



USER MANUAL

KI 021 OPTICAL TALK SET

Issue 2, 2012

Record of Issues

If you have any suggestions for improvement to this document, please contact the author at Kingfisher International.

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1 APPLICATION

The KI 021 Optical Talk Set (hereinafter referred to as the KI 021) is designed to provide a full-duplex communication over a single optical fibre at the 1310 nm 1550 nm wavelengths.

Operational Conditions:

Ambient temperature.....-10°C - +50°C

Relative humidity..... 90% at 30°C

2 TECHNICAL SPECIFICATIONS

2.1 Wavelength: 1310±30 nm (KI 021B) and 1550±30 nm (KI 021A).

2.2 Fiber type: single-mode.

2.3 Dynamic range: not less than 45 dB.

2.4 The device uses a duplex operation mode to provide two-way communication.

2.5 Power supply:

- 3 AA rechargeable batteries with the total voltage (3.75±0.25) V.
- AC/DC adapter with USB-A output connector (input:~100...240 VAC, 50...60 Hz; output: 5 VDC, 500 mA).

2.6 The KI 021 features audio and light indicators of a calling signal.

2.7 Continuous operation with full charged batteries:

- >120 hours in the reception mode;
- > 40 hours in the reception/transmission mode.

2.8 Dimensions: 173 x 85 x 35 mm.

2.9 Weight: 0.4 kg.

3 KI 021 PACKAGE

The KI 021 package is presented in table 3.1.

Name	Quantity	Notes
Optical Talk Set KI 021		
KI 021A	1	1550 nm
KI 021B	1	1310 nm
Telephone Headset	2	
Battery 1.2V, 2 A-h	6	Install into KI 021
AC/DC adapter	2	USB-A output connector
Interface cable USB-A - USB-B	2	
Operation Manual	2	
Packing Bag	2	

Table 3.1

4 KI 021 DESIGN

4.1 The KI 021 consists of 2 units incased into a small size rectangular body.

4.2 General view of the KI 6700 is shown in Figure 4.1

On the upper panel there are:

- power switch which at the same time can be used to switch operation modes;
- optical connector;
- telephone headset connector;
- indicator of the reception mode switching on;
- low battery indicator.

On the bottom panel there are:

- USB-B connector to plug in a AC/DC adapter;
- battery charge indicator.

On the front panel the following things are marked:

- trade mark of the manufacturer;
- name and type of the KI 021;
- laser danger sign;
- wavelength of the laser source;
- layout of the elements on the upper panel.



Figure 4.1

5 OPERATIONAL PRINCIPLE

One of the KI 021 units uses a laser diode (LD) with a 1550 nm wavelength (KI 021A) as an optical light source, and the other one uses a 1310 nm wavelength (KI 021B). Average power of LD is stabilized with the help of a feedback photodiode.

Pulse-duration modulation of the LD current is used to transmit the signal during the KI 021 operation. PDM-electric signal modulates LD emission power. The modulated optical signal is passed through an optical multiplexer to the optical connector of the KI 021 unit.

Optical splitter and pin-photodiode, located inside the KI 021 are used for the optical signal reception. The signal is then converted into an electric one. Further on the electrical signal is amplified, detected and transferred to the telephone headset.

6 PREPARATION FOR WORK

6.1 Before starting up:

- check the KI 021 and make sure it is not mechanically damaged;
- check the correspondence of the package items to the list given in Table 3.1.

6.2 To access the KI 021 side panel, open its cover as shown in Figure 6.1 (place the KI 021 horizontally with the front panel up, press on the middle part of the cover in direction 1, turn the cover back in direction 2);

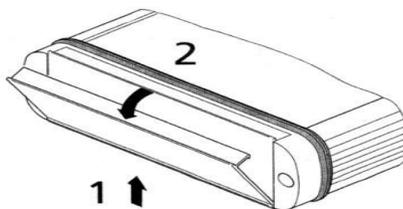


Figure 6.1

6.3 Before starting up, make sure that the optical fiber cable connectors attached to the KI 021 are free of dust and correspond to the type of the head set connectors.

6.4 The KI 021 power supply is provided by either built-in rechargeable batteries AA or AC current 100...240 V via the AC/DC adaptor supplied with the KI 021.

The AC/DC adaptor is plugged via USB connector located on the KI 021 bottom panel.

When AC/DC adaptor is connected to KI 021 the indicator LED on the KI 021 bottom panel lights, and battery is charged. After charge completion the indicator LED goes out.

6.5 When operating the talk-set, one unit should be with a 1550 nm wavelength and the other – with a 1310 nm wavelength.

7 OPERATION SEQUENCE

7.1 To turn the KI 021 on/off, press the switch located on the KI 021 upper edge panel.

Switch position 'I' corresponds to the mode of the connection signal reception.

Switch position 'II' corresponds to the mode of the service connection signal reception/transmission.

7.2. To provide communication contact, connect the optical fiber used for communication, connect the micro telephone headset to the KI 021 and move the switch in to the position 'I' or 'II'.

By moving the switch to the position 'I' the KI 021 operates in the **reception** mode which is indicated by even flashing of LED. When receiving the call signal LED begins to blink and the buzzer begins to sound. Simultaneously the received audio signal is transferred to the telephone headset.

To switch the KI 021 to the **reception/transmission** mode, move the switch in to the position 'II'

8 MAINTENANCE

8.1 Maintenance of the KI 021 includes checking up of:

- availability of all components include into the supply kit as stated in chapter 3;
- marking;
- absence of mechanic damage of the body, front panel, connecting elements.

The discovered faults should be removed.

8.2 Optical connectors of the KI 021 should be periodically cleaned from dirt. It is recommended to use special means for cleaning optical plugs and ports.

8.3. Before putting the fiber connectors to use, it is necessary to clean the dirt off them by special means for cleaning optical plugs.

8.4 When the battery is discharged the “Low Battery” indicator on the top panel of the KI 021 switches on. In this case it is necessary to charge the batteries with the AC/DC adaptor supplied with the KI 021. The charging time is 14 hours.

CAUTION: It is not allowed to store the KI 021 with discharged batteries.

If the KI 021 is not used for more than 1 month, it is necessary to charge the batteries and remove them from the KI 021.

To access the batteries, unscrew the two screws on the bottom panel and put forward a battery compartment cover.

9 STORAGE

Before you start using the KI 021 it should be kept in a storage room as packed by the manufacturer, the storage conditions being as follows:

- ambient temperature ranging from -20 °C to +50 °C
- relative humidity up to 95% (at 25 °C)

When storing the device for more than 1 month, the batteries should be first charged and then removed from the device.

The storage room should be free from dust, acid vapors, alkalis and corrosive gases and other harmful substances causing corrosion.

10 TRANSPORTATION

When transporting the packed KI 021 ambient parameter values should be kept within the following limits:

- ambient temperature ranging from -25 °C to +55 °C
- relative humidity up to 95% (at 35°C)

The KI 021 which was transported as packed by the manufacturer at -10°C and lower, should be kept unpacked in normal climatic conditions for 2 hours.

11 SAFETY MEASURES

	<p>LASER RADIATION CLASS 1 LASER PRODUCT. DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.</p>
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The KI 021 Optical Talk Set is a Class 1 source to IEC 60825-1,

The KI 021 corresponds to IEC 61010-1, equipment Class III.

The AC/DC adaptor corresponds to IEC 61010-1, equipment class II.

12 **DISCLAIMER & WARRANTY**

Information in this manual is given in good faith for the benefit of the user. It cannot be used as the basis for claims against Kingfisher International or its representatives, if accidental damage or inconvenience results from use or attempted repair of the equipment.

Kingfisher International KI 021 Optical Talk Set is guaranteed against defective components and workmanship for a period of 2 years from the date of delivery, unless specifically stated in the original purchase contract or agreement. This warranty excludes optical connectors or incorrect use. Opening the instrument will invalidate the warranty. Liability is limited solely to repair of the equipment.

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Technical data is subject to change without notice as part of our program of continuous improvements. Therefore please verify critical parameters before ordering.

13 DECLARATION OF CONFORMITY



DECLARATION OF CONFORMITY
IN ACCORDANCE WITH ISO/IEC 17050:2004



Manufacturer's Name: Kingfisher International Pty. Ltd.
Manufacturer's Address: 30 Rocco Drive, Scoresby, Victoria 3179, Australia

hereby declares, that the products listed below

Product Name: Optical Talk Set
Model Number: KI 021
Product Options: *This declaration covers all options of the above product(s)*

comply with the essential requirements of the applicable European Directives:

- Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC, amended by 93/68/EEC, and carries the CE marking accordingly
- Directive 2002/95/EC on restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
- Directive 2002/95/EC on waste electrical and electronic equipment (WEEE)

and conform to the following standards and specifications:

IEC 60529: 2001/ EN 60529:1989+A1:2003 Degrees of protection provided by enclosures

EMC

IEC 61326:2002/ EN 61326-1:1998+A1:1998+A2:2001+A3:2003

IEC CISPR 11: 2004/ EN 55011:1998+A1:1999

IEC CISPR 16-1:1999

IEC CISPR 16-2:1999

IEC 61000-3-2: 2005/EN 61000-3-2:2005

IEC 61000-3-3:2002/EN 61000-3-3:1995

IEC 61000-4-2:2001 / EN 61000-4-2:1995+A1:1998+A2:2001

IEC 61000-4-3:2002/ EN 61000-4-3:2002

IEC 61000-4-4:2004/EN 61000-4-4:2004

IEC 61000-4-5:2005/EN 61000-4-5:2006

IEC 61000-4-6:2004/EN 61000-4-6:1998+A1:2001

IEC 61000-4-11:2004/EN 61000-4-11:2004

ICES-001: 2006 (Canada)

CFR 47 FCC Part 15, Subpart B (Class B) (USA)

Limit

Limits applicable to Group 1 Class A equipment

Limits applicable to Class A equipment

Limits applicable to Class A equipment

4kV CD, 8kV AD

3V/m, 80-1000MHz

1kV signal lines, 2kV power lines

1kV line-line, 2kV line-ground

3V, 0.15-80 MHz

0.5 cycle/100% each polarity

Safety

Laser Source conforms to:

IEC 60825-1:2001 Safety of laser products-Equipment classification, requirements and user's guide

IEC 60825-2:2005 Safety of laser products-Safety of optical fibre communication systems (OFCS)

CFR 21 part 1040.10 (USA) Performance standards for light-emitting products-Laser products

Supplemental Information:

The product was tested in a typical configuration with Kingfisher International test systems.

2010-February-11

Date

Bruce Robertson

Name

Technical Director

Title

For further information, please contact your local Kingfisher International sales office, agent or distributor.

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