: <http://www.sonifex.co.uk/technical/register/index.asp> 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
IEC Mains lead fitted with moulded mains plug	1
Handbook and warranty card	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 Declaration of Conformity and Approval Information



This document certifies that the Sonifex product that you have purchased is compliant with CE specifications. If you would like further information on compliance of all Sonifex products, please check the website at the address above where full information is available.

Sonifex Limited hereby certify that the following product with serial number shown has been designed and manufactured in accordance with the following specifications :

EMC: EN 55103-1: 1997 Electromagnetic Compatibility.
Limits of disturbance for audio apparatus for professional use
For use in environments 1 to 4.

EN 55103-2: 1997 Electromagnetic Compatibility.
Limits of disturbance for audio apparatus for professional use
For use in environments 1 to 4.

Safety: EN 60950: 1992 Safety of Information Technology Equipment
Including Electrical Business Equipment.

Hybrid BS6301, BS7002, BS415, CTR21,

Approvals: R&TTE directive (1999/5/EC)

SONIFEX

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Product: _____

Serial No: _____

The Reference Technical Justification File for this product is available at Sonifex Ltd.

Authorised By:

Name: Chris Stills

Position: Technical Director

Date of Issue: 01 November 2014

Signature:

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 – this is a legal requirement. 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.

Important Note: If there is an earth/ground terminal on the rear panel of the product then it must be earthed/grounded.

WEEE Directive



The Waste Electrical and Electronic Equipment (WEEE) Directive was agreed on 13 February 2003, along with the related Directive 2002/95/EC on Restrictions of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS). The Waste Electrical and Electronic Equipment Directive (WEEE) aims to minimise the impacts of electrical and electronic equipment on the environment during their life times and when they become waste. All products manufactured by Sonifex Ltd have the WEEE directive label placed on the case. Sonifex Ltd will be happy to give you information about local organisations that can reprocess the product when it reaches its “end of use”, or alternatively all products that have reached “end of use” can be returned to Sonifex and will be reprocessed correctly free of charge.

RoHS Directive



The RoHS directive limits the use of certain hazardous substances currently used in EEE manufacture, including lead, mercury, cadmium, hexavalent chromium, and halide-containing compounds PBB (polybrominated biphenyl) and PBDE (polybrominated diphenyl ether). Elimination of these substances will result in more environmentally friendly recycling of electronic equipment.

Sonifex Ltd practices lead-free (LF) manufacturing processes and does not use any of the hazardous substances identified in the European Union’s Restriction of Hazardous Substances (RoHS) directive. The manufacturing

processes include the assembly of purchased components from various sources. Product is offered as RoHS compliant, or LF, only after sufficient evidence is received from the component manufacturers that their components are RoHS compliant. Sonifex Ltd relies solely on the distributor, or manufacturer, of the components for identification of RoHS compliance. Thus whilst every effort is made to ensure compliance, Sonifex Ltd makes no warranty, or certification, or declaration of compliance concerning said components.

Atmosphere

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

Fitting Redboxes

Redboxes can be fixed to the underside of a mixing desk, or other surfaces using 4.2mm holes in the sides and fixed with 2 x M4 screws or 2 x No. 6 countersink wood screws.

They can also be rack-mounted, with either the front, or rear of the Redbox positioned at the front of the rack:

Rear Mounting a 1U Rackmount Redbox:

The RB-RK3 1U rear panel rack kit can be used for large 1U rackmount Redboxes.



Note: When fitting the RB-RK3 rear-mounting rack-kits, a notch has been left on the inside of the right-hand rack-piece for the mains cable to pass through. Make sure that the mains cable has been put through the notch before attaching the right hand rack-piece.

1 RB-FS42 Audio Failover Switcher, 4 Main I/O, 2 Standby I/O

Introduction



Fig 1-1: The RB-FS42 Front Panel

The RB-FS42 4 + 2 audio failover switcher is a smaller channel count version of the RB-FS82, offering a lower number of inputs and outputs. It is a more cost effective solution where failover is needed for a smaller number of sources/destinations and supports all of the features of the RB-FS82.

The device has 4 main + 2 standby, stereo analogue audio, AES/EBU digital audio and RS232 connections (both inputs and outputs) and can be configured via Ethernet for two main operational applications:

For switching of program sources to a standby destination in the event of a destination failure ('Standbys to outputs'). Typically this would be audio encoders at a program distribution head end (for audio over IP, E1 or other bearer networks), with "N" x programs feeding "N" x encoders. If an encoder fails the audio destined for that encoder gets routed to a standby encoder so ensuring the continuity of audio to network transport.

Switching of program sources, including standby sources, to destinations in the event of source failure ('Standbys to inputs'). Typically this would be audio decoders at a transmission site with "N" x programs and "N" x decoders feeding "N" x transmitters. If a decoder fails, the audio from a standby decoder, or other audio source such as an mp3 player, overrides the signal path to the transmitter so ensuring continuity on air.

The RB-FS42 supports any configuration of up to 4 main program signal paths ($N \leq 4$) and there are 2 standby program signal paths, in either mode

of operation. Each program path simultaneously switches analogue L/R audio, AES/EBU digital audio and RS232 data. Each of these signals is wired on D-Type connectors on the rear panel.

All signal paths are passive and therefore completely transparent utilising relay based switching. This has the benefit of a "straight wire" topology during normal (alarm free) operation and also during any power outage to the device. An additional benefit of the passive signal path is AES/EBU bit transparency allowing throughput of AES/EBU AC3 Dolby E TM signals.

To ensure the passive nature of the device, switching is determined by alarm (General Purpose) inputs, with this alarm signalling in turn being normally provided by the encoder or decoders (or other devices) at site. Recognising the mission critical nature of the system, a high grade of relay is used in the RB-FS42.

The passive design ensures continuity of audio in the event of any power outage. However the RB-FS42 also includes dual redundant power supplies (85V-264V AC with a 12V 1A DC backup as standard). The RB-FS42-DC model accepts two DC power inputs (24 - 48V DC) via locking 2.5mm pin power connectors and both power supplies are monitored by the unit. This means that if either power supply fails, the other is ready to take over. In the extremely unlikely event that both fail, the unit's passive signal path ensures a straight wire connection for all 4 program feeds (analogue, AES/EBU & RS232). This is essential for applications such as installation at transmitter

sites, where a power failure to the unit will not prevent the audio input signal from being output to each of the supported 4 transmitters.

A row of LEDs on the front panel confirm the unit status, with each individual program path indicated as being in alarm with either Standby 1 or Standby 2 programs clearly confirmed as actively over-riding the failed signal. Alarm LEDs on the front panel are also indicated for power supply 1 failure and power supply 2 failure and these are mirrored by the device's own General Purpose Outputs so facilitating easy interfacing of the device with the addition of a summary alarm status GPO.

By monitoring and acting on a GPI Alarm pin for each signal path the unit can switch between: Through, Standby 1, Standby2 or Silence. The unit will always attempt to route a Standby path when a Main path alarm is detected and if both Standby paths are already in use, then one of the two remaining options (Through, Silence) will be used. The unit can be configured to either Automatically restore a Main 'through' path or wait for a Manual button press.

In the event of alarm clearing, the unit will automatically revert to normal operation, but a manual reversion mode is also provided, allowing for engineering investigation without the unit 'hunting' between different signal paths. Two buttons on the front panel, RESTORE 1 and RESTORE 2, allow manual restoration of the previously failed signal paths, away from Standby 1 and Standby 2 respectively.

To facilitate integration with site management systems the RB-FS42 supports SNMP V1 and is configured by a simple web based GUI. All relevant information regarding input/output status, alarms and power supplies is available via SNMP GET requests to the unit. Traps can also be generated for most of the actions which can occur, including power supply fail and input GPI alarms, etc.

Contact Sonifex for further information if you have a particular requirement that isn't catered for by the RB-FS42 as standard.

Category: Synchronisers, Delays & Silence Detectors.

Product Function: To route the source audio signals in to a standby encoder in event of encoder fail. Or to route the destination audio signals from a standby decoder in event of decoder fail.

Typical Applications: As a failover switcher for multi channel audio transport over E1 or IP, typically as performed by APT Oslo, Prodyss Nureus, where a N+1 topology is adopted.

Features:

- Relay based switching.
- Dual DC, or AC, power supplies (select when ordering).
- Encoder site (Set via IP): 4 stereo program inputs, 4 + 2 stereo program outputs where each program input/Output carries: analogue L/R, stereo AES/EBU & RS232.
- Encoder site: Each program output has an alarm detect GP input.
- Decoder Site (Set via IP): 4 +2 stereo program inputs, 4 program outputs where each program input carries: analogue L/R, stereo AES/EBU & RS232.
- Decoder Site: Each program input has an alarm detect GP input.
- AES/EBU transparent (for Dolby E transport).
- Passive throughput in event of power outage.
- GPO output for signalling RB-FS42 alarm conditions: PSU 1/2 fail, Standby 1/2 active, Summary Alarm.
- Automatic or Manual reversion modes.
- LED indicators on front panel.
- IP control, including Web GUI and SNMP.

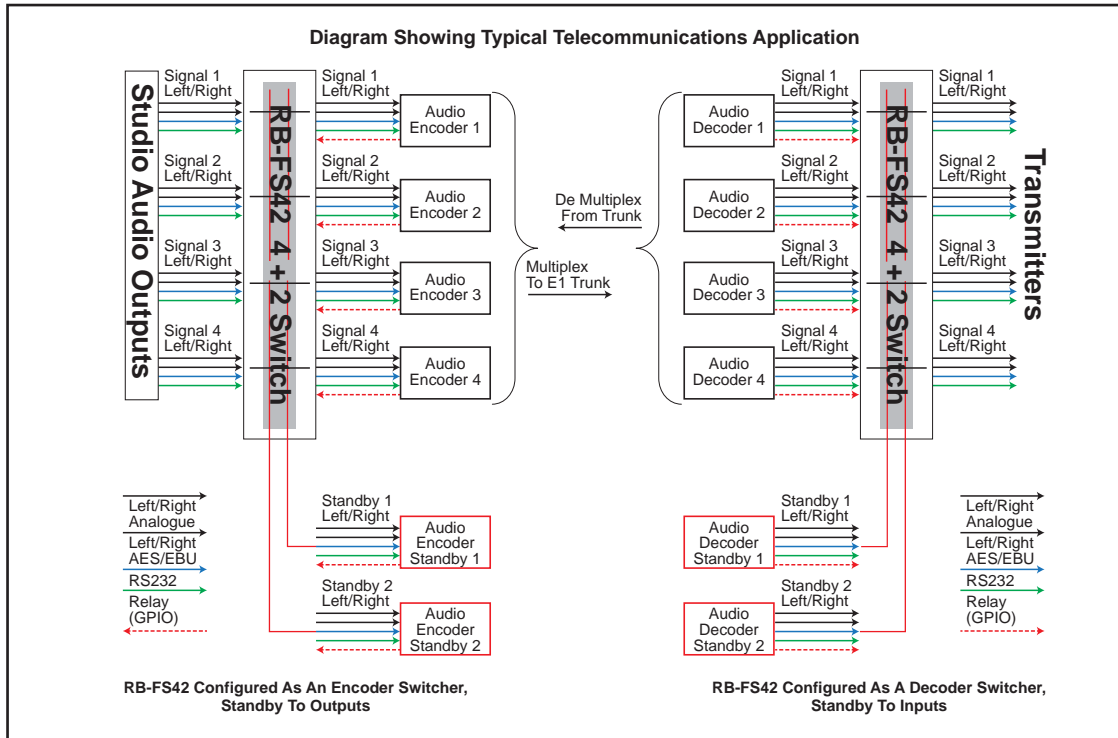


Fig 1-2: The RB-FS42 Diagram

Connections & Operation

Front Panel

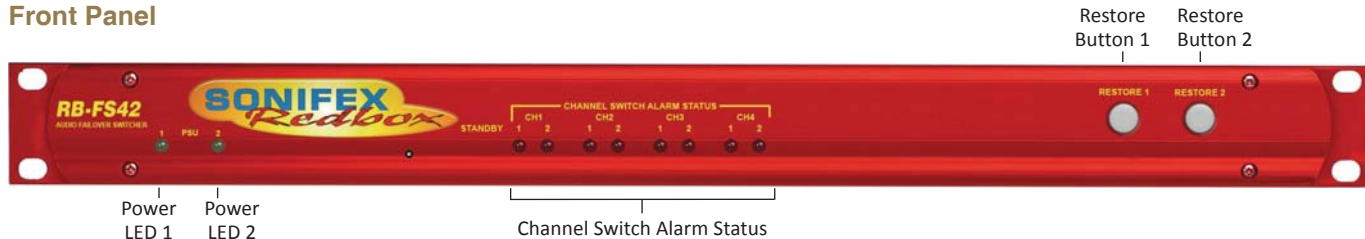


Fig 1-3: The RB-FS42 Front Panel

The front panel consists of 10 LED indicators, two lit RESTORE buttons and a recessed reset switch. The left-most pair of green LEDs are PSU indicators. Next there is a pair of red LEDs for each Main channel. The two RESTORE buttons on the right end of the panel are lit by bi-colour red/green LEDs.

The behaviour of each indicator is as follows:

PSU1 and PSU2

These LEDs will be on solid green when there is a valid power supply connected to the respective input on the rear panel. The LED will be off when no power is detected. The LED will flash if power is detected but the voltage is too low.

Channel LED 1 and 2

Each LED corresponds to the activity of the respective Standby signal (1 or 2). When both LEDs are off, the Main channel in question is routing “Through”. The first LED will light if the Main channel in question is routing Standby 1 path. Conversely the second LED will light if the Main channel

is routing Standby 2 path. Both LEDs will flash for a channel that is routing “Silence” or routing “Through” whilst the input is Alarmed.

Restore Button LEDs

Solid green indicates that the respective Standby channel is not Alarmed and is not being used. Solid red occurs when the respective Standby channel is in an Alarmed state. Solid orange signifies that the respective Standby signal is being routed to a Main channel which is in an Alarmed state. Flashing orange indicates that the respective Standby signal is being routed to a Main channel which is no longer in an Alarmed state and is ready to be restored. This flashing orange state will only occur if the Main channel in question is not set to Auto Restore.

Restore Buttons

STANDBY RESTORE

The restore buttons can be used to perform several functions. As described above they are used to restore Main channels from Standby when those channels are configured in manual mode.

GLOBAL RESTORE

You can also modify the Global Restore option by using the right-most button (RESTORE 2). Pressing and holding this button will cause the LEDs to cycle through three different indications; Double Orange, Double Red then Double Green. Each Indication corresponds to a different setting of the Global Restore option. Whilst the buttons are indicating the option you desire, let go of the RESTORE 2 button to set the Global Restore option:

- Double Orange is Global Auto Restore. Global Automatic sets all channels to auto restore, useful as a quick method of restoring multiple channels.
- Double Red is Global Manual. Global Manual, sets all channels to manual restore, which can be useful for fault finding etc.
- Double Green is Global GUI configuration. Global GUI sets each channel restore option back to that which has been configured using the web based GUI.

Factory Reset

The two RESTORE buttons can also be used for two special reset cases. Holding RESTORE 1 while the unit is power cycled or reset, will cause the unit configuration to be reset to factory defaults. All options are reset to defaults including any network settings that have been modified. The PSU Status LEDs will flash when the unit reboots to indicate that the factory reset has taken place.

Boot Mode

Holding both RESTORE buttons while the unit is power cycled or reset, will cause the unit to revert to Bootstrap Mode.

Warning: This removes the main firmware from the unit and should not be necessary unless the unit has been loaded with incorrect or corrupted firmware. Once in Bootstrap Mode you will need to load correct main firmware back into the unit using the web based GUI as normal.

Rear Panel Connections

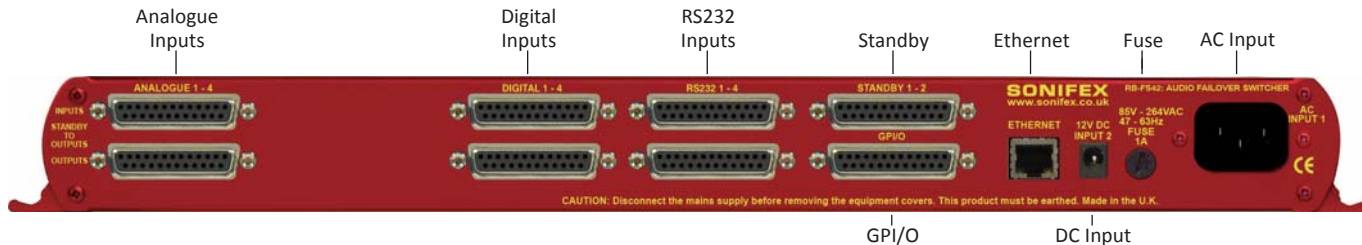


Fig 1-4: The RB-FS42 Rear Panel

The back panel consists of 18 x 25 way D-Type sockets, an Ethernet port and power inlets.

Ethernet Port

The Ethernet port is a standard RJ-45 connector on the rear panel. It is a 10/100Mbps link and has green and amber indicators for link status and speed selection. The unit can be controlled remotely over the Ethernet connection using the built-in webserver. By default the unit is configured for dynamic addressing using DHCP.

The connections for the RJ45 connector are as follows:

Ethernet Connector (RJ-45)			
Pin No.	Function	Pin No.	Function
Pin 1	Transmit data (+)	Pin 5	No connection
Pin 2	Transmit data (-)	Pin 6	Receive data (-)
Pin 3	Receive data (+)	Pin 7	No connection
Pin 4	No connection	Pin 8	No connection

AC Power Input

The AC power is applied via a standard three-pin IEC male socket. Mains voltages between 85V and 264V AC and frequencies between 47 and 63Hz are accepted without adjustment.

A 2A, 5 x 20mm SB fuse is used. The Earth pin MUST be connected to ensure safety.

DC Power Input

The DC power is applied via a locking 2.5mm power socket 1 x 12V 1A DC supply,

Analogue, AES/EBU Digital & RS232 Input & Outputs

The top row of D-Types take the input signals and from left to right correspond to; Analogue Channels 1 – 4, Digital Channels 1 – 4 and Standby Channels 1 and 2 for each signal type.

The first four bottom D-Types from left to right supply the output signals for the corresponding inputs above them.

See the 'D-Type Connection Details' section for specific connection details for each connector.

25 Way D-Type Connection Details

The following table gives the pin out for the main analogue, digital and RS232 input and output channels, according to standard D-Type pin ordering.

Pin No	Analogue 1 Signals (Channels 1 - 4)	AES/EBU Digital Signals	RS232 Signals
Pin 1	Ch1 L - Phase	Ch1 - Phase	Ch1 - TXD
Pin 14	Ch1 L - Non-Phase	Ch1 - Non-Phase	Ch1 - RXD
Pin 2	Screen	Screen	Screen
Pin 15	Ch1 R - Phase	Ch2 - Phase	Ch2 - TXD
Pin 3	Ch1 R - Non-Phase	Ch2 - Non-Phase	Ch2 - RXD
Pin 16	Screen	Screen	Screen
Pin 4	Ch2 L - Phase	Ch3 - Phase	Ch3 - TXD
Pin 17	Ch2 L - Non-Phase	Ch3 - Non-Phase	Ch3 - RXD
Pin 5	Screen	Screen	Screen
Pin 18	Ch2 R - Phase	Ch4 - Phase	Ch4 - TXD
Pin 6	Ch2 R - Non-Phase	Ch4 - Non-Phase	Ch4 - RXD
Pin 19	Screen	Screen	Screen
Pin 7	Ch3 L - Phase	Ch5 - Phase	Ch5 - TXD
Pin 20	Ch3 L - Non-Phase	Ch5 - Non-Phase	Ch5 - RXD
Pin 8	Screen	Screen	Screen
Pin 21	Ch3 R - Phase	Ch6 - Phase	Ch6 - TXD
Pin 9	Ch3 R - Non-Phase	Ch6 - Non-Phase	Ch6 - RXD
Pin 22	Screen	Screen	Screen
Pin 10	Ch4 L - Phase	Ch7 - Phase	Ch7 - TXD
Pin 23	Ch4 L - Non-Phase	Ch7 - Non-Phase	Ch7 - RXD
Pin 11	Screen	Screen	Screen
Pin 24	Ch4 R - Phase	Ch8 - Phase	Ch8 - TXD
Pin 12	Ch4 R - Non-Phase	Ch8 - Non-Phase	Ch8 - RXD
Pin 25	Screen	Screen	Screen
Pin 13	N/C	N/C	N/C

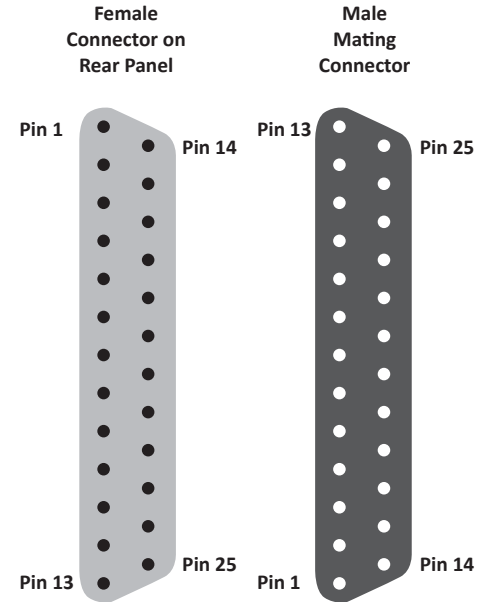


Fig 1-5: The RB-FS42 Female and Male Connectors

GPIO Connector

The last D-Type on the bottom of the rear panel is the GPIO connector and is the location of the 10 GPI Alarm pins corresponding to each of the input signal paths. The 10 pins for the closing contact alarms generated by the RB-FS82 are also here, along with ground reference pins to facilitate the operation of the GPIs in active low mode.

Pin No.	Signal	I/O	Description
Pin 1	GPO1-1	O	Closing Contact Alarm 1
Pin 14	GPO1-2	O	Closing Contact Alarm 2
Pin 2	GPO2-1	O	Closing Contact Alarm 3
Pin 15	GPO2-2	O	Closing Contact Alarm 4
Pin 3	GPO3-1	O	Closing Contact Alarm 5
Pin 16	GPO3-2	O	Closing Contact Alarm 6
Pin 4	GPO4-1	O	Closing Contact Alarm 7
Pin 17	GPO4-2	O	Closing Contact Alarm 8
Pin 5	GPO5-1	O	Closing Contact Alarm 9
Pin 18	GPO5-2	O	Closing Contact Alarm 10
Pin 6	GPI-1	I	General Purpose Input 1 - Alarm Signal
Pin 19	GPI-2	I	General Purpose Input 2 - Alarm Signal
Pin 7	GPI-3	I	General Purpose Input 3 - Alarm Signal
Pin 20	GPI-4	I	General Purpose Input 4 - Alarm Signal
Pin 8	GPI-5	I	General Purpose Input 5 - Alarm Signal
Pin 21	GPI-6	I	General Purpose Input 6 - Alarm Signal
Pin 9	GPI-7	I	General Purpose Input 7 - Alarm Signal
Pin 22	GPI-8	I	General Purpose Input 8 - Alarm Signal
Pin 10	GPI-9	I	General Purpose Input 9 - Alarm Signal
Pin 23	GPI-10	I	General Purpose Input 10 - Alarm Signal
Pin 11	N/C	-	
Pin 24	N/C	-	
Pin 12	DGND	-	Ground Return for External Circuits
Pin 25	DGND	-	Ground Return for External Circuits
Pin 13	DGND	-	Ground Return for External Circuits

Standby 1 - 2 Connector

The following table gives the connections for the Standby Channel connectors.

Pin No.	Type	Signal
Pin 1	Standby 1 RS232	SB1-TXD
Pin 14	Standby 1 RS232	SB1-RXD
Pin 2	Screen	SCREEN
Pin 15	Standby 2 RS232	SB2-TXD
Pin 3	Standby 2 RS232	SB2-RXD
Pin 16	Screen	SCREEN
Pin 4	Standby 1 AES/EBU Phase	SB1 Digital P
Pin 17	Standby 1 AES/EBU Non-Phase	SB1 Digital NP
Pin 5	Screen	SCREEN
Pin 18	Standby 2 AES/EBU Phase	SB2 Digital P
Pin 6	Standby 2 AES/EBU Non-Phase	SB2 Digital NP
Pin 19	Screen	SCREEN
Pin 7	Standby 1 Analogue Left Phase	SB1 Left P
Pin 20	Standby 1 Analogue Left Non-Phase	SB1 Left NP
Pin 8	Screen	SCREEN
Pin 21	Standby 1 Analogue Right Phase	SB1 Right P
Pin 9	Standby 1 Analogue Right Non-Phase	SB1 Right NP
Pin 22	Screen	SCREEN
Pin 10	Standby 2 Analogue Left Phase	SB2 Left P
Pin 23	Standby 2 Analogue Left Non-Phase	SB2 Left NP
Pin 11	Screen	SCREEN
Pin 24	Standby 2 Analogue Right Phase	SB2 Right P
Pin 12	Standby 2 Analogue Right Non-Phase	SB2 Right NP
Pin 25	Screen	SCREEN
Pin 13	-	N/C

Typical Application

The primary application of the RB-FS42 is to monitor the status of 4 main signal groups and, in the event of an alarm status, route one of 2 standby signal groups accordingly. The statuses of both the 4 main signal groups and the 2 standby groups are monitored via GPI pins located on the rear of the unit. In this example, the term 'passive through' refers to the input being routed to the output directly.

Imagine you have your 4 main signal groups from decoders, for example, connected through the RB-FS42 to encoders. You would also have up to 2 standby signal groups connected to the standby inputs on the rear of the RB-FS42 and each decoder status would be relayed to the RB-FS42 using the GPI connections on the rear of the unit.

Whilst each decoder is working as expected, all GPI pins are inactive and the RB-FS42 is passively routing all of the decoded signal groups to the encoders connected at its outputs. All of the red indicators on the front panel are off and the two RESTORE buttons are illuminated green to show that they are not in use.

Failure Detection

When a problem occurs with decoder 6, for example, it activates the relevant GPI pin to alarm main signal group 6. The RB-FS42 immediately switches standby group 1 to main signal group 6 output. The corresponding red standby indicator illuminates for group 6 on the front panel of the RBFS42.

Also the RESTORE 1 button becomes illuminated orange to indicate that standby signal group 1 is in use.

Now imagine that decoder 4 were to fail as well. The RB-FS42 senses the alarm GPI status and immediately switches standby signal group 2 to main signal group 4 output. Again, the corresponding red standby indicator illuminates for group 4 on the front panel of the RB-FS42 and the RESTORE

2 button becomes illuminated orange to indicate that standby signal group 2 is in use.

If any more decoders were to signal an alarm status, the RB-FS42 would be unable to switch the output in question to a standby signal group, as both are already in use. In this case you may configure the behaviour in one of two ways; the RB-FS42 can either continue to route through the signal group despite the alarmed state, or the RB-FS42 can break the signal paths and route "silence" instead. In either case, both of the red front panel indicators flash simultaneously to indicate that a signal source is alarmed and is not routing a standby signal group.

Setting a Priority Signal Input

There is a Priority feature which can be configured for any one of the 4 main signal groups. Following the example above, if main signal group 1 were defined as the priority and it was to become alarmed (whilst both standby signal groups were already being used by main groups 6 and 4), then the most recently routed standby signal group, in this case standby 2, would be "stolen" by signal group 1 and main signal group 4 would route either "silence" or passive through.

Restoring Signals

Now let's say that decoder 4 begins functioning normally and removes its alarm status. If signal group 4 is configured to Automatic Restore mode, the RB-FS42 immediately switches the signal path back to passive through, if it was not already in this state. The red front panel indicators for signal group 4 both turn off to indicate that there is no longer an alarm condition.

If signal groups 6 and 1 are both configured as Manual Restore mode, when their respective alarm conditions are lifted the RB-FS42 indicates that each channel can now be restored by flashing the relevant RESTORE button orange. Pressing the RESTORE button turns off the red front panel indicators for the relevant signal group and also illuminates the RESTORE button green to show that this standby signal group is no longer in use.

GPI Operation

There are GPI pins to sense the status of the 2 standby signal groups as well. If the status of a standby group becomes alarmed whilst it is being routed to one of the 4 main signal outputs, then the main signal output switches to its routing preference, either silence or passive through. This is equivalent to having the standby signal stolen by a higher priority main signal group.

Power Supply Monitoring

The RB-FS42 monitors each power supply connection and displays a status and an approximate voltage reading for both on the webpage. When a power supply is operating at an acceptable level the front panel green indicator will be on solidly. If though a 12V battery pack was connected to the DC input which was in a state of discharge, it may only produce 10.5V - anything below 11V is seen by the RB-FS42 as a fault. In this case the green front panel indicator flashes to indicate this and any associated enabled alarms or SNMP traps are also generated.

Alarm Output Relays & SNMP

There are 5 closing contact relays present on the rear panel GPIO connector. These are used to create alarms from the RB-FS42 in various circumstances. There is an alarm for the validity of each power supply, one to show the usage state of each standby signal group and a summary alarm, which is active whenever any other alarm is present.

In addition to these physical alarm signals the RB-FS42 can generate SNMP Traps upon most actions: PSU failure, PSU return, Standby activation/deactivation and any change to a main signal group routing. The current status of all main and standby signal group inputs and outputs, along with power supply states and levels can be read back by a Network Management System (NMS) using SNMP Get functionality.

The configuration of the options and alarms mentioned above is performed via the built in web browser based GUI.

Network Discovery & Webserver Configuration

In addition to any physical controls the RB-FS42 has a built in webserver which can allow you to control and configure the unit remotely through a web browser. The webpage interface also enables you to view status information, alter network settings, and update product firmware.

The RB-FS42 network interface employs Zeroconf networking, meaning that it supports DHCP, AutoIP and MDNS-SD using Bonjour. We provide a free application available for download from our website (www.sonifex.co.uk/technical/software), to facilitate the discovery and use of Sonifex network enabled hardware, see below for more information.

Connecting to the unit:

Connecting to the webpage interface is as simple as typing the IP address of the unit into the address bar of a web browser on a PC connected to the same network.

DHCP

The RB-FS42 will have DHCP and AutoIP enabled by default, if your network has a DHCP server then the unit will be assigned an IP address which can be found easily by using the Sonifex service discovery application, or by contacting your network administrator. The nature of DHCP means that the unit is not guaranteed to maintain a fixed IP address each time it is reconnected to the network. See the section on static network settings below for information on how to fix the IP address of the unit.

AutoIP

If your network does not support DHCP or it is disabled, then with AutoIP enabled the unit will assign itself an IP address from the AutoIP range (169.254.1.0 to 169.254.254.255). Once an AutoIP address has been assigned you will need to connect the unit directly to a PC using an Ethernet cable. Ensure that the PC has dynamic addressing enabled and you will be

able to use the Sonifex discovery application on this mini network to access the webpage interface.

Static Network Settings

Accessing the webpage interface allows you to configure the network settings as you like. To give the unit a fixed network address, enter appropriate static details and disable both DHCP and AutoIP. The unit will now apply the static network settings whenever it is connected to a network.

MDNS-SD and Bonjour

Bonjour is a hardware discovery service developed by Apple and as such it is natively supported by Apple devices and operating systems. Bonjour for Windows is available, go to our website (www.sonifex.co.uk/technical/software) or other download stores and download the appropriate version for your operating system.

On a Bonjour enabled device or system, you can connect to a unit using only its hostname. By default the hostname for the RB-FS42 will be the hardware ID appended by the unique serial number of the unit:

[Hardware ID] – [Serial No.]

RB-FS42-654321

To connect to a unit using Bonjour you can simply discover and launch the webpage interface from the Sonifex service discovery application. Alternatively you can simply type the hostname appended by the local domain name into the address bar of your web browser, for the example above you would enter the following:

RB-FS42-654321.local.

The hostname is independent of the IP address and this means that the unit can always be discovered and accessed in this way, regardless of which IP address it has been assigned by a DHCP server. The hostname can be changed to make it more memorable or descriptive of an implementation, however, conflicting names should be avoided.

Sonifex Service Discovery App

This is a free download for Windows, available from our website (www.sonifex.co.uk/technical/software). This application uses Bonjour to locate networked hardware and discover what services it has to offer. On a device or system running Bonjour you can discover Sonifex hardware and launch the webserver interface if available. The application also offers legacy discovery for systems which do not support Bonjour or for Sonifex hardware which is not running MDNS-SD.

The web based GUI has a menu bar that allows you to navigate through various pages to configure different aspects of the unit. Each page follows the same standard layout as the Home page, with current status/configuration settings on the left and tooltip explanations in the box on the right. The page footer contains contact details for Sonifex LTD. A brief overview of each page follows:

Home: This page allows you to view the current status of the input/output ports and the power supplies. The page automatically updates to show current data from the unit.

Device Info: This page useful information about the unit you are connected such as the Version Number, Serial Number, MAC Address and active Network Address.

Network: This page allows you to change the network settings of the unit.

SNMP: This page allows you to change the community string for this unit. You can also configure, enable / disable, up to 3 SNMP trap destinations, which will receive any SNMP traps generated by the RB-FS42 as it functions.

Channels: This page allows you to configure various settings for each of the 10 channels (4 Main and 2 Standby). At the top there are two global settings, Global Restore, which is described previously, and Priority. The Priority setting allows the implementation to favour one channel above all others. This basically means that in the event of the Priority channel becoming Alarmed whilst both Standby channels are already in use, the

Priority channel will “steal” a Standby channel from one of the other, lower priority channels.

For each of the 4 Main channels you can specify whether the path should Auto restore or not, and you can pick the routing preference for when no Standby is available. There is the option to select whether you want the GPI alarm pin to be active high or active low for each channel. You can also enable and disable various SNMP traps relating to each channel here. For the standby channels there are more SNMP trap enable/disable options.

Power: This page allows you to enable/disable various SNMP traps relating to PSU1 and PSU2.

GPO: This page lets you mask/unmask the Alarms (closing contacts) generated from the FS42. Useful, for example, if you are only going to be using PSU1 you can prevent the PSU2 alarm from activating.

LEDs: This page simply lets you control the relative brightness of the LEDs on the front panel, in graduated steps from 1 – 5, with 5 being the brightest.

Update: This page allows you to load new firmware into the unit. Simply browse to the location of the correct .dwn file and click update.

Reset to Defaults: This is a button which restores the majority of the units settings to default values.

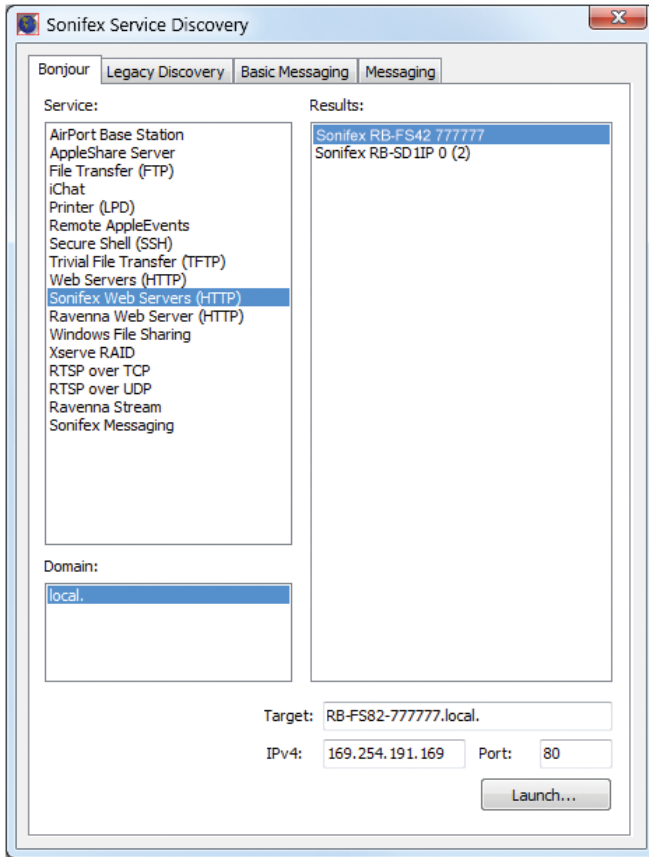


Fig 1-6: The RB-FS42 Bonjour Panel

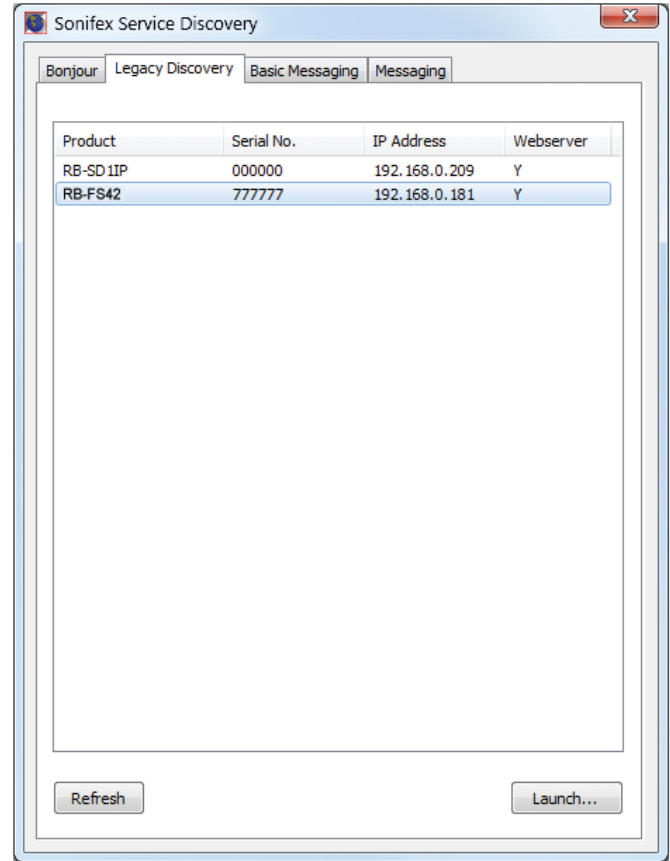


Fig 1-7: The RB-FS42 Legacy Discovery Panel

Device Info

SONIFEX
Manufacturers of audio & video equipment for radio & TV studios

RB-FS42

Home | Device Info | Network | Configuration | Update | Set to Defaults

DEVICE

Device: RB-FS42
 Serial Number: 777777
 Description: Redbox Failover Switch 8 Main, 2 Standby
 Firmware Version: V1.03

NETWORK

Host Name: RB-FS42-777777
 Active IP Address: 192.168.0.220
 Active Netmask: 255.255.255.0
 Active Gateway: 192.168.0.149
 MAC Address: 00.50.C2.05.A9.BE

Device Information
 This page shows general information about the connected RB-FS42.

Sonifex Ltd, 61 Station Road, Ithlingborough, Northants, NN19 5QE, UK. Tel: +44 (0)1933 650700 Fax: +44 (0)1933 650726 Email: sales@sonifex.co.uk

Fig 1-8: The RB-FS42 Device Info Panel

Device Info: This page useful information about the unit you are connected such as the Version Number, Serial Number, MAC Address and active Network Address.

Home Page

SONIFEX
Manufacturers of audio & video equipment for radio & TV studios

RB-FS42

Home | Device Info | Network | **Configuration** | Update | Set to Defaults

Home

HOME

Input Status

1 2 3 4 S1 S2
 [Red] [Green] [Green] [Red] [Green] [Green]

Output Status

1 2 3 4
 [Green] [Green] [Green] [Grey]

PSU 1 PSU 2

PSU Status: [Green] [Green]
 PSU Voltage: 12.0V 12.7V

Home Page

Input Status
 The current status of the 8 main input channels and each of the 2 standby channels. Green indicates a valid signal and red indicates an invalid signal.

Output Status
 The current status of the 8 output channels. Green indicates a valid signal, red indicates an invalid signal and grey indicates that the channel is routing silence. If the channel is routing a standby signal, the standby channel number will appear inside the indicator.

NOTE: The Status for standby 1 and 2 are labelled '1' and '2' respectively. This is to allow clear indication of when a specific channel is routing a standby signal.

Power Supply Status
 The current status and an approximate voltage of each power supply are shown here. Red indicates that the voltage supplied is not within the acceptable range.

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Fig 1-9: The RB-FS42 Home Screen

Input Status

The current status of the 4 main input channels and each of the 2 standby channels. Green indicates a valid signal and red indicates an invalid signal.

Output Status

The current status of the 4 output channels. Green indicates a valid signal, red indicates an invalid signal and grey indicates that the channel is routing silence. If the channel is routing a standby signal, the standby channel number will appear inside the indicator.

Note: The Status for standby 1 and 2 are labelled “I” and “II” respectively. This is to allow clear indication of when a specific channel is routing a standby signal.

Power Supply Status

The current status and an approximate voltage of each power supply are shown here. Red indicates that the voltage supplied is not within the acceptable range.

Network Settings

SONIFEX
Manufacturers of audio & video equipment for radio & TV studios

RB-FS42

Home | Device Info | Network | Configuration | Update | Set to Defaults

NETWORK SETTINGS

Host Name: RB-FS42-777777

IP Address: 192.168.0.100

Netmask: 255.255.255.0

Gateway: 192.168.0.149

DHCP: Enable Disable

Auto IP: Enable Disable

Network Settings

Host Name
The Host Name for this unit is used for Multicast DNS Service Discovery. The default Host Name is the unit Hardware Type, appended with the unique Serial Number.

IP Address
Please enter the static IP Address that you wish to assign to this unit. The address must be in the correct form and the default address is: 192.168.0.100

Netmask
Please enter the Netmask of the network you wish to connect to. The default subnet mask is: 255.255.255.0

Gateway
Please enter the Gateway Address of your router. The default gateway address is: 192.168.0.149

DHCP
Disable to prevent the unit from requesting a dynamic address from a DHCP server.

Auto IP
Disable to prevent the unit from assigning itself an address from the Auto IP range.

NOTE: With both DHCP and Auto IP disabled the unit will use the static network settings entered here.

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Fig 1-10: The RB-FS42 Network Settings Screen

Host Name

The Host Name for this unit is used for Multicast DNS Service Discovery. The default Host Name is the unit Hardware Type, appended with the unique Serial Number.

IP Address

Please enter the static IP Address that you wish to assign to this unit. The address must be in the correct form and the default address is: 192.168.0.100

Netmask

Please enter the Netmask of the network you wish to connect to. The default subnet mask is: 255.255.255.0

Gateway

Please enter the Gateway Address of your router. The default gateway address is: 192.168.0.149

DHCP

Disable to prevent the unit from requesting a dynamic address from a DHCP server.

Auto IP

Disable to prevent the unit from assigning itself an address from the Auto IP range.

Note: With both DHCP and Auto IP disabled the unit will use the network settings entered above.

SNMP

Fig 1-11: The RB-FS42 SNMP Screen

Community String

The community string may be up to 20 characters long.

Trap Destination IP Addresses

You can set up to 3 different IP addresses which will receive all traps generated by the RB-FS42. Each destination can be enabled or disabled individually.

Note: The default community string is “public”. It is recommended that you change this to make it harder to guess, or descriptive of the implementation. However, SNMP Version 1 community strings are not secure - they are sent as raw bytes over the network, i.e. there is no encryption.

Channel Settings

Fig 1-12: The RB-FS42 Channel Settings Screen

Select each Channel you wish to configure from the drop down list and change its settings as required. Once you have configured all channels, hit submit.

Global Restore

You can choose to use restore options as configured for each individual channel (Per Channel), or set global Auto/Manual.

Note: this setting can also be controlled physically from the front panel of the unit

Priority

One of the 4 main channels can be set as a priority route for a standby signal. This priority channel will “steal” a standby signal, if necessary, from another channel when it detects a failure.

Status / Down / Up / Active / Inactive - Trap

Enable or disable the SNMP Trap which is generated when this channel changes output status, goes down or comes back up. There are additional Traps to indicate when a standby signal is active (in use) or inactive (not used).

Restore

The RB-FS42 can either automatically restore a channel from standby when the signal comes up, or wait for the user to manually restore the signal path.

Route Preference

When a channel is down, the first routing preference is always a standby channel, if both standby signals are in use by channels with higher priority, the RB-FS42 can either pass through the original signal or route silence.

GPI Alarm

Each of the 10 Channel Alarm GPI pins can be Active Low (alarmed when pulled to ground) or Active High (alarmed when left open).

Power Supply Trap Settings

POWER

PSU 1 Down Trap: Enable
 Disable

PSU 1 Up Trap: Enable
 Disable

PSU 2 Down Trap: Enable
 Disable

PSU 2 Up Trap: Enable
 Disable

Power Supply Trap Settings
Traps

This page lets you enable or disable SNMP Trap generation for specific events on each power supply. This is useful if you are only using one power supply, as you can prevent the unit from raising an unnecessary alarm with your NMS.

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Fig 1-13: The RB-FS42 Power Supply Trap Settings Screen

Traps

This page lets you enable or disable SNMP Trap generation for specific events on each power supply. This is useful if you are only using one power supply, as you can prevent the unit from raising an unnecessary alarm with your NMS.

GPO Settings

GPO

PSU 1 Fail: Enable
 Disable

PSU 2 Fail: Enable
 Disable

Standby 1 Active: Enable
 Disable

Standby 2 Active: Enable
 Disable

Summary Alarm: Enable
 Disable

GPO Settings
GPO Masks

There are 5 closing relay contact GPOs on the RB-FS42 and each is used to physically output one of the 5 main alarms from the unit. This page enables you to enable or disable the action of each alarm relay.

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Fig 1-14: The RB-FS42 GPO Settings Screen

GPO Masks

There are 5 closing relay contact GPOs on the RB-FS42 and each is used to physically output one of the 5 main alarms from the unit. This page enables you to enable or disable the action of each alarm relay.

LED Settings



Fig 1-15: The RB-FS42 LED Settings Screen

Brightness

This page allows you to select the brightness of the LEDs on the front panel of the RB-FS42. There are 5 options, with option 1 being the least bright.

Update



Fig 1-16: The RB-FS42 Update Screen

The current firmware version on this unit is shown at the top of the page. To find out if there is new firmware for your unit, check our website.

If an update is available, download the latest file from our website in the '.DWN' format.

Browse your computer to locate the appropriate firmware file. Once the correct file has been selected, hit submit/update.

Note: If updated with incorrect or corrupt firmware it may be necessary to recover the unit from boot mode. See the Handbook for details.

Technical Specifications

Audio Specification - Digital

The RB-FS42 uses passive fixed switching relays which don't affect the overall audio performance

Audio Specification - Analogue

Crosstalk: >86dB

Front Panel Operational Controls

Manual Switching: Via Restore 1 & Restore 2 push-buttons

Front Panel Indicators

Power LEDs: 2 x Power indicators

Channel Status LEDs: 8 x Standby status indicators, 2 per channel.

Standby Restore LEDs: 2 x illuminated buttons.

Rear Panel Connections

Analogue Inputs: 4 x differential stereo inputs across
1 x 25 way D-Types female

Digital Inputs: 4 x inputs on
1 x 25 way D-Type female

Analogue Outputs: 4 x inputs on
1 x 25 way D-Type female

Digital Outputs: 4 x outputs on
1 x 25 way D-Type female

RS232 Inputs: 4 x RS232 communication lines on
1 x 25 way D-Type female

RS232 Outputs: 4 x RS232 communication lines on
1 x 25 way D-Type female

GPI/O: 10 Inputs & 5 outputs on
1 x 25 pin D-Type female

Standby 1&2 Inputs: 2 x Analogue differential stereo inputs
2 x Stereo digital inputs
2 x RS232 Communication line pairs
on 1 x 25 way D-Type female

Ethernet Port: 10/100Mbps on 1 x RJ45 socket for IP control,
SNMP and web GUI

Mains Input (AC): 1 x Universal filtered IEC,
continuously rated 85-264VAC
@47- 63Hz, max 20W, plus
1 x 12V 1A DC supply,
2.5mm socket fused.

Nominal Input (DC): 12V DC

Maximum Operating
Range (DC): 5.5V to 13.5V DC

Software Undervolt
Alarm: $V_{in} < 11V$

or (Dual DC): 2 x 18V-75V 20W max, DC supply,
2.5mm socket fused.

Nominal Input (DC): 24V to 48V DC

Maximum Operating
Range (DC): 20V to 60V DC

Software Undervolt
Alarm: $V_{in} < 22V$

Fuse Rating (AC): 1 x Anti-surge fuse 2A 20 x 5mm

Equipment Type

RB-FS42: Audio failover switcher, 4 + 2 inputs

RB-FS42DC: Audio failover switcher, 4 + 2 inputs,
2 x DC inputs

Physical Specifications

Dimensions (Raw): 48cm(W) x 22cm(D) x 4.2cm(H) 1U
19" (W) x 8.7" (D) x 1.7" (H) 1U

Dimensions (Boxed): 55cm(W) x 28cm(D) x 17cm(H)
21.7"(W) x 11"(D) x 6.7"

Weight: Nett: 2.1kg Gross: 3.5kg
Nett: 4.6lb Gross: 7.7lb

* Note that this product is deeper than standard Redboxes

Accessories

RB-RK3: 1U Rear panel rack kit for large Redboxes

2 RB-FS82 Audio Failover Switcher, 8 Main I/O, 2 Standby I/O

Introduction



Fig 2-1: The RB-FS82 Front Panel

The RB-FS82 8 + 2 audio failover switcher is an important tool in many critical areas in telecommunications and broadcast chains. The device has 8 main + 2 standby, stereo analogue audio, AES/EBU digital audio and RS232 connections (both inputs and outputs) and can be configured via Ethernet for two main operational applications:

1. For switching of program sources to a standby destination in the event of a destination failure ('Standbys to outputs'). Typically this would be audio encoders at a program distribution head end (for audio over IP, E1 or other bearer networks), with "N" x programs feeding "N" x encoders. If an encoder fails the audio destined for that encoder gets routed to a standby encoder so ensuring the continuity of audio to network transport.
2. Switching of program sources, including standby sources, to destinations in the event of source failure ('Standbys to inputs'). Typically this would be audio decoders at a transmission site with "N" x programs and "N" x decoders feeding "N" x transmitters. If a decoder fails, the audio from a standby decoder, or other audio source such as an mp3 player, overrides the signal path to the transmitter so ensuring continuity on air.

The RB-FS82 supports any configuration of up to 8 main program signal paths ($N \leq 8$) and there are 2 standby program signal paths, in either mode of operation. Each program path simultaneously switches analogue L/R audio, AES/EBU digital audio and RS232 data. Each of these signals is wired on D-Type connectors on the rear panel.

All signal paths are passive and therefore completely transparent utilising relay based switching. This has the benefit of a "straight wire" topology during normal (alarm free) operation and also during any power outage to the device. An additional benefit of the passive signal path is AES/EBU bit transparency allowing throughput of AES/EBU AC3 Dolby E™ signals.

To ensure the passive nature of the device, switching is determined by alarm (General Purpose) inputs, with this alarm signalling in turn being normally provided by the encoder or decoders (or other devices) at site. Recognising the mission critical nature of the system, a high grade of relay is used in the RB-FS82.

The passive design ensures continuity of audio in the event of any power outage. However the RB-FS82 also includes dual redundant power supplies (85V-264V AC with a 12V 1A DC backup as standard). The RB-FS82-DC model accepts two DC power inputs (24 - 48V DC) via locking 2.5mm pin power connectors and both power supplies are monitored by the unit. This means that if either power supply fails, the other is ready to take over. In the extremely unlikely event that both fail, the unit's passive signal path ensures a straight wire connection for all 8 program feeds (analogue, AES/EBU & RS232). This is essential for applications such as installation at transmitter sites, where a power failure to the unit will not prevent the audio input signal from being output to each of the supported 8 transmitters.

A row of LEDs on the front panel confirm the unit status, with each individual program path indicated as being in alarm with either Standby 1 or Standby 2 programs clearly confirmed as actively over-riding the failed signal. Alarm LEDs on the front panel are also indicated for power supply 1 failure and power supply 2 failure and these are mirrored by the device's own General Purpose Outputs so facilitating easy interfacing of the device with the addition of a summary alarm status GPO.

By monitoring and acting on a GPI Alarm pin for each signal path the unit can switch between: Through, Standby 1, Standby2 or Silence. The unit will always attempt to route a Standby path when a Main path alarm is detected and if both Standby paths are already in use, then one of the two remaining options (Through, Silence) will be used. The unit can be configured to either Automatically restore a Main 'through' path or wait for a Manual button press.

In the event of alarm clearing, the unit will automatically revert to normal operation, but a manual reversion mode is also provided, allowing for engineering investigation without the unit 'hunting' between different signal paths. Two buttons on the front panel, RESTORE 1 and RESTORE 2, allow manual restoration of the previously failed signal paths, away from Standby 1 and Standby 2 respectively.

To facilitate integration with site management systems the RB-FS82 supports SNMP V1 and is configured by a simple web based GUI. All relevant information regarding input/output status, alarms and power supplies is available via SNMP GET requests to the unit. Traps can also be generated for most of the actions which can occur, including power supply fail and input GPI alarms, etc.

Contact Sonifex for further information if you have a particular requirement that isn't catered for by the RB-FS82 as standard.

Category: Synchronisers, Delays & Silence Detectors.

Product Function: To route the source audio signals to a standby encoder in event of encoder fail. Or to route the destination audio signals from a standby decoder in event of decoder fail.

Typical Applications: As a failover switcher for multi channel audio transport over E1 or IP, typically as performed by APT Oslo, Prodys Nureus, where a N+1 topology is adopted.

Features:

- Relay based switching.
- Dual DC, or AC, power supplies (select when ordering).
- Encoder site (Set via IP): 8 stereo program inputs, 8 + 2 stereo program outputs where each program input/Output carries: analogue L/R, stereo AES/EBU & RS232.
- Encoder site: Each program output has an alarm detect GP input.
- Decoder Site (Set via IP): 8 +2 stereo program inputs, 8 program outputs where each program input carries: analogue L/R, stereo AES/EBU & RS232.
- Decoder Site: Each program input has an alarm detect GP input.
- AES/EBU transparent (for Dolby E transport).
- Passive throughput in event of power outage.
- GPO output for signalling RB-FS82 alarm conditions: PSU 1/2 fail, Standby 1/2 active, Summary Alarm.
- Automatic or Manual reversion modes.
- LED indicators on front panel.
- IP control, including Web GUI and SNMP.

Diagram Showing Typical Telecommunications Application

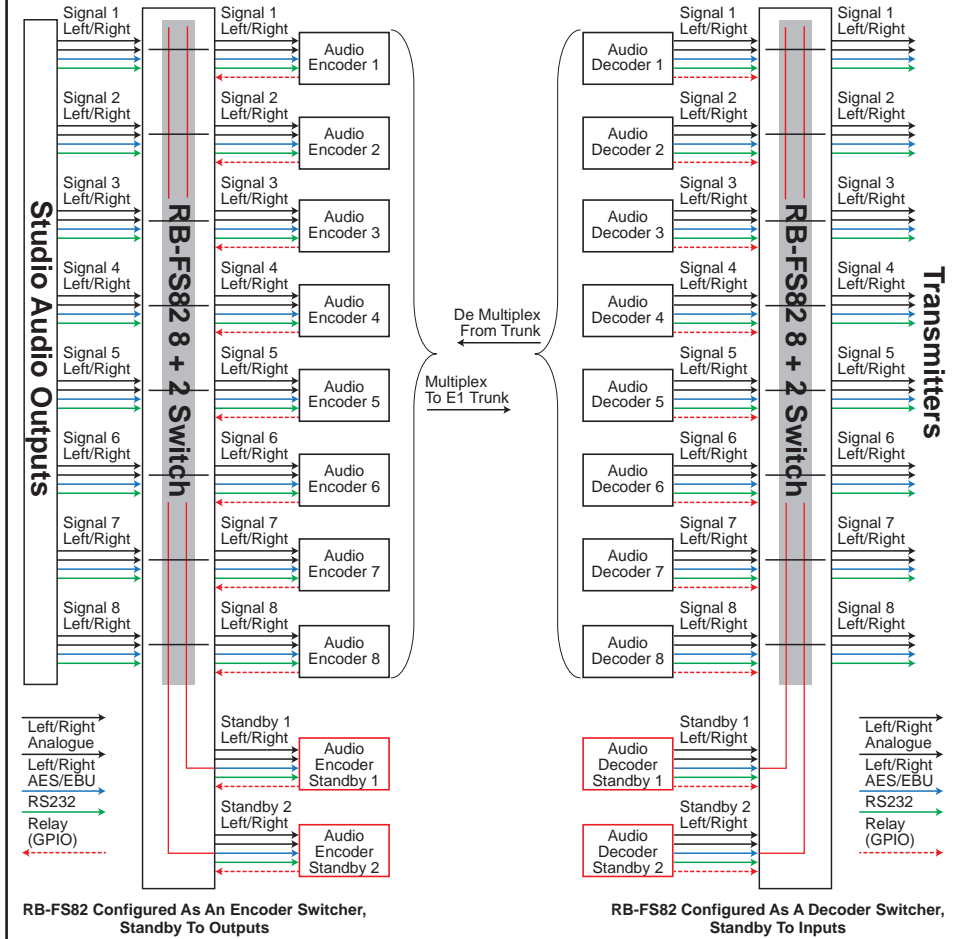


Fig 2-2: The RB-FS82 Diagram

Connections & Operation

Front Panel

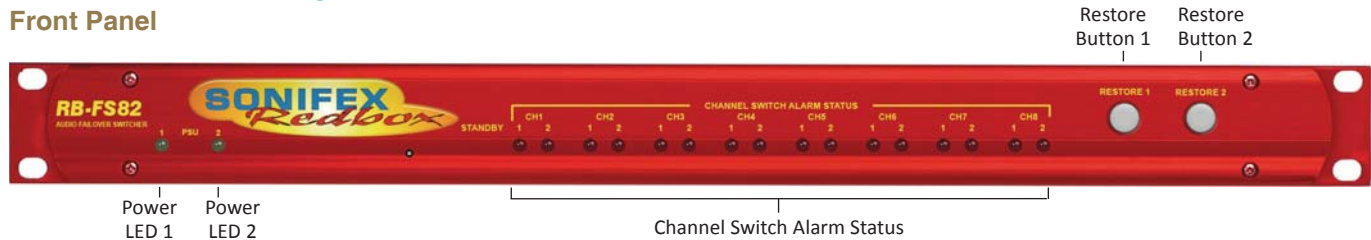


Fig 2-3: The RB-FS82 Front Panel

The front panel consists of 18 LED indicators, two lit RESTORE buttons and a recessed reset switch. The left-most pair of green LEDs are PSU indicators. Next there is a pair of red LEDs for each Main channel. The two RESTORE buttons on the right end of the panel are lit by bi-colour red/green LEDs.

The behaviour of each indicator is as follows:

PSU1 and PSU2

These LEDs will be on solid green when there is a valid power supply connected to the respective input on the rear panel. The LED will be off when no power is detected. The LED will flash if power is detected but the voltage is too low.

Channel LED 1 and 2

Each LED corresponds to the activity of the respective Standby signal (1 or 2). When both LEDs are off, the Main channel in question is routing “Through”. The first LED will light if the Main channel in question is routing Standby 1 path. Conversely the second LED will light if the Main channel

is routing Standby 2 path. Both LEDs will flash for a channel that is routing “Silence” or routing “Through” whilst the input is Alarmed.

Restore Button LEDs

Solid green indicates that the respective Standby channel is not Alarmed and is not being used. Solid red occurs when the respective Standby channel is in an Alarmed state. Solid orange signifies that the respective Standby signal is being routed to a Main channel which is in an Alarmed state. Flashing orange indicates that the respective Standby signal is being routed to a Main channel which is no longer in an Alarmed state and is ready to be restored. This flashing orange state will only occur if the Main channel in question is not set to Auto Restore.

Restore Buttons

STANDBY RESTORE

The restore buttons can be used to perform several functions. As described above they are used to restore Main channels from Standby when those channels are configured in manual mode.

GLOBAL RESTORE

You can also modify the Global Restore option by using the right-most button (RESTORE 2). Pressing and holding this button will cause the LEDs to cycle through three different indications; Double Orange, Double Red then Double Green. Each Indication corresponds to a different setting of the Global Restore option. Whilst the buttons are indicating the option you desire, let go of the RESTORE 2 button to set the Global Restore option:

- Double Orange is Global Auto Restore. Global Automatic sets all channels to auto restore, useful as a quick method of restoring multiple channels.
- Double Red is Global Manual. Global Manual, sets all channels to manual restore, which can be useful for fault finding etc.
- Double Green is Global GUI configuration. Global GUI sets each channel restore option back to that which has been configured using the web based GUI.

Factory Reset

The two RESTORE buttons can also be used for two special reset cases. Holding RESTORE 1 while the unit is power cycled or reset, will cause the unit configuration to be reset to factory defaults. All options are reset to defaults including any network settings that have been modified. The PSU Status LEDs will flash when the unit reboots to indicate that the factory reset has taken place.

Boot Mode

Holding both RESTORE buttons while the unit is power cycled or reset, will cause the unit to revert to Bootstrap Mode.

Warning: This removes the main firmware from the unit and should not be necessary unless the unit has been loaded with incorrect or corrupted firmware. Once in Bootstrap Mode you will need to load correct main firmware back into the unit using the web based GUI as normal.

Rear Panel Connections



Fig 2-4: The RB-FS82 Rear Panel

The back panel consists of 10 x 25 way D-Type sockets, an Ethernet port and power inlets.

Ethernet Port

The Ethernet port is a standard RJ-45 connector on the rear panel. It is a 10/100Mbps link and has green and amber indicators for link status and speed selection. The unit can be controlled remotely over the Ethernet connection using the built-in webserver. By default the unit is configured for dynamic addressing using DHCP.

The connections for the RJ45 connector are as follows:

Ethernet Connector (RJ-45)			
Pin No.	Function	Pin No.	Function
Pin 1	Transmit data (+)	Pin 5	No connection
Pin 2	Transmit data (-)	Pin 6	Receive data (-)
Pin 3	Receive data (+)	Pin 7	No connection
Pin 4	No connection	Pin 8	No connection

AC Power Input

The AC power is applied via a standard three-pin IEC male socket. Mains voltages between 85V and 264V AC and frequencies between 47 and 63Hz are accepted without adjustment.

A 2A, 5 x 20mm SB fuse is used. The Earth pin **MUST** be connected to ensure safety.

DC Power Input

The DC power is applied via a locking 2.5mm power socket 1 x 12V 1A DC supply,

Analogue, AES/EBU Digital & RS232 Input & Outputs

The top row of D-Types take the input signals and from left to right correspond to; Analogue Channels 1 – 4, Analogue Channels 5 – 8, Digital Channels 1 – 8 and Standby Channels 1 and 2 for each signal type.

The first four bottom D-Types from left to right supply the output signals for the corresponding inputs above them.

See the 'D-Type Connection Details' section for specific connection details for each connector.

25 Way D-Type Connection Details

The following table gives the pin out for the main analogue, digital and RS232 input and output channels, according to standard D-Type pin ordering.

Pin No	Analogue 1 Signals (Channels 1 - 4)	Analogue 2 Signals (Channels 5 - 8)	AES/EBU Digital Signals	RS232 Signals
Pin 1	Ch1 L - Phase	Ch5 L - Phase	Ch1 - Phase	Ch1 - TXD
Pin 14	Ch1 L - Non-Phase	Ch5 L - Non-Phase	Ch1 - Non-Phase	Ch1 - RXD
Pin 2	Screen	Screen	Screen	Screen
Pin 15	Ch1 R - Phase	Ch5 R - Phase	Ch2 - Phase	Ch2 - TXD
Pin 3	Ch1 R - Non-Phase	Ch5 R - Non-Phase	Ch2 - Non-Phase	Ch2 - RXD
Pin 16	Screen	Screen	Screen	Screen
Pin 4	Ch2 L - Phase	Ch6 L - Phase	Ch3 - Phase	Ch3 - TXD
Pin 17	Ch2 L - Non-Phase	Ch6 L - Non-Phase	Ch3 - Non-Phase	Ch3 - RXD
Pin 5	Screen	Screen	Screen	Screen
Pin 18	Ch2 R - Phase	Ch6 R - Phase	Ch4 - Phase	Ch4 - TXD
Pin 6	Ch2 R - Non-Phase	Ch6 R - Non-Phase	Ch4 - Non-Phase	Ch4 - RXD
Pin 19	Screen	Screen	Screen	Screen
Pin 7	Ch3 L - Phase	Ch7 L - Phase	Ch5 - Phase	Ch5 - TXD
Pin 20	Ch3 L - Non-Phase	Ch7 L - Non-Phase	Ch5 - Non-Phase	Ch5 - RXD
Pin 8	Screen	Screen	Screen	Screen
Pin 21	Ch3 R - Phase	Ch7 R - Phase	Ch6 - Phase	Ch6 - TXD
Pin 9	Ch3 R - Non-Phase	Ch7 R - Non-Phase	Ch6 - Non-Phase	Ch6 - RXD
Pin 22	Screen	Screen	Screen	Screen
Pin 10	Ch4 L - Phase	Ch8 L - Phase	Ch7 - Phase	Ch7 - TXD
Pin 23	Ch4 L - Non-Phase	Ch8 L - Non-Phase	Ch7 - Non-Phase	Ch7 - RXD
Pin 11	Screen	Screen	Screen	Screen
Pin 24	Ch4 R - Phase	Ch8 R - Phase	Ch8 - Phase	Ch8 - TXD
Pin 12	Ch4 R - Non-Phase	Ch8 R - Non-Phase	Ch8 - Non-Phase	Ch8 - RXD
Pin 25	Screen	Screen	Screen	Screen
Pin 13	N/C	N/C	N/C	N/C

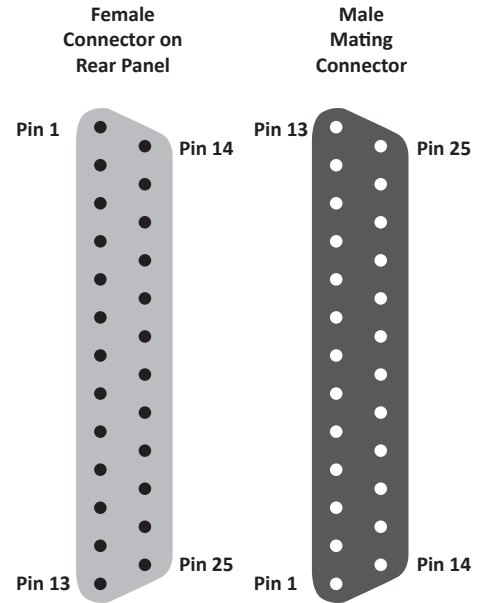


Fig 2-5: The RB-FS82 Female and Male Connectors

GPIO Connector

The last D-Type on the bottom of the rear panel is the GPIO connector and is the location of the 10 GPI Alarm pins corresponding to each of the input signal paths. The 10 pins for the closing contact alarms generated by the RB-FS82 are also here, along with ground reference pins to facilitate the operation of the GPIs in active low mode.

Pin No.	Signal	I/O	Description
Pin 1	GPO1-1	O	Closing Contact Alarm 1
Pin 14	GPO1-2	O	Closing Contact Alarm 2
Pin 2	GPO2-1	O	Closing Contact Alarm 3
Pin 15	GPO2-2	O	Closing Contact Alarm 4
Pin 3	GPO3-1	O	Closing Contact Alarm 5
Pin 16	GPO3-2	O	Closing Contact Alarm 6
Pin 4	GPO4-1	O	Closing Contact Alarm 7
Pin 17	GPO4-2	O	Closing Contact Alarm 8
Pin 5	GPO5-1	O	Closing Contact Alarm 9
Pin 18	GPO5-2	O	Closing Contact Alarm 10
Pin 6	GPI-1	I	General Purpose Input 1 - Alarm Signal
Pin 19	GPI-2	I	General Purpose Input 2 - Alarm Signal
Pin 7	GPI-3	I	General Purpose Input 3 - Alarm Signal
Pin 20	GPI-4	I	General Purpose Input 4 - Alarm Signal
Pin 8	GPI-5	I	General Purpose Input 5 - Alarm Signal
Pin 21	GPI-6	I	General Purpose Input 6 - Alarm Signal
Pin 9	GPI-7	I	General Purpose Input 7 - Alarm Signal
Pin 22	GPI-8	I	General Purpose Input 8 - Alarm Signal
Pin 10	GPI-9	I	General Purpose Input 9 - Alarm Signal
Pin 23	GPI-10	I	General Purpose Input 10 - Alarm Signal
Pin 11	N/C	-	
Pin 24	N/C	-	
Pin 12	DGND	-	Ground Return for External Circuits
Pin 25	DGND	-	Ground Return for External Circuits
Pin 13	DGND	-	Ground Return for External Circuits

Standby 1 - 2 Connector

The following table gives the connections for the Standby Channel connectors.

Pin No.	Type	Signal
Pin 1	Standby 1 RS232	SB1-TXD
Pin 14	Standby 1 RS232	SB1-RXD
Pin 2	Screen	SCREEN
Pin 15	Standby 2 RS232	SB2-TXD
Pin 3	Standby 2 RS232	SB2-RXD
Pin 16	Screen	SCREEN
Pin 4	Standby 1 AES/EBU Phase	SB1 Digital P
Pin 17	Standby 1 AES/EBU Non-Phase	SB1 Digital NP
Pin 5	Screen	SCREEN
Pin 18	Standby 2 AES/EBU Phase	SB2 Digital P
Pin 6	Standby 2 AES/EBU Non-Phase	SB2 Digital NP
Pin 19	Screen	SCREEN
Pin 7	Standby 1 Analogue Left Phase	SB1 Left P
Pin 20	Standby 1 Analogue Left Non-Phase	SB1 Left NP
Pin 8	Screen	SCREEN
Pin 21	Standby 1 Analogue Right Phase	SB1 Right P
Pin 9	Standby 1 Analogue Right Non-Phase	SB1 Right NP
Pin 22	Screen	SCREEN
Pin 10	Standby 2 Analogue Left Phase	SB2 Left P
Pin 23	Standby 2 Analogue Left Non-Phase	SB2 Left NP
Pin 11	Screen	SCREEN
Pin 24	Standby 2 Analogue Right Phase	SB2 Right P
Pin 12	Standby 2 Analogue Right Non-Phase	SB2 Right NP
Pin 25	Screen	SCREEN
Pin 13	-	N/C

Typical Application

The primary application of the RB-FS82 is to monitor the status of 8 main signal groups and, in the event of an alarm status, route one of 2 standby signal groups accordingly. The statuses of both the 8 main signal groups and the 2 standby groups are monitored via GPI pins located on the rear of the unit. In this example, the term ‘passive through’ refers to the input being routed to the output directly.

Imagine you have your 8 main signal groups from decoders, for example, connected through the RB-FS82 to encoders. You would also have up to 2 standby signal groups connected to the standby inputs on the rear of the RB-FS82 and each decoder status would be relayed to the RB-FS82 using the GPI connections on the rear of the unit.

Whilst each decoder is working as expected, all GPI pins are inactive and the RB-FS82 is passively routing all of the decoded signal groups to the encoders connected at its outputs. All of the red indicators on the front panel are off and the two RESTORE buttons are illuminated green to show that they are not in use.

Failure Detection

When a problem occurs with decoder 6, for example, it activates the relevant GPI pin to alarm main signal group 6. The RB-FS82 immediately switches standby group 1 to main signal group 6 output. The corresponding red standby indicator illuminates for group 6 on the front panel of the RBFS82.

Also the RESTORE 1 button becomes illuminated orange to indicate that standby signal group 1 is in use.

Now imagine that decoder 4 were to fail as well. The RB-FS82 senses the alarm GPI status and immediately switches standby signal group 2 to main signal group 4 output. Again, the corresponding red standby indicator illuminates for group 4 on the front panel of the RB-FS82 and the RESTORE

2 button becomes illuminated orange to indicate that standby signal group 2 is in use.

If any more decoders were to signal an alarm status, the RB-FS82 would be unable to switch the output in question to a standby signal group, as both are already in use. In this case you may configure the behaviour in one of two ways; the RB-FS82 can either continue to route through the signal group despite the alarmed state, or the RB-FS82 can break the signal paths and route “silence” instead. In either case, both of the red front panel indicators flash simultaneously to indicate that a signal source is alarmed and is not routing a standby signal group.

Setting a Priority Signal Input

There is a Priority feature which can be configured for any one of the 8 main signal groups. Following the example above, if main signal group 1 were defined as the priority and it was to become alarmed (whilst both standby signal groups were already being used by main groups 6 and 4), then the most recently routed standby signal group, in this case standby 2, would be “stolen” by signal group 1 and main signal group 4 would route either “silence” or passive through.

Restoring Signals

Now let’s say that decoder 4 begins functioning normally and removes its alarm status. If signal group 4 is configured to Automatic Restore mode, the RB-FS82 immediately switches the signal path back to passive through, if it was not already in this state. The red front panel indicators for signal group 4 both turn off to indicate that there is no longer an alarm condition.

If signal groups 6 and 1 are both configured as Manual Restore mode, when their respective alarm conditions are lifted the RB-FS82 indicates that each channel can now be restored by flashing the relevant RESTORE button orange. Pressing the RESTORE button turns off the red front panel indicators for the relevant signal group and also illuminates the RESTORE button green to show that this standby signal group is no longer in use.

GPI Operation

There are GPI pins to sense the status of the 2 standby signal groups as well. If the status of a standby group becomes alarmed whilst it is being routed to one of the 8 main signal outputs, then the main signal output switches to its routing preference, either silence or passive through. This is equivalent to having the standby signal stolen by a higher priority main signal group.

Power Supply Monitoring

The RB-FS82 monitors each power supply connection and displays a status and an approximate voltage reading for both on the webpage. When a power supply is operating at an acceptable level the front panel green indicator will be on solidly. If though a 12V battery pack was connected to the DC input which was in a state of discharge, it may only produce 10.5V - anything below 11V is seen by the RB-FS82 as a fault. In this case the green front panel indicator flashes to indicate this and any associated enabled alarms or SNMP traps are also generated.

Alarm Output Relays & SNMP

There are 5 closing contact relays present on the rear panel GPIO connector. These are used to create alarms from the RB-FS82 in various circumstances. There is an alarm for the validity of each power supply, one to show the usage state of each standby signal group and a summary alarm, which is active whenever any other alarm is present.

In addition to these physical alarm signals the RB-FS82 can generate SNMP Traps upon most actions: PSU failure, PSU return, Standby activation/deactivation and any change to a main signal group routing. The current status of all main and standby signal group inputs and outputs, along with power supply states and levels can be read back by a Network Management System (NMS) using SNMP Get functionality.

The configuration of the options and alarms mentioned above is performed via the built in web browser based GUI.

Network Discovery & Webserver Configuration

In addition to any physical controls the RB-FS82 has a built in webserver which can allow you to control and configure the unit remotely through a web browser. The webpage interface also enables you to view status information, alter network settings, and update product firmware.

The RB-FS82 network interface employs Zeroconf networking, meaning that it supports DHCP, AutoIP and MDNS-SD using Bonjour. We provide a free application available for download from our website (www.sonifex.co.uk/technical/software), to facilitate the discovery and use of Sonifex network enabled hardware, see below for more information.

Connecting to the unit:

Connecting to the webpage interface is as simple as typing the IP address of the unit into the address bar of a web browser on a PC connected to the same network.

DHCP

The RB-FS82 will have DHCP and AutoIP enabled by default, if your network has a DHCP server then the unit will be assigned an IP address which can be found easily by using the Sonifex service discovery application, or by contacting your network administrator. The nature of DHCP means that the unit is not guaranteed to maintain a fixed IP address each time it is reconnected to the network. See the section on static network settings below for information on how to fix the IP address of the unit.

AutoIP

If your network does not support DHCP or it is disabled, then with AutoIP enabled the unit will assign itself an IP address from the AutoIP range (169.254.1.0 to 169.254.254.255). Once an AutoIP address has been assigned you will need to connect the unit directly to a PC using an Ethernet cable. Ensure that the PC has dynamic addressing enabled and you will be

able to use the Sonifex discovery application on this mini network to access the webpage interface.

Static Network Settings

Accessing the webpage interface allows you to configure the network settings as you like. To give the unit a fixed network address, enter appropriate static details and disable both DHCP and AutoIP. The unit will now apply the static network settings whenever it is connected to a network.

MDNS-SD and Bonjour

Bonjour is a hardware discovery service developed by Apple and as such it is natively supported by Apple devices and operating systems. Bonjour for Windows is available, go to our website (www.sonifex.co.uk/technical/software) or other download stores and download the appropriate version for your operating system.

On a Bonjour enabled device or system, you can connect to a unit using only its hostname. By default the hostname for the RB-FS82 will be the hardware ID appended by the unique serial number of the unit:

[Hardware ID] – [Serial No.]
RB-FS82-654321

To connect to a unit using Bonjour you can simply discover and launch the webpage interface from the Sonifex service discovery application. Alternatively you can simply type the hostname appended by the local domain name into the address bar of your web browser, for the example above you would enter the following:

RB-FS82-654321.local.

The hostname is independent of the IP address and this means that the unit can always be discovered and accessed in this way, regardless of which IP address it has been assigned by a DHCP server. The hostname can be changed to make it more memorable or descriptive of an implementation, however, conflicting names should be avoided.

Sonifex Service Discovery App

This is a free download for Windows, available from our website (www.sonifex.co.uk/technical/software). This application uses Bonjour to locate networked hardware and discover what services it has to offer. On a device or system running Bonjour you can discover Sonifex hardware and launch the webservice interface if available. The application also offers legacy discovery for systems which do not support Bonjour or for Sonifex hardware which is not running MDNS-SD.

The web based GUI has a menu bar that allows you to navigate through various pages to configure different aspects of the unit. Each page follows the same standard layout as the Home page, with current status/configuration settings on the left and tooltip explanations in the box on the right. The page footer contains contact details for Sonifex LTD. A brief overview of each page follows:

Home: This page allows you to view the current status of the input/output ports and the power supplies. The page automatically updates to show current data from the unit.

Device Info: This page useful information about the unit you are connected such as the Version Number, Serial Number, MAC Address and active Network Address.

Network: This page allows you to change the network settings of the unit.

SNMP: This page allows you to change the community string for this unit. You can also configure, enable / disable, up to 3 SNMP trap destinations, which will receive any SNMP traps generated by the RB-FS82 as it functions.

Channels: This page allows you to configure various settings for each of the 10 channels (8 Main and 2 Standby). At the top there are two global settings, Global Restore, which is described previously, and Priority. The Priority setting allows the implementation to favour one channel above all others. This basically means that in the event of the Priority channel becoming Alarmed whilst both Standby channels are already in use, the

Priority channel will “steal” a Standby channel from one of the other, lower priority channels.

For each of the 8 Main channels you can specify whether the path should Auto restore or not, and you can pick the routing preference for when no Standby is available. There is the option to select whether you want the GPI alarm pin to be active high or active low for each channel. You can also enable and disable various SNMP traps relating to each channel here. For the standby channels there are more SNMP trap enable/disable options.

Power: This page allows you to enable/disable various SNMP traps relating to PSU1 and PSU2.

GPO: This page lets you mask/unmask the Alarms (closing contacts) generated from the FS82. Useful, for example, if you are only going to be using PSU1 you can prevent the PSU2 alarm from activating.

LEDs: This page simply lets you control the relative brightness of the LEDs on the front panel, in graduated steps from 1 – 5, with 5 being the brightest.

Update: This page allows you to load new firmware into the unit. Simply browse to the location of the correct .dwn file and click update.

Reset to Defaults: This is a button which restores the majority of the units settings to default values.

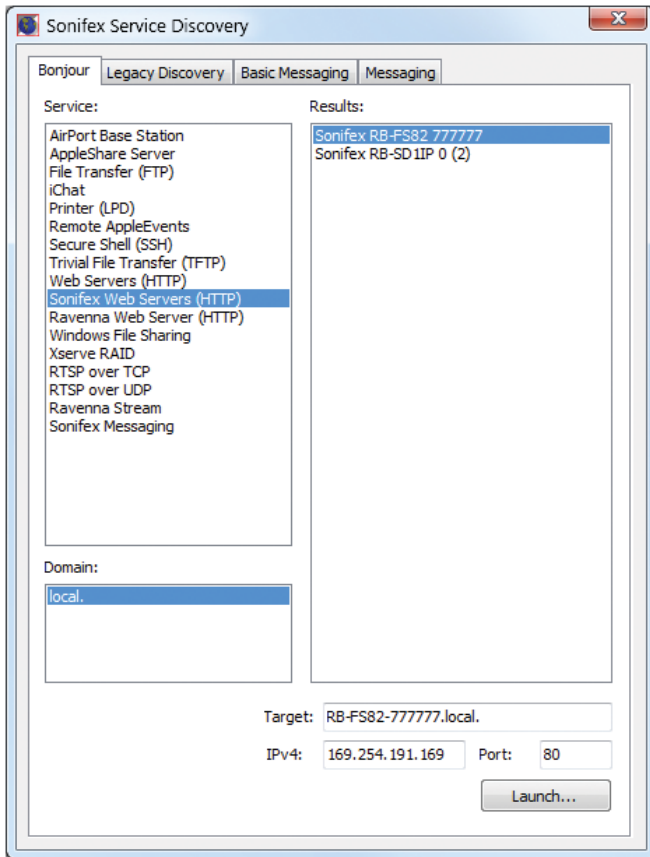


Fig 2-6: The RB-FS82 Bonjour Panel

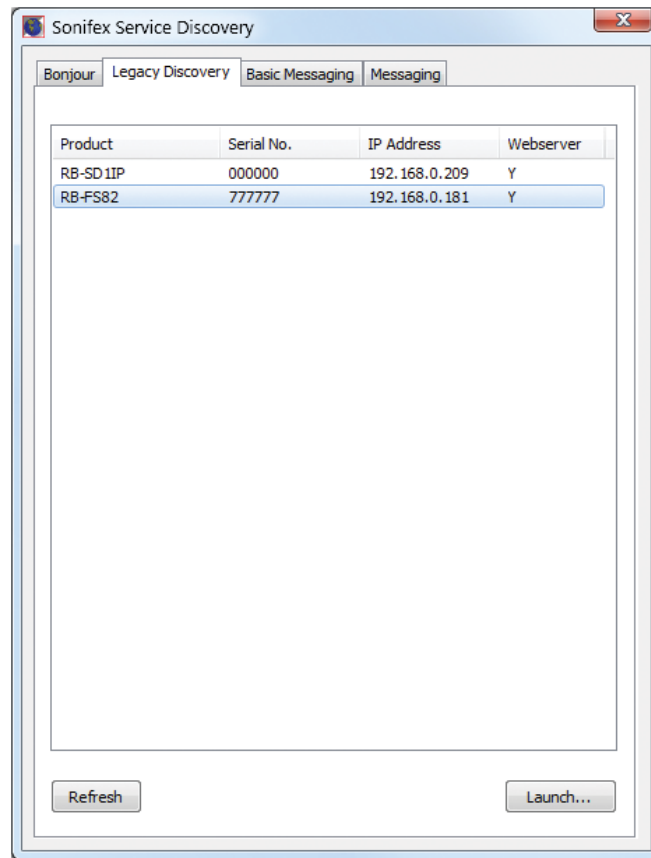


Fig 2-7: The RB-FS82 Legacy Discovery Panel

Device Info

SONIFEX
Manufacturers of audio & video equipment for radio & TV studios

RB-FS82

Home | Device Info | Network | Configuration | Update | Set to Defaults

DEVICE

Device: RB-FS82
 Serial Number: 777777
 Description: Redbox Failover Switch 8 Main, 2 Standby
 Firmware Version: V1.03

NETWORK

Host Name: RB-FS82-777777
 Active IP Address: 192.168.0.220
 Active Netmask: 255.255.255.0
 Active Gateway: 192.168.0.149
 MAC Address: 00:50:C2:05:A9:BE

Device Information
This page shows general information about the connected RB-FS82.

Sonifex Ltd, 61 Station Road, Irthlingborough, Northants, NN9 5QE, UK, Tel: +44 (0)1933 650700 Fax: +44 (0)1933 650726 Email: sales@sonifex.co.uk

Fig 2-8: The RB-FS82 Device Info Panel

Device Info: This page useful information about the unit you are connected such as the Version Number, Serial Number, MAC Address and active Network Address.

Home Page

SONIFEX
Manufacturers of audio & video equipment for radio & TV studios

RB-FS82

Home | Device Info | Network | Configuration | Update | Set to Defaults

HOME

SNMP
Channels
Power
LEDs

Input Status:
The current status of the 8 main input channels and each of the 2 standby channels. Green indicates a valid signal and red indicates an invalid signal.

1	2	3	4	5	6	7	8	S1	S2
■	■	■	■	■	■	■	■	■	■

Output Status:
The current status of the 8 output channels. Green indicates a valid signal, red indicates an invalid signal and grey indicates that the channel is routing silence. If the channel is routing a standby signal, the standby channel number will appear inside the indicator.

1	2	3	4	5	6	7	8
■	■	■	■	■	■	■	■

PSU 1 **PSU 2**

PSU Status: ■ ■
PSU Voltage: 12.0V 12.7V

Home Page
Input Status
The current status of the 8 main input channels and each of the 2 standby channels. Green indicates a valid signal and red indicates an invalid signal.

Output Status
The current status of the 8 output channels. Green indicates a valid signal, red indicates an invalid signal and grey indicates that the channel is routing silence. If the channel is routing a standby signal, the standby channel number will appear inside the indicator.

NOTE: The Status for standby 1 and 2 are labeled "1" and "2" respectively. This is to allow clear indication of when a specific channel is routing a standby signal.

Power Supply Status
The current status and an approximate voltage of each power supply are shown here. Red indicates that the voltage supplied is not within the acceptable range.

Sonifex Ltd, 61 Station Road, Irthlingborough, Northants, NN9 5QE, UK, Tel: +44 (0)1933 650700 Fax: +44 (0)1933 650726 Email: sales@sonifex.co.uk

Fig 2-9: The RB-FS82 Home Screen

Input Status

The current status of the 8 main input channels and each of the 2 standby channels. Green indicates a valid signal and red indicates an invalid signal.

Output Status

The current status of the 8 output channels. Green indicates a valid signal, red indicates an invalid signal and grey indicates that the channel is routing silence. If the channel is routing a standby signal, the standby channel number will appear inside the indicator.

Note: The Status for standby 1 and 2 are labelled “I” and “II” respectively. This is to allow clear indication of when a specific channel is routing a standby signal.

Power Supply Status

The current status and an approximate voltage of each power supply are shown here. Red indicates that the voltage supplied is not within the acceptable range.

Network Settings

NETWORK SETTINGS

Host Name:

IP Address:

Netmask:

Gateway:

DHCP: Enable Disable

Auto IP: Enable Disable

Network Settings

Host Name
The Host Name for this unit is used for Multicast DNS Service Discovery. The default Host Name is the unit Hardware Type, appended with the unique Serial Number.

IP Address
Please enter the static IP Address that you wish to assign to this unit. The address must be in the correct form and the default address is: 192.168.0.100

Netmask
Please enter the Netmask of the network you wish to connect to. The default subnet mask is: 255.255.255.0

Gateway
Please enter the Gateway Address of your router. The default gateway address is: 192.168.0.149

DHCP
Disable to prevent the unit from requesting a dynamic address from a DHCP server.

Auto IP
Disable to prevent the unit from assigning itself an address from the Auto IP range.

NOTE: With both DHCP and Auto IP disabled the unit will use the static network settings entered here.

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Fig 2-10: The RB-FS82 Network Settings Screen

Host Name

The Host Name for this unit is used for Multicast DNS Service Discovery. The default Host Name is the unit Hardware Type, appended with the unique Serial Number.

IP Address

Please enter the static IP Address that you wish to assign to this unit. The address must be in the correct form and the default address is: 192.168.0.100

Netmask

Please enter the Netmask of the network you wish to connect to. The default subnet mask is: 255.255.255.0

Gateway

Please enter the Gateway Address of your router. The default gateway address is: 192.168.0.149

DHCP

Disable to prevent the unit from requesting a dynamic address from a DHCP server.

Auto IP

Disable to prevent the unit from assigning itself an address from the Auto IP range.

Note: With both DHCP and Auto IP disabled the unit will use the network settings entered above.

SNMP

Fig 2-11: The RB-FS82 SNMP Screen

Community String

The community string may be up to 20 characters long.

Trap Destination IP Addresses

You can set up to 3 different IP addresses which will receive all traps generated by the RB-FS82. Each destination can be enabled or disabled individually.

Note: The default community string is “public”. It is recommended that you change this to make it harder to guess, or descriptive of the implementation. However, SNMP Version 1 community strings are not secure - they are sent as raw bytes over the network, i.e. there is no encryption.

Channel Settings

Fig 2-12: The RB-FS82 Channel Settings Screen

Select each Channel you wish to configure from the drop down list and change its settings as required. Once you have configured all channels, hit submit.

Global Restore

You can choose to use restore options as configured for each individual channel (Per Channel), or set global Auto/Manual.

Note: this setting can also be controlled physically from the front panel of the unit

Priority

One of the 8 main channels can be set as a priority route for a standby signal. This priority channel will “steal” a standby signal, if necessary, from another channel when it detects a failure.

Status / Down / Up / Active / Inactive - Trap

Enable or disable the SNMP Trap which is generated when this channel changes output status, goes down or comes back up. There are additional Traps to indicate when a standby signal is active (in use) or inactive (not used).

Restore

The RB-FS82 can either automatically restore a channel from standby when the signal comes up, or wait for the user to manually restore the signal path.

Route Preference

When a channel is down, the first routing preference is always a standby channel, if both standby signals are in use by channels with higher priority, the RB-FS82 can either pass through the original signal or route silence.

GPI Alarm

Each of the 10 Channel Alarm GPI pins can be Active Low (alarmed when pulled to ground) or Active High (alarmed when left open).

Power Supply Trap Settings

POWER

PSU 1 Down Trap: Enable
 Disable

PSU 1 Up Trap: Enable
 Disable

PSU 2 Down Trap: Enable
 Disable

PSU 2 Up Trap: Enable
 Disable

Power Supply Trap Settings Traps

This page lets you enable or disable SNMP Trap generation for specific events on each power supply. This is useful if you are only using one power supply, as you can prevent the unit from raising an unnecessary alarm with your NMS.

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Fig 2-13: The RB-FS82 Power Supply Trap Settings Screen

Traps

This page lets you enable or disable SNMP Trap generation for specific events on each power supply. This is useful if you are only using one power supply, as you can prevent the unit from raising an unnecessary alarm with your NMS.

GPO Settings

GPO

PSU 1 Fail: Enable
 Disable

PSU 2 Fail: Enable
 Disable

Standby 1 Active: Enable
 Disable

Standby 2 Active: Enable
 Disable

Summary Alarm: Enable
 Disable

GPO Settings GPO Masks

There are 5 closing relay contact GPOs on the RB-FS82 and each is used to physically output one of the 5 main alarms from the unit. This page enables you to enable or disable the action of each alarm relay.

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Fig 2-14: The RB-FS82 GPO Settings Screen

GPO Masks

There are 5 closing relay contact GPOs on the RB-FS82 and each is used to physically output one of the 5 main alarms from the unit. This page enables you to enable or disable the action of each alarm relay.

LED Settings



Fig 2-15: The RB-FS82 LED Settings Screen

Brightness

This page allows you to select the brightness of the LEDs on the front panel of the RB-FS82. There are 5 options, with option 1 being the least bright.

Update



Fig 2-16: The RB-FS82 Update Screen

The current firmware version on this unit is shown at the top of the page. To find out if there is new firmware for your unit, check our website.

If an update is available, download the latest file from our website in the 'DWN' format.

Browse your computer to locate the appropriate firmware file. Once the correct file has been selected, hit submit/update.

Note: If updated with incorrect or corrupt firmware it may be necessary to recover the unit from boot mode. See the Handbook for details.

Technical Specifications

Audio Specification - Digital

The RB-FS82 uses passive fixed switching relays which don't affect the overall audio performance

Audio Specification - Analogue

Crosstalk: >86dB

Front Panel Operational Controls

Manual Switching: Via Restore 1 & Restore 2 push-buttons

Front Panel Indicators

Power LEDs: 2 x Power indicators

Channel Status LEDs: 16 x Standby status indicators, 2 per channel.

Standby Restore LEDs: 2 x illuminated buttons.

Rear Panel Connections

Analogue Inputs: 8 x differential stereo inputs across
2 x 25 way D-Types female

Digital Inputs: 8 x inputs on
1 x 25 way D-Type female

Analogue Outputs: 8 x inputs on
1 x 25 way D-Type female

Digital Outputs: 8 x outputs on
1 x 25 way D-Type female

RS232 Inputs: 8 x RS232 communication lines on
1 x 25 way D-Type female

RS232 Outputs: 8 x RS232 communication lines on
1 x 25 way D-Type female

GPI/O: 10 Inputs & 5 outputs on
1 x 25 pin D-Type female

Standby 1&2 Inputs: 2 x Analogue differential stereo inputs
2 x Stereo digital inputs
2 x RS232 Communication line pairs
on 1 x 25 way D-Type female

Ethernet Port: 10/100Mbps on 1 x RJ45 socket for IP control,
SNMP and web GUI

Mains Input (AC): 1 x Universal filtered IEC,
continuously rated 85-264VAC
@47- 63Hz, max 20W, plus
1 x 12V 1A DC supply,
2.5mm socket fused.

Nominal Input (DC): 12V DC
Maximum Operating
Range (DC): 5.5V to 13.5V DC
Software Undervolt
Alarm: $V_{in} < 11V$

or (Dual DC): 2 x 18V-75V 20W max, DC supply,
2.5mm socket fused.

Nominal Input (DC): 24V to 48V DC
Maximum Operating
Range (DC): 20V to 60V DC
Software Undervolt
Alarm: $V_{in} < 22V$

Fuse Rating (AC): 1 x Anti-surge fuse 2A 20 x 5mm

Equipment Type

RB-FS82: Audio failover switcher, 8 + 2 inputs

RB-FS82DC: Audio failover switcher, 8 + 2 inputs,
2 x DC inputs

Physical Specifications

Dimensions (Raw): 48cm(W) x 22cm(D) x 4.2cm(H) 1U
19" (W) x 8.7" (D) x 1.7" (H) 1U

Dimensions (Boxed): 55cm(W) x 28cm(D) x 17cm(H)
21.7"(W) x 11"(D) x 6.7"

Weight: Nett: 2.2kg Gross: 3.6kg
Nett: 4.8lb Gross: 8.0lb

* Note that this product is deeper than standard Redboxes

Accessories

RB-RK3: 1U Rear panel rack kit for large Redboxes

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