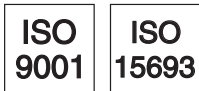
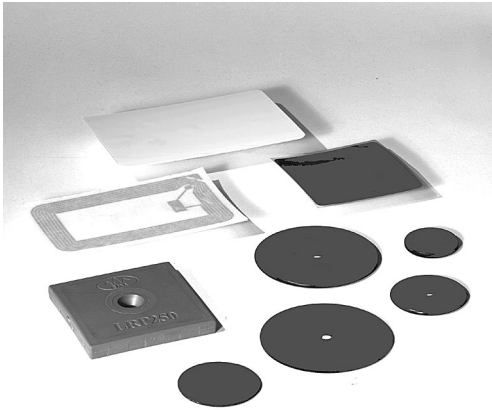


Part No. 501 05005



- Suitable for read-write units of the RFM series

**Disc transponder**  
TFM 02.../TFM 03.../TFM 04.../TFM 05...

- Universal robust disc transponder for industrial environments

**Self-adhesive transponder**  
TFM 02.../TFM 05.../TFM 08...

- Self-adhesive smart label transponder
- Cost-effective and easy to use

**High temperature transponder**  
TFM 05.../TFM 08...

- High temperature-proof transponders up to 200°C

**Keyring transponder TFM 03...**

- Practical transponder for use as a tag or for personal access control

**Spacer for disc transponder**  
TFM 03.../TFM 05...

- 10mm thick spacer for disc transponder Ø 30mm and Ø 50mm
- 30mm thick spacer for high temperature disc transponder Ø 85mm

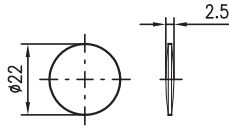


The TFM ... transponders are not provided with a name plate.

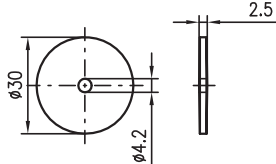
Transponder for explosion-hazard zones, see separate data sheet.

Dimensioned drawing

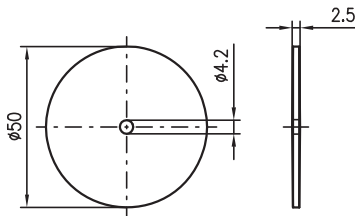
TFM 02 1125.220 Part No. 501 02915



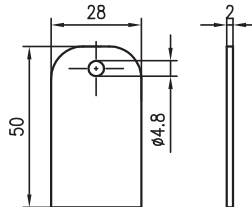
TFM 03 1110.210 Part No. 501 22917  
TFM 03 1510.210 Part No. 501 06412



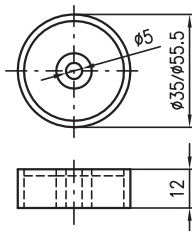
TFM 04 1190.230 Part No. 501 08290  
TFM 05 1110.210 Part No. 501 02916  
TFM 05 1510.210 Part No. 501 06413



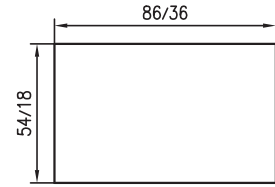
TFM 03 5125.220 Part No. 501 02956



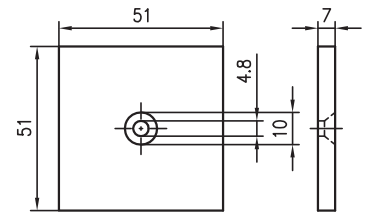
Spacer 30 HT Part No. 501 07102  
Spacer 50 HT Part No. 501 07103



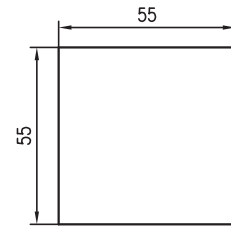
TFM 08 2225.220 Part No. 501 02914 1)  
TFM 08 2125.220 Part No. 501 09233  
TFM 02 2210.210 Part No. 501 07790



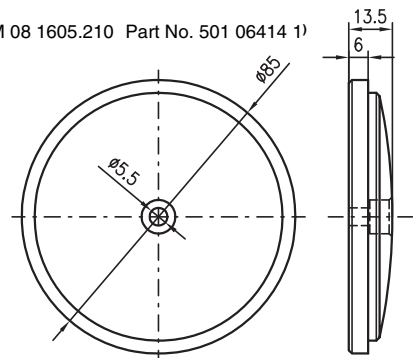
TFM 05 2610.210 Part No. 501 09317



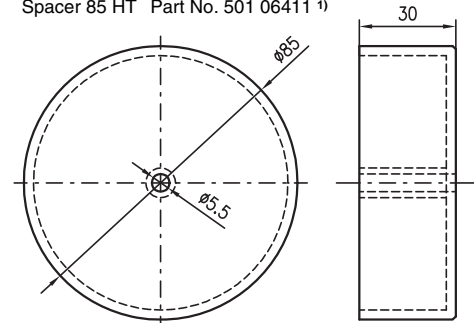
TFM 05 2210.210 Part No. 501 09232  
TFM 06 2225.220 Part No. 501 02913



TFM 08 1605.210 Part No. 501 06414 1)



Spacer 85 HT Part No. 501 06411 1)



1) Part being discontinued!

We reserve the right to make changes \*tfm\_01gb.fm

## Specifications

### General specifications

Working frequency	13.56MHz
Read distance	see diagrams
Data carrier speed	max. 6.0m/s (see diagram), dependent on reader
Data storage	see table
Memory access	write/read - approx. 50ms/block min. 100,000 write cycles typical, min. 10 years of data retention
Material	self-adhesive transponder: paper/PET foil with pressure-sensitive adhesive disc/high-temperature transponder: Epoxy/Royalplast/PA6/PPS keyring/card transponder: PET spacer: Ultramid/PPS
Colour	self-adhesive transponder: white disc transponder: black high-temperature transponder: brown/black keyring/card transponder: white spacer: black

## Remarks

The read-write transponders of the TFM series are robust data carriers with 1024 bytes of memory for a large range of applications in industry.

The specified operating ranges may vary depending on the type of read-write unit selected.

If a larger operating range is required, a read-write device with a larger antenna or larger dimensions must be selected.



**Above a transponder temperature of 50°C, the maximum operating range above the transponder decreases. Typical values for the reduction of the operating range are:**

- at 60°C: ~ 10%
- at 80°C: ~ 15%

**Please note that transponders with temperatures above the operating temperature cannot be read from or written to.**

## Order guide

	<b>Designation</b>	<b>Part No.</b>
<b>Disc transponder</b>		
Ø 22mm, 256 byte memory, IP 68, PPS	TFM 02 1125.220	501 02915
Ø 30mm, 112 byte memory, IP 67, Epoxy/Royalplast	TFM 03 1110.210	501 02917
Ø 30mm, 112 byte memory, IP 68, PA6	TFM 03 1510.210	501 06412
Ø 40mm, 1024 byte memory, IP 67, Epoxy/Royalplast	TFM 04 1190.230	501 08290
Ø 50mm, 112 byte memory, IP 67, Epoxy/Royalplast	TFM 05 1110.210	501 02916
Ø 50mm, 112 byte memory, IP 68, PA6	TFM 05 1510.210	501 06413
<b>Self-adhesive transponder</b>		
18x36 mm, 112 byte memory, paper/PET foil	TFM 02 2210.210	501 07790
55x55mm, 112 byte memory, paper/PET foil	TFM 05 2210.210	501 09232
55x55mm, 256 byte memory, paper/PET foil	TFM 06 2225.220	501 02913
86x54mm, 256 byte memory, paper/PET foil	TFM 08 2225.220	501 02914 <sup>1)</sup>
<b>High temperature transponder</b>		
51x51x7mm, 112 byte memory, IP 68, PPS	TFM 05 2610.210	501 09317
Ø 85mm, 44 byte memory, IP 68, PPS	TFM 08 1605.210	501 06414 <sup>1)</sup>
<b>Keyring transponder</b>		
50x28x2mm, 256 byte memory, PET	TFM 03 5125.220	501 02956
<b>Card transponder</b>		
86x54mm, 256 byte memory, IP 68, PET	TFM 08 2125.220	501 09233
<b>Spacer for disc transponder</b>		
Ø 36mm for TFM 03 1... , Ultramid	Spacer 30 HT	501 07102
Ø 56mm for TFM 05 1... , Ultramid	Spacer 50 HT	501 07103
Ø 85mm for TFM 08 16... , PPS	Spacer 85 HT	501 06411 <sup>1)</sup>

1) Part being discontinued!

# Ident system RFM

# Transponder

## Tables

### Memory organisation / mechanical data


Type	Part No.	Size	Block size	Memory Block range	Type	Chip	Protection class	Dimensions <sup>1)</sup>	Weight
<b>Disc transponder</b>									
TFM 02 1125.220	501 02915	256byte	8byte	00h ... 1Fh(32)	07	Tag-IT HFI	IP 68	Ø 22x3.0mm	2g
TFM 03 1110.210	501 02917	112byte	4byte	00h ... 1Bh(28)	04	I-Code 2 (SLI)	IP 67	Ø 30x2.5 mm	5g
TFM 04 1190.230	501 08290	1024byte	8byte	00h ... 1Fh(32)	05	MyD 10P	IP 67	Ø 40x2.5mm	4g
TFM 05 1110.210	501 02916	112byte	4byte	00h ... 1Bh(28)	04	I-Code 2 (SLI)	IP 67	Ø 50x2.5mm	10g
TFM 03 1510.210	501 06412	112byte	4byte	00h ... 1Bh(28)	04	I-Code 2 (SLI)	IP 68	Ø 30x2.5mm	3g
TFM 05 1510.210	501 06413	112byte	4byte	00h ... 1Bh(28)	04	I-Code 2 (SLI)	IP 68	Ø 50x2.5mm	4g
<b>Self-adhesive transponder</b>									
TFM 02 2210.210	501 07790	112byte	4byte	00h ... 1Bh(28)	04	I-Code 2 (SLI)	IP 54	18x36x0.3mm	2g
TFM 05 2210.210	501 09232	112byte	4byte	00h ... 1Bh(28)	04	I-Code 2 (SLI)	IP 54	55x55x0.3mm	2g
TFM 06 2225.220	501 02913	256byte	8byte	00h ... 1Fh(32)	07	Tag-IT HFI	IP 54	55x55x0.3mm	~ 2g
TFM 08 2225.220	501 02914 <sup>2)</sup>	256byte	8byte	00h ... 1Fh(32)	07	Tag-IT HFI	IP 54	86x54x0.3mm	~ 5g
<b>High temperature transponder</b>									
TFM 05 2610.210	501 09317	112byte	4byte	00h ... 1Bh(28)	04	I-Code 2 (SLI)	IP 68	51x51x7mm	50g
TFM 08 1605.210	501 06414 <sup>2)</sup>	44byte	4byte	05h ... 0Fh(11)	01	I-Code 1	IP 68	Ø 85x15mm	50g
<b>Keyring transponder</b>									
TFM 03 5125.220	501 02956	256byte	8byte	00h ... 1Fh(32)	07	Tag-IT HFI	IP 65	50x28x2.5mm	~ 4g
<b>Card transponder</b>									
TFM 08 2125.220	501 09233	256byte	4byte	00h ... 1Fh(32)	07	Tag-IT HFI	IP 68	86x54x1 mm	~ 5g
<b>Spacer</b>									
Spacer 30 HT	501 07102			-			-	Ø 36x10mm	3g
Spacer 50 HT	501 07103			-			-	Ø 56x10mm	4g
Spacer 85 HT	501 06411 <sup>2)</sup>			-			-	Ø 85x30mm	20g

1) Due to tolerances and product updates, dimensions may change. Tolerances for disc transponders: on average ±0.5mm.

2) **Part being discontinued!**

### Temperatures

Transponder	Part No.	Operating temperature <sup>1)</sup>						Storage temperature						Storage temperature, for limited time		
		0°C ... +50°C	-20°C ... +50°C	-20°C ... +70°C	-25°C ... +85°C	25°C ... +100°C	-40°C ... +85°C	-20°C ... +50°C	-20°C ... +70°C	-25°C ... +85°C	-40°C ... +85°C	-25°C ... +120°C	-25°C ... +200°C	up to +140°C	up to +200°C	up to +210°C
TFM 02 1125.220	501 02915				●									● 100h		
TFM 03 1110.210	501 02917			●												
TFM 04 1190.230	501 08290			●												
TFM 05 1110.210	501 02916			●												
TFM 03 1510.210	501 06412				●									● 1000h		
TFM 05 1510.210	501 06413				●									● 1000h		
TFM 02 2210.210	501 07790		●													
TFM 05 2210.210	501 09232		●													
TFM 06 2225.220	501 02913		●													
TFM 08 2225.220	501 02914 <sup>2)</sup>		●													
TFM 05 2610.210	501 09317						●								● 1000h	● 400h
TFM 08 1605.210	501 06414 <sup>2)</sup>					●						●		● 4000h	● 1000h	
TFM 03 5125.220	501 02956			●												
TFM 08 2125.220	501 09233			●						●						
Spacer 30 HT	501 07102												●			
Spacer 50 HT	501 07103												●			
Spacer 85 HT	501 06411 <sup>2)</sup>												●			

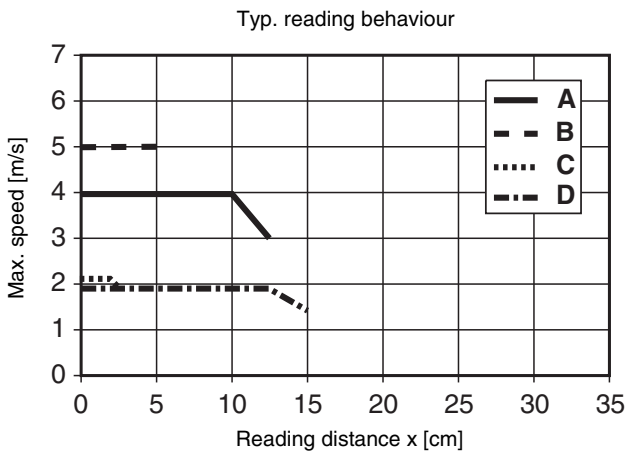
1)  Operating temperature: temperature range in which the data to/from the transponder are written and read

2) **Part being discontinued!**

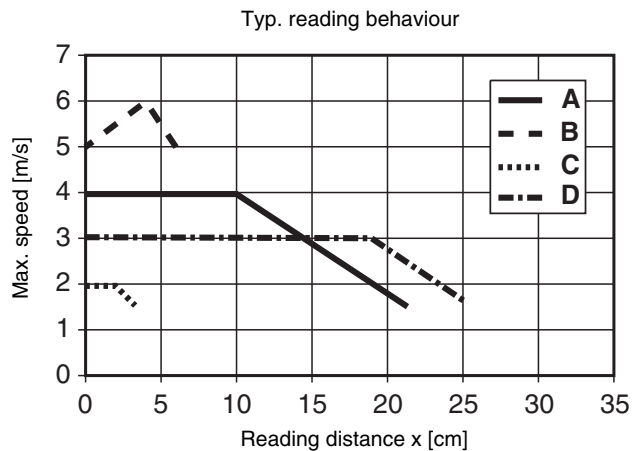
## Diagrams

### Typical reading behaviour

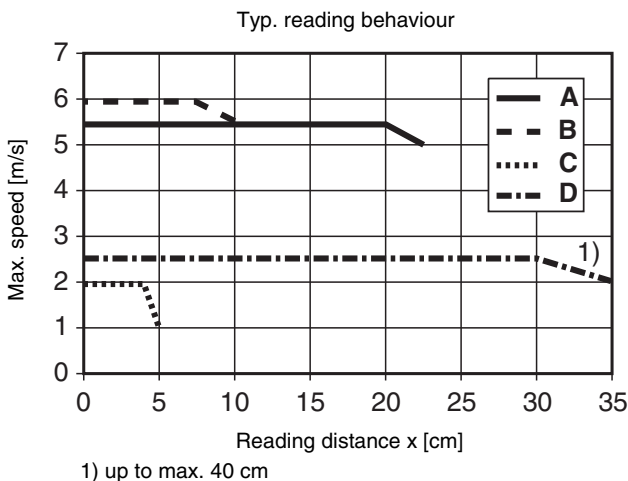
TFM 02...



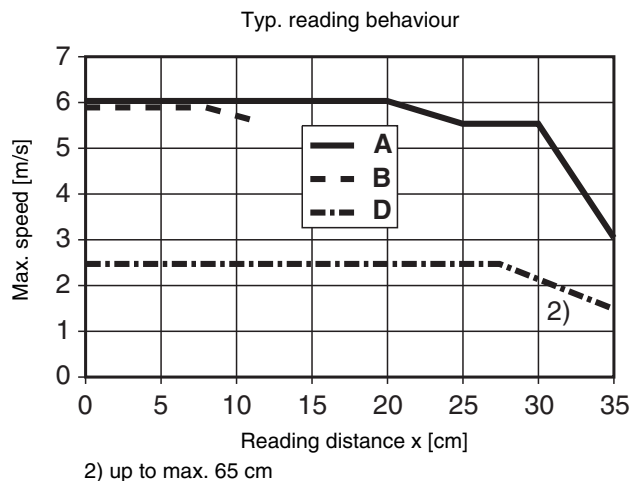
TFM 03...



TFM 05...



TFM 08...



- A With read-write unit RFM 62
- B With read-write unit RFM 32
- C With read-write unit RFM 12
- D With read-write unit RFM 82/AFM

The values specified may deviate as a result of temperature influences, installation site, read angle, etc.



## Mounting/fastening information

### ● Self-adhesive transponders:

When fastening, the mounting surface must be dry, free of grease and clean in order to ensure secure bonding. In the vicinity of the chip, the self-adhesive transponders must not be mounted around corners or edges as damages could result. Recommended distance to metal/metal foils: > 5 mm. Intended for use in mechanically protected environments.

### ● Disc transponders:

Screw connection of the disc transponder only with sufficient play. Excessive tightening of the fastening screw may result in damage to the transponder. Recommended distance to metal/metal foils: > 5 mm. Also suitable for areas with slight mechanical loading.

### ● High-temperature transponders:

Screw connection of the high-temperature transponders must be loose. The material expansion with increasing temperature must be taken into account. Material stresses must be avoided.