The information below is provided to facilitate using our catalogue.

Product hierarchy

for example, RAFIX 16 control components

- Chapter (control components)
- Product family (RAFIX 16)
- Product group (RAFIX 16 pushbuttons)
- Product version (RAFIX 16 pushbutton with flat lens)
- Product: 1.30.070.251/0303

Product families e.g. RAFIX 16 control components

Order: The product families appear in ascending order according to mounting hole diameter or size within the individual chapters.

Product group (e.g. RAFIX 16 pushbuttons)

- **Technical data**
  The specified data are valid for all products within the product group; any deviating data are specified with the individual versions.
- **Typical accessories**
  Frequently used accessory products for the product group are listed here. For additional accessory types, refer to the page numbers specified.

Product versions e. g. RAFIX 16 pushbutton with flat lens

- The **order blocks** summarise the products with the same appearance and dimensions.
- **Version accessories**: Accessories which are suitable for all products of the specific version or the order block.

RoHS Compliance of RAFI Components

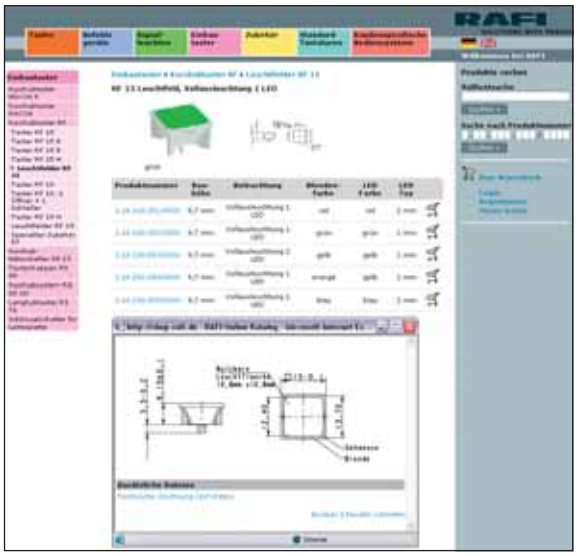
RoHS 2002/95/EC compliant

The products in this catalogue are RoHS compliant (RoHS = Restriction of Hazardous Substances). Those components are qualified for leadfree soldering. Details see glossary.

Stock items

The order numbers of stock items are **printed in bold type** in the catalogue. Stock items are usually available in commercial quantities within one week.

Download drawings in dxf- and step-format from the Internet



Most of the drawings used in the catalogue can be downloaded from the Internet in dxf file format. Drawings of some products are also available in the 3D formats *.step.
The data are available for download in our Online Catalogue at **http://www.rafi.de**. As soon as the individual product is displayed with data and graphics, you can download the **drawings by clicking on it with the right-hand** mouse key.

Download of correction sheets and PDF catalogues

You can always download the several chapters of our catalogue and correction sheets to this catalogue from the chapter PDF-documents.
In our Online Catalogue you can create **PDF data sheets** from individual products: Find and display the desired product using the search tree or by entering the order number. You can then generate a PDF document with the information displayed by clicking the "Generate product data sheet" button.

Disclaimer

Subject to technical modification. The information contained herein is solely intended for product description and shall not be interpreted as warranted qualities in a legal sense. Any claims for damages against us – regardless for which legal basis – shall be excluded unless we should be liable for intent or gross negligence.

Pushbuttons

8 mm Series
LUMOTAST FK
LUMOTAST 25
LUMOTAST 75 IP40
LUMOTAST 75 IP65
Other keylock switches
Other pushbuttons

1

Control Components

RAFIX 16
RAFIX 22 QR
RAFIX 22 FS

2

Signal Lamps

Signal lamps with integrated LED
Signal lamps with integrated lamp
Signal lamps with lamp socket
Panel mounting sockets

3

PCB Keyswitches

MICON 5 - Short-travel keyswitches
RACON - Short-travel keyswitches
RF - Short-travel keyswitches
KN 19 - Short-travel main switch
RK 90 - Keycaps
RG 85 III - Short-travel system
RS 76 - Full-travel keyswitches
Keylock and rotary switches for PCB

4

Accessories

Luminous elements
Other accessories

5

Appendix

Glossary
Reference number guide

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Pushbuttons

	8 mm Series	**LUMOTAST FK**	**LUMOTAST 25**	**LUMOTAST 75**	**Keylock switch**	**Other Pushbuttons**
Panel cut-out	ø 8.1 mm	ø 16.2 mm	ø 16.2 mm	ø 16.2 mm	ø 16.2 mm	ø 9.1 – 20.3 mm
Contacts	1 NO	1 NO	1 NO	1 NC + 1 NO, 2 NC + 2 NO	1…4 NO	1 NC, 1 NO, 1 NC + 1 NO, 2 NC
Contact material	Au	Au	Au	Ag	Au	Ag
Voltage max./min.	35 V	35 V / 0,02 V	35 V / 0,02 V	250 V	35 V	250 V / 0,02 V
Current max./min.	250 mA	100 mA / 0,1 mA	100 mA / 0,1 mA	4 A	100 mA	2 A / 0.1 mA
Terminals	Solder	Flat-ribbon cable with connector, PCB socket	Flat-ribbon cable with connector, PCB socket	Solder	PCB	Solder, screw, quick connect
Protection	IP 40	IP 65	IP 65	IP 40 / 65	IP 65	IP 40
Lamp socket	Bi-Pin T1	Bi-Pin T1/T1¼	Bi-Pin T1/T1¼	T 4.5	–	BA 9s
Illumination	Filament lamp, LED	Filament lamp, LED	Filament lamp, LED	Filament lamp, LED	–	Filament lamp, LED
Collar shape	○ □	○ □ ▭	□	○ □ ▭	○ ▭	○
Variants	Illuminated push-button, signal lamp	Illuminated push-button, signal lamp	Illuminated push-button, keylock, E-stop, seletor switch, signal lamp	Illuminated push-button, keylock switch, signal lamp	Keylock, authorization lock switch	Illuminated push-button

Control Components

Signal Lamps

RAFIX 16/ RAFIX 16 F	**RAFIX 22 FS PCB**	**RAFIX 22 FS quick-connect**	**RAFIX 22 QR**	**Integral LED**	**Integral filament/ neon lamp**	**With lamp socket**
ø 16.2 mm □ 23.1 mm ø 22.3 mm	ø 22.3 mm	ø 22.3 mm	ø 22.3 mm	ø 5 – 10 mm	ø 5 – 14 mm	ø 9.1 – 30.5 mm
1 NC, 1 NO, 1 NC + 1 NO, 2 NC, 2 NO	1 NC, 1 NO, 1 NC + 1 NO, 2 NC, 2 NO	1 NC, 1 NO, 1 NC + 1 NO, 2 NC, 2 NO	1 NC, 1 NO, max. 6 NC, 6 NO	–	–	–
Ag / Au	Ag / Au	Ag / Au	Ag / Au	–	–	–
250 V / 0,02 V	250V / 0,02 V	250V / 0,02 V	500 V / 0,02 V	28 V	6 - 230 V	35 / 250 V
6 A / 1 mA	4 A / 1 mA	4 A / 1 mA	10 A / 1 mA	0.25 - 1 W	0.3 - 1.2 W	1.2 - 5 W
PCB, quick-connect, screw	PCB	quick-connect	Screw, spring-type, quick-connect, RJ 12	Solder, quick-connect	Solder, quick-connect, cable	Solder, quick-connect, screw
IP 65	IP 65 / 69 K	IP 65 / 69 K	IP 65	IP 40	IP 40	IP 40 / 65
W 2x4.6d	LED	–	BA 9s	none	none	various
Filament lamp, LED	LED	LED clip	Filament lamp, neon lamp, LED	LED	Filament/ neon lamp	Filament/ neon lamp/LED
○ □	○ □	○ □	○ □	○ △	○ □ ⇧	○
Pushbutton, keylock, E-stop, selector, toggle switch, potentiometer drive, buzzer, signal indicator	Pushbutton, keylock, E-stop, selector switch, signal indicator, potentiometer drive	Pushbutton, keylock, E-stop, selector switch, signal indicator, potentiometer drive	Pushbutton, keylock, mushroom, E-stop, selector switch, signal indicator, potentiometer drive, buzzer			

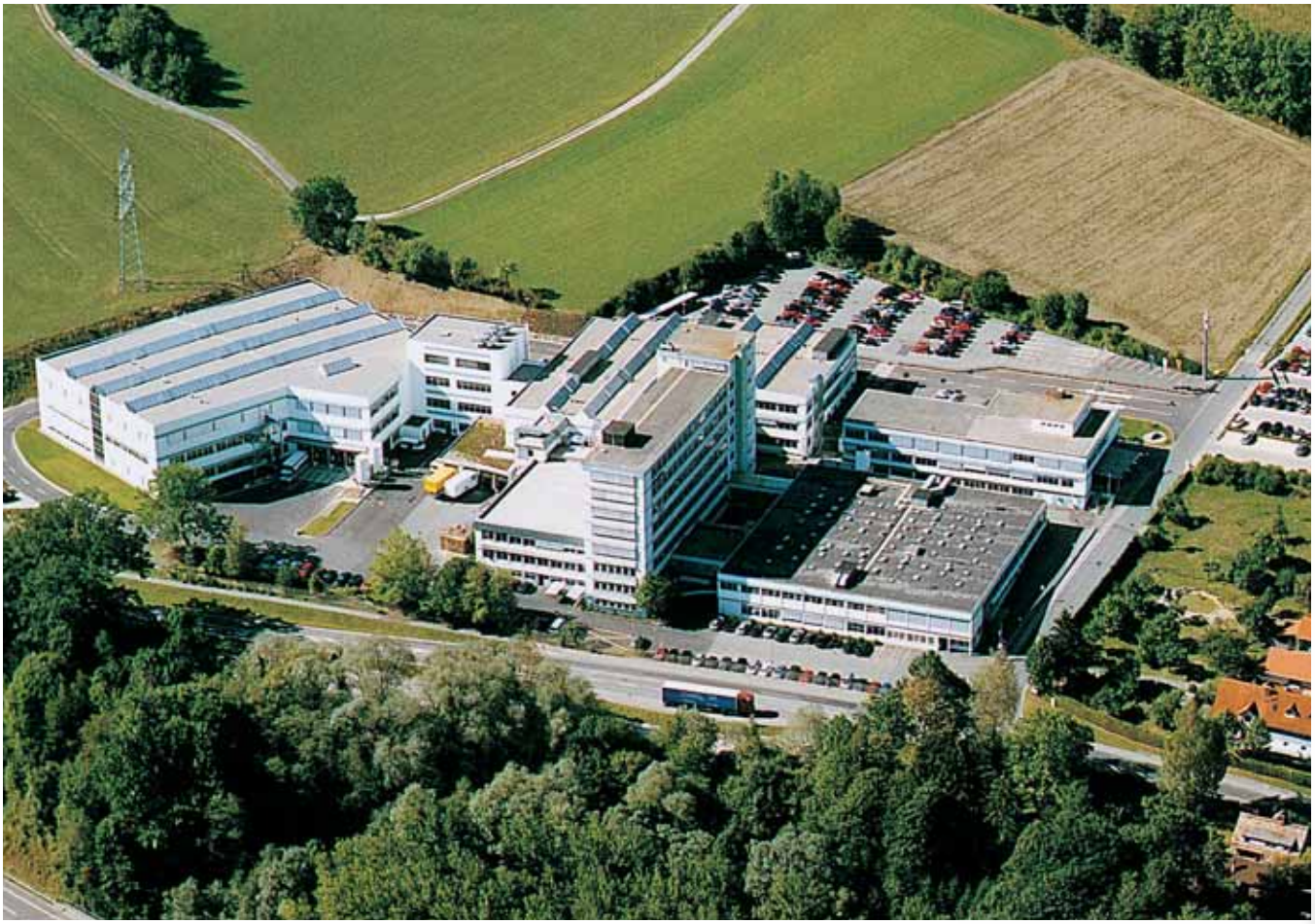
Short-Travel Keyswitches

MICON and RACON

RF 15/19

	MICON 5	RACON 8	RACON 12	RF 15 / 15 H	RF 15 R	RF 15 N
Grid min.	6 x 8 mm	12 mm	15.24 mm	19.05 mm	15.24 mm	15.24 mm
Overall height, min.	3.85 mm, variable	5 mm, variable	5 mm, variable	9.7 / 12.5 mm	9.7 / 12.5 mm	9.7 / 12.5 mm
Contacts	1 NO	1 NO	1 NO	1 NO	1 NO	1 NO
Contact material	Au	Au	Au	Ag / Au	Ag / Au	Ag / Au
Rated voltage	0.02…35 V	0.02…35 V	0.02…35 V	0.02…50 V	0.02…50 V	0.02…50 V
Rated current	0.01…100 mA	0.01…100 mA	0.01…100 mA	0.01…250 mA	0.01…250 mA	0.01…250 mA
Operating travel	0.7 … 1.1 mm	0.34 mm	0.61 mm	0.5 mm	0.5 mm	0.5 mm
Operating force	3.0 … 8.0 N	3.3 N	3.6 … 9.7 N	2 - 3 N	2 - 3 N	2 - 3 N
Terminals	PCB SMT & THT	PCB SMT & THT	PCB SMT & THT	PCB THT	PCB THT	PCB THT
Illumination	Separate LED	Separate LED	Separate LED	Full / Spot	Full / Spot	Spot
Operating life min.	250,000 / 1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Special features	Variable height by use of plungers, various operating forces	Variable height by use of plungers	Variable height by use of plungers, 90° vertical adapter	1-module indicator field, variable height by use of plungers		

	KN 19	RK 90	RG 85 III	Full-Travel Keyswitches RS 76		Keylock Switches
RF 19/19 H	**KN 19**	**RK 90/II**	**RG 85 III**	**RS 76 M**	**RS 76 C**	**Keylock switch**
23 mm	19.05 x 38,1 mm	12.5 / 19.05 mm	35 mm	19.05 mm	19.05 mm	19.05 mm
9.7 / 12.5 mm	9.7 mm		12.08 mm	15.5 mm	15.5 mm	40 mm
1 NO	1 NC + 1 NO/ 2 NC / 2 NO		1 NO / 1 NC + 1 NO	1 NO	1 NO	1 NO – 4 NO
Ag / Au	Ag		Ag	Au	contactless	Au
0.02…50 V	12…250 V		3…50 V	2…35 V	4.75…5.25 V	2…35 V
0.01…250 mA	6 A		0.1…250 mA	0.01…100 mA	–	0.01…100 mA
0.5 mm	0.5 mm		1 mm	4 mm	4 mm	1...4 x 90° rotating angle
2 - 3 N	$9^{\pm 3}$ N		3.5 - 4.5 N	0.9...1.4 N	0.7...1 N	–
PCB THT	PCB THT		8-pin Micro Match connector	PCB THT	PCB THT	PCB THT
Full / Spot	Spot	Full	Edge and symbol	Full / Spot	Spot	–
1,000,000	50,000 - 200,000		1,000,000	10,000,000	100,000,000	10,000
Indicator fields 1/2-, 1- and 2-module	Main switch under overlay or keycaps	Plastic or aluminum surface, compatible to MICON, RACON, RF and KN 19	Vandal-proof	Fully illuminable keycaps (RS 76 MX)	Very soft stroke, extremely long operating life	Degree of protection IP 54 priority keylock switch



The Head Office as well as the development, logistics, production and sales departments are based in Berg near Ravensburg.

The merging of the European Union has increases the appeal of this geographical location in the south-west of Germany for an internationally active company like RAFI. The region near Lake Constance has always been internationally-minded and is now at the heart of the EU, the most important interior market in the world. Domestic and international business is facilitated by good links to the most important road and rail networks and the Friedrichshafen regional airport.

RAFI ist represented in all important global industrial locations, either by its own subsidiaries or by contractual agencies. Assembly plants in China and Hungary and the membrane keyboard manufacturer "PIM" in France have laid the foundations for the internationalisation of our production.

The RAFI Group

RAFI GmbH & Co. KG
D-88276 Berg / Ravensburg

Headquarter with development, logistics, production, marketing and personnel department

RAFI Systec GmbH & Co. KG
D-88339 Bad Waldsee

Development and production of operating system

RAFI Eltec GmbH
D-88662 Überlingen

Production of electronic assemblies

RAFI Dekotec GmbH
D-78315 Radolfzell

Decorative assemblies for automotive industry

RAFI GB Ltd.
GB-Salfords RH 1 5 DZ

Development and sales of operating systems

RAFI Italia S.r.l.
I-20040 Cambiago (MI)

Development and sales of operating systems

RAFI France S.A.R.L.
F-77220 Gretz-Armainvilliers

Development and sales of operating systems

RAFI Hungaria KFT
H-5400 Mezötúr

Production of components and systems

PIM Industrie
F-67390 Marckolsheim

Development and production of membrane keyboards/ operating systems

RAFI Electronics Co. Ltd.
Shanghai, 201712, P.R. China

Production of components and operating systems

Components

RAFI's electromechanical components offer highest precision for input, display and switching tasks.
Top priority is given to reliability and a long service life.

Customer designed components
For specific requirements we are able to modify or even reconstruct our products according to your wishes.

Standard keyboards
Full-travel and membrane keyboards for PC applications. From the numerical key block to the integrated tracker ball.

Systems

If your prefer complete input units rather than individual components, we develop and produce customer designed operating panels for you with electronic encoding and the required interfaces (e.g. field bus interface).

Electronic modules
It is near at hand for a manufacturer of data entry systems to be active in the field of electronics as well. Today, RAFI can offer you comprehensive know-how in the development and manufacture of complete electronic assemblies. The spectrum of our services comprises the circuit concept, selection and procurement of suitable component parts, hardware and software development, design suggestions, PCB layout, assembly of the complete module, functional tests, delivery and maintenance service.

Telecommunications

International procurement, production streamlining, production and logistics for electronic assemblies in the field of telecommunications.

Automotive

Customer-specific operating panels in cars and commercial vehicles. Ergonomic handling concepts, up-to-date design and absolute reliability.

Development: State-of-the-art technology for creative solutions

We utilize state-of-the-art computer-based systems for the development and production of the switches, pushbuttons, keyboards and control units, millions of which are output each year from our production plants. CAD facilities support our engineers and precision parts are manufactured on CNC machines; concurrent engineering guarantees the best possible results since production planning and quality assurance considerations are incorporated as early as in the development phase of a product.

Logistics: Just in time

Our logistics department is not limited to merely taking care of just-in-time delivery of your products. An equally important task is the procurement of all the necessary raw materials and component parts in the international markets.

Precise production and delivery relies on an organization working at the same level of precision. For this reason, our computer-assisted ordering system is based on SAP.

Our customers' orders are processed with EDIFACT, Electronic Data Interchange For Administration, Commerce and Transport. The underlying idea is: Implement a generally accepted standard for data exchange between customers and suppliers. Our customers' order data can be input directly into our data processing system.

Production

Our production methods are guided by economical as well as ecologiacal considerations. It is our objective to reach a defined quality standard with maximum economy, a careful use of our natural resources and a high degree of environmental compatibility.

Assembly and testing

SMT production lines

THT PCB assembly and solder bath

CNC sheet metal machining center

Screen printing of overlays

CNC machining centers

High-performance injection-moulding machines

Assembly plant in Hungary (Mezötür)

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