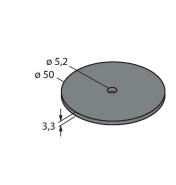


# In TAG 500 2K FRAM HF Tag



#### Technical data

Operating frequency

Туре	In TAG 500 2K FRAM
ID	100002360
Remark to product	Not suitable for direct mounting on metal
Device marking	II 1G Ex ia IIC T6 Ga II 1D Ex ia IIIC T85 °C Da I M1 Ex ia I Ma
Approval acc. to	Ex Veritas 21ATEX1101X Ex Veritas 21UKEX1103X IECEx EXV 21.0082X
Data transfer	Inductive coupling
Technology	HF RFID
Operating frequency	13.56 MHz
Radio communication and protocol stan- dards	ISO 15693 NFC Typ 5
Read/Write distance max.	405 mm
	For explosion hazardous areas see in- struction leaflet
Design	Hard tag, R50
Housing material	Plastic, PA6
Active area material	Plastic, PA6, black
Protection class	IP69K
Tightening torque	≤ 6.5 Nm
Packaging unit	1
Technical data	
Туре	In TAG 500 2K FRAM
ID	100002360
Remark to product	Not suitable for direct mounting on metal
Data transfer	Inductive coupling
Technology	HF RFID
On exeting frequency	40.50 MUL



### Features

- The tags must undergo adequate stress tests within the proposed temperature processes before deployment.
- The following stress test was performed on this tag:
  - Cyclic temperature stress: 5 min at -40  $^\circ\text{C}$  5 min at 90  $^\circ\text{C}$
- Number of tested cycles: 100, transition period: 30 seconds
- Continuous load: 140 °C for 100 hours
- This successfully performed test does not imply suitability for a specific application, but merely serves as proof of the basic usability.
- FRAM memory 2 kB
- Not for direct mounting on metal
- ATEX category II 1 G, Ex Zone 0
- ATEX category II 1 D, Ex Zone 20
- ATEX category I M1, mining

## Functional principle

The HF read/write devices operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and tag used.

The read/write distances mentioned here only represent standard values measured under laboratory conditions, free from any influences caused by surrounding materials.

The read/write distances of tags suitable for mounting in/on metal were determined in/on metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal). Testing of the application under real operating conditions is therefore essential, especially with on-the-fly reading and writing!

13.56 MHz



## Technical data

ChipFujitsu MB89R118Memory size2048 ByteMemoryRead/WriteFreely usable memory2000 ByteNumber of read operationsunlimitedNumber of write operations $10^{10}$ Typical read time0.5 ms/ByteTypical write time0.5 ms/ByteRadio communication and protocol standardsISO 15693 NFC Typ 5Minimum distance to metal10 mmTemperature during read/write access-25+85 °CTemperature outside detection range-45+85 °C140 °C, 1 × 100 hFor explosion hazardous areas see instruction leafletDevice markingII 1G Ex ia IIC T6 Ga I 1M Ex ia IIC T6 Ga I M1 Ex ia I IM T6 S°C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X EX Veritas 21UKEX1103X IECEX EXV 21.0082XDesignHard tag, R50Diameter5.0 mm +/- 0.5 mmHousing height3.5 mm +/- 0.5 mmHousing heightS.5 mm +/- 0.5 mmHousing naterialPlastic, PA6 Active area materialProtection classIP69KPackaging unit1	Memory type	FRAM
MemoryRead/WriteFreely usable memory2000 ByteNumber of read operationsunlimitedNumber of write operations10 <sup>10</sup> Typical read time0.5 ms/ByteTypical write time0.5 ms/ByteRadio communication and protocol standardsISO 15693 NFC Typ 5Minimum distance to metal10 mmTemperature during read/write access-25+85 °CTemperature outside detection range-45+85 °CTemperature outside detection range-45+85 °CDevice markingII 1G Ex ia IIC T6 Ga IM Ex ia IIC T6 Ga IM Ex ia IIC T85 °C Da IM Ex ia IIC T85 °C CaDevice markingII 4G Ex ia IIC T6 Ga IM Ex ia IIC T85 °C Ca IM Ex	Chip	Fujitsu MB89R118
Freely usable memory2000 ByteNumber of read operationsunlimitedNumber of write operations101°Typical read time0.5 ms/ByteTypical write time0.5 ms/ByteRadio communication and protocol standardsISO 15693 NFC Typ 5Minimum distance to metal10 mmTemperature during read/write access-25+85 °CTemperature outside detection range-45+85 °CTemperature outside detection range-45+85 °CDevice markingII 10 Ex ia IIC T6 Ga II 10 Ex ia IIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X EX Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter5.2 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Memory size	2048 Byte
Number of read operationsunlimitedNumber of write operations10*°Typical read time0.5 ms/ByteTypical write time0.5 ms/ByteRadio communication and protocol standardsISO 15693 NFC Typ 5Minimum distance to metal10 mmTemperature during read/write access-25+85 °CTemperature outside detection range-45+85 °CTemperature outside detection range-45+85 °CDevice markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X EX Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter5.0 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Memory	Read/Write
Number of write operations $10^{10}$ Typical read time $0.5 \text{ ms/Byte}$ Typical write time $0.5 \text{ ms/Byte}$ Radio communication and protocol standardsISO 15693 NFC Typ 5Minimum distance to metal $10 \text{ mm}$ Temperature during read/write access $-25+85 \text{ °C}$ Temperature outside detection range $-45+85 \text{ °C}$ Temperature outside detection range $-45+85 \text{ °C}$ Device markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIIC T6 Ga II 1D Ex ia IIIC T8 5 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X Ex Veritas 21ATEX1101X Ex Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter $50 \text{ mm} + /- 0.3 \text{ mm}$ Housing height $3.5 \text{ mm} + /- 0.5 \text{ mm}$ Housing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque $\leq 6.5 \text{ Nm}$	Freely usable memory	2000 Byte
Typical read time0.5 ms/ByteTypical write time0.5 ms/ByteRadio communication and protocol standardsISO 15693 NFC Typ 5Minimum distance to metal10 mmTemperature during read/write access-25+85 °CTemperature outside detection range-45+85 °CTemperature outside detection range-45+85 °CDevice markingI1 G Ex ia IIC T6 Ga II 1D Ex ia IIIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X Ex Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter5.2 mm +/- 0.3 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Number of read operations	unlimited
Typical write time0.5 ms/ByteRadio communication and protocol standardsISO 15693 NFC Typ 5Minimum distance to metal10 mmTemperature during read/write access-25+85 °CTemperature outside detection range-45+85 °CTemperature outside detection range-45+85 °CDevice markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIC T6 Ga II 1D Ex ia IIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X EX Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter5.2 mm +/- 0.3 mmHousing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Number of write operations	10 <sup>10</sup>
Radio communication and protocol standardsISO 15693 NFC Typ 5Minimum distance to metal10 mmTemperature during read/write access-25+85 °CTemperature outside detection range-45+85 °CTemperature outside detection range-45+85 °CDevice markingI140 °C, 1 × 100 hDevice markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X Ex Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter50 mm +/- 0.5 mmInternal diameter5.2 mm +/- 0.5 mmHousing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackProtection classIP69K	Typical read time	0.5 ms/Byte
dardsNFC Typ 5Minimum distance to metal10 mmTemperature during read/write access $-25+85$ °CTemperature outside detection range $-45+85$ °CTemperature outside detection range $-45+85$ °C140 °C, 1 × 100 hFor explosion hazardous areas see in- struction leafletDevice markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X ECX EXV 21.0082XDesignHard tag, R50Diameter $50$ mm +/- 0.5 mmInternal diameter $5.2$ mm +/- 0.3 mmHousing height $3.5$ mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque $\leq 6.5$ NmProtection classIP69K	Typical write time	0.5 ms/Byte
Temperature during read/write access-25+85 °CTemperature outside detection range-45+85 °C140 °C, 1 × 100 hFor explosion hazardous areas see in- struction leafletDevice markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X Ex Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter50 mm +/- 0.5 mmInternal diameter5.2 mm +/- 0.3 mmHousing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K		
Temperature outside detection range-45+85 °C140 °C, 1 × 100 hFor explosion hazardous areas see in- struction leafletDevice markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X Ex Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter50 mm +/- 0.5 mmInternal diameter5.2 mm +/- 0.3 mmHousing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Minimum distance to metal	10 mm
140 °C, 1 × 100 hFor explosion hazardous areas see in- struction leafletDevice markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X Ex Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter50 mm +/- 0.5 mmInternal diameter5.2 mm +/- 0.3 mmHousing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Temperature during read/write access	-25+85 °C
For explosion hazardous areas see in- struction leafletDevice markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X Ex Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter50 mm +/- 0.5 mmInternal diameter5.2 mm +/- 0.3 mmHousing height3.5 mm +/- 0.5 mmHousing naterialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Temperature outside detection range	-45+85 °C
struction leafletDevice markingII 1G Ex ia IIC T6 Ga II 1D Ex ia IIIC T85 °C Da I M1 Ex ia I MaApproval acc. toEx Veritas 21ATEX1101X Ex Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter50 mm +/- 0.5 mmInternal diameter5.2 mm +/- 0.3 mmHousing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K		140 °C, 1 × 100 h
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Ex Veritas 21UKEX1103X IECEx EXV 21.0082XDesignHard tag, R50Diameter50 mm +/- 0.5 mmInternal diameter5.2 mm +/- 0.3 mmHousing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Device marking	II 1D Ex ia IIIC T85 °C Da
Diameter50 mm +/- 0.5 mmInternal diameter5.2 mm +/- 0.3 mmHousing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Approval acc. to	Ex Veritas 21UKEX1103X
Internal diameter5.2 mm +/- 0.3 mmHousing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Design	Hard tag, R50
Housing height3.5 mm +/- 0.5 mmHousing materialPlastic, PA6Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Diameter	50 mm +/- 0.5 mm
Housing material   Plastic, PA6     Active area material   Plastic, PA6, black     Tightening torque   ≤ 6.5 Nm     Protection class   IP69K	Internal diameter	5.2 mm +/- 0.3 mm
Active area materialPlastic, PA6, blackTightening torque≤ 6.5 NmProtection classIP69K	Housing height	3.5 mm +/- 0.5 mm
Tightening torque ≤ 6.5 Nm   Protection class IP69K	Housing material	Plastic, PA6
Protection class IP69K	Active area material	Plastic, PA6, black
	Tightening torque	≤ 6.5 Nm
Packaging unit 1	Protection class	IP69K
	Packaging unit	1