Leuze electronic

the sensor people

RFID

Identification in a new dimension

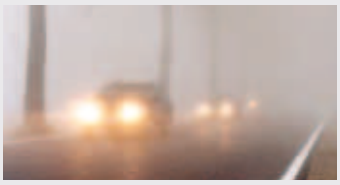
PRODUCT INFORMATION

RFID – A technology which performs under even the most adverse conditions.

The alternative to optical identification.

I “see” what you don’t see!

An RFID system consists of a read/write unit, a transponder and the corresponding software. RFID offers one main advantage over all standard identification methods. Depending on the frequency, no direct “visual contact” between the read/write unit and the transponder is necessary in order to read information. Thus, these systems can be used reliably and easily under the most adverse environmental conditions.



Poor visibility

The transponders are moved past the read station within range of the electrical field and the information is read out even when the view is obstructed.

Wetness

Nearly without exception, our product line is protected against moisture according to IP 67 and, thus, always operates properly even when exposed to splashed water or wetness.

Heat

Leuze electronic RFID systems are designed for temperatures of up to max. 220 °C. Thus, the systems function properly even when subjected to extreme heat.

Cold

The Leuze electronic RFID systems operate unimpaired at temperatures as low as –25 °C.

Soiling

Even in the case of badly soiled environments, e.g. with dust, varnish or other chemical substances, RFID functions without interference.

Process control

Flexible process control through data updates during processes.

RFID can do a lot –
Leuze electronic RFID can do more!

With Leuze electronic identification solutions: always one step more economical.

With the Leuze electronic RFID systems, we were able to expand the possible application areas as well as reliably ensure their function even under the most difficult environmental conditions, such as when disturbing sources from metal arise. Thus, from the highly praised future technology has come a practical complement to existing identification systems.

Through our tried and tested technology and our extensive application know-how in the implementation of these systems, we are able to find a reliable solution for nearly all difficult conditions.

Optimal efficiency through mature technology.

- Systems are available with an integrated or external antenna depending on the application requirements
- Broad spectrum of RFID ranges available
- Simple handling and fast, uncomplicated mounting thanks to compact size
- A parameter memory ensures that the parameters are retained in the device even in the event of a power failure

Maximum functional reliability through software designed for practical use.

- User friendly, intuitive handling
- Continuous detection even in the event of transponder errors (trigger = no read)
- Time-optimized writing to the transponder while moving past through pre-transmission of the data to the write unit
- Maximum connectivity with all common interfaces and fieldbus systems
- Network and fieldbus coupling through modular connector units

With Leuze electronic RFID, the gray theory becomes an **economically attractive practice**.

With Leuze electronic, you benefit from extensive practical application know-how.

Leuze electronic RFID is already demonstrating its potential for a large number of customers in a wide range of applications. Our solutions are especially characterized by their suitability for practical applications and the possibility of flexible and uncomplicated integration in a broad array of network environments. Our engineers have already developed systems for meeting the demands of many different tasks and are, therefore, able to utilize wide-ranging application knowledge for optimally expanding your processes with RFID technology as well.

Leuze electronic RFID is already proving itself in the following industries:

- Conveyor and storage technology
  - Pallet transportation systems
  - Container transportation systems
- Automotive engineering
  - Painting lines
  - Skid conveyor systems
- Special engineering
  - Drying technology
  - Paper-roll transportation systems
- Packaging technology

Container / Load carrier

- Fast and reliable identification even with block driving of containers with destination control e.g. in return shipment storage areas
- Increase in the availability and quality in processing compared to barcode labeling on boxes

For particularly well-suited devices for these applications, see table pages 10 – 11.

Painting / Skid

- Reliable identification of the carrier (skid) in processes for surface treatment, even at high temperatures and under exposure to chemicals
- Maintenance-free data carriers through passive RFID technology
- RFM 32 with EX approval is available for special requirements in potentially explosive areas (ATEX)

For particularly well-suited devices for these applications, see table pages 10 – 11.

Pallets

- Reliable detection of pallet or load, also as disposable label
- Wide spectrum of available operating ranges up to 5,000 mm, dependent on frequency range
- Also suitable for transfer stations of high-lift trucks

For particularly well-suited devices for these applications, see table pages 10 – 11.

The complete Leuze electronic RFID program – the right solution for every application.

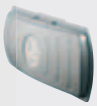
Transponder

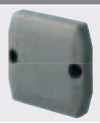
The spectrum of requirements for transponders is broad. In this segment, Leuze electronic offers you an extensive and high-quality selection of products for all conceivable applications.

RFID read/write systems

Depending on the application, RFID components must meet diverse technical demands. For this reason, we offer you a large number of different solutions which vary in functional scope, working frequency and operating range.

Transponder	TFI 03 1601 TFI 05 1601	TFM 03 1510 TFM 05 1510	TFM 03 1110 TFM 05 1110
Product illustration			
Type	disc transponder 8 byte (fixcode)	disc transponder 112 byte	disc transponder 112 byte
Max. temperature	200 °C	140 °C	120 °C

Frequency	Read / write systems	Product illustration	Function	Max. reading speed	Max. reading distance	Max. reading distance	Max. reading distance
125 kHz Encoding	**RFI 32**		reading	up to 0.6 m/s	up to 60 mm 90 mm		
13.56 MHz writeable	**RFM 12**		read and write	up to 2.0 m/s		up to 30 mm 45 mm	up to 30 mm 45 mm
	RFM 32 also with EX approval		read and write	up to 6.0 m/s		up to 65 mm 110 mm	up to 65 mm 110 mm
	RFM 62		read and write	up to 6.0 m/s		up to 150 mm 250 mm	up to 150 mm 250 mm
	HFM 35 XOD		read and write + 1D code			up to 30 mm	up to 30 mm
868 MHz writeable	**RFU 61**		read and write	up to 4.0 m/s			
	RFU 81		read and write	up to 7.5 m/s			
	HFU 45 XOD		read and write + 1D code + 2D code				

TFM 03 1110.EX TFM 05 1110.EX	TFM 04 1190	TFM 08 1610	TFM 03 5125	TFM 02 2210 TFM 06 2225	TFU 05 1101	TFU 05 2101	TFU 08 2101	TFU 03 2201 TFU 10 2201
								
disc transponder 112 byte	disc transponder 1,024 byte	high temperature 112 byte	keyring 256 byte	smart label self-adhesive 112 byte, 256 byte	disc transponder 12 byte	on metal 60 byte	card 30 byte	smart label self-adhesive 30 byte
60 °C	85 °C	220 °C			120 °C	125 °C	85 °C	
Max. reading distance	**Max. reading distance**	**Max. reading distance**	**Max. reading distance**	**Max. reading distance**	**Max. reading distance**	**Max. reading distance**	**Max. reading distance**	**Max. reading distance**
	up to 30 mm		up to 25 mm	up to 25 mm 45 mm				
up to 65 mm 110 mm	up to 90 mm	up to 110 mm	up to 40 mm	up to 40 mm 110 mm				
	up to 250 mm	up to 350 mm	up to 100 mm	up to 60 mm 100 mm				
up to 30 mm	up to 30 mm	up to 50 mm	up to 20 mm	up to 20 mm 30 mm				
					up to 500 mm	up to 700 mm	up to 800 mm	up to 800 mm 1,500 mm
					up to 850 mm	up to 1,500 mm	up to 1,000 mm	up to 1,000 mm 3,000 mm
					up to 250 mm	up to 250 mm	up to 300 mm	up to 200 mm 450 mm

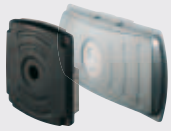
At Leuze electronic you combine
state-of-the-art technology with proven structures.

Our systems adapt to the surroundings – not vice versa.

All Leuze electronic RFID components can be easily networked by means of modular connector units.
In this regard, the systems support all common industrial interfaces and fieldbus systems.

RFI 32

RFM 12/32/62



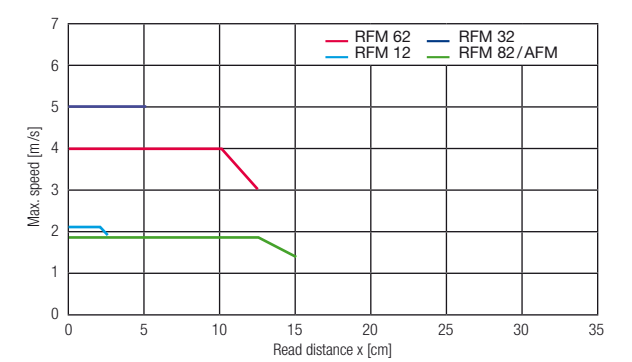
RFU 61/81

HFM 35 XOD
HFU 45 XOD

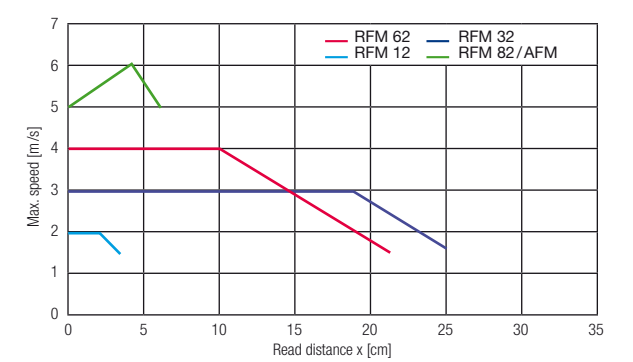
RS232 with MA 2		via PCB connector	via PCB connector		
multiNet with MA 21 100.2		via PCB connector	via PCB connector	via KB JST-3000	via KB JST-HS-300
RS485/RS422 with MA 21				via terminals	via terminals
Interbus with MA 41 IS MA 42 IS		via PCB connector (MA 42)	via PCB connector (MA 42)	via terminals (MA 41)	via KB JST-HS-300 (MA 42)
PROFIBUS with MA 204*i*		via PCB connector	via PCB connector	via KB JST-3000	via KB JST-HS-300
EtherNet TCP/IP with MA 208*i*		via PCB connector	via PCB connector	via KB JST-3000	via KB JST-HS-300
PROFINET with MA 248*i*		via PCB connector	via PCB connector	via KB JST-3000	via KB JST-HS-300
DeviceNet with MA 255*i*		via PCB connector	via PCB connector	via KB JST-3000	via KB JST-HS-300
EtherNet IP with MA 258*i*		via PCB connector	via PCB connector	via KB JST-3000	via KB JST-HS-300
CANopen with MA 235*i*		via PCB connector	via PCB connector	via KB JST-3000	via KB JST-HS-300

Reading curves TFM and TFU.

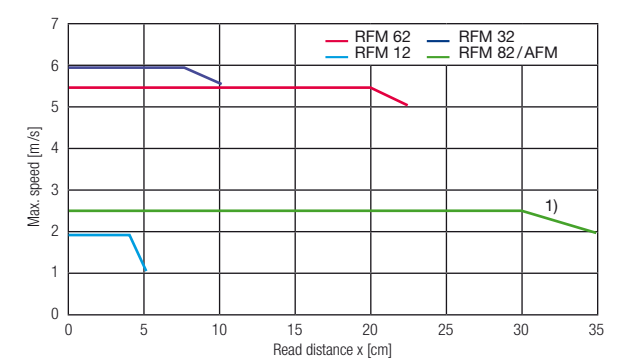
TFM 02 ...



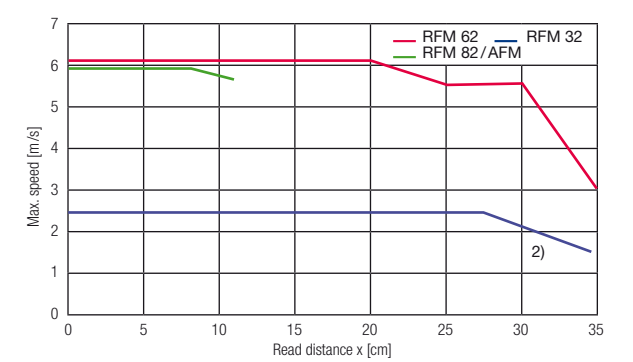
TFM 03/04 ...



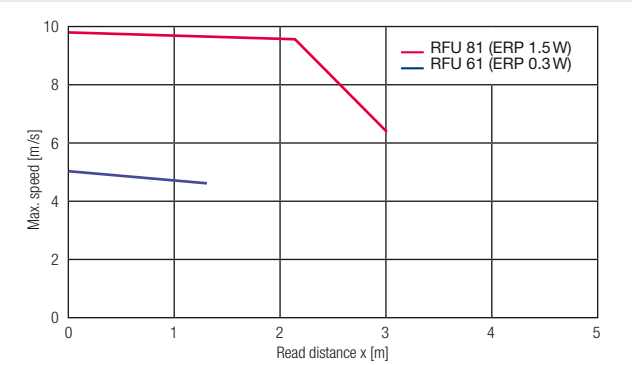
TFM 05/06 ...



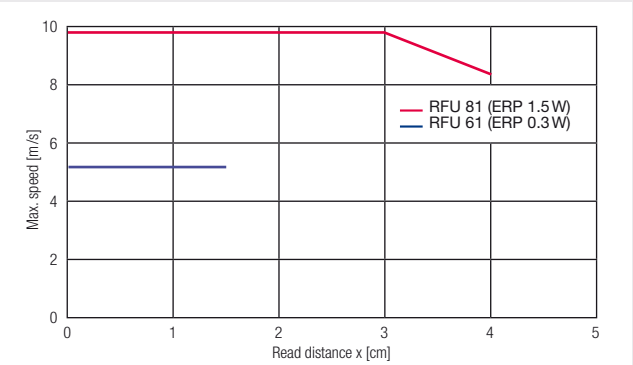
TFM 08 ...



TFU 03 ... / TFU 05 ...



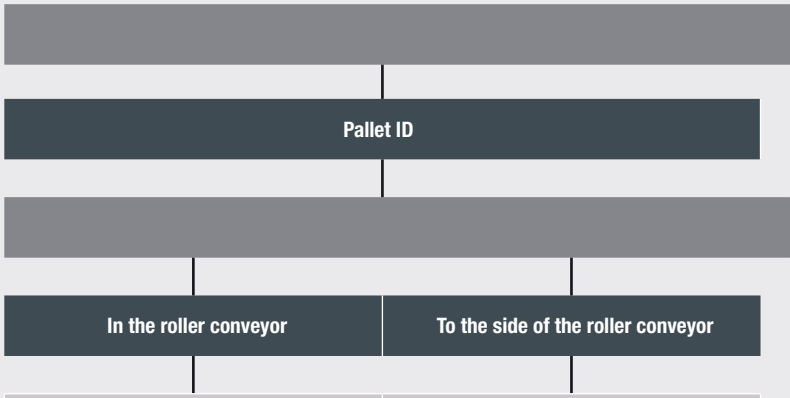
TFU 08 ... / TFU 10 ...



The right RFID components for your applications.

The adjacent overview gives you a quick assignment of suitable devices for your individual applications.

For special applications, your Leuze electronic specialists are at your disposal.



	In the roller conveyor	To the side of the roller conveyor
Operating range	20 – 120 mm typical**	40 – 400/1,000 mm typical**
Pallet formats	800 × 600 mm, 800 × 1,200 mm typical	800 × 600 mm, 800 × 1,200 mm typical
Conveyor speeds	0.2 – 0.5 m/s typical	0.2 – 0.8 m/s typical
Transponder format	for 20 mm >Ø 30 mm / >approx. 20 × 40 mm for 60 mm >Ø 50 mm / >approx. 50 × 50 mm	>Ø 50 mm, > approx. 50 × 50mm
Reader mounting height	10 – 20 mm below the roll edge	min. 10 – 20 mm above the upper roll edge, 15 – 20 mm to the side of the conveyor edge, with RFU min distance 100 mm, with angle to pal., device middle at height of transponder
Distance of reader to metal	min. 10 mm to the side, when reader surrounded by metal, approx. 5 mm to the roll on the side	min. 15 mm to the side, when reader surrounded by metal, with RFU reflection, turn downwards or to the side
Fastening of transponder	adhered or screwed onto middle of pallet base, slightly sunk or set back	on pallet base, lateral, possibly slightly set back in the center
Distance of transponder to metal	>20 mm, min. 10 mm for 40 mm range	recommended >50 mm, min. 10 mm for 40 / 500 mm
Data volume	typical: pallet number and goals, 112 – 256 byte	typical: pallet number and goals, 60 – 256 byte
Particularly suitable devices	**RFM32SL200**, RFM62SL200** **TFM051110.210****, TFM082125.220**	**RFM62SL200,** RFU61SL100-EU** TFM051110.210, **TFM052210.210**** or TFU032201.308, TFU052101.308,

* Readers are mounted between or above the rolls and the entire area in front of and above the dev
** Please observe device ranges, cf. data sheets.

For which application would you like to use the RFID?

Container ID		Skid ID / Workpiece holders	
Where will the RFID be installed?			
In the roller conveyor	**To the side of the roller conveyor**	**In the roller conveyor**	**To the side of the roller conveyor**
10 – 60 mm typical**	40 – 350 / 700 mm typical**	20 – 150 mm typical**	40 – 400 / 1,000 mm typical**
600 × 400 mm, 400 × 300 mm typical	600 × 400 mm, 400 × 300 mm typical	–	–
0.3 – 1.5 m/s typical	0.3 – 1.5 m/s typical	0.1 – 0.5 m/s typical	0.1 – 0.8 m/s typical
up to 40 mm: >Ø 30 mm, > approx. 20 × 40 mm up to 60 mm: >Ø 50 mm, > approx. 50 × 50 mm	for 40 - 200 >Ø 50 mm, > approx. 50 × 50 mm for >200 – 350 mm approx. 86 × 54 mm with RFU: 34 × 54 mm or 27 × 97 mm	up to 40 mm >Ø 30 mm up to 150 mm >Ø 50 mm / Ø 85 mm	up to 90 mm >Ø 50 mm, up to 400 mm >Ø 85 mm
min. 10 – 20 mm above the upper roll edge, 10 – 40 mm below the roll edge, device middle at height of transponder	min.10 – 20 mm above the upper roll edge, 15 – 20 mm to the side of the conveyor edge	min.10 – 20 mm above the upper roll edge, 15 – 20 mm to the side of the conveyor edge, device middle at height of transponder	15 – 20 mm to the side of the conveyor edge, device middle at height of transponder
min. 15 mm to the side, when reader surrounded by metal, approx. 5 mm to the roll on the side	min. 15 mm to the side, when reader surrounded by metal	min. 10 mm to the side, when reader surrounded by metal, approx. 5 mm to the roll on the side	min. 15 mm to the side, when reader surrounded by metal
on / in container base, possibly with wrapping foil	on container side, possibly with wrapping foil, two necessary when turning the container!	free on skid on bottom of holder, set back	free on skid on bottom of holder, lateral orientation, slightly set back
recommended >15 mm, min. 10 mm for 40 mm	recommended >50 mm, min. 20 mm for 40 mm	>20 mm, min. 10 mm for 40 mm range	recommended >50 mm, min. 20 mm for 40 mm
typical: pallet number and goals, 112 – 1,024 byte	typical: container number and goals, 60 – 256 byte	typical: skid number, 44 – 1,024 byte	typical: skid number, 44 – 112 byte
RFM12SL200, **RFM32SL200**** TFM022210.210, TFM051110.210, **TFM052210.220****, TFM041190.230, **TFM082125.220**, special formats	**RFM62SL200**, RFU61SL100-EU** TFM051110.210, **TFM052210.220****, TFM041190.230, special formats TFU032201.308, TFU102201.308	RFM32SL200, **RFM62SL200**, RFM32SL200 EXn** TFM051110.210, **TFM052610.210**, **TFM051110.Ex** TFM081605.210**, TFM041190.230	R**FM32SL200**, RFM62SL200, RFM32SL200 EXn** RFU61SL100-EU TFM051110.210, **TFM052610.210,** **TFM051110.Ex** **TFM081605.210****, TFM041190.230, TFU052101.308, TFU102201.308

vice is free of metal.

Optoelectronic Sensors

Cubic Series
Cylindrical Sensors, Mini Sensors, Fibre Optic Amplifiers
Measuring Sensors
Special Sensors
Light Curtains
Forked Sensors
Double Sheet Monitoring, Splice Detection
Inductive Switches
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Data Transmission Systems
Distance Measurement

Barcode Readers
RF-IDent-Systems
Modular Interfacing Units
Industrial Image Processing Systems
Optical Data Transmission Systems
Optical Distance Measurement/Positioning
Mobile Code Readers

Safety Sensors
Safety Systems
Safety Services

Safety Laser Scanners
Safety Light Curtains
Transceivers and Multiple Light Beam Safety Devices
Single Light Beam Safety Devices
AS-i-Safety Product Range
Safety Sensor Technology for PROFIBUS DP
Safety Switches, Safety Locking Devices and Safety Command Devices
Safety Relays
Sensor Accessories and Signal Devices
Safety Engineering Software
Machine Safety Services

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