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# WHO WE ARE


RAFI is one of the world's leading suppliers of efficient solutions for human-machine communication – for over 100 years now. With about 2,000 employees, the RAFI Group is characterised by independence, healthy growth and profitability. Our long-standing customer relationships are based on our internationally superior performance, quality and cross-industry experience. When developing complex solutions, we place great emphasis on involving the customer in the process – from the very start. This helps to build customer satisfaction as well as very stable relationships.

RAFI products are also very impressive in terms of their quality and sustainability. Their quality is dictated by the customers' needs and requirements. Legal regulations can also play a role, along with the

current state of the art. Economical use of natural resources is an important aspect of the RAFI corporate philosophy. The company's environmental management system is certified according to ISO 14001.

## Subsidiaries and locations

The company originally founded in 1900 by Ernst Bucher in Ravensburg, Germany as "Optisches, mechanisches und elektrotechnisches Institut" has evolved to become today's RAFI Group with subsidiaries in China, France, Italy, Hungary and the USA. Thanks to its own in-house sales staff and field service as well as a dense worldwide network of dealers and distributors, RAFI is extremely flexible and can always be reached by its customers.



RAFI Electronics

# WHAT WE DO

As a business, we hold a solid position in the market for electromechanical components, complete control systems as well as electronic assemblies and devices.

From buttons, switches, signal lamps, PCB keyswitches and short-travel keyswitches to control and signalling units, all of our products stand out for their reliability and long operating life. We deliver solutions that meet your needs, and if you cannot use a standard product, we will custom-manufacture a product to fulfil your specific requirements.

Moreover, we are known as pioneers in the world of industrial touch data entry systems, providing clever solutions with just the right effect – RAFI is always one step ahead. Let us help you to obtain efficient and cost-effective production of your goods.



RAFI Berg/Ravensburg

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**Certifications:**

DIN EN ISO 9001: 2008  
DIN EN ISO 9001: 2008 with Road Traffic Regulations,  
EN ISO 13485: 2003  
ISO /TS 16949: 2009,  
DIN EN ISO: 2004 + Cor 1: 2009

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**CONTROL SYSTEMS:** This is the classic application for our components: short-travel keyswitches below an overlay or RAFIX control components and emergency stop buttons for control and safety functions. Also available as an additional input element for touchscreen units.



**CONSUMER GOODS:** Our components turn up in countless everyday consumer goods – and not just in washing machines. In most cases, they are customer-specific developments or standard components that have been transformed in some way.



**AUTOMOTIVE INDUSTRY:** Controls for inside of vehicles are our speciality, involving steering wheels, consoles, door handles as well as remote control systems. Example: A typical overhead control panel contains up to 20 MICON short-travel keyswitches, working together to give the vehicle a highly exclusive brand feeling.

While the contact that is made might only last for seconds and be barely perceptible, its effect is usually far greater.

Whenever someone presses a key, flips a switch or operates a joystick, a reaction is triggered, causing something to happen. Since people usually do not give these fleeting moments a second thought, many of our products go unnoticed in everyday life.

Upon closer examination, however, it is clear that RAFI products are used day after day in all sorts of modern consumer goods in a wide range of situations. From pushbuttons, signal lamps, keylock switches, signalling units and PCB keyswitches to short- and full-travel keyswitches, we have prepared an overview of the various core industries where our products are commonly used.

# INDUSTRIES

**ELEVATOR AND TRANSPORT SYSTEMS:** We supply elevator, cabin and display panels to elevator manufacturers for all types of buildings, including optional digital printing with custom designs for any location. Vandal-proof buttons are used, just in case ...



**SPECIAL MECHANICAL ENGINEERING:** The RG 85 button system was originally developed for vending machines and elevators. Nowadays, coffee machines are controlled using capacitive switches and systems, with intuitive operation and guaranteed hygiene being critical features. Of course, it is all made by RAFI.

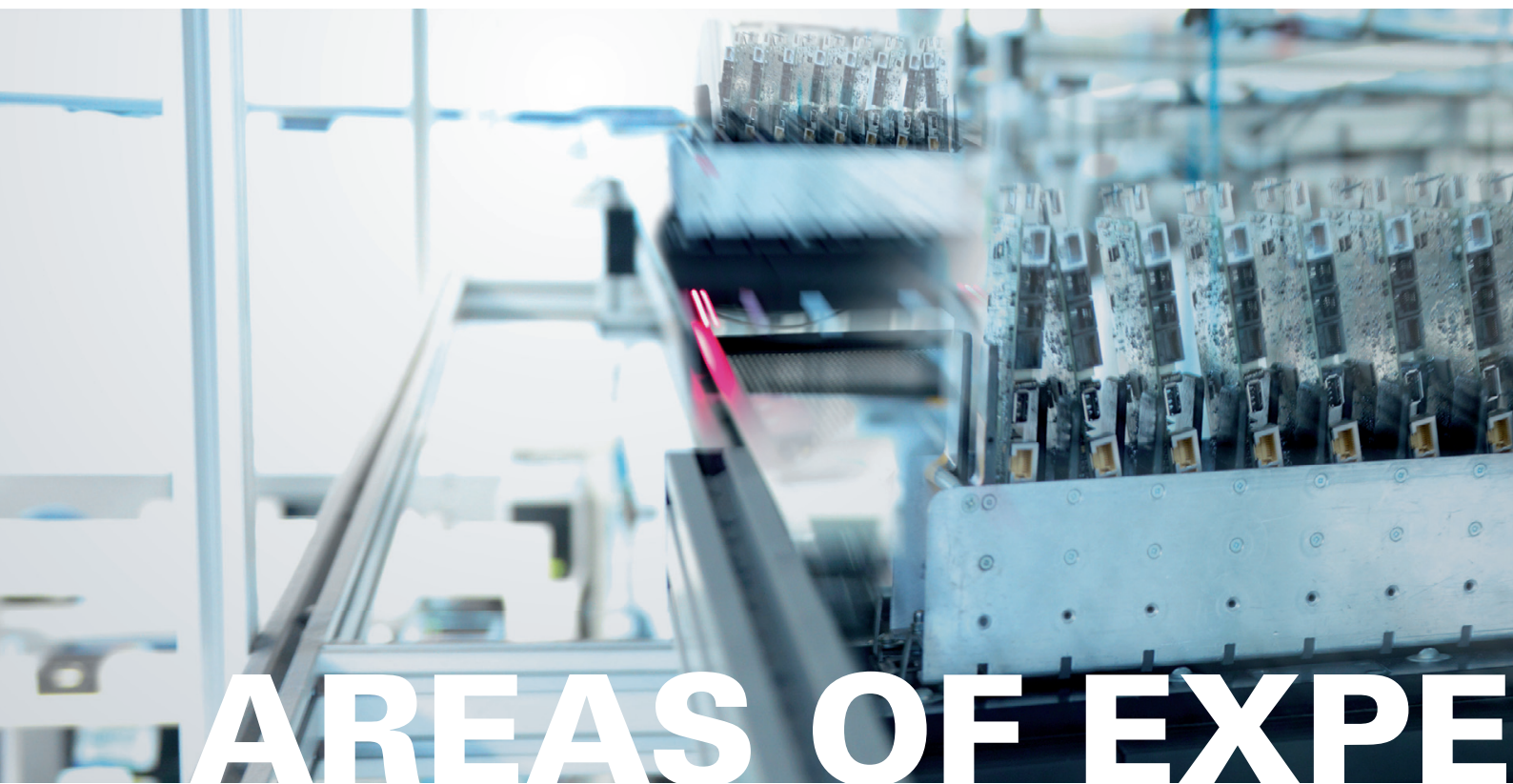


**TELECOMMUNICATIONS:** We rank among the ten largest providers of electronic manufacturing services in Germany. Our customers include the market leader for broadband terminal equipment and smart home products. Any RAFI customer who relies on electronic circuitry will benefit from our advanced expertise.

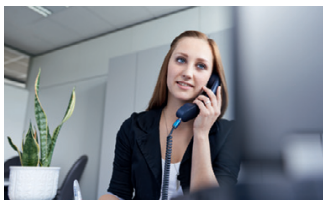


CLEARLY THE RIGHT SOLUTION FOR YOUR APPLICATION





# AREAS OF EXPERTISE



**SALES:** We like to keep the focus on our customers. We will work together with you from the start to develop the best solution to meet your needs. Our industry-oriented sales structure reflects our consistent customer focus around the globe.

Within our sales divisions, different industries are handled by independent teams under the leadership of key account managers. This highly targeted approach ensures that our customers receive optimum care and support. We speak your language.



**PRODUCTION:** From contact technology, plastic injection moulding, sheet metal machining, printing technology and mechanics all the way to electronics, we have a broad spectrum of production capabilities – subject to clearly defined quality standards and optimum cost-effectiveness.



**DEVELOPMENT:** Ranging from development to product realization and series production, we possess development expertise covering the entire production process. This includes development of mechanics, electronics, and software.

All of this is based on state-of-the-art technologies and simulation tools as well as highly efficient processes. Our development teams accompany products from the initial idea to series-production readiness, ensuring top quality along with comprehensive after-sales service.







**MATERIALS MANAGEMENT:** Our materials management covers everything from purchasing and order processing to logistics. Purchasing is divided into strategic and operational areas to ensure we remain competitive in the international marketplace. Order processing aims to achieve the optimum balance between cost-effectiveness and availability.



AN INTEGRATED SUPPLY CHAIN WITH CAREFULLY TAILORED CONCEPTS.

# PRODUCT OVERVIEW







ELECTROMECHANICAL COMPONENTS

PUSHBUTTONS						
						
	<b>LUMOTAST FK</b>	<b>LUMOTAST 25</b>	<b>LUMOTAST 75</b>	<b>Keylock switches</b>	<b>Other pushbuttons</b>	<b>RAFIX 16/ RAFIX 16 F</b>
<b>Panel cut-out</b>	Ø 16.2 mm	Ø 16.2 mm	Ø 16.2 mm	Ø 16.2 mm	Ø 9.1/20.3 mm	Ø 16.2 mm □ 23.1 mm Ø 22.3 mm
<b>Contacts</b>	1 NO	1 NO	1 NC + 1 NO 2 NC + 2 NO	1 to 4 NO	1 NC, 1 NO, 1 NC + 1 NO, 2 NO	1 NC, 1 NO, 1 NC + 1 NO, 2 NC, 2 NO
<b>Contact material</b>	Au	Au	Ag	Au	Ag	Ag / Au
<b>Voltage max./min.</b>	35 V / 0.02 V	35 V / 0.02 V	250 V	35 V	250 V / 0.02 V	250 V / 0.02 V
<b>Current max./min.</b>	100 mA / 0.1 mA	100 mA / 0.1 mA	4 A	100 mA	16 A / 0.1 mA	6 A / 1 mA
<b>Current max./min.</b>	Ribbon cable with connector, PCB plug-in socket	Ribbon cable with connector, PCB plug-in socket	Solder	PCB	Solder, screw, quick connect	Quick-connect, screw, PCB, plug-in socket
<b>Degree of protection</b>	IP 65	IP 65	IP 40 / 65	IP 65	IP 40	IP 65
<b>Terminals</b>	Bi-Pin T1 / T1 1¼	Bi-Pin T1 / T1 1¼	T 4.5	–	BA 9s	W 2 x 4.6d
<b>Lamp socket</b>	Filament lamp, LED	Filament lamp, LED	Filament lamp, LED	–	Filament lamp, LED	Filament lamp, LED
<b>Collar shape</b>	○□□	□	○□□	○□	○	○□
<b>Variants</b>	Illuminated pushbutton, signal lamp	Illuminated pushbutton, EMERGENCY STOP button, keylock switch, selector switch, signal lamp	Illuminated pushbutton, signal lamp, keylock switch	Keylock switch, priority keylock switch	Pushbutton, illuminated pushbutton	Pushbutton, stop button, EMERGENCY STOP button, keylock switch, selector switch, toggle switch, potentiometer drive, signaling unit, signal indicator



# PRODUCT OVERVIEW

ELECTROMECHANICAL COMPONENTS

CONTROL COMPONENTS				SIGNAL LAMPS	
					
<b>RAFIX 22 FS+</b>	<b>RAFIX 22 FSR</b>	<b>RAFIX 30 FS+</b>	<b>RAFIX 22 QR</b>	<b>Integrated LED</b>	<b>Integrated neon lamp</b>
Ø 22.3 mm	Ø 22.3 mm	Ø 30.5 mm	Ø 22.3 mm	Ø 5–30 mm	Ø 7–14 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, up to 6 NC, 6 NO	–	–
Ag / Au	Ag / Au	Ag / Au	Ag / Au	–	–
250 V / 0.02 V	250 V / 0.02 V	250 V / 0.02 V	500 V / 0.02 V	28 V	230 V
4 A / 1 mA	4 A / 1 mA	4 A / 1 mA	10 A / 1 mA	0.25 – 1 W	–
PCB, quick-connect (QC)	PCB, quick-connect (QC)	PCB, quick-connect (QC)	Screw, cage clamp, quick-connect	Solder, quick-connect	Solder, quick-connect
IP 65	IP 65 / 69 K	IP 65	IP 65	IP 40	IP 40
–	–	–	BA 9s	None	None
LED, clip	LED, clip	LED, clip	Filament lamp, neon lamp, LED	LED	Neon lamp
□	○	○	□	△	□ ↑
Pushbutton, EMERGENCY STOP button, signal indicator, keylock switch, selector switch, potentiometer drive, USB feed- through	Pushbutton, EMERGENCY STOP button, signal indicator, keylock switch, selector switch, USB feedthrough	Pushbutton, signal indicator, keylock switch, selector switch, USB feed- through	Pushbutton, mushroom actuator, EMERGENCY STOP button, twin push- button, signal indica- tor, keylock switch, selector switch, potentiometer drive, signalling unit		

# PRODUCT OVERVIEW

ELECTROMECHANICAL COMPONENTS

## SHORT-TRAVEL KEYSWITCHES



**MICON 5**

**RACON 8**

**RACON 12**

**RF 15/15 H**








**RF 15 R**

**RF 15 N**

<b>Grid min.</b>	6 x 8 mm	12 mm	15,24 mm	19,05 mm	15,24 mm	15,24 mm
<b>Overall height, min.</b>	3.85 mm, variable	5 mm, variable	5 mm, variable	9.7 / 12.5 mm	9.7 / 12.5 mm	6.2 mm, variable
<b>Contacts</b>	1 NO	1 NO	1 NO	1 NO	1 NO	1 NO
<b>Contact material</b>	Au	Au	Au	Ag / Au	Ag / Au	Ag / Au
<b>Rated voltage</b>	0.02...35 V	0.02...35 V	0.02...35 V	0.02...50 V	0.02...50 V	0.02...50 V
<b>Rated current</b>	0,01...100 mA	0,01...100 mA	0,01...100 mA	0,01...250 mA	0,01...250 mA	0,01...250 mA
<b>Operating travel</b>	0.7 ... 1.1 mm	0.34 mm	0.61 mm	0.5 mm	0.5 mm	0.5 mm
<b>Operating force</b>	3.0 ... 8.0 N	3.3 ... 6.3 N	3.6 ... 9.7 N	2 - 3 N	2 - 3 N	2 - 3 N
<b>Terminals</b>	PCB SMT & THT	PCB SMT & THT	PCB SMT & THT	PCB THT	PCB THT	PCB THT
<b>Illumination</b>	Separate LED	separate LED	separate LED	Full / spot	Full / spot	Full / spot
<b>Operating life min.</b>	250,000 / 1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
<b>Special features</b>	Variable height by use of plungers, different operating forces	Variable height by use of plungers, different operating forces	Variable height by use of plungers, 90° vertical adapter, different operating forces	Variable height by use of plungers, 1-module indicator field		Variable height by use of plungers

# PRODUCT OVERVIEW

ELECTROMECHANICAL COMPONENTS

				FULL-TRAVEL KEYSWITCHES		KEYLOCK SWITCHES
						
<b>RF 19/19 H</b>	<b>KN 19</b>	<b>RK 90/II</b>	<b>RG 85 III</b>	<b>RS 76 M</b>	<b>RS 76 C</b>	<b>Keylock switches</b>
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 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 ± 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	Spotl	–
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	Mains switch under overlay or keycaps	Plastic or alumi- nium surface, compatible with MICON, RACON, RF and KN 19	Vandal-proof	Fully illumina- ble keycaps (RS 76 MX)	Very soft stroke, ext- remely long operating life	Degree of protection IP 54, priority keylock switch

# NEW PRODUCTS IN THE CATALOGUE

ELECTROMECHANICAL COMPONENTS



GET IN  
TOUCH  
NEW  
PRODUCTS



# NEW PRODUCTS IN THE CATALOGUE

ELECTROMECHANICAL COMPONENTS



## LUMOTAST 22

E-Stop pushbuttons,  
22.3 mm

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## RAFIX 22 FS+

Pushbuttons FLEXLAB

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## RAFIX 22 FS+

Keylock switches  
compact

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## RAFIX 22 FS+

Emergency stop  
pushbuttons compact

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## RAFIX 22 FSR

Pushbuttons

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## RAFIX 22 FSR

Selector switches

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## RAFIX 22 FSR

Keylock switches

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## RAFIX 22 FSR

Emergency stop  
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## RAFIX 22 FSR

Signal indicators

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## RAFIX 30 FS+

Pushbuttons

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## RAFIX 30 FS+

Pushbuttons FLEXLAB

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## RAFIX 30 FS+

Selector switches

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## RAFIX 30 FS+

Keylock switches

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## RAFIX 30 FS+

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## RAFIX 30 FS+

USB feedthroughs

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## RAFIX FS

Short-travel adapters

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## MICON 5

Plungers round,  
ring illumination

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## MICON 5

Plungers square,  
spot-illumination

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# HOW TO USE THE CATALOGUE

## ELECTROMECHANICAL COMPONENTS

### Latest online version as the basis for your order

Since this catalogue is published in paper format only at certain intervals, it is not as up-to-date as our website. For this reason, we recommend using the datasheets on our website when ordering standard products.

You can always find the latest information on our products here: <http://www.shop.rafi.de>

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### Creation of individual datasheets in PDF format

You can create PDF datasheets in our online catalogue at <http://www.shop.rafi.de>. Find the product you want using the search tool or by entering the order number and then click on the "Create datasheet" link.

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### 3D data and 2D drawings

For many of our products, we can provide 3D models in the \*.stp file format. For older products, we usually still have dimensional drawings in dxf format. This data can be found in our online catalogue where the individual products are specified: <http://www.shop.rafi.de>

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### Correction sheets for the printed catalogue

We provide correction sheets on our home page if we discover errors after the catalogue has been printed. Alternatively, you can download the individual (corrected) chapters of this catalogue in PDF format at [www.rafi.de/Downloads](http://www.rafi.de/Downloads).

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### Availability

We always strive to satisfy the needs of our customers. However, it is necessary to mention that our production is contingent on the availability and delivery of the appropriate base materials. Such issues, in addition to changing legislation, can result in modification or discontinuation of our products.

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### Specifications

The specifications, depictions and other information about our products are merely the results of individual technical inspections. The conditions are derived from the pertinent standards. These inspections should be considered to be independent of one another and they cannot be used to infer possible interactions, especially also in terms of the applicable usage category, installation situation and/or environmental conditions. If you need an evaluation of your application, we will be happy to prepare an offer on request.

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### Subject to change

We, the RAFI Group, reserve the right to deviate from the specifications in this catalogue, especially in terms of the technical and exterior designs, colours and materials from which the products are manufactured. Excluded from this provision are the basic core functions of our products, on which our customers rely.

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**Information about our products** (e.g. weights, dimensions, practical values, capacity, tolerances and specifications) as well as the depictions (e.g. drawings, CAD data and figures), both in printed and in electronic format, is authoritative only as an approximation unless usability for the express and contractually stipulated purpose requires precise conformity. Such information and depictions do not represent guaranteed quality features but are non-binding descriptions or indicators of the product characteristics. Deviations which are customary in the trade and deviations which are required by law or represent technical improvements, as well as the substitution of components with equivalent parts (form/fit/function), are permissible insofar as they do not impair the usability for the express and contractually stipulated purpose. This applies in particular to spare parts and subsequent orders.

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### RoHS conformity



The products in this catalogue are RoHS-compliant (RoHS = Restriction of Hazardous Substances).

The components are qualified for lead-free soldering processes. See the glossary for more details.

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### Terms and conditions

Our current terms and conditions (sales) can be found at [www.rafi.de/AGBs](http://www.rafi.de/AGBs).