Reading Device

KeyD 232 DUO
KeyD 485 DUO
KeyD ANT DUO

Manual and operational description

SKIDATA™
access unlimited

Version February 2004

SKIDATA AG
Technical Documentation
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Declaration of Conformity

The KeyDetector DUO has been developed, designed and manufactured in accordance with the following EU directive:

R&TTE (99/5/EC)

C E 0408

EU countries only: The length of the DC cable (cable between power adaptor and KeyDetector) must not exceed 3 m.

FCC 15.19:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC 15.21:

IMPORTANT: Any changes to or modifications of KeyDetector DUO unless expressly approved by SKIDATA AG, may void the user's authority to operate this device.

FCC only: the DC cable or combined DC/interface cable must be fitted with a ferrite element of type "Würth 74271131" near the location where the cable connects to the KeyDetector (see image; the cable must be 'looped' twice through the ferrite element, as illustrated below).

KeyDetector

Ferrite element
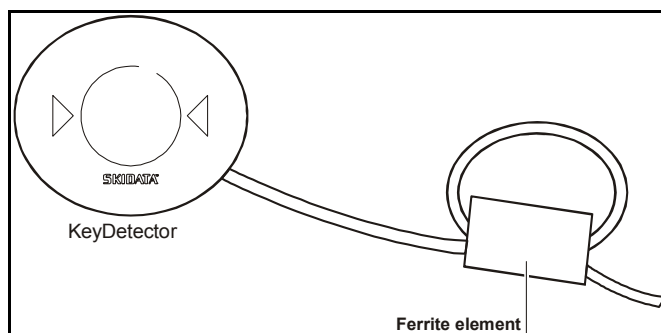
KeyDetector DUO   1

Document Management – Version Table

Tab. 1: Document Version Table for Installation & Maintenance Instructions

Section	Document	Pages	Version	Date
1	KeyDetector DUO	4	1.0	2004-02-02

KeyDetector DUO

KD DUO

KeyDetector DUO is the standard interface module for SKIDATA's keymotion technology. As such it constitutes a connecting link interfacing keycard and Swatch Access data carriers with higher systems and applications.

- **Proximity 122 kHz and 13 MHz transmission technology.**
- **Reads keymotion Data Carriers; allows coding them using automatic memory management.**
- **Contains a security-IC for encrypting data for keymotion data carriers.**
- **Control and communication via serial interface RS232 (RS485 optional) with defined protocol.**
- **Signalling by red/green/orange LED and beeper.**

Mounting Information

The data transmission between the KeyDetector and data carriers is sensitive against electrical and electro-magnetical fields. Those fields are produced by electrical devices of any kind such as monitors, TV-sets, ... Thus the KeyDetector must not be placed near electrical devices. Also metal surfaces placed near the KeyDetector have a strong impact on the data **transmissions. For sure and reliable operation it is neccessary that there are no metal objects within 10 cm around the KeyDetector in any direction. If metal objects are placed between the KeyDetector and a data carrier data transmission will be impossible at all in most cases.**

Electrical Characteristics

	RS232-Versions	RS485-Versions
Supply Voltage (V_{in})	7 V to 12 V	7 V to 12 V
Supply Current (I_{in}) TAG write-mode	max. 500 mA excl. external antenna	
Supply Current (I_{in}) Idle mode	typ. 60 mA max. 100 mA (no LEDs switched on)	

Reading distance

	Typical
Swatch Access	40 mm
Swatch Beat	40 mm
KeyCard	100 mm
GemFree	80 mm

Weights

	Weight
KeyDetector in housing	150 g (excl. power supply and cable)
module version	50 g

Absolute Maximum Ratings

|	RS232-Versions	RS485-Versions
Supply Voltage (V_{in})	+15.00 V	+15.00 V
Input Voltage (RxD)	±30.00 V	
Input Voltage (A,B)		+5.00 V
Input Voltage IO1 – IO3	+32.00 V	+32.00 V
Output Current IO1/IO2	1.0 A	
Storage Temperature	-30 °C to +70 °C	
Operating Temperature	-20 °C to +60 °C	

Pin Description - Desktop Versions

All desktop Versions have a cable with D-type subminiature connector with 9 pins; receptable (=female) housing. A plug-in power supply, connected to the cable, is also be included.

Figure 1 - connector-receptable, front view
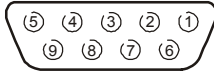
Pin #	Signal	Function	
1	-	not connected	
2	RxD / A	RS232:	Receive Data
		RS485:	Signal A
3	TxD / B	RS232:	Transmit Data
		RS485:	Signal B
4	-	not connected	
5	GND	Power Ground	
		RS232: Signal Ground	
6	-	not connected	
7	-	not connected	
8	-	not connected	
9	Vin	Power Supply Voltage	

Figure 2
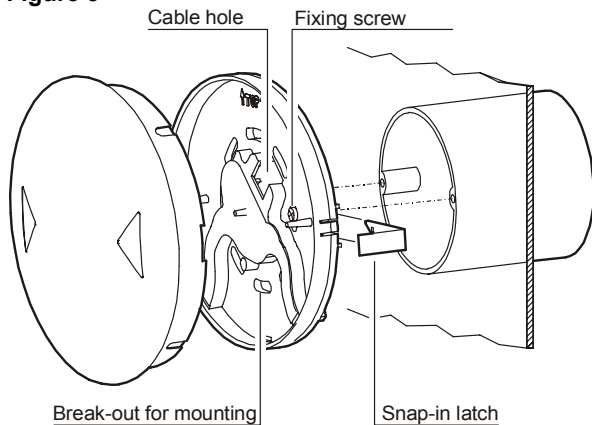

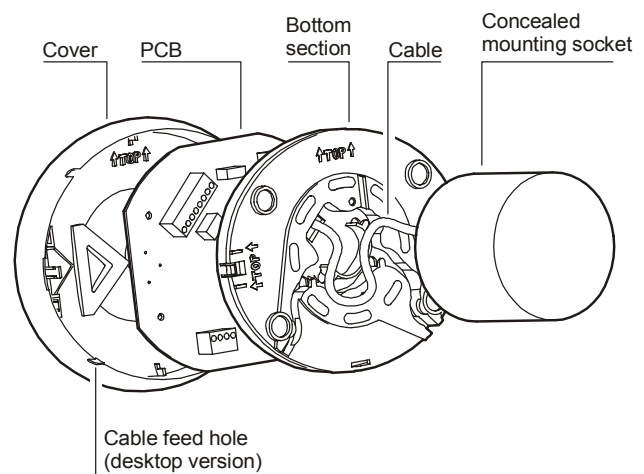**Casing**   **Mounting Plate** (bottom view)
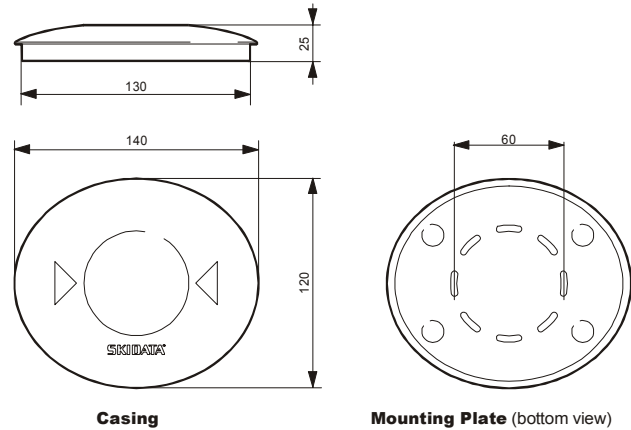
Installing KD DUO

1. Thread cable through bottom section and fasten
2. Screw bottom section to mounting socket
   NOTE: Ensure correct alignment of TOP marking
3. Screw top cover to bottom section

All cables must be fed in vertically to prevent water from leaking in. Adjust cable feed as needed. Note that fixing screws are not included in delivery

Figure 3

Cable hole   Fixing screw

Break-out for mounting   Snap-in latch

Figure 4

Cover   PCB   Bottom section   Cable   Concealed mounting socket

Cable feed hole (desktop version)

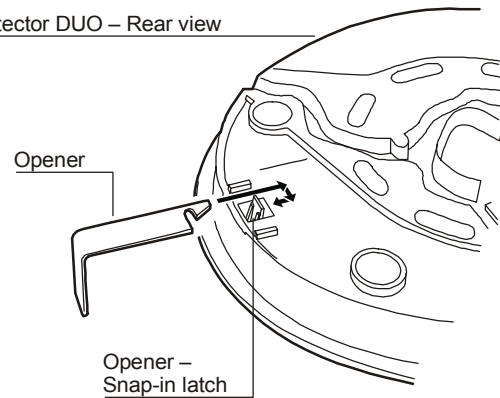## Deinstalling KeyDetector DUO

1. Slide opener into top and bottom guide rail (see Fig. 12).
2. Pull lever upwards or downwards
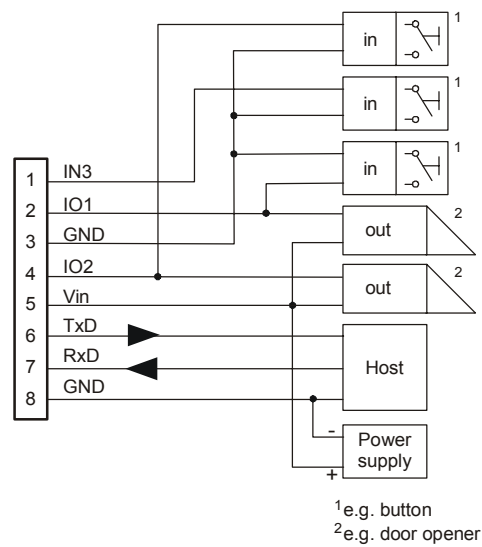3. Pull lever out and lift off cover

Pin Description

The PCB has three connectors, one to connect the optional external antenna, one for the power supply and data, separate for surface mount and desktop version.
To attach an external antenna (optional), see Fig. 10.
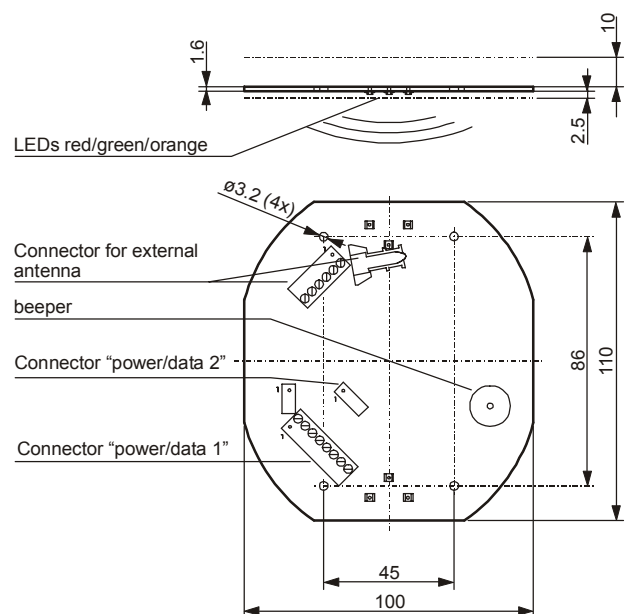
Pin Description – Connector "power / data 1"

This is an 8 pin connector, fixed by screws. Cable diameter: 0,14 mm² - 0,75 mm².

Pin	Signal	Function
1	IN 3	Input
2	IO1	Input / Output
3	GND	Power Ground
4	IO2	Input / Output
5	Vin	Power supply voltage
6	TxD/A	KeyD: Data out KD
7	TxD/B	KeyD: Data in KD
8	GND	Power Ground

Figure 5

KeyDetector DUO – Rear view

Opener

Opener – Snap-in latch

Figure 6

1	IN3
2	IO1
3	GND
4	IO2
5	Vin
6	TxD
7	RxD
8	GND

in [1]
in [1]
in [1]
out [2]
out [2]
Host
Power supply

[1] e.g. button
[2] e.g. door opener

Figure 7

LEDs red/green/orange

Connector for external antenna

beeper

Connector "power/data 2"

Connector "power/data 1"

ø3.2 (4x)

1.6
10
2.5
86
110
45
100

Connector "Power / Data 2"

(use connector JST-PHR-5 or JST-08KR)

Pin #	Signal	Function
1	GND	Power Ground
2	RxD	RS232: Receive Data KD DUO
3	TxD	RS232: Transmit Data KD DUO
4	Vin	Power supply, 9 to 12 VDC
5	IO1	Signal in / out

**Figure 8**

e.g. Door opener

e.g. button
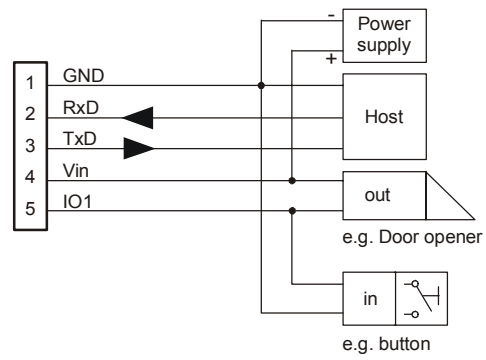
External Antenna DUO

KeyD ANT DUO

The external antenna can be used in applications where the KeyDetector with integrated antenna is not applicable and/or where a second KeyDetector would be unneccessarily redundant.

- **Increases KeyDetector security**
- **Signalling by red/green/orange LED**
- **Design and outline dimensions similar to KeyDetector**
- **Can be mounted directly on a flat surface or in a standard wall socket**

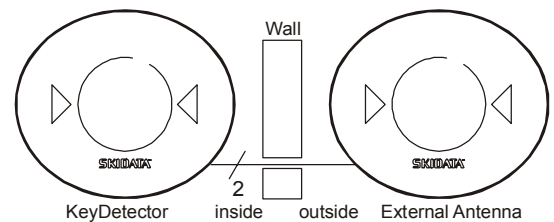**Figure 9**

Block diagram

Function scheme
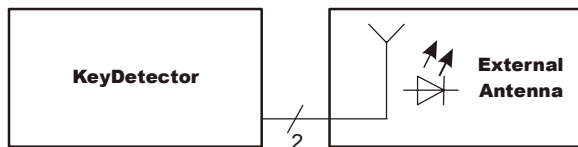
Mounting Information

The data transmission between the external antenna and data carriers is sensitive against electrical and electro-magnetical fields. Those fields are produced by electrical devices of any kind such as monitors, TV-sets, ... Thus the external antenna must not be placed near electrical devices. Also metal surfaces placed
**near the external antenna have a strong impact on the data transmission. For reliable operation no metal objects should be within 10 cm around the external antenna in any direction. If metal objects are placed between the external antenna and a data carrier, data transmission will be impossible at all in most cases.**

Connector for External Antenna

(use connector RIACON Type 166)

Terminal pin #	Signal	Wire Colours	Function
1	ANT 13 MHz	Coaxial cable inside	External 13 MHz antenna
2	GND	Coaxial cable shield	
3	ANT 122 kHz	White	External 122 kHz antenna
4	GND	Brown	
5	LED-R	Yellow	LED, red or green
6	LED-G	Green	or orange (both)

Figure 10
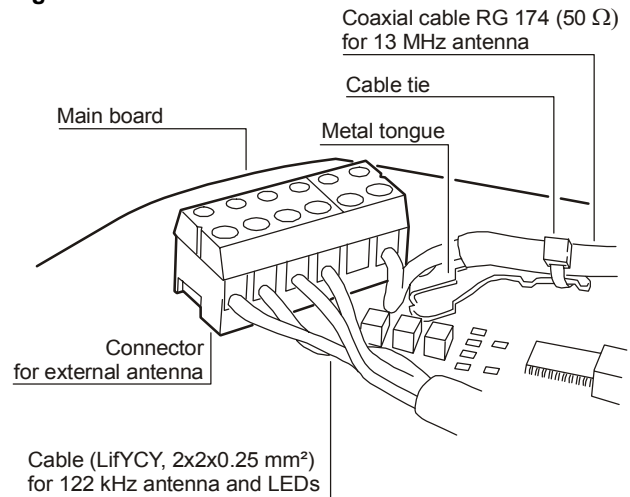
To connect and fasten the coaxial cable
- Insert metal tongue between cable shield and insulation
- Fasten cable tie