AEROFLEX

4921, 4931 and 4932 RF Shields

User Guide

4921, 4931 and 4932 RF Shields

User Guide

Ordering information This guide is issued as part of a 4921, 4931 or 4932 RF Shield package. The ordering numbers for the product and the RF Shield package are as follows:

Table 1   Product ordering information

Ordering number	Description
AG248346	4921 RF Shield (N) (including RF cable N–N)
AG248721	RF Shield Package (4921 RF Shield, 4916 or 4918 Antenna Coupler)
AG100010	4931 RF Shield (including RF cable N–N)
AG100020	4932 RF Shield (including power supply, line cord, USB cable, RF cable N–N)

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About this guide

This section contains the following information:

Purpose and scope

This guide covers three Aeroflex RF Shield models (4921, 4931, 4932) that are of a similar design but differ in the features they offer. The purpose of this guide is to help you successfully use the features and capabilities of these models. The guide includes task-based instructions that describe how to handle and use the RF shield. Additionally, this guide provides a description of Aeroflex's warranty, services, and repair information.

Assumptions

This guide is intended for novice, intermediate, and experienced users who want to use the the 4921, 4931 or 4932 RF Shield effectively and efficiently. We are assuming that you have basic computer and mouse/track ball experience and are familiar with basic telecommunication concepts and terminology.

Related information

Use this guide in conjunction with the following information:

4914. 4916 and 4918 Antenna Couplers User Guide AG292015.

Technical assistance

If you need assistance or have questions related to the use of this product, call Aeroflex's technical support. Contact numbers are given at the end of this document.

Conventions

This guide uses naming conventions and symbols, as described in the following tables.

Table 1   Typographical conventions

Description	Example
User interface actions appear in this **typeface**.	On the Status bar, click **Start**.
Buttons or switches that you press on a unit appear in this **TYPEFACE**.	Press the **ON** switch.
Code and output messages appear in this typeface.	All results okay
Text you must type exactly as shown appears in this **typeface**.	Type: **a:\set.exe** in the dialog box.
Variables appear in this **<typeface>**.	Type the new **<hostname>**.
Book references appear in this **typeface**.	Refer to **Newton's Telecom Dictionary**
A vertical bar | means "or": only one option can appear in a single command.	platform [a|b|e]
Square brackets [ ] indicate an optional argument.	login [platform name]
Slanted brackets < > group required arguments.	<password>

Table 2   Keyboard and menu conventions

Description	Example
A plus sign + indicates simultaneous keystrokes.	Press **Ctrl+s**
A comma indicates consecutive keystrokes.	Press **Alt+f,s**
A slanted bracket indicates choosing a submenu from menu.	On the menu bar, click **Start > Program Files**.

Safety notes

This chapter provides the safety notes for the 4921, 4931 and 4932 RF Shields. Topics discussed in this chapter include the following:

- – 'Precautions' on page xiv
- – 'External power supply (4932 only)' on page xvi
- – 'Safety class' on page xvii
- – 'During maintenance and repair' on page xvii
- – 'Safety warnings' on page xviii
- – 'Handling instructions' on page xviii
- – 'Declaration of EU Conformity' on page xx

Precautions

These terms have specific meanings in this manual:

WARNING	Information to prevent personal injury.
CAUTION	Information to prevent damage to the equipment.
Note	Important general information.

Symbols used on this product The meaning of hazard symbols appearing on the equipment and in the documentation is as follows:

Symbol **Nature of hazard**

Refer to the operating manual when this symbol is marked on the instrument. Familiarize yourself with the nature of the hazard and the actions that may have to be taken.

Dangerous voltage

General conditions of use This product is designed and tested to comply with the requirements of BS EN 61010-1 'Safety requirements for electrical equipment for measurement, control and laboratory use', for Class I portable equipment and is for use in a pollution degree 2 environment. The equipment is designed to operate from an installation category II supply.

Equipment should be protected from the ingress of liquids and precipitation such as rain, snow, etc. When moving the equipment from a cold to a hot environment, it is important to allow the temperature of the equipment to stabilize before it is connected to the supply to avoid condensation forming. The equipment must only be operated within the environmental conditions specified in the data sheet, otherwise the protection provided by the equipment may be impaired.

This product is not approved for use in hazardous atmospheres or safety-critical applications.

WARNING

Suitability for use

This equipment has been designed and manufactured by Aeroflex to perform measurements on RF systems. If the equipment is not used in a manner specified by Aeroflex, or if it is damaged, the protection provided by the equipment may be impaired.

Aeroflex has no control over the use of this equipment and cannot be held responsible for events arising from its use other than for its intended purpose.

The safety of any system incorporating this equipment is the responsibility of the assembler of the system.

WARNING

Electrical hazards (AC supply voltage)

This equipment conforms with IEC Safety Class I, meaning that it is provided with a protective grounding lead. To maintain this protection the supply lead must always be connected to the source of supply via a socket with a grounded contact.

Be aware that the supply filter contains capacitors that may remain charged after the equipment is disconnected from the supply. Although the stored energy is within the approved safety requirements, a slight shock may be felt if the plug pins are touched immediately after removal.

External power supply (4932 only)

The external power supply of the 4932 RF Shield is a safety class I equipment as defined in EN 60950.

Do not try to open the power supply. There are no serviceable parts inside. If the power supply is defective you can obtain a new one from Aeroflex (order number AG860224).

Use the supplied power cord or an appropriate replacement.

Do not replace the power cord with an inadequately rated cord.

The power cord set must be an appropriately rated and approved cord-set in accordance with the regulations of the country it is used in.

Power supply ratings   Before powering on, ensure that the operating voltage that is permitted for the instrument is the same as your power source. The external power supply adjusts itself automatically to the applied (permissible) line voltage.

Input voltage range: 100–240 VAC.

Input current: 1.5 A

Frequency range: 50–60 Hz.

Operating temperature: 0–60 °C

Storage temperature: -20–85 °C

Humidity: 93% RH max, non-condensing

Do not interrupt the protective conductor
Risk of electric shock

Any interruption of the protective conductor to the external power supply may result in electric shock.

Do not attempt to service this product yourself
Risk of electric shock

Opening or removing covers of the external power supply may expose you to dangerous high voltage points and other hazards. Refer all servicing to qualified service personnel.

Safety class

The 4921, 4931 and 4932 RF Shields are built and tested in line with DIN 57411 part 1 (protective measures for electronic test equipment). The instrument complies with safety class I; it left the factory in a perfectly safe condition for operation.

During maintenance and repair

Maintenance and repair is only allowed to specially trained service technicians. Opening a unit without permission causes loss of warranty.

Live parts can be exposed when you open covers or remove components from the external power supply. Connecting parts can also be live.

Capacitors in the power supply can still be charged, even though the instrument has been separated from all voltage sources.

Only use fuses with identical specifications to the replaced ones. You should never patch fuses or short the fuse holder.

Safety warnings

To ensure safe handling and avoid injuries, observe the following:

WARNING

Close the lid of the RF shield carefully. Careless handling of the lid and the closing mechanisms can result in hand injury.

WARNING

Beware of strong magnetic fields. Keep cardiac pacemakers, electronic or mechanical implants and loose metal objects away from the front of the 4932 RF Shield.

WARNING

Customized back panel

The 4921, 4931 and 4932 RF Shields comply with the requirements of BS EN 61010-1 when used with the standard, unmodified back panel. In some cases users may wish to use a customized back panel to route signals in and out of the shielded enclosure. If, as a result, hazardous voltages, currents or other potential hazards are introduced it is the responsibility of the user to ensure that the equipment remains safe to operators. In all such cases modifications should be assessed for safety by a competent person prior to use.

This product is designed for indoor use. Exposure to water may damage the instrument, so protect it against moisture when used outdoors.

Handling instructions

In order to avoid damage to the RF shield, and to ensure shielding performance, adhere to the following handling instructions.

CAUTION

The exertion of physical impact on the RF shield, for example by dropping it, can cause damage and thus have adverse effects on the shielding performance. Be sure to handle the RF shield carefully and do not expose it to physical impact of any kind.

Proper usage

Use the RF shield only for its designated purpose.
Do not use it as a carrier box.

Prevent material fatigue

Leave the RF shield open when not in use to prevent material fatigue.

Cleaning

The contact surface has to be cleaned at least twice a year, or even more often depending on usage and contamination. For cleaning and maintenance the Shielding Service Kit option is available. Sections 'Options' on page 3 and 'The Shielding Service Kit option' on page 18 offer more details as well as ordering information. For cleaning instructions please refer to the printed information that comes with your Shielding Service Kit.

Replacing parts

Contact springs and sealing string have to be replaced after 50,000 open/close cycles at the latest, or even earlier depending on usage and contamination. When replacing these parts adhere to the instructions provided with the Shielding Service Kit.

Declaration of EU Conformity

All Aeroflex Ltd products are in compliance with appropriate Directives for CE marking utilizing standards as published in the Official Journal of the European Union; Reference: Safety standard EN 61010-1 and EMC standard EN 61326-1.

Copies of the EC declaration of conformity for the 4921, 4931 and 4932 RF Shield boxes are available on request from Aeroflex Ltd.

Overview

1

This chapter provides a general description of the 4921, 4931 and 4932 RF Shields. Topics discussed in this chapter include the following:

About the 4921, 4931 and 4932 RF Shields

The 4921, 4931 and 4932 RF Shields provide an RF shielding solution for testing 3G mobile phones as well as data cards and WLAN equipment in large service centers and production lines. They are the optimum solution for service centers and manufacturers with high volume phone testing because they can endure the high open/close rates involved and offer reliability, longevity and support in measurement precision.

4921, 4931 and 4932 RF Shields are designed to eliminate interference from any adjacent mobile phones and the local base station, and to isolate the environment from the RF emitted from the phone (or other device under test). The RF shield can contain the phone under test as well as an antenna coupler (for example, the Aeroflex 4916 Antenna Coupler), and provides a connector for external test equipment (such as the Aeroflex 4400 Mobile Phone Tester). The solid rocker arm lever and gas springs allow the operator to smoothly open and close the box with little force. The 4932 uses a solenoid to further ease this process. A removable plate on the back panel can be used to hold customer-specific connectors, for example, for an interface for remote-controlling the unit under test (but see the associated warning).

Features and capabilities (all models)

More than 80 dB shielding.

Highly reliable and robust design, guaranteed number of open-close cycles.

Portable (small size and low weight).

Complements the 4914/4916/4918 Antenna Coupler.

Suitable for mobile phones of all sizes.

RF isolation measured according to German military standard VG 95737, "Electromagnetic Compatibility of Equipment - Part 15 Test Methods for Coupling and Shielding".

Optional rear panel for customer-specific connectors.

Features and capabilities (4932 RF Shield only)

The 4932 RF Shield uses AC power to provide solenoid-controlled opening of the lid, and a USB link for data transfer and control of the lid solenoid.

Options

The following accessories are available:

Table 3   Accessories for RF shields

Order number	Description
AG300850	Rear panel for customization of 4921, 4931 or 4932
AG382804	Shielded RF cable (N–N), 1.5 m for 4921/4931/4932 (high-performance Sucoflex 104 cable)
AG248349	Shielding Service Kit for 4921 (gas springs, finger stocks, RF gasket)

There is also a range of couplers and shuttles available to accommodate most mobile phones, PDAs and tablets.

Further information

For full details refer to the relevant 4921, 4931 or 4932 data sheet at www.aeroflex.com.

Installation

2

This chapter describes how to set up the 4921, 4931 and 4932 RF Shields. The topics discussed in this chapter are:

Scope of delivery

When unpacking the 4921, 4931 and 4932 RF Shields, check that the following items are included:

– RF Shield
– USB cable (type 'A' plug and type 'B' plug)
– RF cable N–N
– this User Guide
– power supply (4932 only)
– power cable for your region (4932 only)

Getting acquainted with the 4921, 4931 and 4932 RF Shields

The 4921, 4931 and 4932 RF Shields have a lid that is opened and closed with the blue handle. Take note of the safety advice on the lid.

Dampers ensure that the lid opens slowly and is supported when in the open position.

WARNING

Keep your body and clothing clear when opening the lid.

The N-type RF connector is used to feed signals to and from the inside of the shield. For proper isolation of radiation, use a double-shielded cable.

4932 only: there are LED status indicators and an on-off button on the front panel, and there is a button on the left-hand side of the front panel for releasing the lid. Plugs for the external power supply and the USB cable are located at the right-hand side of the front panel.

Securing the lid The front latch on the 4921 and 4931secures the lid closed. Leave the lid open when the shield is not in use.

The 4932 has a captive screw at the front right-hand side of the lid. Turn this clockwise to lock the RF shield closed for transport, and remember to release it before using the RF shield. Leave the lid open when the shield is not in use.

Carrying the RF shield Make sure that the lid is closed and secured (see 'Securing the lid'). Then use the blue handle to carry the RF shield.

Connecting the 4921, 4931 and 4932 RF Shields

The 4921, 4931 and 4932 RF Shields provide an N-type connector on the rear panel for external test equipment, for example, the Aeroflex 4400 Mobile Phone tester series. Connect the RF shield to your measurement instrument with the RF cable supplied.

Custom back panel with connectors Aeroflex also offers customized back panels with connectors for other signals such as digital control and communication lines (but see the associated warning about customized back panels). The picture below shows an example of a customized back panel.

On first use, ensure that the back panel is tightly screwed to the RF shield to avoid radiation through any opening.

The back panel connectors are typically filtered to support only the specific signals. However, when not in use, either replace the custom back panel by a standard one without connectors, or terminate the plugs to avoid spurious signals going in and out.

For details on ordering information refer to 'Options' on page 3.

Installing the 4914/4916/4918 Antenna Coupler in the RF shield

The 4921, 4931 and 4932 RF Shields are equipped to hold the 4914/4916/4918 Antenna Coupler in a defined position.

To install the antenna coupler in the RF shield, proceed as follows:

1 Place the antenna coupler in the shield box and push it between the clamps.

2 Move the coupler up and down between the clamps until the coupler is tightly held and the left-hand clamp has direct contact with the coupler.

Attach the supplied cable from the antenna coupler to the inside of the box and connect the RF cable. Connect the RF cable to the coupler (this cable is already attached to the RF shield).

NOTE

For precise power and sensitivity measurements the antenna coupling factor should be taken into account when setting the RF power level at the instrument and when interpreting measurement results. A table of coupling loss factors (attenuation values) for most mobile phone types is available from Aeroflex on the internet. The attenuation values stated there are only valid for the defined position of the antenna coupler within the RF shield and the defined shuttle position on the coupler.

For further information please refer to the *4914, 4916 and 4918 Antenna Coupler User Guide*, document number AG292015.

Setting up the 4932 RF Shield

1 Place the RF shield in a firm position.

2 Unlock and open the lid.

3 Connect the power supply to a line power outlet and to the DC input plug.

4 If you want to control the RF shield from an external computer (for example, using the 7310 Lector-Scriptor software, see Appendix A), use the USB cable (supplied) to connect the RF shield to the computer.

Operation (4932)

3

This chapter describes how to operate the 4932 RF Shield. Topics discussed in this chapter are as follows:

Solenoid operation

The 4932 RF Shield can be operated either manually (using the front panel) or semi-automatically with the help of a computer. Status information and the command to open the lid are transferred over the USB interface (see 'Setting up the 4932 RF Shield' on page 11).

For proper operation and shielding, please observe the following steps.

LED indicators The front panel contains the following LED indicators:
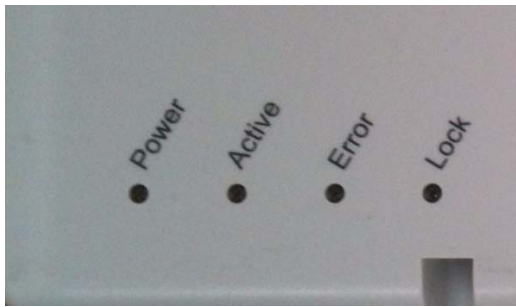
- – Power LED (blue) – lights when the RF shield is connected to line power and the on-off button is switched on.
- – Active LED (orange) – lights when the solenoid (electromagnet) is powered up. The solenoid is enabled when the photosensor identifies that the lid is within 10 cm of the closed position.
- – Error LED (red) – flashes when the RF shield requires maintenance (occurs after a number of open-close cycles, when springs and gaskets need to be renewed to ensure proper shielding).
- – Lock LED (green) – lights when the lid is firmly closed.

Power and USB connectors These are at the right-hand side of the front panel, when viewed from the front.

- – DC plug – connector for the power supply delivered with the RF shield.
- – USB plug – B-type connector for the interface to a computer (used for remote control).

On-off button Switch on the 4932 RF Shield at the on-off button.

The blue Power LED lights (if it does not, check the power connection).
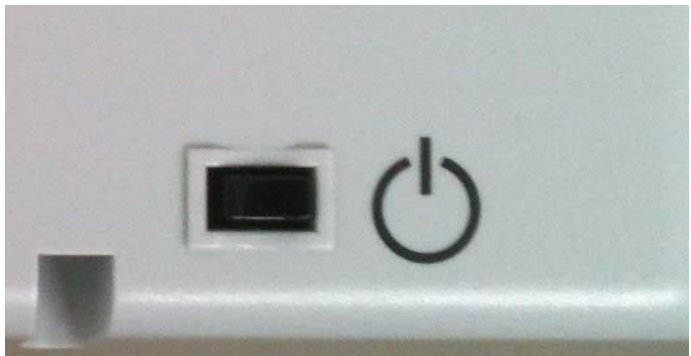
Opening the lid

⚠️ **WARNING**

Keep your body and clothing clear when opening the lid.

Open the lid by pressing the button on the left-hand side of the front panel:

The lid opens slowly.

Closing the lid

Tightly close the lid with **both hands on the blue handle** until the green Lock LED lights.

Keep metal pieces and magnetic objects away

The 4932 RF Shield keeps the lid closed using a solenoid at the front. Loose metal objects such as keys may be attracted to the magnet, and magnetic stripe cards may be erased.

Maintenance

4

This chapter describes how to maintain your RF shield. Topics discussed in this chapter are as follows:

The Shielding Service Kit option

The 4921, 4931 and 4932 RF Shields offer a reliable and robust design and a high guaranteed number of open-close cycles (50,000). For further enhancing longevity by regular maintenance, optional Shielding Service Kits are available, which contain the following components:

– Gas springs
– Finger stocks (4921 only)
– RF gasket

For ordering details refer to 'Options' on page 3.

Remote control of the 4932 RF Shield

A

This chapter describes the command set for remote control of the 4932 RF Shield via USB interface. Topics discussed in this chapter include the following:

Introduction

Remote control can be performed either through Aeroflex's 7310 Lector and Scriptor software or through custom software. Lector and Scriptor software version 6.20 and higher comes with the necessary drivers and commands to control the 4932 RF Shield.

This appendix explains the necessary software driver and the commands for custom software.

Software driver

The necessary software driver can be loaded from the Aeroflex website containing product information about the 4932 RF Shield. If you need assistance or have questions related to the use of this product, call Aeroflex's technical support. Contact numbers are given at the end of this document. The driver supports various versions of the Windows operating system.

For software driver installation, please proceed as follows:

1 Make sure the 4932 RF Shield is not connected to the PC.

2 Download the installation software for the software driver to the PC.

3 Start the installation software. The Wizard for CP210X USB to UART Bridge Controller Driver appears.

4 Follow the instructions on the screen.
The USB driver is installed, typically in C:\SiLabs. After completion, you are able to control the instrument via USB.

Remote control syntax

The commands, queries and returns are terminated with linefeed (<lf>, chr$(10)). Strings are encapsulated in quotes (", chr$(34)). Queries are distinguished from commands by a question mark at the end.

The commands follow IEEE 488.2 and SCPI conventions.

The commands and queries are described with uppercase and lowercase letters. The part with uppercase letters shows a usable abbreviation; either the abbreviated version or the full version shall be used, but not a mixture. Example: The query :SYSTem:ERRor? can be sent as :SYSTEM:ERROR? or :System:Error? or syst:err?, but not as syste:error?

The command interpreter itself is case-insensitive.

Standard commands

*CLS – Clear Status Command

Description This command clears the status byte (*STB?) and event status register (*ESR?). The error queue is flushed.

Parameters None

Returns none

> ⚠ **WARNING**
>
> This command may cause the lid to open automatically if it was closed. Keep clear of the lid during operation.

*ESE – Standard Event Status Enable *ESE?

Description Sets the enable filter (mask) of the event status register.

Parameters Value of event mask (0 .. 255) (command only)

Returns The event mask as integer (query only)

*ESR? – Standard Event Status Register Query

Description Only query possible. Clears event status register after query.

Parameters none

Returns Current value of the event status register

*IDN? – Identification Query

Description This query allow you to receive the box identification message. Only query possible.

Parameters none

Returns "<Manufacturer>, <Model>, <Serialnumber>, <Version>"
where
<Manufacturer> = Aeroflex
<Model> = 4932
<Serialnumber> = Serial number of the RF shield
<Version> = Firmware version of the RF shield,
format xx.yy.zz e.g. 00.01.00

*OPC – Operation Complete
*OPC?

Description Only query possible.

Parameters none

Returns Current value of the event status register

*RST – Reset

Description Resets the RF shield. All parameters are set to the internally predefined default values.

Parameters none

> ⚠️ **WARNING**
> This command may cause the lid to open automatically if it was closed. Keep clear of the lid during operation.

*SRE — Service Request Enable *SRE?

Description This mask enables service requests to be initiated. The respective bit indicates the specific events. An SRQ telegram is sent on a positive transition (change from 0 to 1). Meanings of the bits in the status byte are:

Bit 0: Lock Status; the box is locked.

Bit 1:   Open Status; the box is open.

Bit 2:   Error Queue; one ore more errors are queued

Bit 3:   reserved

Bit 4:   reserved

Bit 5: Standard Event Status Register Summary; an event happened, which was enabled by *ESE.

Bit 6: Request service status; enables the telegram "SRQ" to be sent.

Bit 7:   reserved

Parameters none

Returns Value of the service request enable register (query only)

*STB? – Read Status Byte Query

Description Returns the current status of the status byte. For the meaning of the bits, see *SRE above. Only query possible.

Parameters none

Returns Current value of status register

*TST? – Self-Test Query

Description Only query possible.

Parameters none

Returns Result of self test.

> ⚠️ **WARNING**
> This command may cause the lid to open automatically if it was closed. Keep clear of the lid during operation.

*WAI – Wait-to-Continue Command

Description Only command possible.

Parameters none

Returns none

SYSTem:ERRor?

Description Requests the latest error in error queue and removes the item. Only available as a query.

Returns <error string> contains number and description like 0; "No error"

Functional commands

Echo? <string>

Description Returns the string parameter. It is a useful command for test purposes. Only query possible.

Parameters any string

Returns the string parameter

STATus:ALL?

Description Returns with all states as one ASCII string without separators. Only query possible.

Parameters none

Returns Below is the meaning according to the string position

1 Open flag: "1" = open, "0" = not open
2 Lock flag: "1" = locked, "0" = not locked
3 Magnet flag: "1" = on, "0" = off
4 Error flag: "1" = on, "0" = off
5 Blue LED: "0" = dark, "1" = illuminated, "2" = flashing
6 Green LED: "0" = dark, "1" = illuminated, "2" = flashing
7 Yellow LED: "0" = dark, "1" = illuminated, "2" = flashing
8 Red LED: "0" = dark, "1" = illuminated, "2" = flashing
9 Layout: Layout identifier as printable character like "A". "?" is unset value.
10 Reserved ("00")
11 Reserved

12 Reserved ("00")

13 Reserved

14 Reserved ("00")

15 Reserved

16 Reserved ("00")

LOCK:RELease

Description Commands the lock to release. It has the same function as the open button. This is available only as a command.

Parameters none

LOCK:STATus?

Description Queries the current lock status. Only available as a query.

Returns Current lock status as string. Possible results are: "open", "intermediate", "halflocked", "locked", "released"

LOCK:COUNt?

Description Queries the current lock counter for open/close cycles. Only available as a query.

Returns Current lock count as decimal number like 12345

Appendix A Remote control of the 4932 RF Shield

Functional commands

Repair

B

This chapter describes how to return the equipment to Aeroflex.

Equipment return instructions

Please contact your local service center for Aeroflex products via telephone or web site for return or reference authorization to accompany your equipment. For each piece of equipment returned for repair, attach a tag that includes the following information:

– Owner's name, address, and telephone number.
– Serial number, product type, and model.
– Warranty status. (If you are unsure of the warranty status of your instrument, include a copy of the invoice or delivery note.)
– Detailed description of the problem or service requested.
– Name and telephone number of the person to contact regarding questions about the repair.
– Return authorization (RA) number or reference number.

If possible, return the equipment using the original shipping container and material. Additional Aeroflex shipping containers are available from Aeroflex on request. If the original container is not available, the unit should be carefully packed so that it will not be damaged in transit. Aeroflex is not liable for any damage that may occur during shipping. The customer should clearly mark the Aeroflex-issued RA or reference number on the outside of the package and ship it prepaid and insured to Aeroflex.

Software licence and warranty

C

This appendix describes the conditions for using the software.

AEROFLEX LIMITED
SOFTWARE LICENCE AND WARRANTY

This document is an Agreement between the user of this Licensed Software, the Licensee, and Aeroflex Limited ('Aeroflex'), the Licensor. By installing or commencing to use the Licensed Software you accept the terms of this Agreement. If you do not agree to the terms of this Agreement do not use the Licensed Software.

1. DEFINITIONS

The following expressions will have the meanings set out below for the purposes of this Agreement:

Add-In Application Software	Licensed Software that may be loaded separately from time to time into the Designated Equipment to improve or modify its functionality
Computer Application Software	Licensed Software supplied to run on a standard PC or workstation
Designated Equipment	means either:
	the single piece of equipment or system supplied by Aeroflex upon which the Licensed Software is installed; or

	a computer that is connected to a single piece of equipment or system supplied by Aeroflex upon which computer the Licensed Software is installed
Downloaded Software	any software downloaded from an Aeroflex web site
Embedded Software	Licensed Software that forms part of the Designated Equipment supplied by Aeroflex and without which the Equipment cannot function
Licence Fee	means either the fee paid or other consideration given to Aeroflex for the use of the Licensed Software on the Designated Equipment
Licensed Software	all and any programs, listings, flow charts and instructions in whole or in part including Add-in, Computer Application, Downloaded and Embedded Software supplied to work with Designated Equipment
Licensee	the organization or individual that is the user of the Licensed Software
PXI Software	Licensed Software specific to Aeroflex's 3000 Series PXI product range

2. LICENCE FEE

The Licensee shall pay the Licence Fee to Aeroflex in accordance with the terms of the contract between the Licensee and Aeroflex.

3. TERM

This Agreement shall be effective from the date of receipt or download (where applicable) of the Licensed Software by the Licensee and shall continue in force until terminated under the provisions of Clause 8.

4. LICENCE

4.1   The following rights and restrictions in this Article 4 apply to all Licensed Software unless otherwise expressly stated in other Articles of this Agreement.

4.2   Unless and until terminated, this Licence confers upon the Licensee the non-transferable and non-exclusive right to use the Licensed Software on the Designated Equipment.

4.3 Neither the Licensed Software nor any information provided by Aeroflex to the Licensee nor any licence and rights granted hereunder, may be sold, leased, assigned, sublicensed, electronically distributed, timeshared or otherwise transferred, in whole or in part by the Licensee other than as specified in this Licence without the prior written consent of Aeroflex. Such consent may be withheld at Aeroflex's sole discretion.

4.4 The Licensee may not use the Licensed Software on other than the Designated Equipment, unless written permission is first obtained from Aeroflex and until the appropriate additional Licence Fee has been paid to Aeroflex.

4.5 The Licensee may not amend or alter the Licensed Software and shall have no right or licence other than that stipulated herein.

4.6 Except as specifically permitted elsewhere in this Agreement the Licensee may make not more than two copies of the Licensed Software (but not the Authoring and Language Manuals) in machine-readable form for operational security and shall ensure that all such copies include Aeroflex's copyright notice, together with any features which disclose the name of the Licensed Software and the Licensee. Furthermore, the Licensee shall not permit the Licensed Software or any part to be disclosed in any form to any third party and shall maintain the Licensed Software in secure premises to prevent any unauthorized disclosure. The Licensee shall notify Aeroflex immediately if the Licensee has knowledge that any unlicensed party possesses the Licensed Software. The Licensee's obligation to maintain confidentiality shall cease when the Licensed Software and all copies have been destroyed or returned. The copyright in the Licensed Software shall remain with Aeroflex. The Licensee will permit Aeroflex at all reasonable times to audit the use of the Licensed Software.

4.7 The Licensee will not disassemble or reverse engineer the Licensed Software, nor sub-license, lease, rent or part with possession or otherwise transfer the whole or any part of the Licensed Software.

5 ADDITIONAL LICENCE RIGHTS SPECIFIC TO PXI SOFTWARE

5.1 Definitions for PXI Software

The following expressions will have the meanings set out below for the purposes of the supplementary rights granted in this Article.

PXI Drivers	All 3000 Series PXI module device drivers including embedded firmware that are installed at runtime
PXI Executable Applications	All executable applications supplied with each 3000 Series PXI module including:-
	PXI Studio
	Soft Front Panels (manual operation graphical user interfaces)

	Utilities including: RF Investigator, PXI Version Information and Self Test
PXI Spectrum Analysis Library	The spectrum analysis measurement suite library .dll software supplied with each 3000 Series PXI module
PXI Optional Application Library	Individual measurement suite available from a range of optional .dll application libraries

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Appendix C Software licence and warranty

Publication history

Revision	Comment
0504-100-A	First version.
0609-100-A	Layout changes.
Issue 1	Safety update revision at Stevenage.
Issue 2	Relocated lid release button.

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web: **www.aeroflex.com**   Email: **info-test@aeroflex.com**

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