


## 5.4.2 SIMATIC RF350R

### 5.4.2.1 Features

SIMATIC RF350R	Characteristics	
	Design	<ul style="list-style-type: none"> <li>① Antenna connection</li> <li>② RS-422 interface</li> <li>③ Status display</li> </ul>
	Area of application	Identification tasks in assembly lines in harsh industrial environments; for external antennas (ANT 1, ANT 3, ANT 12, ANT 18, ANT 30)

#### Note

##### Reader requires external antennas

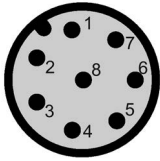
Note that the RF350R reader is designed only for operation with external antennas and only works in conjunction with the antennas ANT 1, ANT 3, ANT 12, ANT 18 or ANT 30.

### 5.4.2.2 Ordering data for RF350R

Table 5- 14 Ordering data for RF350R

	Article number
RF350R with RS-422 interface (3964R)	6GT2801-4AB10





### 5.4.2.3 Pin assignment of RF350R RS422 interface

Pin	Pin Device end 8-pin M12	Assignment
	1	+ 24 V
	2	- Transmit
	3	0 V
	4	+ Transmit
	5	+ Receive
	6	- Receive
	7	Unassigned
	8	Earth (shield)

### 5.4.2.4 LED operating display

The operational statuses of the reader are displayed by the LEDs. The LED can adopt the colors green, red or yellow and the statuses off □, on ■, flashing ■:

Table 5- 15 LED operating display on the reader

LED	Meaning
□	The reader is turned off.
	Operating voltage present, reader not initialized or antenna switched off
	Operating voltage present, reader initialized and antenna switched on
	<ul style="list-style-type: none"> <li>Operating mode "with presence": Transponder present</li> <li>Operating mode "without presence": Transponder present and command currently being executed</li> </ul>
	There is an error. The number of flashes provides information about the current error. You will find more information on error messages in the section "System diagnostics (Page 413)".

### 5.4.2.5 Ensuring reliable data exchange

The "center point" of the transponder must be situated within the transmission window.

### 5.4.2.6 Metal-free area

The RF350R reader does not have an internal antenna. Operation is not affected by mounting on metal or flush-mounting in metal. For information about the metal-free area required by the external antennas, refer to the corresponding section of the chapter AUTOHOTSPOT.

### 5.4.2.7 Technical specifications

Table 5- 16 Technical specifications of the RF350R reader

<b>6GT2801-4AB10</b>		
Product type designation	SIMATIC RF350R	
<b>Radio frequencies</b>		
Operating frequency, rated value	13.56 MHz	
<b>Electrical data</b>		
Maximum range		
• ANT 1	• 140 mm	
• ANT 3 / ANT 3 S	• 50 mm / 20 mm	
• ANT 12	• 16 mm	
• ANT 18	• 35 mm	
• ANT 30	• 55 mm	
Maximum data transmission speed reader ↔ transponder	RF300 transponder	ISO transponder
• Read	• approx. 8000 bytes/s	• approx. 1500 bytes/s
• Write	• approx. 8000 bytes/s	• approx. 1500 bytes/s
Transmission speed	19.2, 57.6, 115.2 kBd	
Read/write distances of the reader	See section "Field data for transponders, readers and antennas (Page 51)."	
MTBF (Mean Time Between Failures)	140 years	
<b>Interfaces</b>		
Electrical connector design	M12, 8-pin	
Antenna connector design	M8, 4-pin	
Standard for interfaces for communication	RS-422 (3964R protocol)	
Antenna	External, antennas ANT 1, ANT 3, ANT 12, ANT 18 or ANT 30	
<b>Mechanical specifications</b>		
Enclosure		
• Material	• Plastic PA 12	
• Color	• Anthracite	
Recommended distance to metal	0 mm	

<b>6GT2801-4AB10</b>	
<b>Supply voltage, current consumption, power loss</b>	
Supply voltage	24 VDC
Typical current consumption	100 mA
<b>Permitted ambient conditions</b>	
Ambient temperature	
• During operation	• -25 to +70 °C
• During transportation and storage	• -40 to +85 °C
Degree of protection to EN 60529	IP65
Shock-resistant to EN 60721-3-7, Class 7 M3	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted
<b>Design, dimensions and weights</b>	
Dimensions (L x W x H)	75 x 75 x 41 mm
Weight	250 g
Type of mounting	2 x M5 screws; 1.5 Nm
Cable length for RS-422 interface, maximum	1000 m
LED display design	3-color LED
<b>Standards, specifications, approvals</b>	
Proof of suitability	Radio to R&TTE directives EN 300330, EN 301489, CE, FCC, UL/CSA, Ex approval

### 5.4.2.8 Approvals

#### FCC information

**Siemens SIMATIC RF350R (MLFB 6GT2801-4AA10); FCC ID NXW-RF350R**

**Siemens SIMATIC RF350R (MLFB 6GT2801-4AB10); FCC ID NXW-RF350R01**

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

#### Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

#### Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### IC information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

5.4.2.9 Dimension drawing

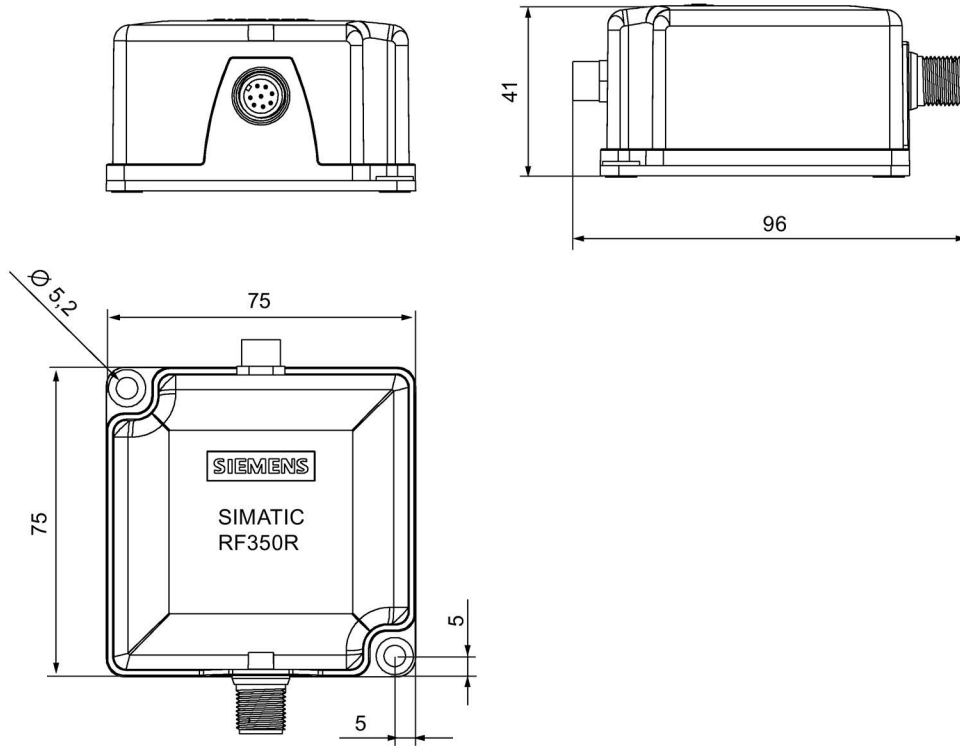



Figure 5-17 RF350R dimension drawing

Dimensions in mm

### 5.4.3 Use of the reader in hazardous areas

TÜV NORD CERT GmbH as accredited test center and certification body, no. 0044 as per Article 9 of the Directive 94/9/EC of the European Council of 23 March 1994, has confirmed the compliance with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in hazardous areas as per Annex II of the Directive. The essential health and safety requirements are satisfied in accordance with the following standards:

Document	Title
EN 60079-0: 2006	Electrical equipment for hazardous gas atmospheres - Part 0: General requirements
EN 60079-15: 2005	Electrical equipment for hazardous gas atmospheres - Part 15: Design, testing and identification of electrical equipment with type of protection "n"
IEC 61241 -0: 2006	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements
IEC 61241 -1: 2004	Electrical apparatus for use in the presence of combustible dust - Part 1: Protection through enclosure

 <b>WARNING</b>
<b>EXPLOSION HAZARD</b> DO NOT CONNECT OR DISCONNECT EQUIPMENT WHEN A FLAMMABLE OR COMBUSTIBLE ATMOSPHERE IS PRESENT.

### Identification

The identification of the electrical equipment as an enclosed unit is:



II 3 G Ex nA nC IIB T5  
 II 3 D Ex tD A22 IP6x T80 °C

-25 °C to +70 °C  
 U<sub>n</sub> = 20 to 30 VDC

The equipment also has the following additional markings:

XXXYYYYZZZ [= serial number, is assigned during production]  
 TÜV 10 ATEX 556039 [= certificate number]

### 5.4.3.1 Use of the readers in hazardous areas for gases

#### Temperature class delineation for gases

The temperature class of the reader for hazardous areas depends on the ambient temperature range:

Ambient temperature range	Temperature class
-25 °C to +70 °C	T5

<p><b>! WARNING</b></p> <p><b>Ignitions of gas-air mixtures</b></p> <p>When using the RF340R/RF350R readers, check to ensure that the temperature class is observed in respect of the requirements of the area of application.</p> <p>Non-compliance with the permitted temperature ranges while using the reader can lead to ignitions of gas-air mixtures.</p>
--

### 5.4.3.2 Use of the readers in hazardous areas for dusts

The equipment is suitable for dusts whose ignition temperatures for a dust layer of 5 mm are higher than 80 °C (smoldering temperature). With the ignition temperature according to type of protection iD specified here in compliance with IEC 61241-0 and IEC 61241-11, the smoldering temperature of the dust layer is referenced in this case.

#### Temperature class delineation for dusts

Ambient temperature range	Temperature value
$-25\text{ °C} < T_a < +70\text{ °C}$	T80 °C

<p><b>! WARNING</b></p> <p><b>Ignitions of dust-air mixtures</b></p> <p>When using the RF340R/RF350R readers, check to ensure that the temperature values are observed in respect of the requirements of the area of application.</p> <p>Non-compliance with the permitted temperature ranges while using the reader can lead to ignitions of dust-air mixtures.</p>
--



### 5.4.3.3 Installation and operating conditions for the hazardous area

#### NOTICE

##### Device may be damaged


Note the following conditions when installing and operating the device in a hazardous zone to avoid damage:

- Making and breaking of circuits is permitted only in a de-energized state.
- The maximum surface temperature, corresponding to the marking, applies only for operation without a cover of dust.
- The device may only be operated in such a way that adequate protection against UV light is ensured.
- The device may not be operated in areas influenced by processes that generate high electrostatic charges.
- The equipment must be installed so that it is mechanically protected.
- The device sockets must be protected with a shrink-on tube.
- The 8 pin connector must be grounded via its supply line.
- The device may only be operated with accessories specified or supplied by the manufacturer. All the points above also apply to the accessories (cables and connectors) and to the antennas (exception: the housing of antenna 1 does not need to be installed with impact protection).

## 5.5 SIMATIC RF340R/RF350R - 2nd generation

### 5.5.1 SIMATIC RF340R - 2nd generation

#### 5.5.1.1 Features

SIMATIC RF340R	Characteristics	
	Design	<ul style="list-style-type: none"> <li>① RS-422 interface</li> <li>② LED operating display</li> </ul>
	Area of application	Identification tasks on assembly lines in harsh industrial environments

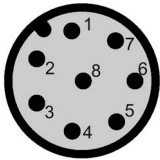
#### 5.5.1.2 Ordering data

Table 5- 17 Ordering data for RF340R

	Article number
RF340R with RS-422 interface (3964R)	6GT2801-2BA10

### 5.5.1.3 Pin assignment of the RS-422 interface







Table 5- 18 Pin assignment

Pin	Pin Device end 8-pin M12	Assignment
	1	+ 24 V
	2	- Transmit
	3	0 V
	4	+ Transmit
	5	+ Receive
	6	- Receive
	7	Unassigned
	8	Earth (shield)

### 5.5.1.4 LED operating display

The operational statuses of the reader are displayed by two LEDs. The LEDs can adopt the colors white green, red, yellow or blue and the statuses off □, on ■, flashing ■:

Table 5- 19 Display elements

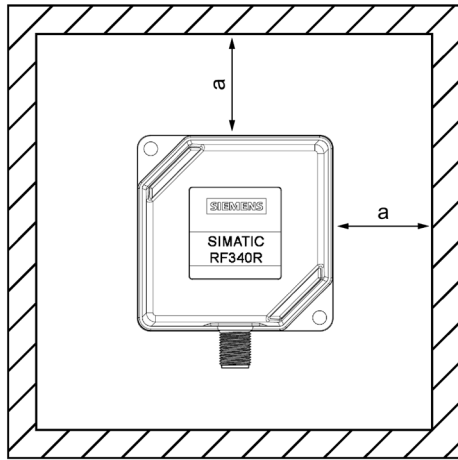
LED	Meaning
□	The reader is turned off.
	The reader is turned on and is searching for transponders. The reader is in the "Setup" mode, in the "Search for transponders" status and has not yet received a "RESET" command and is not ready.
 / □	There is transponder in the antenna field. The reader is in the "Setup" mode, in the status "Show quality", has not yet received a "RESET" command and is not ready. Depending on the signal strength, the LED flickers or is lit permanently.
	The reader has received a "RESET" command.
	The reader is turned on, the antenna is turned off.
	<ul style="list-style-type: none"> <li>Operating mode "with presence": Transponder present</li> <li>Operating mode "without presence": Transponder present and command currently being executed</li> </ul>
	There is an error. The number of flashes provides information about the current error. You will find more information on error messages in the section "System diagnostics (Page 413)".

### 5.5.1.5 Ensuring reliable data exchange

The "center point" of the transponder must be situated within the transmission window.

**5.5.1.6 Metal-free area**

The RF340R can be flush-mounted in metal. Allow for a possible reduction in the field data. To avoid any influence on the field data, the distance "a" should be kept to.

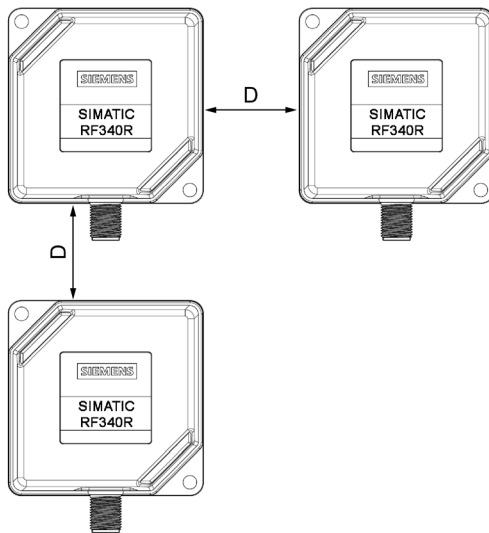


$a \geq 20 \text{ mm}$

Figure 5-18 Metal-free area for RF340R

**5.5.1.7 Minimum distance between RF340R readers**

**RF340R side by side**

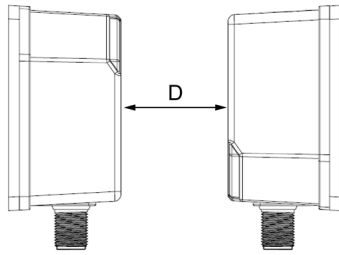


$D \geq 350 \text{ mm}$  (with 2 readers)

$D \geq 500 \text{ mm}$  (with more than 2 readers)

Figure 5-19 Minimum distance between RF340R readers

## RF340R face-of-face



$D \geq 500 \text{ mm}$

Figure 5-20 Face-of-face distance between two RF340Rs

## 5.5.1.8 Technical specifications

Table 5- 20 Technical specifications of the RF340R reader

<b>6GT2801-2BA10</b>			
Product type designation	SIMATIC RF340R		
<b>Radio frequencies</b>			
Operating frequency, rated value	13.56 MHz		
<b>Electrical data</b>			
Maximum range	140 mm		
Maximum data transmission speed reader ↔ transponder	RF300 transponder	ISO transponder (MDS D)	ISO tran- sponder (MDS E)
• Read	• ≤ 8000 bytes/s	• ≤ 3300 bytes/s	• ≤ 3400 bytes/s
• Write	• ≤ 8000 bytes/s	• ≤ 1700 bytes/s	• ≤ 800 bytes/s
Transmission speed	19.2, 57.6, 115.2 kBd		
Read/write distances of the reader	See section "Field data for transponders, readers and antennas (Page 51)."		
MTBF (Mean Time Between Failures)	260 years		
<b>Interfaces</b>			
Electrical connector design	M12, 8-pin		
Standard for interfaces for communication	RS-422 (3964R protocol)		
Antenna	integrated		
<b>Mechanical specifications</b>			
Enclosure			

<b>6GT2801-2BA10</b>	
• Material	• Plastic PA 12
• Color	• TI-Grey
Recommended distance to metal	0 mm
<b>Supply voltage, current consumption, power loss</b>	
Supply voltage	24 VDC
Typical current consumption	60 mA
<b>Permitted ambient conditions</b>	
Ambient temperature	
• During operation	• -25 to +70 °C
• During transportation and storage	• -40 to +85 °C
Degree of protection to EN 60529	IP67
Shock-resistant to EN 60721-3-7, Class 7 M3	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted
<b>Design, dimensions and weights</b>	
Dimensions (L x W x H)	75 x 75 x 41 mm
Weight	210 g
Type of mounting	2 x M5 screws; 1.5 Nm
Cable length for RS-422 interface, maximum	1000 m
LED display design	2 LEDs, 5 colors
<b>Standards, specifications, approvals</b>	
Proof of suitability	Radio to R&TTE directives EN 300330, EN 301489, CE, FCC, UL/CSA (IEC 61010), Ex approval

### 5.5.1.9 Approvals

#### FCC information

**Siemens SIMATIC RF340R (MLFB 6GT2801-2BA10); FCC ID NXW-RF340R02**

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

**Caution**

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### IC information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**UL information (IEC 61010-1 / IEC 61010-2-201)**

This standard applies to equipment designed to be safe at least under the following conditions:

- a) indoor use;
- b) altitude up to 2 000 m;
- c) temperature -25 °C to 70 °C;
- d) maximum relative humidity 80 % for temperature up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C;
- e) TRANSIENT OVERVOLTAGES up to the levels of OVERVOLTAGE CATEGORY II, NOTE 1: These levels of transient overvoltage are typical for equipment supplied from the building wiring.
- f) using a "NEC Class 2" power supply is required
- g) the device is categorized as pollution degree 3/4

**5.5.1.10 Dimension drawing**

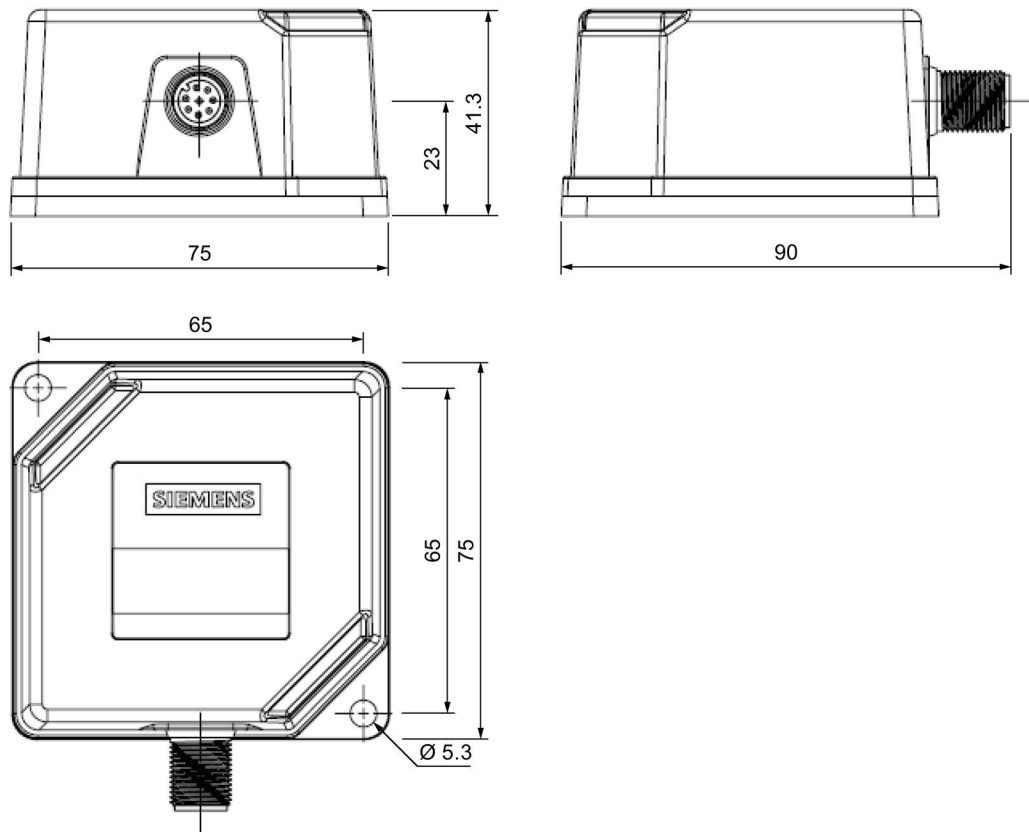



Figure 5-21 Dimension drawing for RF340R

Dimensions in mm



## 5.5.2 SIMATIC RF350R - 2nd generation

### 5.5.2.1 Features

SIMATIC RF350R	Characteristics	
	Design	<ul style="list-style-type: none"> <li>① Antenna connection</li> <li>② RS-422 interface</li> <li>③ LED operating display</li> </ul>
	Area of application	Identification tasks in assembly lines in harsh industrial environments; for external antennas (ANT 1, ANT 3, ANT 12, ANT 18, ANT 30)

#### Note

#### Reader requires external antennas

Note that the RF350R reader is designed only for operation with external antennas and only works in conjunction with the antennas ANT 1, ANT 3, ANT 12, ANT 18 or ANT 30.

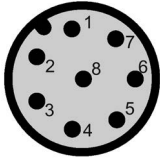
### 5.5.2.2 Ordering data

Table 5- 21 Ordering data for RF350R

	Article number
RF350R with RS-422 interface (3964R)	6GT2801-4BA10

### 5.5.2.3 Pin assignment of the RS-422 interface








Table 5- 22 Pin assignment

Pin	Pin Device end 8-pin M12	Assignment
	1	+ 24 V
	2	- Transmit
	3	0 V
	4	+ Transmit
	5	+ Receive
	6	- Receive
	7	Unassigned
	8	Earth (shield)

### 5.5.2.4 LED operating display

The operational statuses of the reader are displayed by two LEDs. The LEDs can adopt the colors white green, red, yellow or blue and the statuses off □, on ■, flashing ■:

Table 5- 23 Display elements

LED	Meaning
□	The reader is turned off.
	The reader is turned on and is searching for transponders. The reader is in the "Setup" mode, in the "Search for transponders" status and has not yet received a "RESET" command and is not ready.
 / 	There is transponder in the antenna field. The reader is in the "Setup" mode, in the status "Show quality", has not yet received a "RESET" command and is not ready. Depending on the signal strength, the LED flickers or is lit permanently.
	The reader has received a "RESET" command.
	The reader is turned on, the antenna is turned off.
	<ul style="list-style-type: none"> <li>Operating mode "with presence": Transponder present</li> <li>Operating mode "without presence": Transponder present and command currently being executed</li> </ul>
	There is an error. The number of flashes provides information about the current error. You will find more information on error messages in the section "System diagnostics (Page 413)".

### 5.5.2.5 Ensuring reliable data exchange

The "center point" of the transponder must be situated within the transmission window.

### 5.5.2.6 Metal-free area

The RF350R reader does not have an internal antenna. Operation is not affected by mounting on metal or flush-mounting in metal. For information about the metal-free area required by the external antennas, refer to the corresponding section of the chapter "Antennas (Page 221)".

### 5.5.2.7 Technical specifications

Table 5- 24 Technical specifications of the RF350R reader

<b>6GT2801-4BA10</b>			
Product type designation	SIMATIC RF350R		
<b>Radio frequencies</b>			
Operating frequency, rated value	13.56 MHz		
<b>Electrical data</b>			
Maximum range			
• ANT 1	• 140 mm		
• ANT 3	• 50 mm		
• ANT 12	• 16 mm		
• ANT 18	• 35 mm		
• ANT 30	• 55 mm		
Maximum data transmission speed reader ↔ transponder	RF300 transponder	ISO transponder (MDS D)	ISO tran- sponder (MDS E)
• Read	• ≤ 8000 bytes/s	• ≤ 3300 bytes/s	• ≤ 3400 bytes/s
• Write	• ≤ 8000 bytes/s	• ≤ 1700 bytes/s	• ≤ 800 bytes/s
Transmission speed	19.2, 57.6, 115.2 kBd		
Read/write distances of the reader	See section "Field data for transponders, readers and antennas (Page 51)."		
MTBF (Mean Time Between Failures)	260 years		
<b>Interfaces</b>			
Electrical connector design	M12, 8-pin		
Antenna connector design	M8, 4-pin		
Standard for interfaces for communication	RS-422 (3964R protocol)		
Antenna	External, antennas ANT 1, ANT 3, ANT 12, ANT 18 or ANT 30		

<b>6GT2801-4BA10</b>	
<b>Mechanical specifications</b>	
Enclosure	
• Material	• Plastic PA 12
• Color	• TI-Grey
Recommended distance to metal	0 mm
<b>Supply voltage, current consumption, power loss</b>	
Supply voltage	24 VDC
Typical current consumption	60 mA
<b>Permitted ambient conditions</b>	
Ambient temperature	
• During operation	• -25 to +70 °C
• During transportation and storage	• -40 to +85 °C
Degree of protection to EN 60529	IP65
Shock-resistant to EN 60721-3-7, Class 7 M3	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted
<b>Design, dimensions and weights</b>	
Dimensions (L x W x H)	75 x 75 x 41 mm
Weight	250 g
Type of mounting	2 x M5 screws; 1.5 Nm
Cable length for RS-422 interface, maximum	1000 m
LED display design	2 LEDs, 5 colors
<b>Standards, specifications, approvals</b>	
Proof of suitability	Radio to R&TTE directives EN 300330, EN 301489, CE, FCC, UL/CSA (IEC 61010), Ex approval

### 5.5.2.8 Approvals

#### FCC information

**Siemens SIMATIC RF350R (MLFB 6GT2801-4BA10); FCC ID NXW-RF350R02**

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

**Caution**

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### IC information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**UL information (IEC 61010-1 / IEC 61010-2-201)**

This standard applies to equipment designed to be safe at least under the following conditions:

- a) indoor use;
- b) altitude up to 2 000 m;
- c) temperature -25 °C to 70 °C;
- d) maximum relative humidity 80 % for temperature up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C;
- e) TRANSIENT OVERVOLTAGES up to the levels of OVERVOLTAGE CATEGORY II, NOTE 1: These levels of transient overvoltage are typical for equipment supplied from the building wiring.
- f) using a "NEC Class 2" power supply is required
- g) the device is categorized as pollution degree 3/4

**5.5.2.9 Dimension drawing**

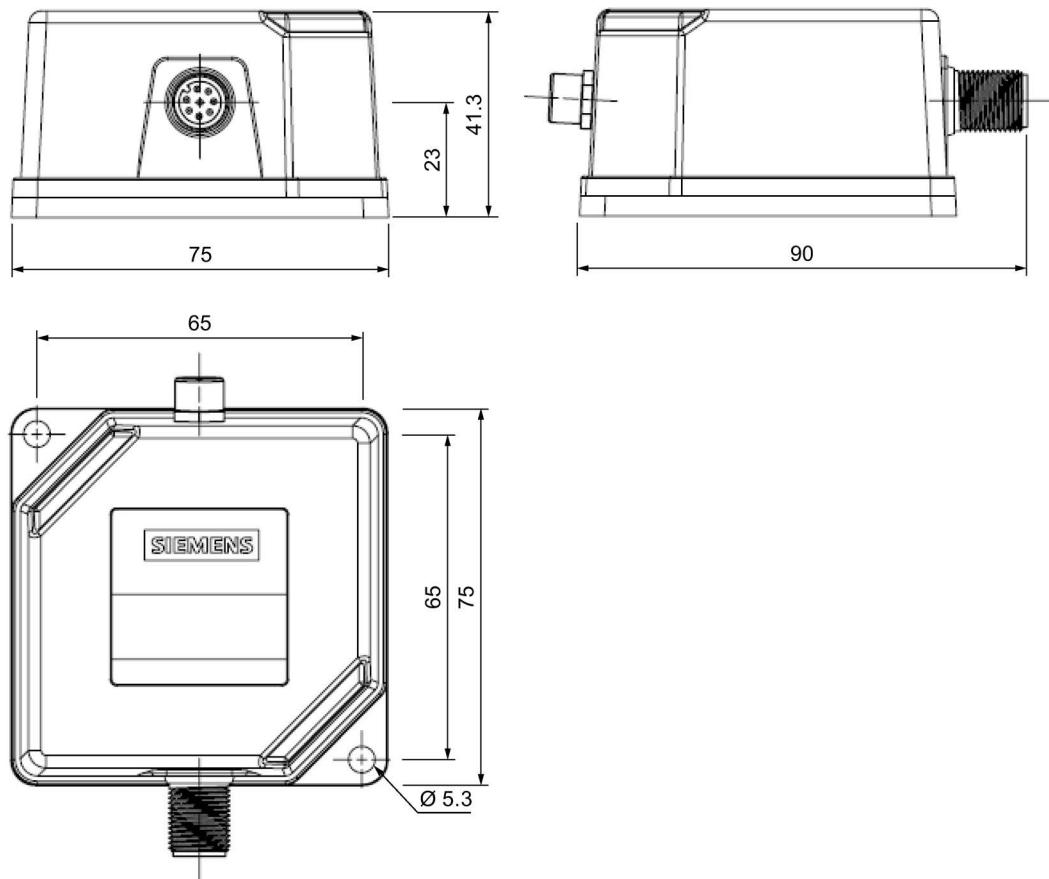



Figure 5-22 RF350R dimension drawing

Dimensions in mm

### 5.5.3 Using the readers in a hazardous area

 <b>WARNING</b>
<b>Explosion hazard</b>
In a flammable or combustible environment, no cables may be connected to or disconnected from the device.

### ATEX

The SIMATIC Ident products meet the requirements of explosion protection acc. to ATEX. The products meet the requirements of the standards:



Document	Title
EN 60079-0	Hazardous areas Part 0: Equipment - General requirements
EN 60079-7	Hazardous areas Part 7: Equipment protection by increased safety "e"
EN 60079-31	Potentially explosive atmosphere Part 31: Equipment dust ignition protection by enclosure "t"

You will find the current versions of the standards in the currently valid ATEX certificates.

### ATEX mark

<b>NOTICE</b>
<b>Validity only when the devices are marked</b>
There is a corresponding approval only with devices to which the Ex mark is applied.

The identification of the electrical equipment as an enclosed unit is:

  II 3 G Ex ec IIB T4 Gc  
II 3 D Ex tc IIIC T80°C Dc

-25 °C ... +70 °C

U<sub>n</sub> = 24 VDC

The equipment also has the following additional information:

XXXXXXXXXX [= serial number, is assigned during production]

DEMKO 17 ATEX 1767 X [= certificate number]

**IECEX**

The SIMATIC Ident products meet the requirements of explosion protection acc. to IECEx. The products meet the requirements of the standards:

Document	Title
IEC 60079-0	Hazardous areas Part 0: Equipment - General requirements
IEC 60079-7	Hazardous areas Part 7: Equipment protection by increased safety "e"
IEC 60079-31	Potentially explosive atmosphere Part 31: Equipment dust ignition protection by enclosure "t"

You will find the current versions of the standards in the currently valid IECEx certificates.

**IECEX mark**

<b>NOTICE</b>
<b>Validity only when the devices are marked</b>
There is a corresponding approval only with devices to which the IECEx mark is applied.

The identification of the electrical equipment as an enclosed unit is:

II 3 G Ex ec IIB T4 Gc  
 II 3 D Ex tc IIIC T80°C Dc  
 -25 °C ... +70 °C  
 U<sub>n</sub>= 24 VDC

The equipment also has the following additional information:

XXXYYYYZZZ [= serial number, is assigned during production]  
 IECEx ULD 17.0031 X [= certificate number]



**UL HAZ. LOC.**

The SIMATIC Ident products meet the requirements of explosion protection acc. to UL HAZ. LOC. The products meet the requirements of the standards:

Document	Title
UL 60079-0	Hazardous areas
CSA C22.2 NO. 60079-0	Part 0: Equipment - General requirements
UL 60079-7	Hazardous areas
CSA C22.2 NO. 60079-7	Part 7: Equipment protection by increased safety "e"
UL 60079-31	Potentially explosive atmosphere
CSA C22.2 NO. 60079-31	Part 31: Equipment dust ignition protection by enclosure "t"

You will find the current versions of the standards in the currently valid UL HAZ. LOC. certificates

**UL HAZ. LOC. mark**

NOTICE
<b>Validity only when the devices are marked</b>
There is a corresponding approval only with devices to which the UL HAZ. LOC. mark is applied.

The identification of the electrical equipment as an enclosed unit is:



E223122  
 IND.CONT.EQ FOR HAZ.LOC.  
 CL.I, DIV.2, GP.C,D T4  
 CL.II, DIV.2, GP.F,G T80°C  
 AEx ec IIB T4, Ex ec IIB T4  
 AEx tc IIIC T80°C, Ex tc IIIC T80°C

-25 °C ... +70 °C

U<sub>n</sub>= 24 VDC

The equipment also has the following additional information:

XXXXXXXXXX

[= serial number, is assigned during production]

**5.5.3.1 Using the reader in hazardous area for gases**

The temperature class of the reader for hazardous areas depends on the ambient temperature range:

Ambient temperature range	Temperature class
-25 °C ... +70 °C	T4

<b>! WARNING</b>
<b>Ignitions of gas-air mixtures</b>
When using the reader, check to make sure that the temperature class is adhered to in keeping with the requirements of the area of application
Non-compliance with the permitted temperature ranges while using the reader can lead to ignitions of gas-air mixtures.

**5.5.3.2 Using the reader in hazardous area for dust**

The equipment is suitable for dusts whose ignition temperatures for a dust layer of 5 mm are higher than 80 °C (smoldering temperature).

Ambient temperature range	Temperature value
$-25\text{ °C} < T_a < +70\text{ °C}$	T80 °C

<b>! WARNING</b>
<b>Ignitions of dust-air mixtures</b>
When using the reader, check to make sure that the temperature values are adhered to in keeping with the requirements of the area of application. Non-compliance with the permitted temperature range while using the reader can lead to ignitions of dust-air mixtures.

### 5.5.3.3 Installation and operating conditions for hazardous areas:


**NOTICE****Risk of explosion**

Risk of explosion of dust-air mixtures or gas-air mixtures and the device can be damaged. Note the following conditions when installing and operating the device in a hazardous area:

- Making and breaking of circuits is permitted only in a de-energized state.
- The maximum surface temperature, corresponding to the marking, applies only for operation without a cover of dust.
- The device may only be operated in such a way that adequate protection against UV light is ensured.
- The device may not be operated in areas influenced by processes that generate high electrostatic charges.
- The device must be installed so that it is mechanically protected.
- The grounding of the plug (8-pin) on the reader must be via its supply cable.
- The device may only be operated with accessories specified or supplied by the manufacturer. All the points above also apply to the accessories (cables and connectors) and to the antennas (exception: the housing of ANT 1 does not need to be installed with impact protection).
- The device sockets incl. the metal parts of the connecting cable must have a shrink-on sleeve pulled over them, in other words, all metal parts apart from the securing sockets of the housing must be fully covered and be inaccessible.
- After disconnecting the connections (antenna cable, signal/supply cable), before the plugs are inserted again, they must be checked for contamination and if necessary cleaned.

## 5.6 SIMATIC RF380R

### 5.6.1 Features

<p><b>SIMATIC RF380R</b></p> 	<p><b>Characteristics</b></p>	
	<p>Design</p>	<p>① RS-232 or RS-422 interface ② Status display</p>
	<p>Area of application</p>	<p>Identification tasks on assembly lines in harsh industrial environments</p>

### 5.6.2 RF380R ordering data

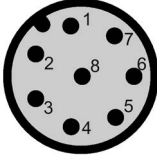
Table 5- 25 RF380R ordering data

	Article number
RF380R with RS-232/RS-422 interface (3964R)	6GT2801-3AB10

### 5.6.3 Pin assignment of RF380R RS-232/RS-422 interface

You can connect the RF380R reader to a higher-level system via the internal RS-422 interface or via the RS-232 interface. After connection, the interface module automatically detects which interface has been used.






Note correct assignment of the pins here:

Pin	Pin Device end 8-pin M12	Assignment	
		RS-232	RS-422
	1	+ 24 V	+ 24 V
	2	RXD	- Transmit
	3	0 V	0 V
	4	TXD	+ Transmit
	5	not used	+ Receive
	6	not used	- Receive
	7	not used	not used
	8	Ground (shield)	Ground (shield)

#### 5.6.4 LED operating display

The operational statuses of the reader are displayed by the LEDs. The LED can adopt the colors green, red or yellow and the statuses off , on , flashing :

Table 5- 26 LED operating display on the reader

LED	Meaning
	The reader is turned off.
	Operating voltage present, reader not initialized or antenna switched off
	Operating voltage present, reader initialized and antenna switched on
	<ul style="list-style-type: none"> <li>Operating mode "with presence": Transponder present</li> <li>Operating mode "without presence": Transponder present and command currently being executed</li> </ul>
	There is an error. The number of flashes provides information about the current error. You will find more information on error messages in the section "System diagnostics (Page 413)".

#### 5.6.5 Ensuring reliable data exchange

The "center point" of the transponder must be situated within the transmission window.

### 5.6.6 Metal-free area

The RF380R can be flush-mounted in metal. Allow for a possible reduction in the field data.

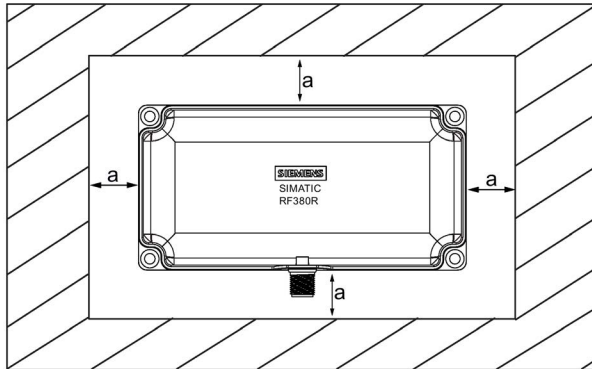
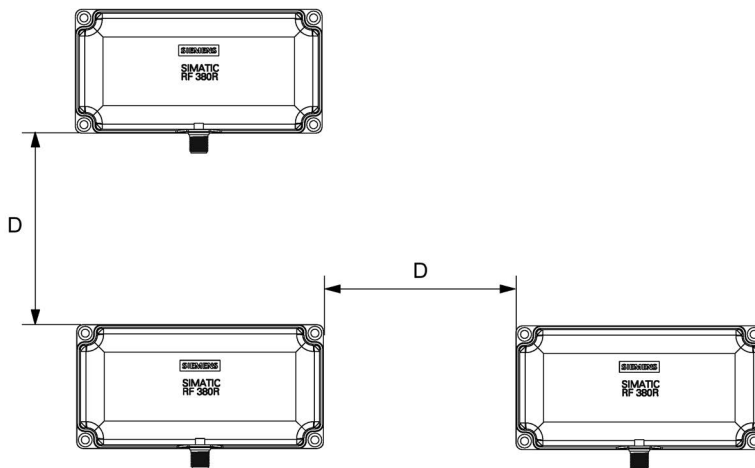


Figure 5-23 Metal-free area for RF380R

To avoid any impact on the field data, the distance a should be  $\geq 20$  mm.

### 5.6.7 Minimum distance between RF380R readers

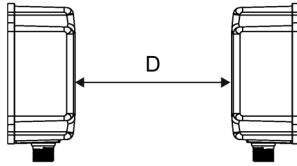
#### RF380R side by side



- D  $\geq 400$  mm (with 2 readers)
- D  $\geq 500$  mm (with more than 2 readers)

Figure 5-24 Minimum distance between RF380R readers

## RF380R face-to-face



$D \geq 800 \text{ mm}$

Figure 5-25 Face-to-face distance between two RF380R

## 5.6.8 Technical specifications

Table 5- 27 Technical specifications of the RF380R reader

		<b>6GT2801-3AB10</b>	
Product type designation	SIMATIC RF380R		
<b>Radio frequencies</b>			
Operating frequency, rated value	13.56 MHz		
<b>Electrical data</b>			
Maximum range	200 mm		
Maximum data transmission speed reader ↔ transponder	RF300 transponder	ISO transponder	
• Read	• approx. 8000 bytes/s	• approx. 1500 bytes/s	
• Write	• approx. 8000 bytes/s	• approx. 1500 bytes/s	
Transmission speed	19.2, 57.6, 115.2 kBd		
Read/write distances of the reader	See section "Field data for transponders, readers and antennas (Page 51)."		
MTBF (Mean Time Between Failures)	109 years		
<b>Interfaces</b>			
Electrical connector design	M12, 8-pin		
Standard for interfaces for communication	RS-232/RS-422 (3964R protocol)		
Antenna	integrated		
<b>Mechanical specifications</b>			
<b>Enclosure</b>			
• Material	• Plastic PA 12		
• Color	• Anthracite		

<b>6GT2801-3AB10</b>		
Recommended distance to metal	0 mm	
<b>Supply voltage, current consumption, power loss</b>		
Supply voltage	24 VDC	
Typical current consumption	160 mA	
<b>Permitted ambient conditions</b>		
Ambient temperature		
• During operation	• -25 to +70 °C	
• During transportation and storage	• -40 to +85 °C	
Degree of protection to EN 60529	IP67	
Shock-resistant to EN 60721-3-7, Class 7 M3	500 m/s <sup>2</sup>	
Vibration-resistant to EN 60721-3-7, Class 7 M3	200 m/s <sup>2</sup>	
Torsion and bending load	Not permitted	
<b>Design, dimensions and weights</b>		
Dimensions (L x W x H)	160 x 80 x 41 mm	
Weight	600 g	
Type of mounting	4 x M5 screws; 1.5 Nm	
Cable length for RS-422 interface, maximum	RS-422	RS-232
	1000 m	30 m
LED display design	3-color LED	
<b>Standards, specifications, approvals</b>		
Proof of suitability	Radio in accordance with R&TTE directives EN 300330, EN 301489, CE, FCC, UL/CSA, Ex: II 3G Ex nC IIB T5	



## 5.6.9 Approvals

### FCC information

**Siemens SIMATIC RF380R (MLFB 6GT2801-3AA10); FCC ID NXW-RF380R**

**Siemens SIMATIC RF380R (MLFB 6GT2801-3AB10); FCC ID NXW-RF380R01**

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

#### Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

#### Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### IC information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

### 5.6.10 Dimension drawing

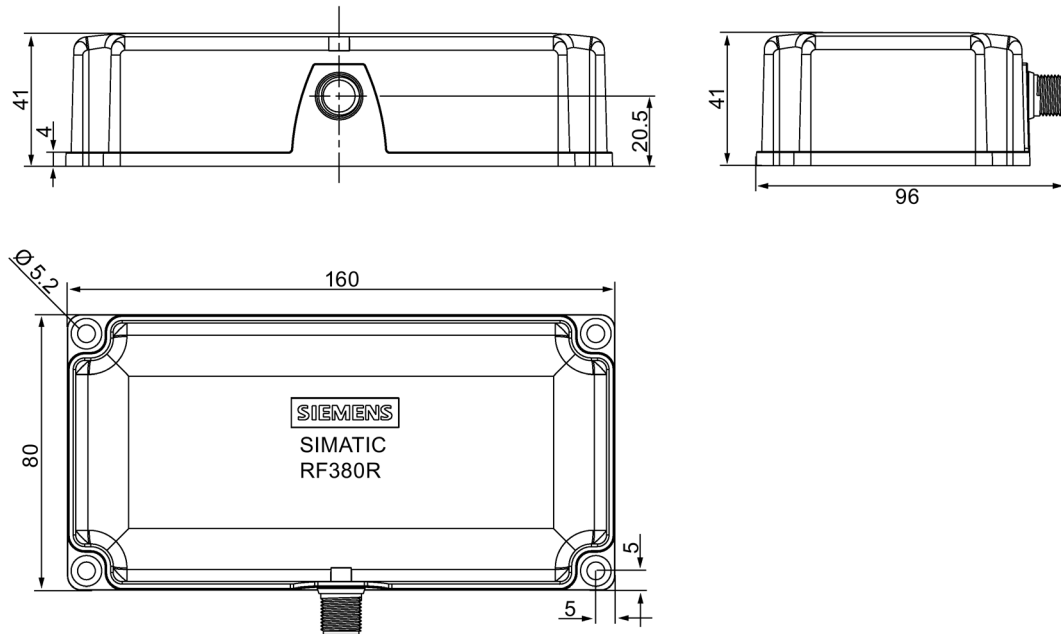


Figure 5-26 Dimension drawing RF380R

Dimensions in mm

### 5.6.11 Use of the reader in a hazardous

#### 5.6.11.1 Use of the reader in a hazardous area

The TÜV SÜD Automotive GmbH as approved test center as well as the TÜV SÜD Product Service GmbH as certification center, identification number 0123, as per Article 9 of the Directive of the European Council of 23 March 1994 (94/9/EC), has confirmed the compliance with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in hazardous areas as per Annex II of the Directive. The essential health and safety requirements are satisfied in accordance with the following standards:

Document	Title
EN 60079-0: 2006	Electrical equipment for hazardous gas atmospheres - Part 0: General requirements
EN 60079-15: 2005	Electrical equipment for hazardous gas atmospheres - Part 15: Design, testing and identification of electrical equipment with type of protection "n"
DIN VDE 0848-5: 2001 (in parts)	Safety in electrical, magnetic and electromagnetic fields - Part 5: Explosion protection
ZLS SK 107.1	Central office of the states for safety; test components

## Identification

The identification of the electrical equipment as an enclosed unit is:



II 3G Ex nC IIB T5

-25°C to +70°C

Um=30 V DC

The equipment is assigned the following references:

XXXYYYYZZZ [= serial number, is assigned during production]

TPS 09 ATEX 1 459 X [= certificate number]

"No use of the equipment in the vicinity of processes generating high charges"

"Do not disconnect plug on load"

### 5.6.11.2 Use of the reader in hazardous areas for gases

#### Temperature class grading for gases

The temperature class of the reader for hazardous areas depends on the ambient temperature range:

Ambient temperature range	Temperature class
-25 °C to +70 °C	T5

#### WARNING

##### Ignitions of gas-air mixtures

When using the RF380R reader, check to ensure that the temperature class is observed in respect of the requirements of the area of application

Non-compliance with the permitted temperature ranges while using the reader can lead to ignitions of gas-air mixtures.

### 5.6.11.3 Installation and operating conditions for hazardous areas:

**NOTICE****Explosion hazard**


Risk of explosion of gas-air mixtures and the device can be damaged. Note the following conditions when installing and operating the device in a hazardous area:

- Making and breaking of circuits is permitted only in a de-energized state.
- The maximum surface temperature, corresponding to the marking, applies only for operation without a cover of dust.
- The device may only be operated in such a way that adequate protection against UV light is ensured.
- The device may not be operated in areas influenced by processes that generate high electrostatic charges.
- The device must be installed so that it is mechanically protected.
- The grounding of the plug (8-pin) on the reader must be via its supply cable.
- The device may only be operated with accessories specified or supplied by the manufacturer. All the points above also apply to the accessories (cables and connectors) and to the antennas (exception: the housing of ANT 1 does not need to be installed with impact protection).
- The device sockets incl. the metal parts of the connecting cable must have a shrink-on sleeve pulled over them, in other words, all metal parts apart from the securing sockets of the housing must be fully covered and be inaccessible.
- After disconnecting the connections (antenna cable, signal/supply cable), before the plugs are inserted again, they must be checked for contamination and if necessary cleaned.

## 5.7 SIMATIC RF380R with Scanmode

You will find detailed information on the SIMATIC RF382R with Scanmode on the Industry Online Support - SIMATIC RF380R with Scanmode (<https://support.industry.siemens.com/cs/ww/en/ps/15037>).

### 5.7.1 Features

RF380R Scanmode	Characteristics	
	Design	<ul style="list-style-type: none"> <li>① RS-232 or RS-422 interface</li> <li>② Status display</li> </ul>
	Area of application	Identification tasks on assembly lines in harsh industrial environments

### 5.7.2 Ordering data for RF380R with Scanmode

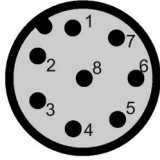
Table 5- 28 Ordering data RF380R Scanmode

Product	Article number
RF380R Scanmode	6GT2801-3AB20-0AX1

### 5.7.3 Pin assignment RF380R Scanmode RS-232 interface

You can connect the RF380R Scanmode reader via the internal RS-232/RS-422 interface to a higher-level system. (See section "Basic rules (Page 111)") Make sure that the pin assignment is correct. In the factory settings, the reader is set to RS-232. Siemens can change the interface to RS-422.

Table 5- 29 Connector and reader pin assignment

Pin	Pin Device end 8-pin M12	Assignment	
		RS-232	RS-422
	1	+ 24 V	+ 24 V
	2	RXD	- Transmit
	3	0 V	0 V
	4	TXD	+ Transmit
	5	not used	+ Receive
	6	not used	- Receive
	7	not used	not used
	8	Ground (shield)	Ground (shield)

### 5.7.4 LED operating display








The operational statuses of the reader are displayed by the LEDs. The LED can adopt the colors green, red or yellow and the statuses off , on , flashing :

Table 5- 30 LED operating display on the reader

LED	Meaning
	The reader is turned off.
	Operating voltage present, reader ready for operation
	<ul style="list-style-type: none"> <li>Operating mode "with presence": Transponder present</li> <li>Operating mode "without presence": Transponder present and command currently being executed</li> </ul>
	There is an error. The number of flashes provides information about the current error. You will find more information on error messages in the section "System diagnostics (Page 413)".

### 5.7.5 Ensuring reliable data exchange

The "center point" of the transponder must be situated within the transmission window.

### 5.7.6 Metal-free area

The RF380R can be flush-mounted in metal. Allow for a possible reduction in the field data.

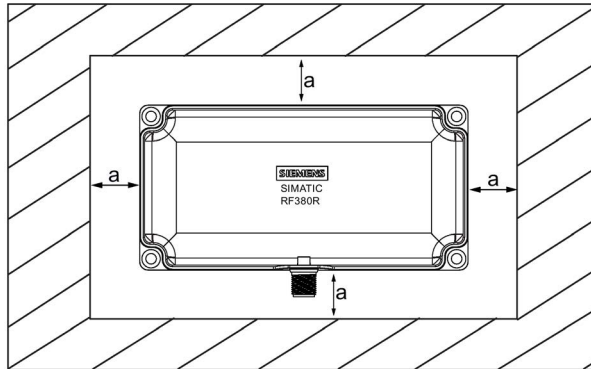
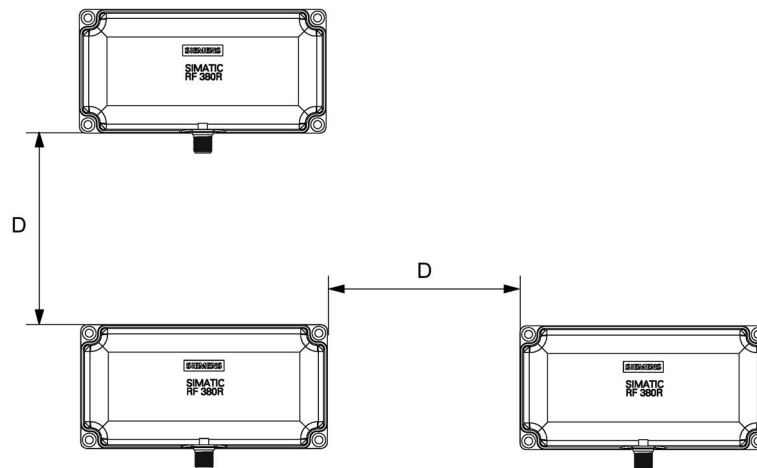


Figure 5-27 Metal-free area for RF380R

To avoid any impact on the field data, the distance  $a$  should be  $\geq 20$  mm.

### 5.7.7 Minimum distance between several RF380R Scanmode readers

#### RF380R side by side

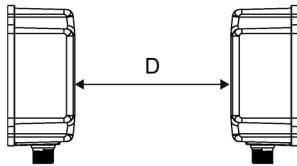


$D \geq 400$  mm (with 2 readers)

$D \geq 500$  mm (with more than 2 readers)

Figure 5-28 Minimum distance between RF380R readers

**RF380R face-to-face**



D ≥ 800 mm

Figure 5-29 Face-to-face distance between two RF380R

**5.7.8 Technical specifications**

Table 5- 31 Technical specifications of the RF380R Scanmode reader

<b>6GT2801-3AB20-0AX1</b>		
Product type designation	SIMATIC RF380R Scanmode	
<b>Radio frequencies</b>		
Operating frequency, rated value	13.56 MHz	
<b>Electrical data</b>		
Maximum range	200 mm	
Maximum data transmission speed reader ↔ transponder	RF300 transponder	ISO transponder
• Read	approx. 8000 bytes/s	approx. 1500 bytes/s
Transmission speed	9.6, 19.2, 38.4, 57, 115.2 kBd	
Read distances of the reader	See section "Field data for transponders, readers and antennas (Page 51)."	
MTBF (Mean Time Between Failures)	109 years	
<b>Interfaces</b>		
Electrical connector design	M12, 8-pin	
Standard for interfaces for communication	RS-232 / RS-422	
Antenna	integrated	
<b>Mechanical specifications</b>		
Enclosure		
• Material	• Plastic PA 12	
• Color	• Anthracite	
Recommended distance to metal	0 mm	



**6GT2801-3AB20-0AX1****Supply voltage, current consumption, power loss**

Supply voltage	24 VDC
Typical current consumption	160 mA

**Permitted ambient conditions**

Ambient temperature	
• During operation	-25 to +70 °C
• During transportation and storage	-40 to +85 °C
Degree of protection to EN 60529	IP67
Shock-resistant to EN 60721-3-7, Class 7 M3	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted

**Design, dimensions and weights**

Dimensions (L x W x H)	160 x 80 x 41 (without M12 device connector)	
Weight	Approx. 600 g	
Type of mounting	4 x M5 screws; 1.5 Nm	
Cable length for RS-422 interface, maximum	RS-422	RS-232
	1000 m	30 m
LED display design	3-color LED	

**Standards, specifications, approvals**

Proof of suitability	Radio to R&TTE directives EN 300330, EN 301489, CE, FCC, UL/CSA
----------------------	--

**5.7.9 Approvals****FCC information****Siemens SIMATIC RF380R (MLFB 6GT2801-3AB20-0AX1); FCC ID NXW-RF380R01**

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

**Caution**

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**IC information**

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:


- (1) This device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**5.7.10 Certificates and Approvals**

**Certificates for USA and Canada**

	Underwriters Laboratories (UL) acc. to standard UL 60950, Report E11 5352 and Canadian standard C22.2 No. 60950 (I.T.E) or acc. to UL508 and C22.2 No. 142 (IND.CONT.EQ)
---	--

### 5.7.11 Dimension drawing

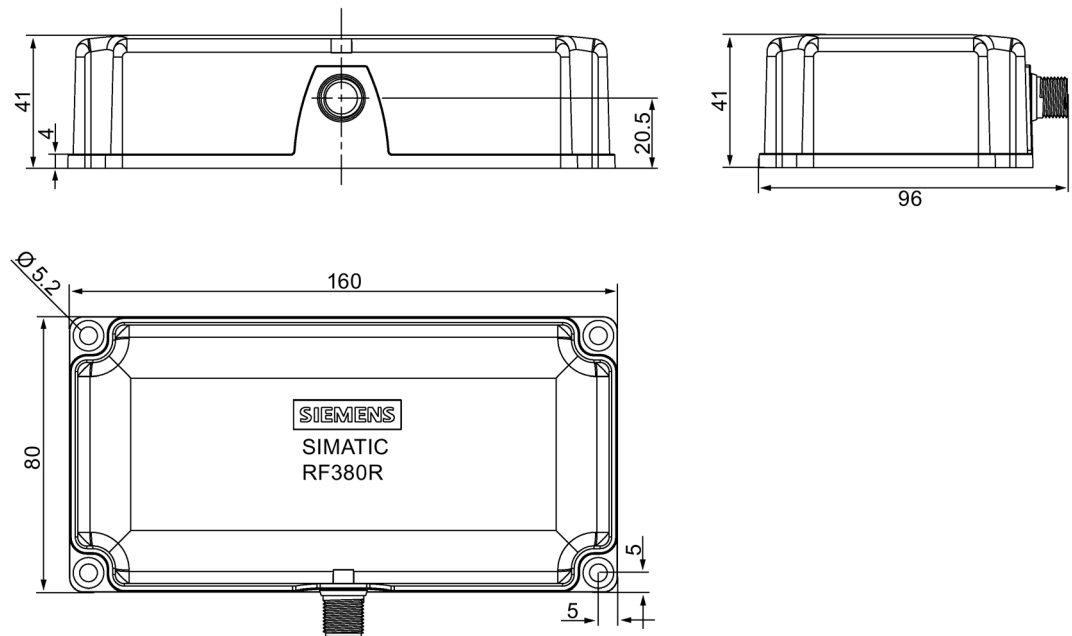
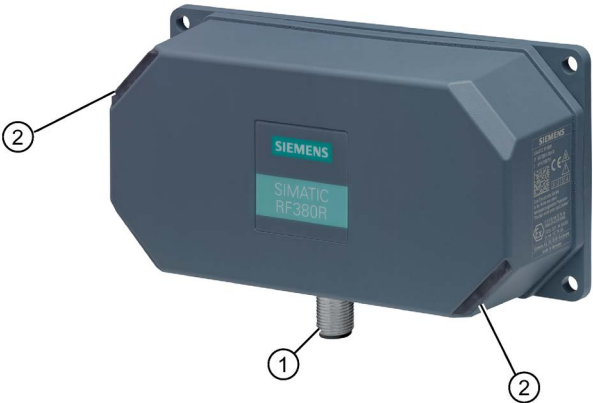


Figure 5-30 Dimension drawing RF380R

Dimensions in mm

## 5.8 SIMATIC RF380R - 2nd generation

### 5.8.1 Features

SIMATIC RF380R	Characteristics	
	Design	① RS-232 or RS-422 interface ② Status display
	Area of application	Identification tasks on assembly lines in harsh industrial environments

### 5.8.2 RF380R ordering data

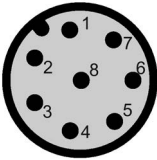
Table 5- 32 RF380R ordering data

	Article number
RF380R with RS-232/RS-422 interface (3964R)	6GT2801-3BA10

### 5.8.3 Pin assignment of RF380R RS-232/RS-422 interface

You can connect the RF380R reader to a higher-level system via the internal RS-422 interface or via the RS-232 interface. After connection, the interface module automatically detects which interface has been used.

Note correct assignment of the pins here:

Pin	Pin Device end 8-pin M12	Assignment	
		RS-232	RS-422
	1	+ 24 V	+ 24 V
	2	RXD	- Transmit
	3	0 V	0 V
	4	TXD	+ Transmit
	5	not used	+ Receive
	6	not used	- Receive
	7	not used	not used
	8	Ground (shield)	Ground (shield)

### 5.8.4 LED operating display

The operational statuses of the reader are displayed by two LEDs. The LEDs can adopt the colors white green, red, yellow or blue and the statuses off □, on ■, flashing ■:

Table 5- 33 Display elements

LED	Meaning
□	The reader is turned off.
■	The reader is turned on and is searching for transponders. The reader is in the "Setup" mode, in the "Search for transponders" status and has not yet received a "RESET" command and is not ready.
■ / □	There is transponder in the antenna field. The reader is in the "Setup" mode, in the status "Show quality", has not yet received a "RESET" command and is not ready. Depending on the signal strength, the LED flickers or is lit permanently.
■	The reader has received a "RESET" command.
■	The reader is turned on, the antenna is turned off.
■	<ul style="list-style-type: none"> <li>Operating mode "with presence": Transponder present</li> <li>Operating mode "without presence": Transponder present and command currently being executed</li> </ul>
■	There is an error. The number of flashes provides information about the current error. You will find more information on error messages in the section "System diagnostics (Page 413)".

### 5.8.5 Ensuring reliable data exchange

The "center point" of the transponder must be situated within the transmission window.

### 5.8.6 Metal-free area

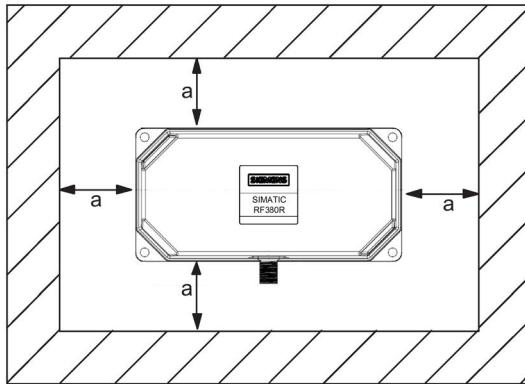


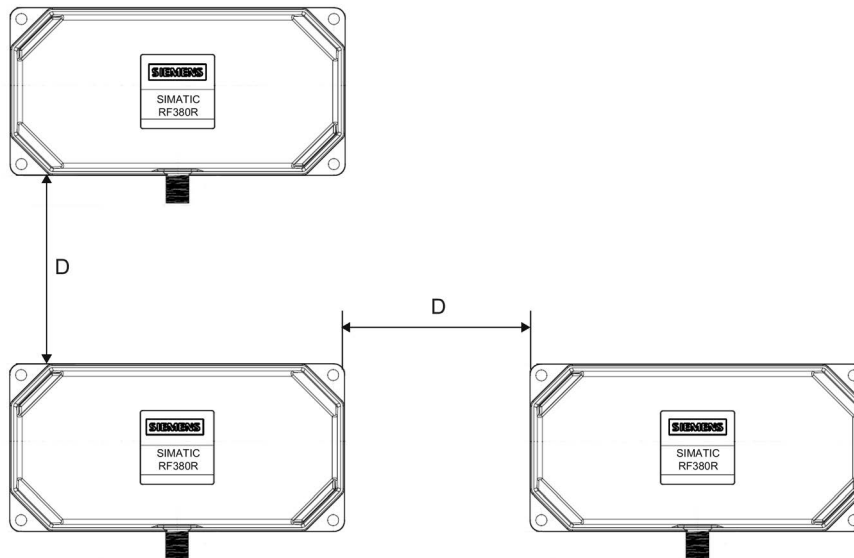
Figure 5-31 Metal-free space for RF380R - 2nd generation

The RF380R can be flush-mounted in metal. Allow for a possible reduction in the field data.

To avoid any impact on the field data, the distance  $a$  should be  $\geq 20$  mm.

## 5.8.7 Minimum distance between RF380R readers

### RF380R side by side

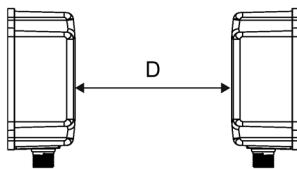


D  $\geq$  400 mm (with 2 readers)

D  $\geq$  500 mm (with more than 2 readers)

Figure 5-32 Minimum distance between multiple RF380R - 2nd generation

### RF380R face-to-face



D  $\geq$  800 mm

Figure 5-33 Face-of-face distance between two RF380R - 2nd generation

## 5.8.8 Technical specifications

Table 5- 34 Technical specifications of the RF380R reader

<b>6GT2801-3BA10</b>			
Product type designation	SIMATIC RF380R		
<b>Radio frequencies</b>			
Operating frequency, rated value	13.56 MHz		
<b>Electrical data</b>			
Maximum range	240 mm		
Maximum data transmission speed reader ↔ transponder	RF300 tran- sponder	ISO tran- sponder (MDS D)	ISO transponder (MDS E)
• Read	• ≤ 8000 bytes/s	• ≤ 3300 bytes/s	• ≤ 3400 bytes/s
• Write	• ≤ 8000 bytes/s	• ≤ 1700 bytes/s	• ≤ 800 bytes/s
Transmission speed	19.2, 57.6, 115.2 kBd		
Read/write distances of the reader	See section "Field data for transponders, readers and antennas (Page 51)."		
MTBF (Mean Time Between Failures)	172.6 years		
<b>Interfaces</b>			
Electrical connector design	M12, 8-pin		
Standard for interfaces for communication	RS-232/RS-422 (3964R protocol)		
Antenna	integrated		
<b>Mechanical specifications</b>			
Enclosure			
• Material	• Plastic PA 12		
• Color	• Anthracite		
Recommended distance to metal	0 mm		
<b>Supply voltage, current consumption, power loss</b>			
Supply voltage	24 VDC		
Typical current consumption	130 mA		
<b>Permitted ambient conditions</b>			
Ambient temperature			
• During operation	• -25 to +70 °C		



<b>6GT2801-3BA10</b>		
• During transportation and storage	• -40 to +85 °C	
Degree of protection to EN 60529	IP67	
Shock-resistant to EN 60721-3-7, Class 7 M3	500 m/s <sup>2</sup>	
Vibration-resistant to EN 60721-3-7, Class 7 M3	200 m/s <sup>2</sup>	
Torsion and bending load	Not permitted	
<b>Design, dimensions and weights</b>		
Dimensions (L x W x H)	160 x 80 x 41 mm	
Weight	600 g	
Type of mounting	4 x M5 screws; 1.5 Nm	
Cable length for RS-422 interface, maximum	RS-422	RS-232
	1000 m	30 m
LED display design	2 LEDs, 5 colors	
<b>Standards, specifications, approvals</b>		
Proof of suitability	Radio in accordance with R&TTE directives EN 300330, EN 301489, CE, FCC, UL/CSA, Ex: II 3G Ex nC IIB T4	

## 5.8.9 Approvals

### FCC information

#### Siemens SIMATIC RF380R (MLFB 6GT2801-3BA10); FCC ID NXW-RF380R02

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

#### Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### IC information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

### 5.8.10 Dimension drawing

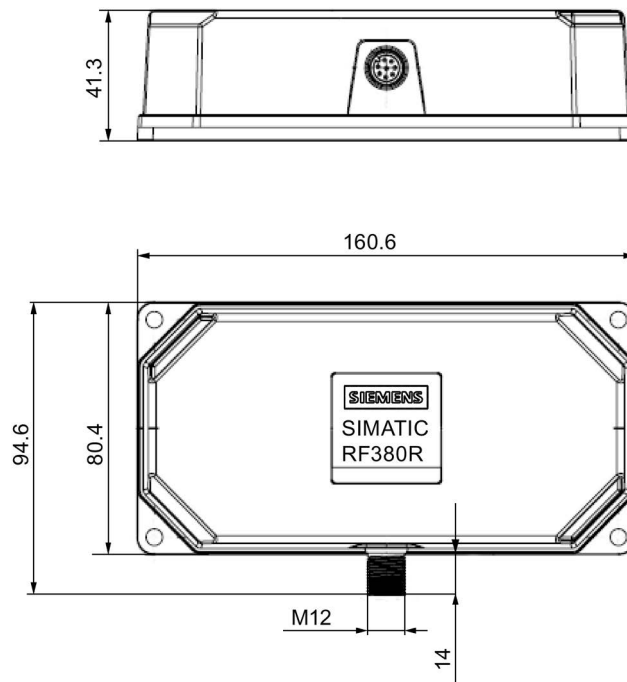


Figure 5-34 Dimension drawing SIMATIC RF380R - 2nd generation

Dimensions in mm

### 5.8.11 Using the reader in hazardous area

<b>⚠ WARNING</b>
<b>Explosion hazard</b>
In a flammable or combustible environment, no cables may be connected to or disconnected from the device.

**ATEX**

The SIMATIC Ident products meet the requirements of explosion protection acc. to ATEX. The products meet the requirements of the standards:



Document	Title
EN 60079-0	Hazardous areas Part 0: Equipment - General requirements
EN 60079-7	Hazardous areas Part 7: Equipment protection by increased safety "e"
EN 60079-31	Potentially explosive atmosphere Part 31: Equipment dust ignition protection by enclosure "t"

You will find the current versions of the standards in the currently valid ATEX certificates.

**ATEX mark**

<b>NOTICE</b>
<b>Validity only when the devices are marked</b>
There is a corresponding approval only with devices to which the Ex mark is applied.

The identification of the electrical equipment as an enclosed unit is:



 II 3 G Ex ec IIB T4 Gc  
 II 3 D Ex tc IIIC T80°C Dc

-25 °C ... +70 °C

U<sub>n</sub> = 24 VDC

The equipment also has the following additional information:

XXXYYYZZZ [= serial number, is assigned during production]

DEMKO 17 ATEX 1767 X [= certificate number]

## IECEX

The SIMATIC Ident products meet the requirements of explosion protection acc. to IECEx. The products meet the requirements of the standards:

Document	Title
IEC 60079-0	Hazardous areas Part 0: Equipment - General requirements
IEC 60079-7	Hazardous areas Part 7: Equipment protection by increased safety "e"
IEC 60079-31	Potentially explosive atmosphere Part 31: Equipment dust ignition protection by enclosure "t"

You will find the current versions of the standards in the currently valid IECEx certificates.

## IECEX mark

NOTICE
<b>Validity only when the devices are marked</b>
There is a corresponding approval only with devices to which the IECEx mark is applied.

The identification of the electrical equipment as an enclosed unit is:

II 3 G Ex ec IIB T4 Gc  
 II 3 D Ex tc IIIC T80°C Dc  
 -25 °C ... +70 °C  
 U<sub>n</sub>= 24 VDC

The equipment also has the following additional information:

XXXYYYZZZ [= serial number, is assigned during production]  
 IECEx ULD 17.0031 X [= certificate number]

## UL HAZ. LOC.

The SIMATIC Ident products meet the requirements of explosion protection acc. to UL HAZ. LOC. The products meet the requirements of the standards:


Document	Title
UL 60079-0	Hazardous areas
CSA C22.2 NO. 60079-0	Part 0: Equipment - General requirements
UL 60079-7	Hazardous areas
CSA C22.2 NO. 60079-7	Part 7: Equipment protection by increased safety "e"
UL 60079-31	Potentially explosive atmosphere
CSA C22.2 NO. 60079-31	Part 31: Equipment dust ignition protection by enclosure "t"

You will find the current versions of the standards in the currently valid UL HAZ. LOC. certificates

**UL HAZ. LOC. mark**

<b>NOTICE</b>
<b>Validity only when the devices are marked</b>
There is a corresponding approval only with devices to which the UL HAZ. LOC. mark is applied.

The identification of the electrical equipment as an enclosed unit is:


 E223122  
 IND.CONT.EQ FOR HAZ.LOC.  
 CL.I, DIV.2, GP.C,D T4  
 CL.II, DIV.2, GP.F,G T80°C  
 AEx ec IIB T4, Ex ec IIB T4  
 AEx tc IIIC T80°C, Ex tc IIIC T80°C

-25 °C ... +70 °C

U<sub>n</sub>= 24 VDC

The equipment also has the following additional information:

XXXYYYZZZ [= serial number, is assigned during production]

**5.8.11.1 Using the reader in hazardous area for gases**

The temperature class of the reader for hazardous areas depends on the ambient temperature range:


Ambient temperature range	Temperature class
-25 °C ... +70 °C	T4

<b>⚠ WARNING</b>
<b>Ignitions of gas-air mixtures</b>
When using the reader, check to make sure that the temperature class is adhered to in keeping with the requirements of the area of application
Non-compliance with the permitted temperature ranges while using the reader can lead to ignitions of gas-air mixtures.

### 5.8.11.2 Using the reader in hazardous area for dust

The equipment is suitable for dusts whose ignition temperatures for a dust layer of 5 mm are higher than 80 °C (smoldering temperature).

Ambient temperature range	Temperature value
-25 °C < Ta < +70 °C	T80 °C

<p> <b>WARNING</b></p> <p><b>Ignitions of dust-air mixtures</b></p> <p>When using the reader, check to make sure that the temperature values are adhered to in keeping with the requirements of the area of application. Non-compliance with the permitted temperature range while using the reader can lead to ignitions of dust-air mixtures.</p>
--


### 5.8.11.3 Installation and operating conditions for hazardous areas:

<p><b>NOTICE</b></p> <p><b>Risk of explosion</b></p> <p>Risk of explosion of dust-air mixtures or gas-air mixtures and the device can be damaged. Note the following conditions when installing and operating the device in a hazardous area:</p> <ul style="list-style-type: none"> <li>• Making and breaking of circuits is permitted only in a de-energized state.</li> <li>• The maximum surface temperature, corresponding to the marking, applies only for operation without a cover of dust.</li> <li>• The device may only be operated in such a way that adequate protection against UV light is ensured.</li> <li>• The device may not be operated in areas influenced by processes that generate high electrostatic charges.</li> <li>• The device must be installed so that it is mechanically protected.</li> <li>• The grounding of the plug (8-pin) on the reader must be via its supply cable.</li> <li>• The device may only be operated with accessories specified or supplied by the manufacturer. All the points above also apply to the accessories (cables and connectors) and to the antennas (exception: the housing of ANT 1 does not need to be installed with impact protection).</li> <li>• The device sockets incl. the metal parts of the connecting cable must have a shrink-on sleeve pulled over them, in other words, all metal parts apart from the securing sockets of the housing must be fully covered and be inaccessible.</li> <li>• After disconnecting the connections (antenna cable, signal/supply cable), before the plugs are inserted again, they must be checked for contamination and if necessary cleaned.</li> </ul>
---

## 5.9 SIMATIC RF382R with Scanmode

You will find detailed information on the SIMATIC RF382R with Scanmode on the Internet (<https://support.industry.siemens.com/cs/ww/en/ps/15038>).

### 5.9.1 Characteristics

<p><b>RF382R Scanmode</b></p> 	<p><b>Characteristics</b></p>	
<p>Design</p>	<p>① RS-232 or RS-422 interface ② Status display</p>	
<p>Operating range</p>	<p>Suitable for high speeds, e.g. in</p> <ul style="list-style-type: none"> <li>• Suspension conveyor systems</li> <li>• Assembly lines</li> <li>• Production</li> <li>• Order picking</li> </ul>	

### 5.9.2 RF382R with Scanmode ordering data

Table 5- 35 RF382R Scanmode ordering data

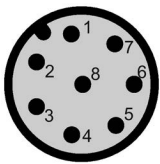
	Article number
RF382R Scanmode	6GT2801-3AB20-0AX0



### 5.9.3 Pin assignment RF382R Scanmode RS232 interface

You can connect the RF382R Scanmode reader via the internal RS-232/RS-422 interface or via a higher-level system. (See section "Basic rules (Page 111)") Make sure that the pin assignment is correct. In the factory settings, the reader is set to RS-232. Siemens can change the interface to RS-422.





Table 5- 36 Connector and reader pin assignment

Pin	Pin Device end 8-pin M12	Assignment	
		RS-232	RS-422
	1	+ 24 V	+ 24 V
	2	RXD	- Transmit
	3	0 V	0 V
	4	TXD	+ Transmit
	5	not used	+ Receive
	6	not used	- Receive
	7	not used	not used
	8	Ground (shield)	Ground (shield)

### 5.9.4 LED operating display

The operational statuses of the reader are displayed by the LEDs. The LED can adopt the colors green, red or yellow and the statuses off , on , flashing :

Table 5- 37 LED operating display on the reader

LED	Meaning
	The reader is turned off.
	Operating voltage present, reader ready for operation
	<ul style="list-style-type: none"> <li>Operating mode "with presence": Transponder present</li> <li>Operating mode "without presence": Transponder present and command currently being executed</li> </ul>
	There is an error. The number of flashes provides information about the current error. You will find more information on error messages in the section "System diagnostics (Page 413)".

### 5.9.5 Ensuring reliable data exchange

The "center point" of the transponder must be situated within the transmission window.

### 5.9.6 Mounting on metal

The RF382R can be mounted directly on metal. Flush mounting on metal is not permitted.

### 5.9.7 Minimum distance between several RF382R Scanmode readers

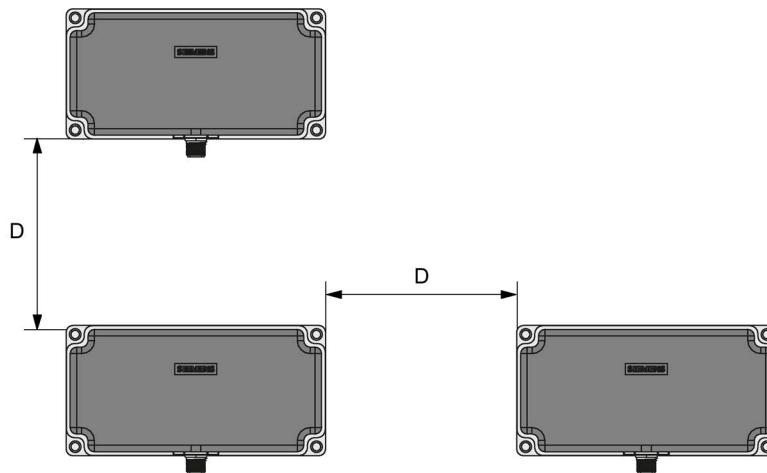


Figure 5-35 Minimum distance between several RF382R Scanmode readers

Minimum distance D from RF382R to RF382R	$D \geq 200 \text{ mm}$
--	-------------------------

### 5.9.8 Transmission window

#### Orientation of fields of the SIMATIC RF382R Scanmode

For many applications it may be best to operate the reader so that the tags move from left to right (or from right to left) at a certain distance in front of the narrow edge of the reader. With this direction of movement, the horizontal reader field is used, see figure below.

You also have the option of moving the tags up and down (or down and up) past the narrow edge of the reader. With this direction of movement, uses the vertical reader field is used.

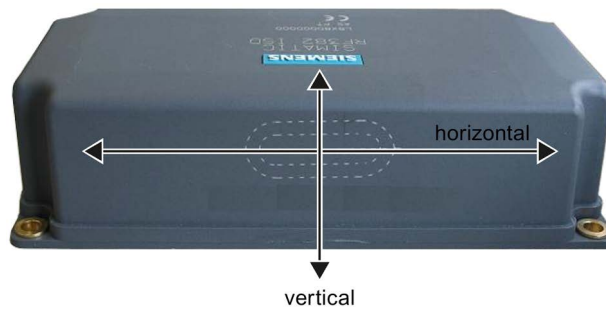


Figure 5-36 Definition of horizontal and vertical reader field

### Maximum field strength

The reader creates the maximum field approximately 13 mm below the upper reader edge. For the largest possible reading range the tags you want to read should move in this range. This applies regardless of whether the horizontal or the vertical field is used.



Figure 5-37 Line of maximum magnetic field strength

The area of the maximum field strength and, therefore, the maximum range is identified by a laser icon:

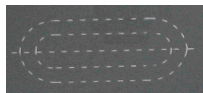


Figure 5-38 Laser labeling

Transmission window horizontal field

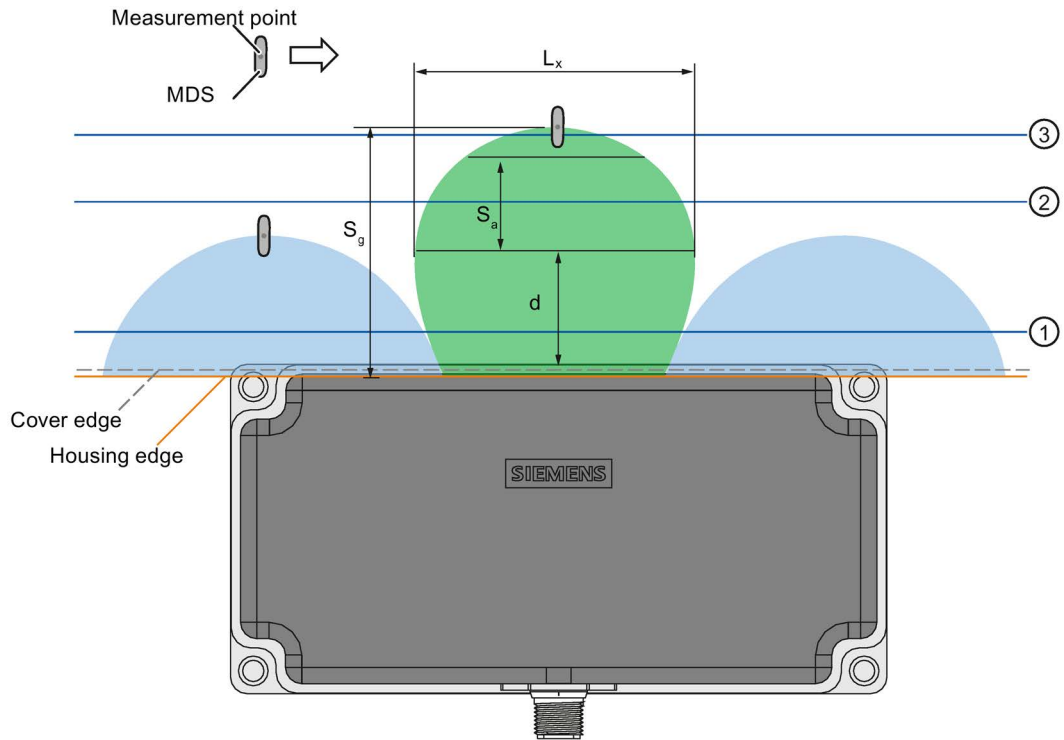


Figure 5-39 Distance definition horizontal field

Green	Main field (processing field)
Blue	Secondary fields, horizontal field
$L_x$	Maximum length of the main field, horizontal field
$d$	Distance from the reader edge at which maximum horizontal main field length $L$ exists
$S_a$	Operating range in the main field
$S_g$	Limit distance
①	Level 1
②	Level 2
③	Level 3
$\Rightarrow$	Direction of motion of the transponder

Operating range ( $S_a$ )

The operating range lies between Level ① and Level ③.

The operating range between Levels ① and ② includes secondary fields.

The recommended operating range therefore lies in the green main field between Level 2 and Level 3.

### Limit distance ( $S_g$ )

The limit distance lies on Level ③.

### Transmission window vertical field

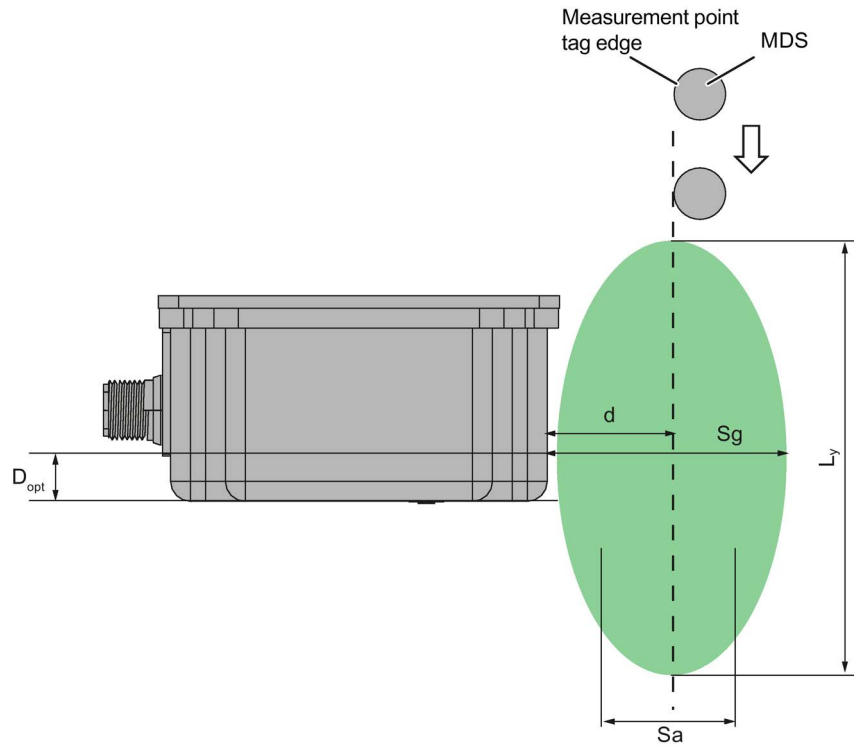


Figure 5-40 Distance definition vertical field

Green	Main field (processing field)
$L_y$	Maximum length of the main field, vertical field
$d$	Distance from the reader edge at which maximum vertical main field length $L_y$ exists
$S_a$	Operating range in the main field
$S_g$	Limit distance
$D_{opt}$	= 13 mm
↓	Direction of motion of the transponder

## 5.9.9 Technical specifications

Table 5- 38 Technical specifications of the RF382R reader with Scanmode

<b>6GT2801-3AB20-0AX0</b>	
Product type designation	SIMATIC RF382R Scanmode
<b>Radio frequencies</b>	
Operating frequency, rated value	13.56 MHz
<b>Electrical data</b>	
Maximum range	75 mm
Maximum data transmission speed reader ↔ transponder	ISO transponder
<ul style="list-style-type: none"> <li>• Read</li> </ul>	<ul style="list-style-type: none"> <li>• approx. 1500 bytes/s</li> </ul>
Transmission speed	19.2, 57.6, 115.2 kBd
Read/write distances of the reader	See section "Field data for transponders, readers and antennas (Page 51)."
MTBF (Mean Time Between Failures)	115 years
<b>Interfaces</b>	
Electrical connector design	M12, 8-pin
Standard for interfaces for communication	RS-232 (factory setting, can be changed to RS-422)
Antenna	integrated
<b>Mechanical specifications</b>	
Enclosure	
<ul style="list-style-type: none"> <li>• Material</li> </ul>	<ul style="list-style-type: none"> <li>• Plastic PA 12</li> </ul>
<ul style="list-style-type: none"> <li>• Color</li> </ul>	<ul style="list-style-type: none"> <li>• Anthracite</li> </ul>
Recommended distance to metal	0 mm
<b>Supply voltage, current consumption, power loss</b>	
Supply voltage	24 VDC
Typical current consumption	140 mA
<b>Permitted ambient conditions</b>	
Ambient temperature	
<ul style="list-style-type: none"> <li>• During operation</li> </ul>	<ul style="list-style-type: none"> <li>• -25 to +70 °C</li> </ul>
<ul style="list-style-type: none"> <li>• During transportation and storage</li> </ul>	<ul style="list-style-type: none"> <li>• -40 to +85 °C</li> </ul>
Degree of protection to EN 60529	IP67
Shock-resistant to EN 60721-3-7, Class 7 M3	500 m/s <sup>2</sup>

<b>6GT2801-3AB20-0AX0</b>		
Vibration-resistant to EN 60721-3-7, Class 7 M3	200 m/s <sup>2</sup>	
Torsion and bending load	Not permitted	
<b>Design, dimensions and weights</b>		
Dimensions (L x W x H)	160 x 80 x 41 mm	
Weight	550 g	
Type of mounting	4 x M5 screws; 1.5 Nm	
Cable length for RS-422 interface, maximum	RS-422	RS-232
	1000 m	30 m
LED display design	3-color LED	
<b>Standards, specifications, approvals</b>		
Proof of suitability	Radio to R&TTE directives EN 300330, EN 301489, CE, FCC, UL/CSA	

## 5.9.10 Approvals

### FCC information

#### Siemens SIMATIC RF382R (MLFB 6GT2801-3AB20-0AX0); FCC ID NXW-RF382R

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

#### Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

#### Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**IC information**

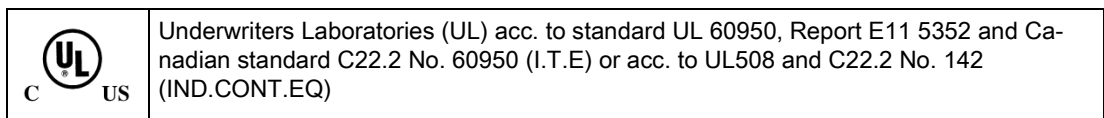
This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**Certificates for USA and Canada**



**5.9.11 Dimensional diagram**

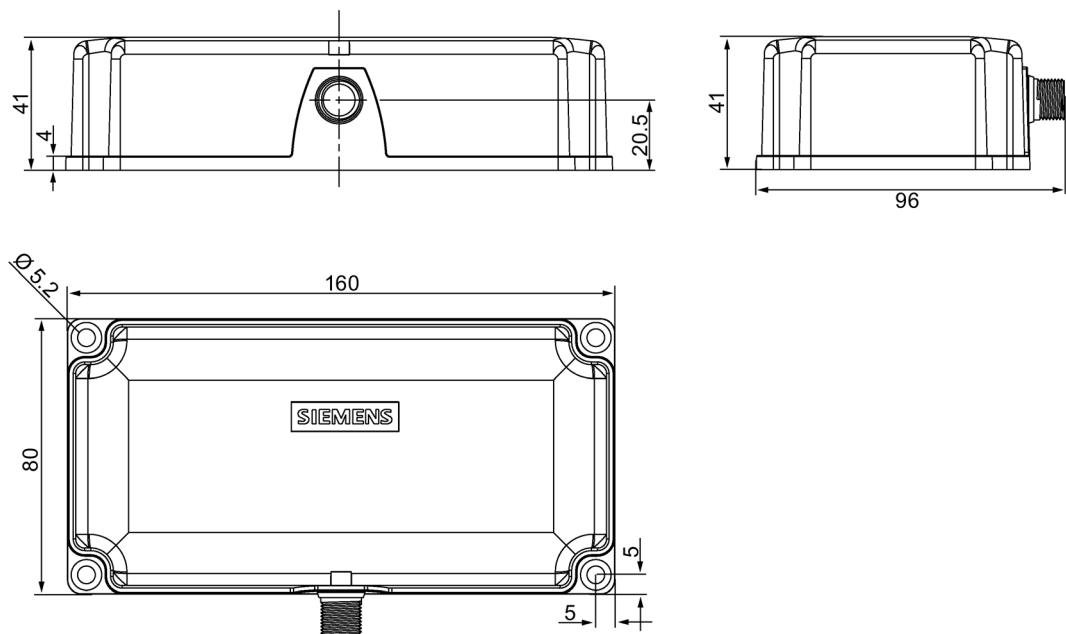




Figure 5-41 Dimension drawing



## Antennas

### 6.1 Features

For the RF350R and RF350M readers, you can use the following plug-in antennas:

Antenna	Product photo	Limit distance $S_g$ <sup>1)</sup>	Dimensions
ANT 1		Up to 140 mm	75 x 75 x 20 mm (L x W x H)
ANT 3		Up to 50 mm	50 x 75 x 10 mm (L x W x H)

Antenna	Product photo	Limit distance $S_g$ <sup>1)</sup>	Dimensions
ANT 3S		Up to 5 mm	50 × 28 × 10 mm (L × W × H)
ANT 8 <sup>2)</sup>		Up to 4 mm	M8 x 1.0 x 39 mm (Ø x thread x L)
ANT 12		Up to 16 mm	M12 x 1.0 x 40 mm (Ø x thread x L)
ANT 18		Up to 35 mm	M18 x 1.0 x 55 mm (Ø x thread x L)
ANT 30		Up to 55 mm	M30 x 1.5 x 61 mm (Ø x thread x L)

<sup>1)</sup> Depending on the transponder used

<sup>2)</sup> only released with RF350M und RF350R - second generation

---

**Note**

**Use of the antennas in hazardous areas**

The antennas ANT 1, ANT 12, ANT 18 and ANT 30 are approved for use in hazardous locations. For more information, refer to the section "Use of the reader in hazardous areas (Page 163)".

---

**ANT 1**

The ANT 1 is an antenna in the mid performance range and can be used to the customer's advantage in production and assembly lines due to its manageable housing shape. The antenna dimensions make it possible to read/write large quantities of data dynamically from/to the transponder during operation. The antenna cable can be plugged in.

**ANT 3**

The ANT 3 is designed for use in small assembly lines. The extremely compact design of the antenna allows extremely accurate positioning. The antenna cable can be plugged in.

**ANT 3S**

Due to its slimline and compact design, the ANT 3S can still be precisely positioned in cramped conditions. Areas of application are, for example, tool identification. The antenna cable can be plugged in.

**ANT 8**

The ANT 8 is primarily envisaged for tool identification applications. The extremely small design of the antenna allows extremely accurate positioning. The antenna cable can be connected at the reader end and screwed to the antenna.

The antenna ANT 8 has currently only been tested and released for use in conjunction with the mobile reader RF350M and the reader RF350R - second generation.

**ANT 12**

The ANT 12 is primarily envisaged for tool identification applications. The very small size of the antenna means that highly exact positioning is possible using the plastic nuts included in the scope of delivery. The antenna cable can be plugged in.

**ANT 18**

The ANT 18 is designed for use in small assembly lines. Due to its small, compact construction, the antenna can be easily positioned for any application using two plastic nuts (included in the package). The antenna cable can be connected at the reader end.

**ANT 30**

The ANT 30 is designed for use in small assembly lines. In comparison to ANT 18, the maximum write/read distance is approximately 60 % larger. Due to its compact construction, the antenna can be easily positioned for any application using two plastic nuts (included in the package). The antenna cable can be connected at the reader end.

**6.2 Ordering data**

Table 6- 1 Ordering data for antennas

		Article number
ANT 1	incl. integrated antenna cable 3 m	6GT2398-1CB00
ANT 3	without antenna connecting cable	6GT2398-1CD30-0AX0
	incl. plug-in antenna cable 3 m	6GT2398-1CD40-0AX0
ANT 3S	without antenna connecting cable	6GT2398-1CD50-0AX0
	incl. plug-in antenna cable 3 m	6GT2398-1CD60-0AX0
ANT 8	without antenna connecting cable	6GT2398-1CF00
	incl. plug-in antenna cable 3 m	6GT2398-1CF10
ANT 12	incl. plug-in antenna cable 3 m	6GT2398-1CC00
ANT 18	incl. plug-in antenna cable 3 m	6GT2398-1CA00
ANT 30	incl. plug-in antenna cable 3 m	6GT2398-1CD00

Table 6- 2 Antenna accessories ordering data

		Article number
Antenna connecting cable	3 m	6GT2398-0AH30

**6.3 Ensuring reliable data exchange**

The "center point" of the transponder must be situated within the transmission window.

## 6.4 Metal-free area

The antennas ANT 1, ANT 8, ANT 12, ANT 18 and ANT 30 can be flush-mounted in metal. Please allow for a possible reduction in the field data values. During installation, maintain the minimum distances (a and b) on/flush with the metal.

---

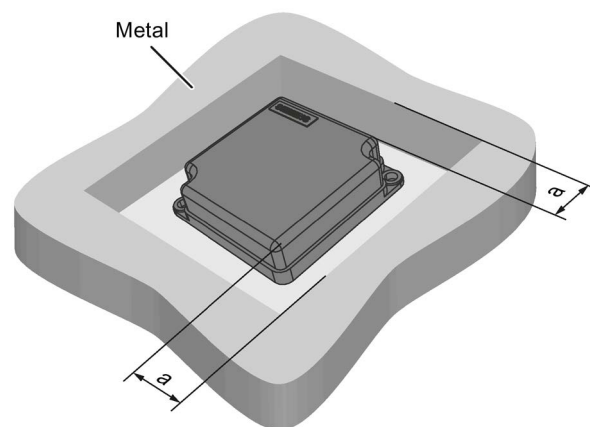
### Note

#### Reduction of range if the metal-free space is not maintained

At values lower than a and b, the field data changes significantly, resulting in a reduction in the limit distance and operating distance. Therefore, during installation, maintain the minimum distances (a and b) on/flush with the metal.

---

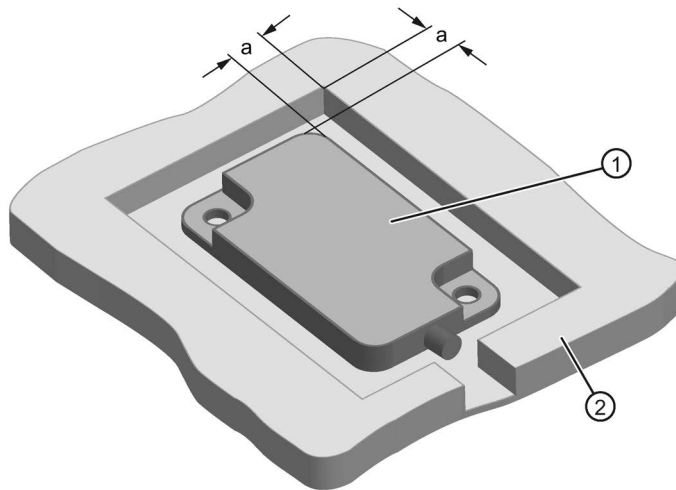
### Metal-free space for flush-mounted installation of ANT 1



a = 40 mm

Figure 6-1 ANT 1 flush-mounted in metal

**Metal-free space for flush-mounted installation of ANT 3 and ANT 3S**



- ① ANT 3
- ② Metal
- a = 10 mm

Figure 6-2 ANT 3 and ANT 3S flush-mounted in metal

**Flush-mounting of ANT 8**

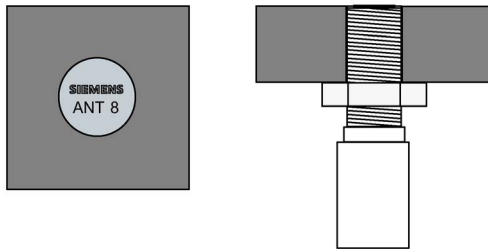


Figure 6-3 ANT 8 flush-mounted in metal

The ANT 8 can be flush-mounted in metal.

**Flush-mounting of ANT 12**

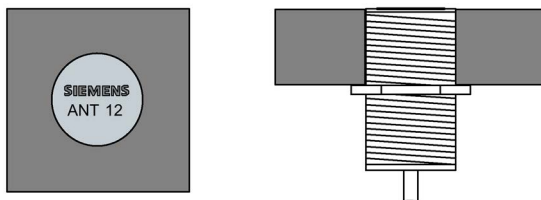
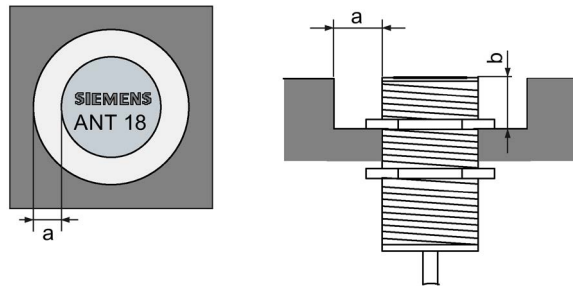


Figure 6-4 ANT 12 flush-mounted in metal

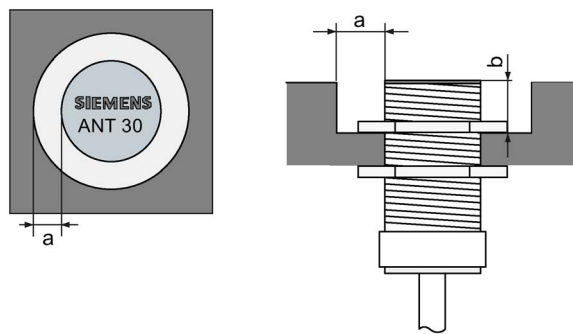
The ANT 12 can be flush-mounted in metal.

**Metal-free space for flush-mounted installation of ANT 18**

a = 10 mm

b = 10 mm

Figure 6-5 ANT 18 flush-mounted in metal

**Metal-free space for flush-mounted installation of ANT 30**

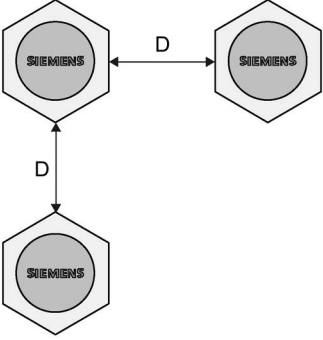
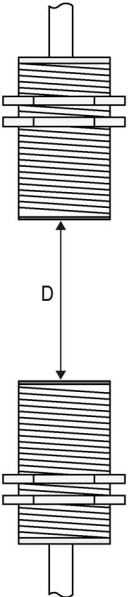
a = 20 mm

b = 20 mm

Figure 6-6 ANT 30 flush-mounted in metal

## 6.5 Minimum distance between antennas

Table 6- 3 Minimum distance between antennas

Diagram (example)	Minimum distance [mm]	
	<b>Antennas next to each other</b>	
	ANT 1	$D \geq 300 \text{ mm}$
	ANT 3	$D \geq 150 \text{ mm}$
	ANT 3S	$D \geq 20 \text{ mm}$
	ANT 8	$D \geq 50 \text{ mm}$
	ANT 12	$D \geq 70 \text{ mm}$
	ANT 18	$D \geq 100 \text{ mm}$
	ANT 30	$D \geq 100 \text{ mm}$
	<b>Antennas face to face</b>	
	ANT 1	$D \geq 500 \text{ mm}$
	ANT 3	$D \geq 200 \text{ mm}$
	ANT 3S	$D \geq 50 \text{ mm}$
	ANT 8	$D \geq 50 \text{ mm}$
	ANT 12	$D \geq 100 \text{ mm}$
	ANT 18	$D \geq 100 \text{ mm}$
	ANT 30	$D \geq 200 \text{ mm}$

The reader electronics can be mounted directly alongside each other.



## 6.6 Technical specifications

Table 6- 4 Technical specifications of the antennas ANT 1, ANT 3 , ANT 3S and ANT 8

	ANT 1	ANT 3	ANT 3S	ANT 8
Max. write/read distance antenna ↔ transponder (S <sub>g</sub> )	140 mm	50 mm	5 mm	4 mm
Housing dimensions	75 x 75 x 20 mm (L x W x H)	50 x 28 x 10 mm (L x W x H)	50 x 28 x 10 mm (L x W x H)	M8 x 1.0 x 39 mm (Ø x thread x L)
Color	Anthracite	Black	Black	silver-metallic
Material	Plastic PA 12	Plastic PA6-V0	Plastic PA6-V0	Stainless steel
Plug connection	M8, 4-pin; (pins on antenna side)	M8, 4-pin; socket on antenna side	M8, 4-pin; socket on antenna side	M8, 4-pin; (pins on antenna side)
Degree of protection to EN 60529	IP67			IP67 (front)
Shock-resistant acc. to EN 60721-3-7, Class 7M2 <sup>1)</sup>	500 m/s <sup>2</sup>			
Vibration-resistant to EN 60721-3-7, Class 7M2 <sup>1)</sup>	200 m/s <sup>2</sup> (3...50 Hz)			
Attachment of the antenna	2 x M5 screws	2 x M4 screws	2 x M4 screws	2x stainless steel nuts M8 x 1.0 mm
Ambient temperature				
• During operation	• -25 °C ... +70 °C			
• During transportation and storage	• -40 °C ... +85 °C			
Approx. weight				
• without antenna cable	• --	• 35 g	• 35 g	• 10 g
• with antenna cable (3.0 m)	• 225 g	• 160 g	• 160 g	• 140 g

<sup>1)</sup> Warning: The values for shock and vibration are maximum values and must not be applied continuously.

Table 6- 5 Technical specifications of the antennas ANT 12, ANT 18 and ANT 30

	ANT 12	ANT 18	ANT 30
Max. write/read distance antenna ↔ transponder (S <sub>g</sub> )	16 mm	35 mm	55 mm
Housing dimensions	M12 x 1.0 x 40 mm (Ø x thread x L)	M18 x 1.0 x 55 mm (Ø x thread x L)	M30 x 1.5 x 61 mm (Ø x thread x L)
Color	Pale turquoise		
Material	Plastic Crastin		
Plug connection	M8, 4-pin; (pins on antenna side)		

6.7 Dimensional drawings

	ANT 12	ANT 18	ANT 30
Degree of protection to EN 60529	IP67 (front)		
Shock-resistant acc. to EN 60721-3-7, Class 7M2 <sup>1)</sup>	500 m/s <sup>2</sup>		
Vibration-resistant to EN 60721-3-7, Class 7M2 <sup>1)</sup>	200 m/s <sup>2</sup> (3...50 Hz)		
Attachment of the antenna	2 plastic nuts M12 x 1.0 mm	2 plastic nuts M18 x 1.0 mm	2 plastic nuts M30 x 1.5 mm
Ambient temperature	<ul style="list-style-type: none"> <li>• During operation: -25 °C ... +70 °C</li> <li>• During transportation and storage: -40 °C ... +85 °C</li> </ul>		
Approx. weight	<ul style="list-style-type: none"> <li>• without antenna cable: --</li> <li>• with antenna cable (3.0 m): 145 g</li> </ul>		
	<ul style="list-style-type: none"> <li>• without antenna cable: --</li> <li>• with antenna cable: 130 g</li> </ul>		<ul style="list-style-type: none"> <li>• without antenna cable: --</li> <li>• with antenna cable: 180 g</li> </ul>

<sup>1)</sup> Warning: The values for shock and vibration are maximum values and must not be applied continuously.

## 6.7 Dimensional drawings

The cable length is 3 m. All dimensions are in mm.

### ANT 1

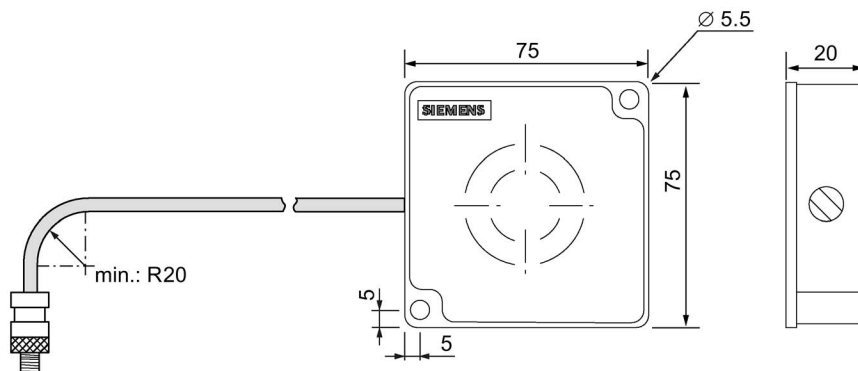


Figure 6-7 Dimension drawing for ANT 1

ANT 3 / ANT 3S

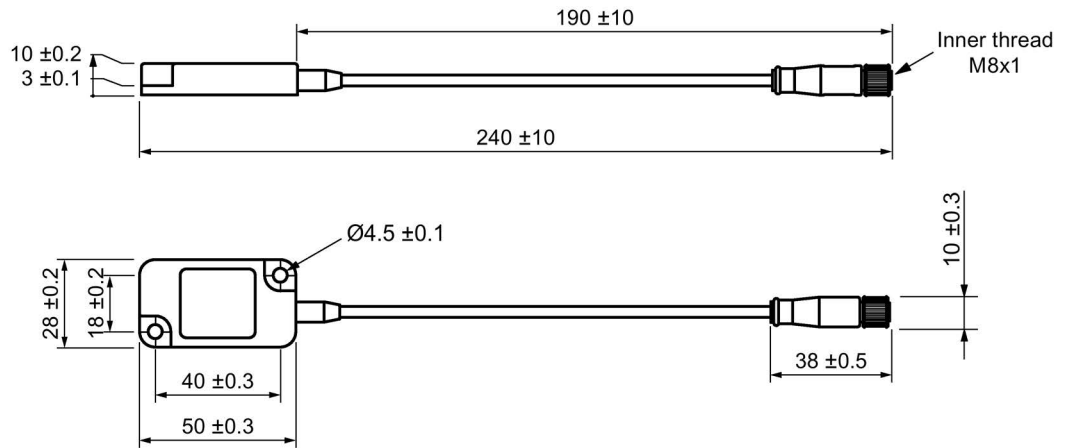


Figure 6-8 Dimension drawing ANT 3 7 ANT 3S

ANT 8

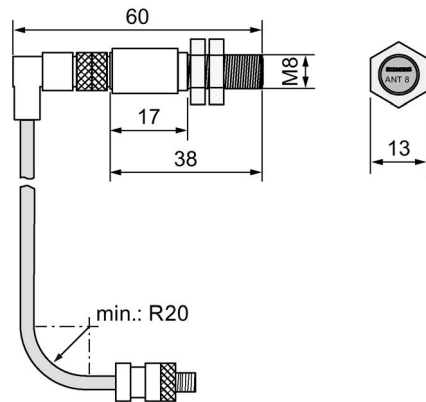


Figure 6-9 Dimension drawing for ANT 8

ANT 12

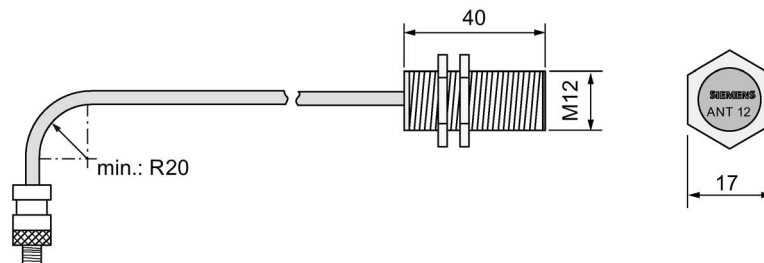


Figure 6-10 Dimension drawing for ANT 12

ANT 18

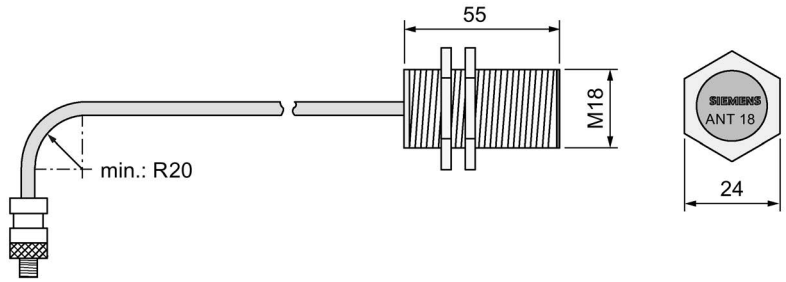


Figure 6-11 Dimension drawing for ANT 18

ANT 30

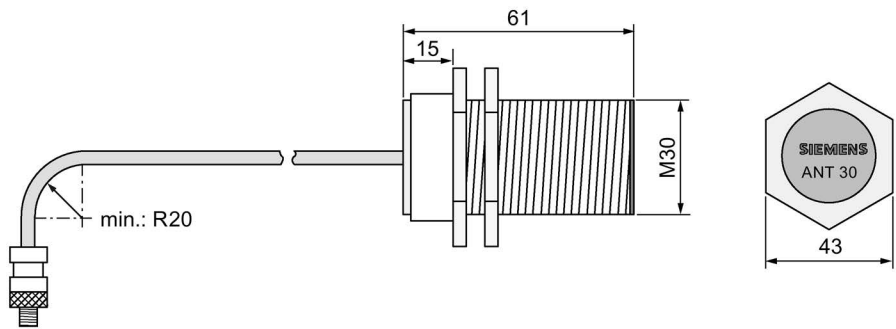


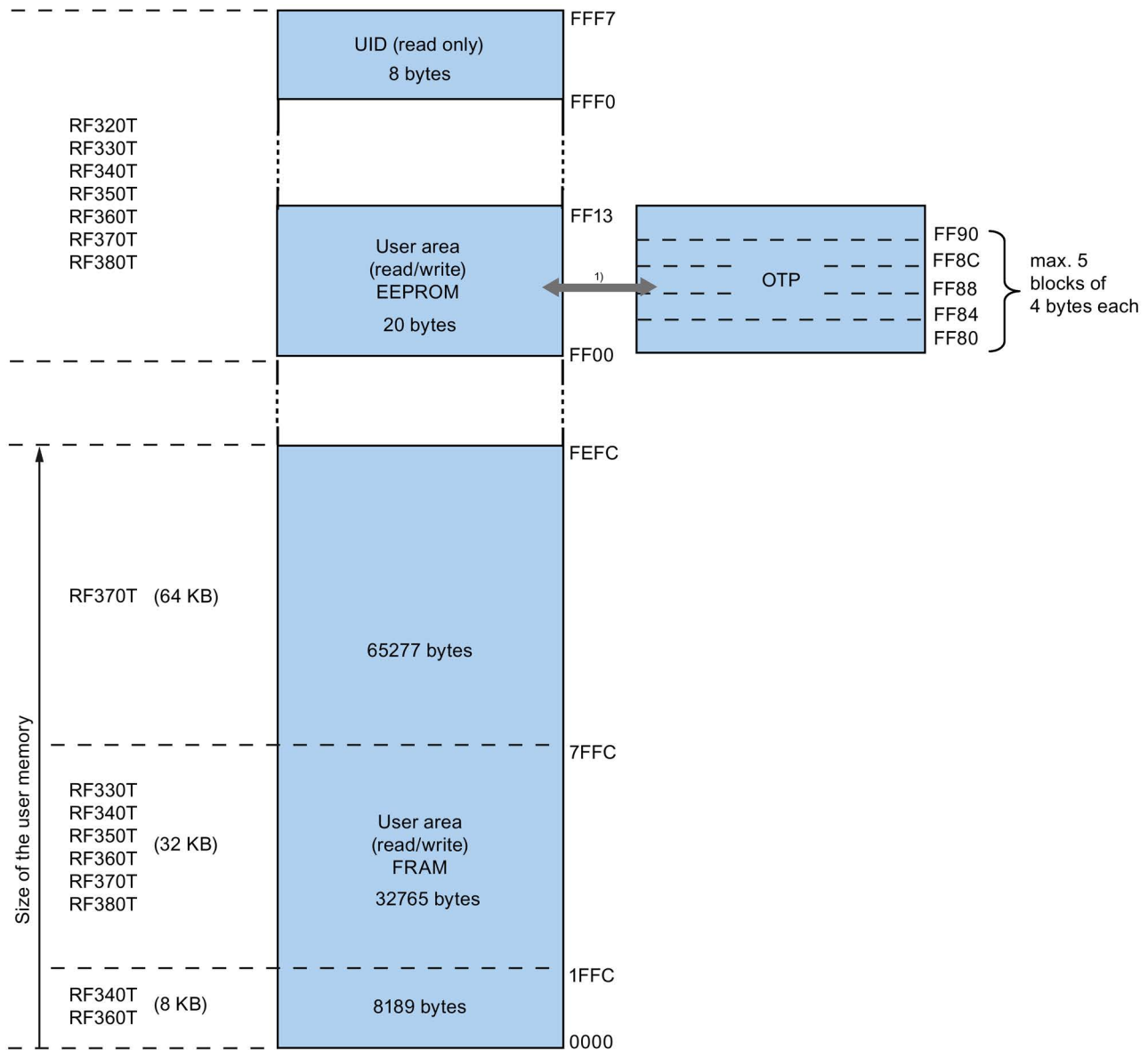
Figure 6-12 Dimension drawing for ANT 30

## RF300 transponder

### Features of the RF300 transponders

The RF300 transponders (RF3xxT) stand out particularly for their extremely fast data exchange with the RF300 readers (RF3xxR). With the exception of the RF320T transponder, all of the RF300 transponders have 8 to 64 KB of FRAM memory, which has an almost unlimited capacity for reading and writing.

### 7.1 Memory configuration of the RF300 transponders



1) Physically identical memory When the OTP area is used, the corresponding user area (FF00-FF13) can no longer be modified (read only).

Figure 7-1 Memory configuration of the RF300 transponders

## EEPROM area

The memory configuration of an RF300 transponder always comprises an EEPROM that has 20 bytes for user data (read/write) and a 4-byte unique serial number (UID, read only). For reasons of standardization, the UID is transferred as an 8 byte value through a read command to address FFF0 with a length of 8. The unused 4 high bytes are filled with zeros.

---

### Note

#### Write speed

The EEPROM user memory (address FF00-FF13, or FF80-FF90) requires significantly more time for writing (approx. 11 ms/byte) than the high-speed FRAM memory. For time-critical applications with write functions, it is advisable to use FRAM transponders (e.g. RF330T, RF340T, RF350T, RF360T, RF370T, RF380T).

---

## FRAM area

Depending on the tag type, high-speed FRAM memory is available. (8 KB, 32 KB, 64 KB). This area does not exist for the RF320T.

In the case of RF3xxT transponders with FRAM memory, the data carrier initialization command (INIT) is only effective on this memory area but not on the EEPROM area (FF00-FF13).

## OTP area

The EEPROM memory area (address FF00-FF13) can also be used as a so-called "OTP" memory (One Time Programmable). The 5 block addresses FF80, FF84, FF88, FF8C and FF90 are used for this purpose. A write command to this block address with a valid length (4, 8, 12, 16, 20 depending on the block address) protects the written data from subsequent overwriting.

---

### Note

#### Seamless use of the OTP area

When the OTP area is used, it must be ensured that the blocks are used starting from Block 0 consecutively.

Examples:

- 3 blocks (with write command), Block 0, 1, 2 (FF80, length = 12): valid
  - 2 blocks (consecutive), Block 0 (FF80, length =4), Block 1 (FF84, length = 4): valid
  - 2 blocks (consecutive), Block 0 (FF80, length =4), Block 2 (FF88, length = 4): Invalid
  - 1 Block, Block 4 (FF90, length = 4): Invalid
-


**Note**

**Use of the OTP area is not reversible**

If you use the OPT area, you cannot undo it, because the OPT area can only be written to once.

## 7.2 SIMATIC RF320T

### 7.2.1 Features

RF320T	Characteristics	
 <p>A circular grey transponder with a central hole. The text on the disc reads: SIEMENS, 6GT2800-1CA00, A, SIMATIC, RF320T.</p>	Area of application	Identification tasks on small assembly lines in harsh industrial environments
	Memory size	20 bytes of EEPROM user memory
	Write/read range	See section Field data of RF300 transponders (Page 52)
	Mounting on metal	Yes, with spacer
	Degree of protection	IP67/IPx9K

### 7.2.2 Ordering data

Table 7- 1 Ordering data RF320T

	Article number
RF320T	6GT2800-1CA00

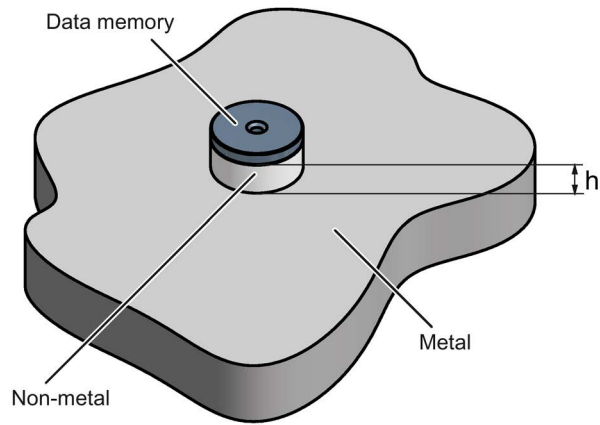
Table 7- 2 Ordering data for RF320T accessories

	Article number
Spacer	6GT2690-0AK00



## 7.2.3 Mounting on metal

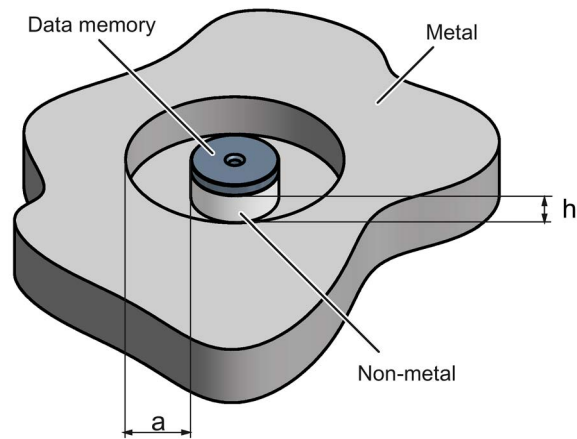
### Mounting on metal



$$h \geq 15 \text{ mm}$$

Figure 7-2 Mounting the MDS D124/D324/D424/D524/E624 and RF320T on metal with spacer

### Flush-mounting



$$h \geq 15 \text{ mm}$$

$$a \geq 25 \text{ mm}$$

Figure 7-3 Flush-mounting of the MDS D124/D324/D424/D524/E624 and RF320T in metal with spacer

**Note**

**Going below the distances**

If the distances (a and h) are not observed, a reduction of the field data results. It is possible to mount the MDS with metal screws (M3 countersunk head screws). This has no tangible impact on the range.

**7.2.4 Technical data**

Table 7- 3 Technical specifications for RF320T

<b>6GT2800-1CA00</b>	
Product type designation	SIMATIC RF320T
<b>Memory</b>	
Memory organization	Byte-oriented, write protection possible in 4-byte blocks
Memory configuration	
• UID	• 4 bytes EEPROM
• User memory	• 20 bytes EEPROM
• OPT memory	• 20 bytes EEPROM
Read cycles (at < 40 °C)	> 10 <sup>14</sup>
Write cycles (at < 40 °C)	> 10 <sup>5</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>9</sub> )	Dependent on the reader used, see section "Field data of RF300 transponders (Page 52)"
MTBF (Mean Time Between Failures)	1800 years
<b>Mechanical specifications</b>	
Enclosure	
• Material	• Epoxy resin
• Color	• Black
Recommended distance to metal	≥ 20 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 to +125 °C
• outside the read/write field	• -40 ... +140 °C

<b>6GT2800-1CA00</b>	
• during storage	• -40 to +140 °C
Degree of protection to EN 60529	• IP67 • IPx9K
Shock-resistant acc. to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	1000 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted

#### Design, dimensions and weights

Dimensions (Ø x H)	27 x 4 mm
Weight	5 g
Type of mounting	• 1 x M3 screw <sup>2)</sup> ≤ 1.0 Nm • Glued <sup>3)</sup>

1) The values for shock and vibration are maximum values and must not be applied continuously.

2) ) To prevent it loosening during operation, secure the screw with screw locking varnish.

3) The glue manufacturer's processing instructions must be observed.

### 7.2.5 Dimension drawing

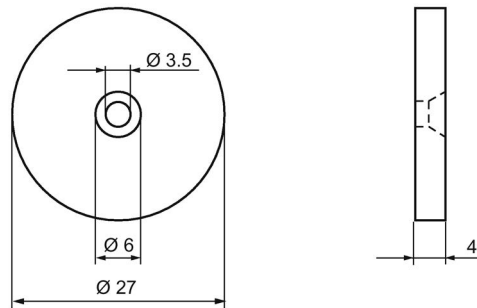



Figure 7-4 RF320T dimension drawing

Dimensions in mm

## 7.3 SIMATIC RF330T

### 7.3.1 Features

Table 7- 4

RF330T	Characteristics	
	Area of application	In production automation for identification of metallic workpiece holders, workpieces or containers.
	Memory size	32 KB EEPROM user memory
	Write/read range	See section "Field data of RF300 transponders (Page 52)"
	Mounting on metal	Yes flush mounted on/in metal
	Degree of protection	IP68/IPx9K

### 7.3.2 Ordering data

Table 7- 5 Ordering data RF330T

	Article number
RF330T	6GT2800-5BA00

Table 7- 6 Ordering data for RF330T accessories

	Article number
Fixing hood RF330T / MDS D423	6GT2690-0AE00

### 7.3.3 Mounting on/in metal

Direct mounting of the RF330T on metal is permitted.

### Mounting of the RF330T on metal

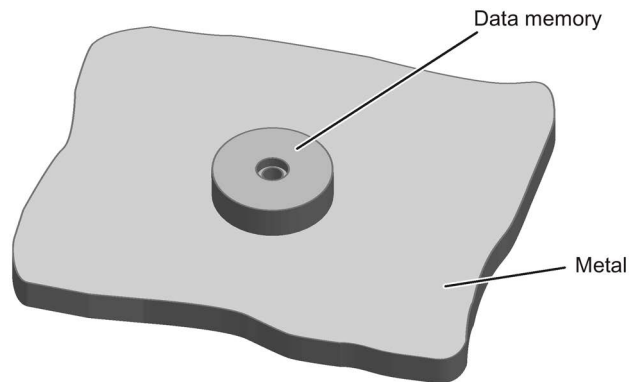
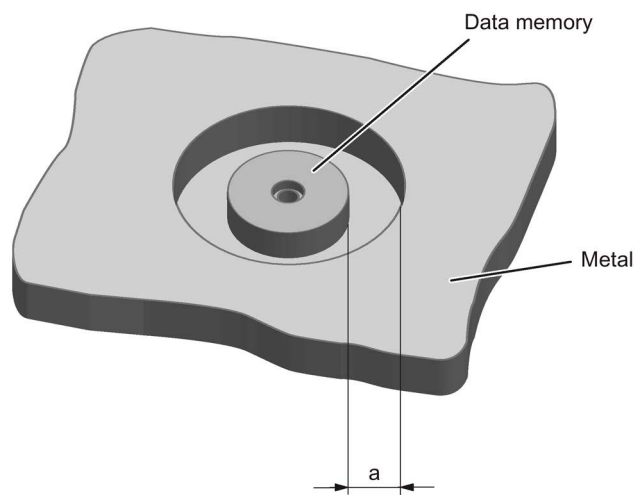


Figure 7-5 Mounting of the RF330T on metal

### Flush-mounting of RF330T in metal



$$a \geq 10 \text{ mm}$$

Figure 7-6 Mounting of the RF330T in metal with 10 mm clearance

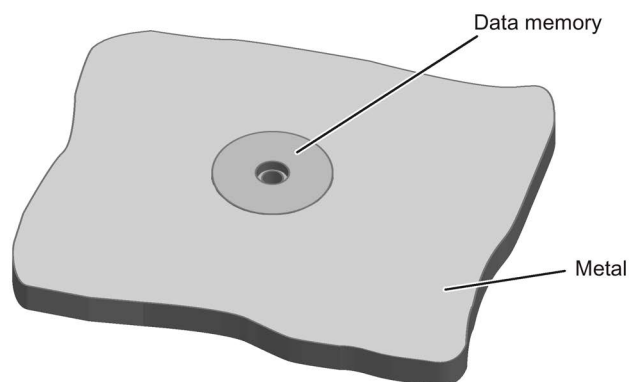


Figure 7-7 Mounting of the RF330T in metal without clearance

**Note**

**Reduction of the write/read range**

Note that when the device is flush-mounted in metal without a surrounding clearance  $\geq 10$  mm, the write/read range is significantly reduced.

**7.3.4 Technical specifications**

Table 7- 7 RF330T technical specifications

<b>6GT2800-5BA00</b>	
Product type designation	SIMATIC RF330T
<b>Memory</b>	
Memory organization	in bytes
Memory configuration	
• UID	• 4 bytes EEPROM
• User memory	• 8 KB FRAM
• OPT memory	• 20 bytes EEPROM
Read cycles (at < 40 °C)	> 10 <sup>14</sup>
Write cycles (at < 40 °C)	> 10 <sup>14</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>g</sub> )	Dependent on the reader used, see section "Field data of RF300 transponders (Page 52)"
MTBF (Mean Time Between Failures)	1200 years
<b>Mechanical specifications</b>	
Enclosure	
• Material	• Plastic PPS
• Color	• Black
Recommended distance to metal	$\geq 0$ mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 to +85 °C
• outside the read/write field	• -40 ... +100 °C
• during storage	• -40 to +100 °C

<b>6GT2800-5BA00</b>	
Degree of protection to EN 60529	<ul style="list-style-type: none"> <li>• IP68 2 hours, 2 m, 20 °C</li> <li>• IPx9K steam jet: 150 mm; 10 to 15 l/min; 100 bar; 75 °C</li> </ul>
Pressure resistance	<ul style="list-style-type: none"> <li>• Low pressure resistant vacuum dryer: up to 20 mbar</li> <li>• high pressure resistant (see degree of protection IPx9K)</li> </ul>
Shock-resistant acc. to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted

#### Design, dimensions and weights

Dimensions (Ø x H)	30 x 8 mm
Weight	10 g
Type of mounting	1 x M4 screw <sup>2)</sup> ≤ 1.5 Nm

<sup>1)</sup> The values for shock and vibration are maximum values and must not be applied continuously.

<sup>2)</sup> ) To prevent it loosening during operation, secure the screw with screw locking varnish.

### 7.3.5 Dimension drawing

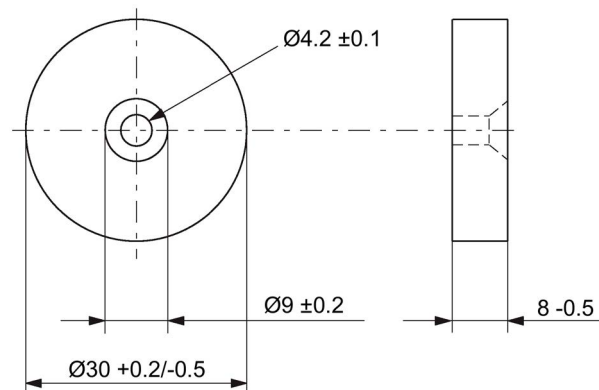



Figure 7-8 RF330T dimension drawing

Dimensions in mm

## 7.4 SIMATIC RF340T

### 7.4.1 Features

Table 7- 8

RF340T	Characteristics	
	Area of application	Identification tasks on small assembly lines in harsh industrial environments
	Memory size	<ul style="list-style-type: none"> <li>• 8 KB FRAM user memory</li> <li>• 32 KB FRAM user memory</li> </ul>
	Write/read range	See section Field data of RF300 transponders (Page 52)
	Mounting on metal	Yes
	Degree of protection	IP68/IPx9K

### 7.4.2 Ordering data

Table 7- 9 Ordering data RF340T

	Article number
RF340T 8 KB FRAM user memory	6GT2800-4BB00
RF340T 32 KB FRAM user memory	6GT2800-5BB00



### 7.4.3 Mounting on metal

Direct mounting of the RF340T on metal is permitted.

#### Mounting of RF340T on metal

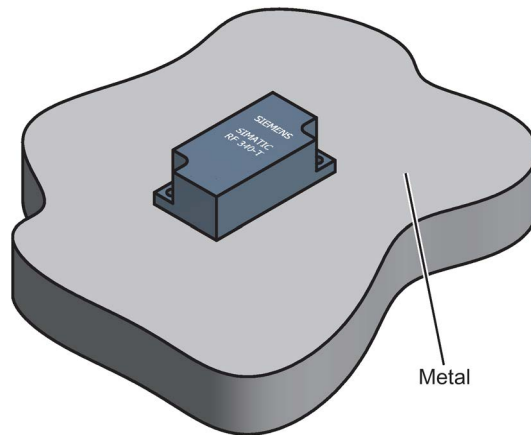


Figure 7-9 Mounting of RF340T on metal

#### Flush-mounting of RF340T in metal:

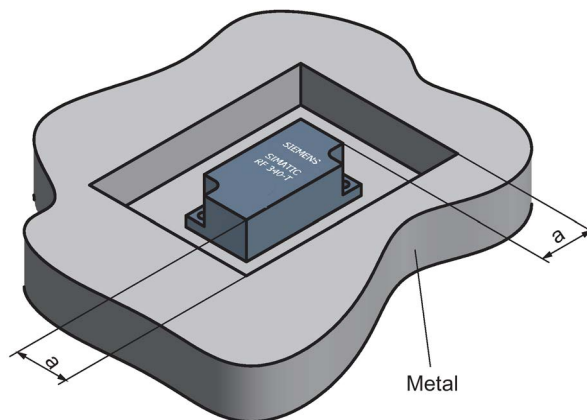


Figure 7-10 Flush-mounting of RF340T in metal

The standard value for  $a$  is  $\geq 20$  mm. At lower values, the field data change significantly, resulting in a reduction in the range.

### 7.4.4 Technical specifications

Table 7- 10 Technical specifications for RF340T

<b>6GT2800-4BB00</b>	
<b>6GT2800-5BB00</b>	
Product type designation	SIMATIC RF340T
<b>Memory</b>	
Memory organization	in bytes
Memory configuration	
• UID	• 4 bytes EEPROM
• User memory	• 8 KB FRAM / 32 KB FRAM
• OPT memory	• 20 bytes EEPROM
Read cycles (at < 40 °C)	> 10 <sup>10</sup>
Write cycles (at < 40 °C)	> 10 <sup>10</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>g</sub> )	Dependent on the reader used, see section "Field data of RF300 transponders (Page 52)"
MTBF (Mean Time Between Failures)	1200 years
<b>Mechanical specifications</b>	
Enclosure	
• Material	• Plastic PA 12
• Color	• Anthracite
Recommended distance to metal	≥ 0 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 to +85 °C
• outside the read/write field	• -40 to +85 °C
• during storage	• -40 to +85 °C
Degree of protection to EN 60529	• IP68 • IPx9K
Shock-resistant acc. to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted

6GT2800-4BB00

6GT2800-5BB00

**Design, dimensions and weights**

Dimensions (L x W x H)	48 x 25 x 15 mm
Weight	25 g
Type of mounting	2 x M3 screws ≤ 1.0 Nm

1) The values for shock and vibration are maximum values and must not be applied continuously.

**7.4.5 Dimension drawing**

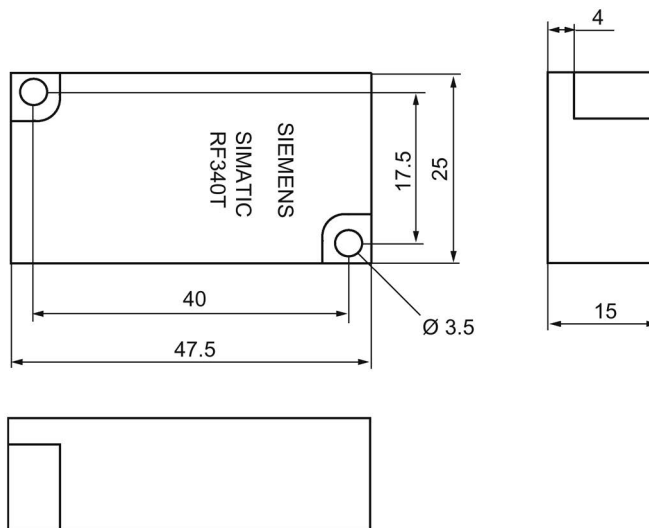



Figure 7-11 RF340T dimension drawing

Dimensions in mm

## 7.5 SIMATIC RF350T

### 7.5.1 Features

RF350T	Characteristics	
	Area of application	Identification tasks on small assembly lines in harsh industrial environments
	Memory size	32 KB FRAM user memory
	Write/read range	See section Field data of RF300 transponders (Page 52)
	Mounting on metal	Yes
	Degree of protection	IP68

### 7.5.2 Ordering data

Table 7- 11 Ordering data RF350T

	Article number
RF350T	6GT2800-5BD00

### 7.5.3 Mounting on metal

Direct mounting of the RF350T on metal is permitted.

#### Mounting of RF350T on metal

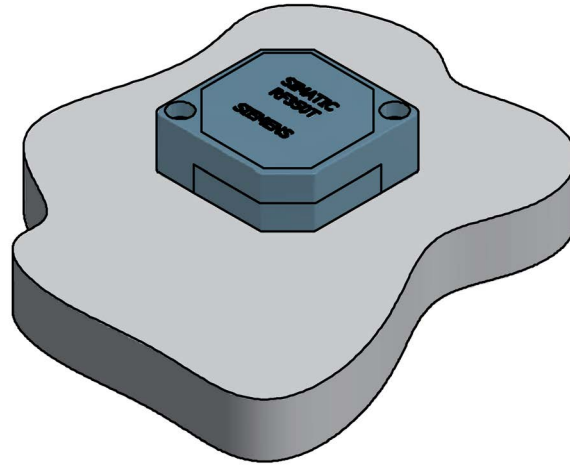


Figure 7-12 Mounting of RF350T on metal

#### Flush-mounting of RF350T in metal:

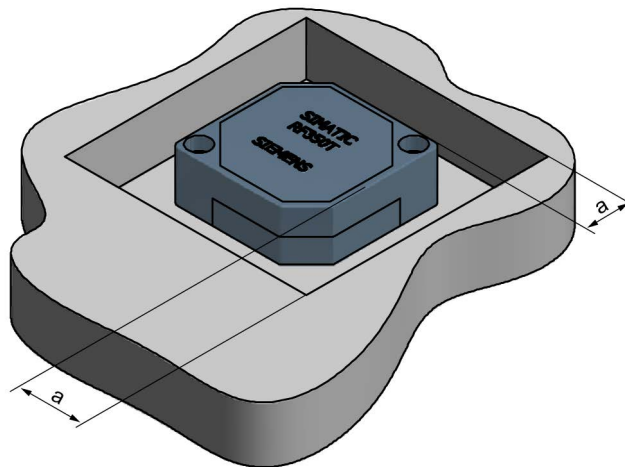


Figure 7-13 RF350T flush-mounted in metal

The standard value for  $a$  is  $\geq 20$  mm. At lower values, the field data change significantly, resulting in a reduction in the range.

### 7.5.4 Mounting options

#### Mounting with fixing frame

The RF350T transponder can be mounted as shown with the fixing frame:

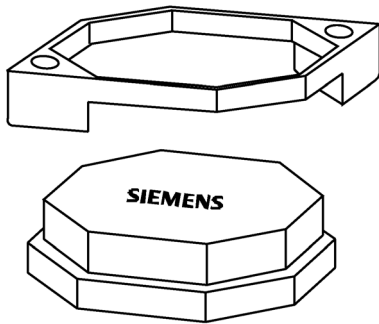


Figure 7-14 Installation diagram

#### Dimensions of the fixing frame

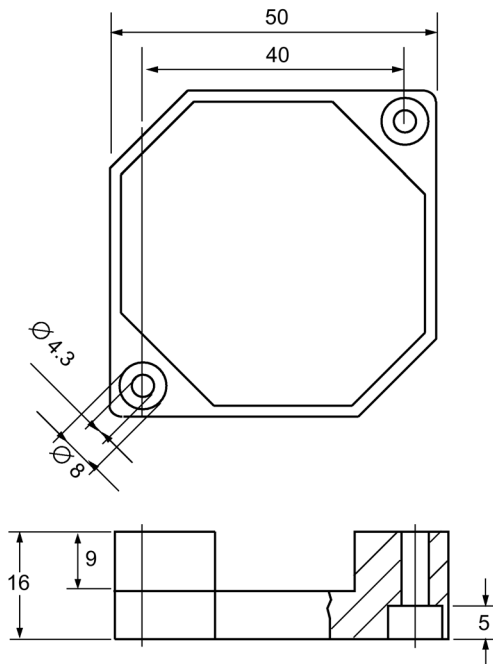


Figure 7-15 RF350T fixing frame

## 7.5.5 Technical data

Table 7- 12 Technical specifications for RF350T

<b>6GT2800-5BD00</b>	
Product type designation	SIMATIC RF350T
<b>Memory</b>	
Memory organization	in bytes
Memory configuration	
• UID	• 4 bytes EEPROM
• User memory	• 32 KB FRAM
• OPT memory	• 20 bytes EEPROM
Read cycles (at < 40 °C)	> 10 <sup>10</sup>
Write cycles (at < 40 °C)	> 10 <sup>10</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>g</sub> )	Dependent on the reader used, see section "Field data of RF300 transponders (Page 52)"
MTBF (Mean Time Between Failures)	1200 years
<b>Mechanical specifications</b>	
Enclosure	
• Material	• Plastic PA 12
• Color	• Anthracite
Recommended distance to metal	≥ 0 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 to +85 °C
• outside the read/write field	• -40 to +85 °C
• during storage	• -40 to +85 °C
Degree of protection to EN 60529	IP68
Shock-resistant acc. to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted
<b>Design, dimensions and weights</b>	
Dimensions (L x W x H)	50 x 50 x 20 mm

<b>6GT2800-5BD00</b>	
Weight	25 g
Type of mounting	2 x M4 screws ≤ 1.5 Nm

1) The values for shock and vibration are maximum values and must not be applied continuously.

### 7.5.6 Dimension drawing

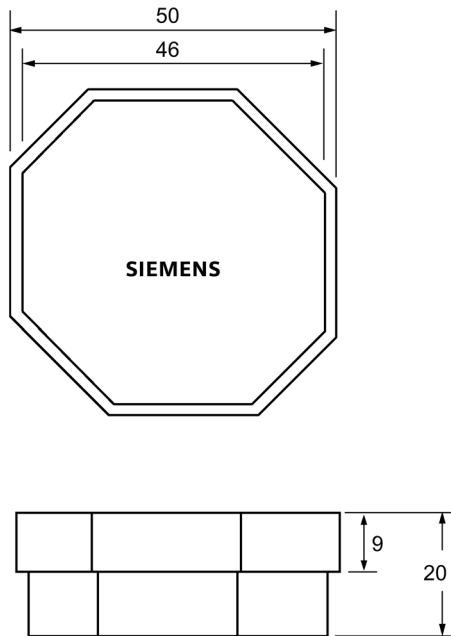



Figure 7-16 RF350T dimension drawing

Dimensions in mm



## 7.6 SIMATIC RF360T

### 7.6.1 Features

RF360T	Characteristics	
	Area of application	Identification tasks on small assembly lines in harsh industrial environments
	Memory size	<ul style="list-style-type: none"> <li>8 KB FRAM user memory</li> <li>32 KB FRAM user memory</li> </ul>
	Write/read range	see section Field data of RF300 transponders (Page 52)
	Mounting on metal	Yes, with spacer
	Degree of protection	IP67

### 7.6.2 Ordering data

Table 7- 13 Ordering data RF360T

	Article number
RF360T 8 KB FRAM user memory	6GT2800-4AC00
RF360T 32 KB FRAM user memory	6GT2800-5AC00

Table 7- 14 Ordering data for RF360T accessories

	Article number
Spacer (in conjunction with fixing pocket 6GT2190-0AB00)	6GT2190-0AA00
Fixing pocket (in conjunction with spacer 6GT2190-0AA00)	6GT2190-0AB00

### 7.6.3 Mounting on metal

Direct mounting of the RF360T on metal is not allowed. A distance  $\geq 20$  mm is recommended. This can be achieved using the spacer 6GT2190-0AA00 in combination with the fixing pocket 6GT2190-0AB00.

#### Mounting of RF360T on metal

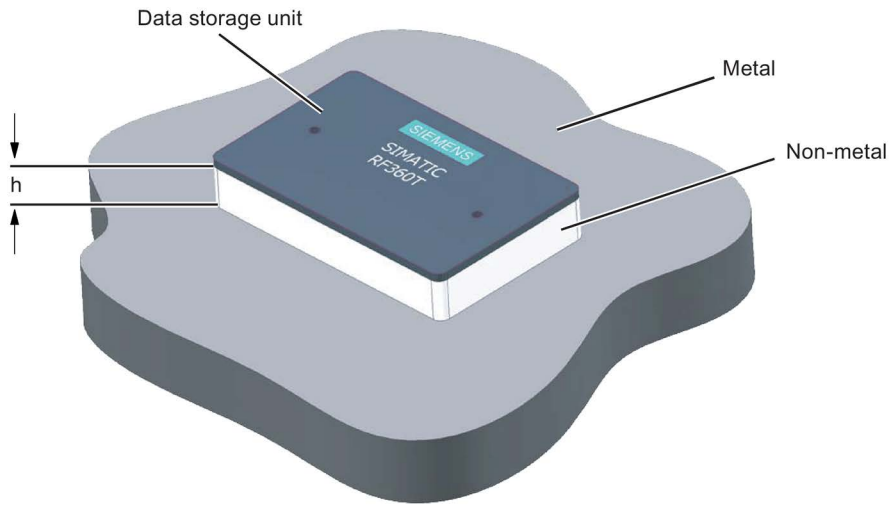


Figure 7-17 Mounting of RF360T with spacer

The standard value for h is  $\geq 20$  mm.

#### Flush-mounting of RF360T in metal:

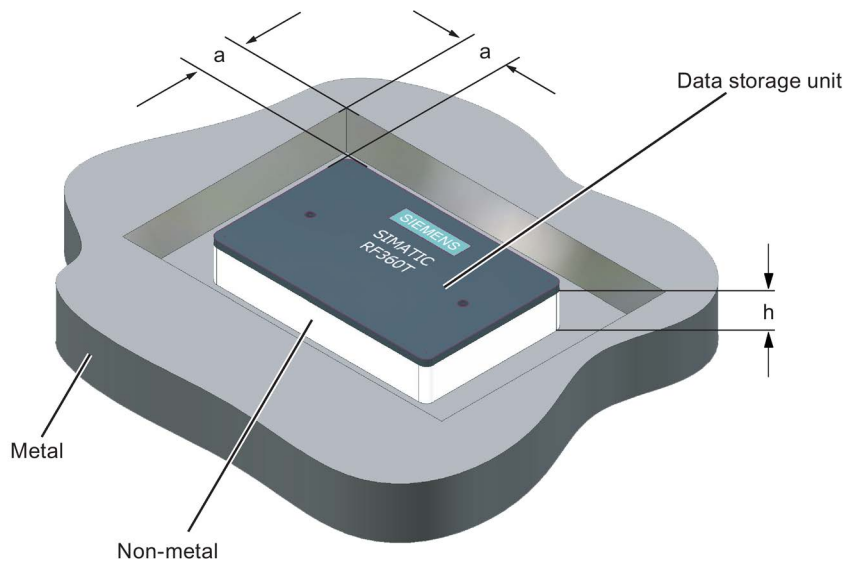


Figure 7-18 Flush-mounting of RF360T with spacer

The standard value for  $a$  is  $\geq 20$  mm. At lower values, the field data change significantly, resulting in a reduction in the range.

## **Dimensions of spacer and fixing pocket for RF360T**

Figure 7-19 Dimensions of spacer and fixing pocket for RF360T

## 7.6.4 Technical data

Table 7- 15 Technical specifications for RF360T

	6GT2800-4AC00 6GT2800-5AC00
Product type designation	SIMATIC RF360T
<b>Memory</b>	
Memory organization	in bytes
Memory configuration	
• UID	• 4 bytes EEPROM
• User memory	• 8 KB FRAM / 32 KB FRAM
• OPT memory	• 20 bytes EEPROM
Read cycles (at < 40 °C)	> 10 <sup>10</sup>
Write cycles (at < 40 °C)	> 10 <sup>10</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>g</sub> )	Dependent on the reader used, see section "Field data of RF300 transponders (Page 52)"
MTBF (Mean Time Between Failures)	1200 years
<b>Mechanical specifications</b>	
Enclosure	
• Material	• Epoxy resin
• Color	• Anthracite
Recommended distance to metal	≥ 20 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 to +75 °C
• outside the read/write field	• -40 to +85 °C
• during storage	• -40 to +85 °C
Degree of protection to EN 60529	IP67
Shock-resistant to EN 60721-3-7, Class 7 M3	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted
<b>Design, dimensions and weights</b>	
Dimensions (L x W x H)	86 x 55 x 2.5 mm

	<b>6GT2800-4AC00</b>
	<b>6GT2800-5AC00</b>
Weight	25 g
Type of mounting	<ul style="list-style-type: none"> <li>• 2 x M3 screws                              ≤ 1.0 Nm</li> <li>• Fixing pocket (6GT2190-0AB00)</li> </ul>

7.6.5 Dimension drawing

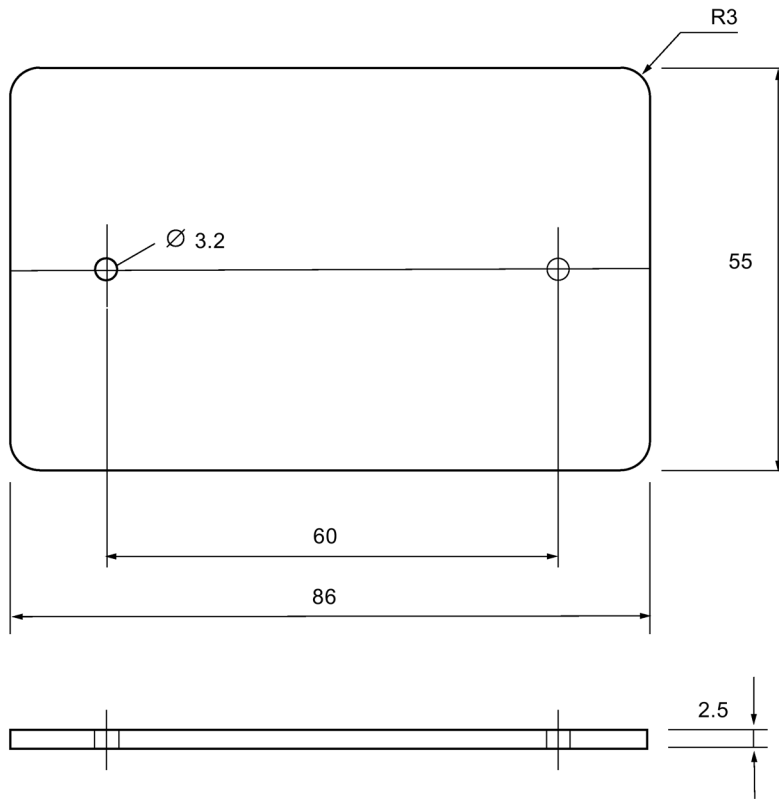



Figure 7-20 RF360T dimension drawing

Dimensions in mm

## 7.7 SIMATIC RF370T

### 7.7.1 Features

The SIMATIC RF370T transponder is a passive (i.e. battery-free) data carrier in a square type of construction.

RF370T	Characteristics	
	Area of application	Identification tasks on assembly lines in harsh industrial environments, due to high resistance to oils, lubricants and cleaning agents, and suitable for larger ranges, e.g. automotive industry
	Memory size	<ul style="list-style-type: none"> <li>• 32 KB FRAM user memory</li> <li>• 64 KB FRAM user memory</li> </ul>
	Write/read range	see section Field data of RF300 transponders (Page 52)
	Mounting on metal	Yes
	Degree of protection	IP68/IPx9K

### 7.7.2 Ordering data

Table 7- 16 Ordering data RF370T

	Article number
RF370T 32 KB FRAM user memory	6GT2800-5BE00
RF370T 64 KB FRAM user memory	6GT2800-6BE00

### 7.7.3 Mounting on metal

Direct mounting of the RF370T on metal is permitted.

#### Mounting of RF370T on metal

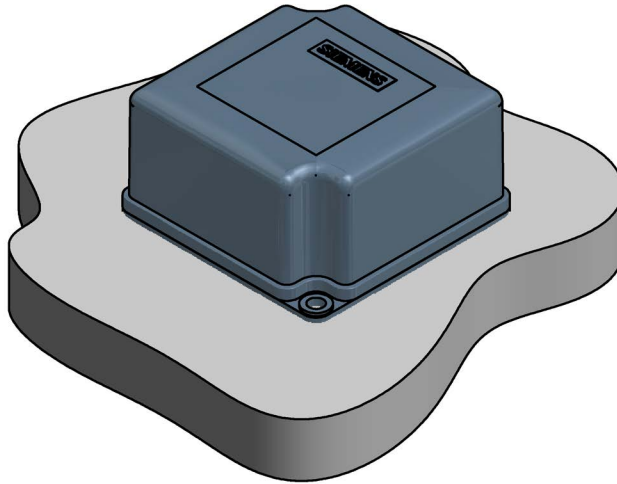


Figure 7-21 Mounting of RF370T on metal

#### Flush-mounting of RF370T in metal:

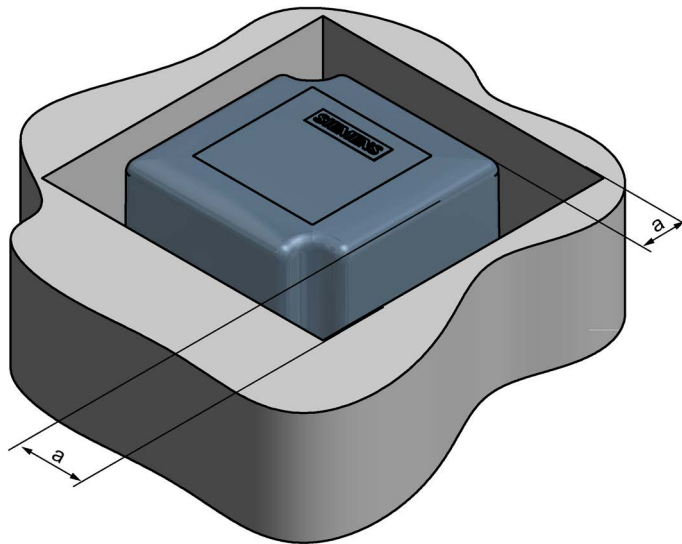


Figure 7-22 RF370T flush-mounted in metal

The standard value for  $a$  is  $\geq 20$  mm. At lower values, the field data change significantly, resulting in a reduction in the range.



## 7.7.4 Mounting instructions

It is essential that you observe the instructions in the Section Installation guidelines (Page 67).

Properties	Description
Type of installation	Screw fixing (two M5 screws)
Tightening torque	< 1.2 Nm (at room temperature)

## 7.7.5 Technical specifications

Table 7- 17 Technical specifications RF370T

	6GT2800-5BE00 6GT2800-6BE00
Product type designation	SIMATIC RF370T
<b>Memory</b>	
Memory organization	in bytes
Memory configuration	
• UID	• 4 bytes EEPROM
• User memory	• 32 KB FRAM / 64 KB FRAM
• OPT memory	• 20 bytes EEPROM
Read cycles (at < 40 °C)	> 10 <sup>10</sup>
Write cycles (at < 40 °C)	> 10 <sup>10</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>g</sub> )	Dependent on the reader used, see section "Field data of RF300 transponders (Page 52)"
MTBF (Mean Time Between Failures)	1200 years
<b>Mechanical specifications</b>	
Enclosure	
• Material	• Plastic PA 12
• Color	• Anthracite
Recommended distance to metal	≥ 0 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	

	<b>6GT2800-5BE00</b>
	<b>6GT2800-6BE00</b>
<b>Ambient temperature</b>	
• during write/read access	• -25 to +85 °C
• outside the read/write field	• -40 to +85 °C
• during storage	• -40 to +85 °C
Degree of protection to EN 60529	IPx9K
Shock-resistant acc. to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted
<b>Design, dimensions and weights</b>	
Dimensions (L x W x H)	75 x 75 x 41 mm
Weight	200 g
Type of mounting	2 x M5 screws ≤ 1.5 Nm

1) The values for shock and vibration are maximum values and must not be applied continuously.

### 7.7.6 Dimensional drawing

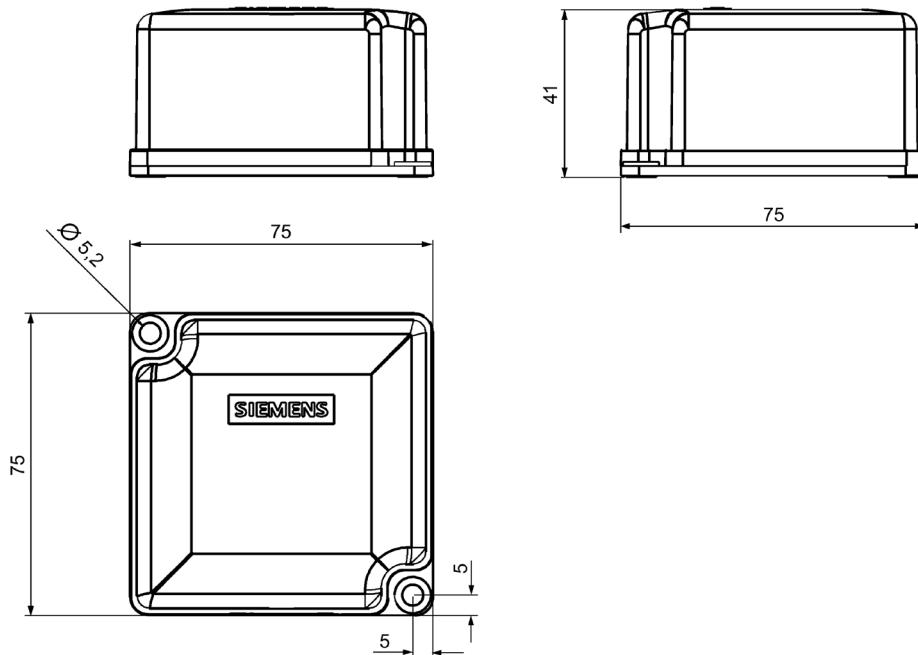



Figure 7-23 RF370T dimension drawing

Dimensions in mm

## 7.8 SIMATIC RF380T

### 7.8.1 Features

The SIMATIC RF380T transponder is an extremely rugged and heat-resistant round data carrier suitable e.g. for applications in the automotive industry.

SIMATIC RF380T transponder	Characteristics	
	Area of application	Identification tasks in applications (e.g. automotive industry) with cyclic high temperature stress > 85 °C and < 220 °C Highly resistant to mineral oils, lubricants and cleaning agents Typical applications: <ul style="list-style-type: none"> <li>• Primer coat, electrolytic dip area, cataphoresis with the associated drying furnaces</li> <li>• Top coat area with drying furnaces</li> <li>• Washing areas at temperatures &gt; 85°C</li> <li>• Other applications with higher temperatures</li> </ul>
	Memory size	32 KB FRAM user memory
	Write/read range	see section "Field data of RF300 transponders (Page 52)"
	Mounting on metal	Yes, flush-mounted in metal
	Degree of protection	IP68

### 7.8.2 Ordering data

Table 7- 18 Ordering data RF380T

	Article number
RF380T User memory 32 KB FRAM (read/write) and 4 bytes EEPROM	6GT2800-5DA00

Table 7- 19 Ordering data for RF380T

	Article number
Holder (short version)	6GT2090-0QA00
Holder (long version)	6GT2090-0QA00-0AX3
Shrouding cover	6GT2090-0QB00
Universal holder	6GT2590-0QA00

### 7.8.3 Installation guidelines for RF380T

It is essential that you observe the instructions in the Section Installation guidelines (Page 67).

The following section only deals with features specific to the SIMATIC RF380T.

#### 7.8.3.1 Mounting instructions

**Note**

**Only use tag with original holder**

You are strongly recommended to only use the tag with the original holder specified. Only this holder guarantees that the data memory observes the listed values for shock, vibration and temperature. A protective cover is recommendable for applications in paint shops.

#### Data memory holder

Short version (6GT2 090-0QA00)	Long version (6GT2090-0QA00-0AX3)
<p>Material: V2A sheet-steel with thickness 2.5 mm BI 2.5 DIN 59382 1.4541</p>	

## Assembly of data memory with holder

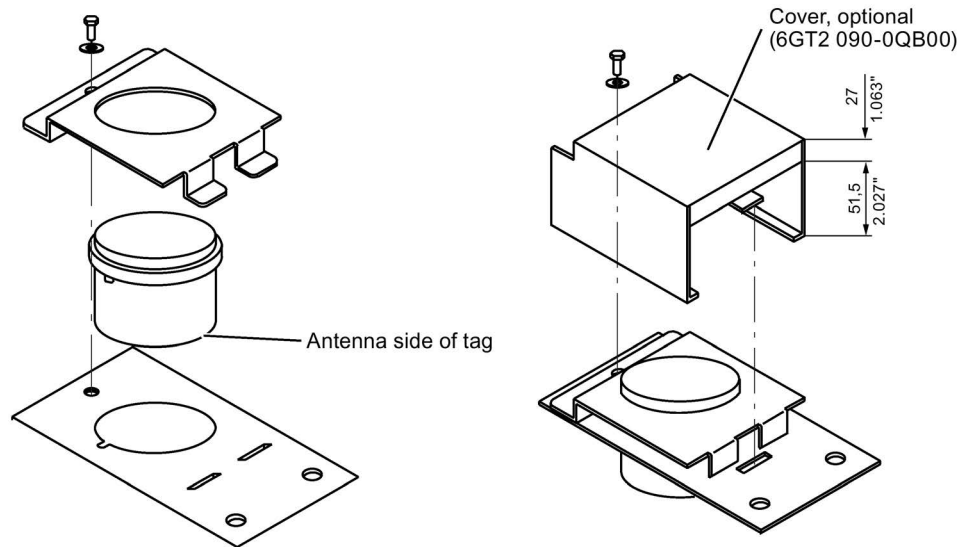


Figure 7-24 Assembly of tag with holder

## Scope of supply

The holder is provided with all mounting parts and a mounting diagram. Mounting screws for securing the holder are not included. The mounting screws are of diameter M 10. The minimum length is 25 mm. The optional cover can be used for the long and short versions of the holder.

Universal holder

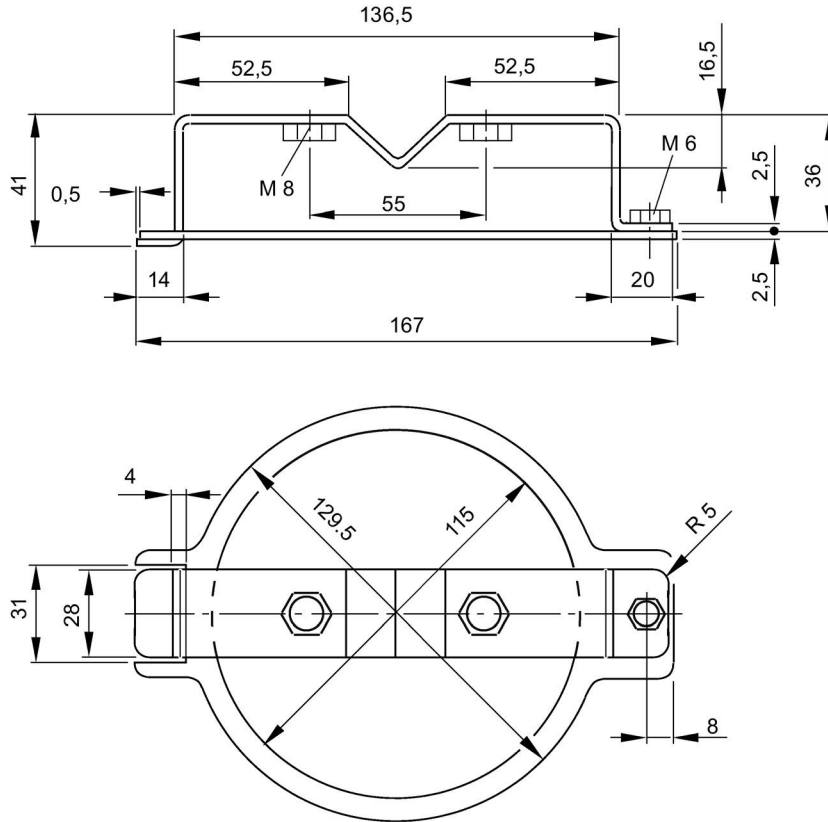


Figure 7-25 Universal holder 6GT2590-0QA00

### 7.8.3.2 Metal-free area

Direct mounting of the RF380T on metal is permitted.

#### Mounting of RF380T on metal

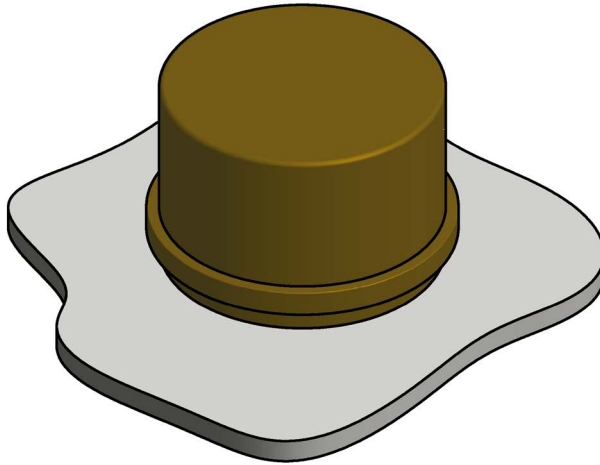


Figure 7-26 Mounting of RF380T on metal

#### Flush-mounting of RF380T in metal:

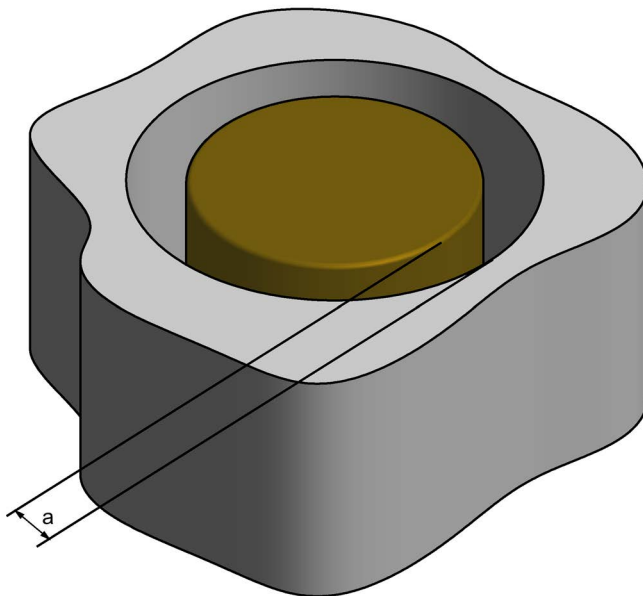


Figure 7-27 RF380T flush-mounted in metal

The standard value for  $a$  is  $\geq 40$  mm. At lower values, the field data change significantly, resulting in a reduction in the range.

## 7.8.4 Configuring instructions

### 7.8.4.1 Temperature dependence of the transmission window

The guidelines in the section "Planning the RF300 system" apply to configuration of heat-resistant data memories, with the exception of the limit distance and field length at temperatures above 85 °C. At temperatures above 85 °C, the length of the transmission window is reduced by up to 10%.

### 7.8.4.2 Temperature response in cyclic operation

At ambient temperatures ( $T_u$ ) up to 110 °C, cyclic operation is not necessary, i.e. up to this temperature, the transponder can be in constant operation.

---

**Note**

**Calculation of the temperature curves**

Calculation of the temperature curves or of a temperature profile can be carried out on request by Siemens AG. Exact knowledge of the internal temperature facilitates configuration for time-critical applications.

You can also carry out the calculation with the aid of the "SIMATIC RF Temperature Calculator" on the "Ident Systems Software & Documentation" DVD (refer to the section "DVD "Ident Systems Software & Documentation" (Page 435)").

---

## Ambient temperatures > 110 °C

---

**Note**

**Cancellation of warranty**

The internal temperature of the data memory must not exceed the critical threshold of 110 °C. Each heating phase must be followed by a cooling phase. No warranty claims will otherwise be accepted.

---

Some limit cycles are listed in the table below:

Table 7- 20 Limit cycles of data memory temperature

$T_u$ (heating up)	Heating up	$T_u$ (cooling down)	Cooling down
220 °C	0.5 h	25 °C	> 2 h
200 °C	1 h	25 °C	> 2 h
190 °C	1 h	25 °C	> 1 h 45 min
180 °C	2 h	25 °C	> 5 h
170 °C	2 h	25 °C	> 4 h



The internal temperature of the tag follows an exponential function with which the internal temperature and the operability of the tag can be calculated in advance. This is particularly relevant to temperature-critical applications or those with a complex temperature profile.

## Ambient temperatures > 220°C

---

### Note

#### Cancellation of warranty

The data memory must not be exposed to ambient temperatures > 220 °C. No warranty claims will otherwise be accepted.

However, the mechanical stability is retained up to 230 °C!

---

## Example of a cyclic sequence

Table 7- 21 Typical temperature profile of an application in the paint shop

Start of tag at initial point	Duration (min)	Ambient temperature (°C)
Electrolytic dip	20	30
Electrolytic dip dryer	60	200
Transport	60	25
PVC dryer	25	170
Transport	60	25
Filler dryer	60	160
Transport	60	25
Top coat dryer	60	120
Transport	60	25
Wax dryer	25	100
Transport	150	25

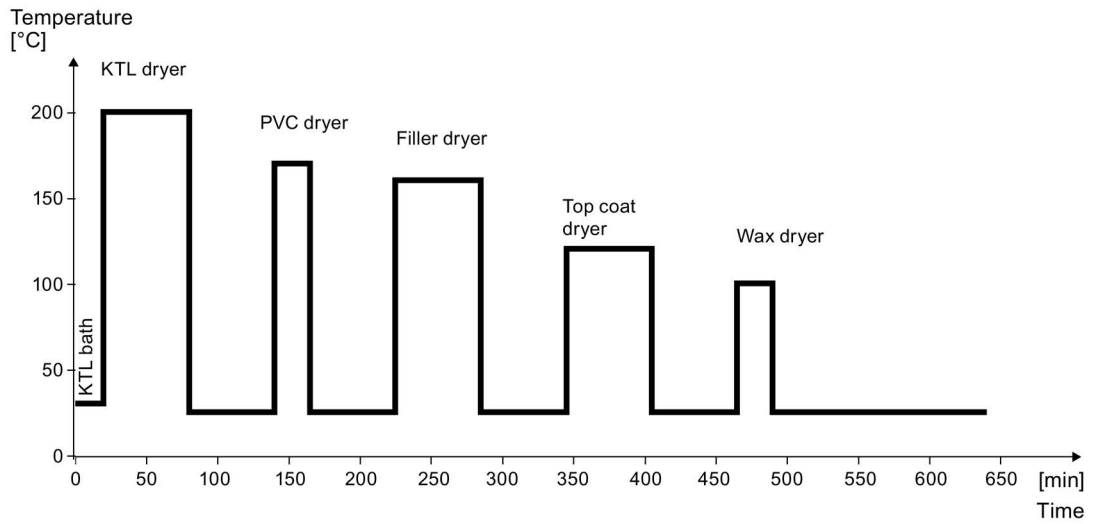


Figure 7-28 Graphic trend of temperature profile from above table

**The simulation results in the following:**

Following a simulation time of 36.5 hours, a total of 3 cycles were carried out, and an internal temperature of 90 degrees Celsius was reached.

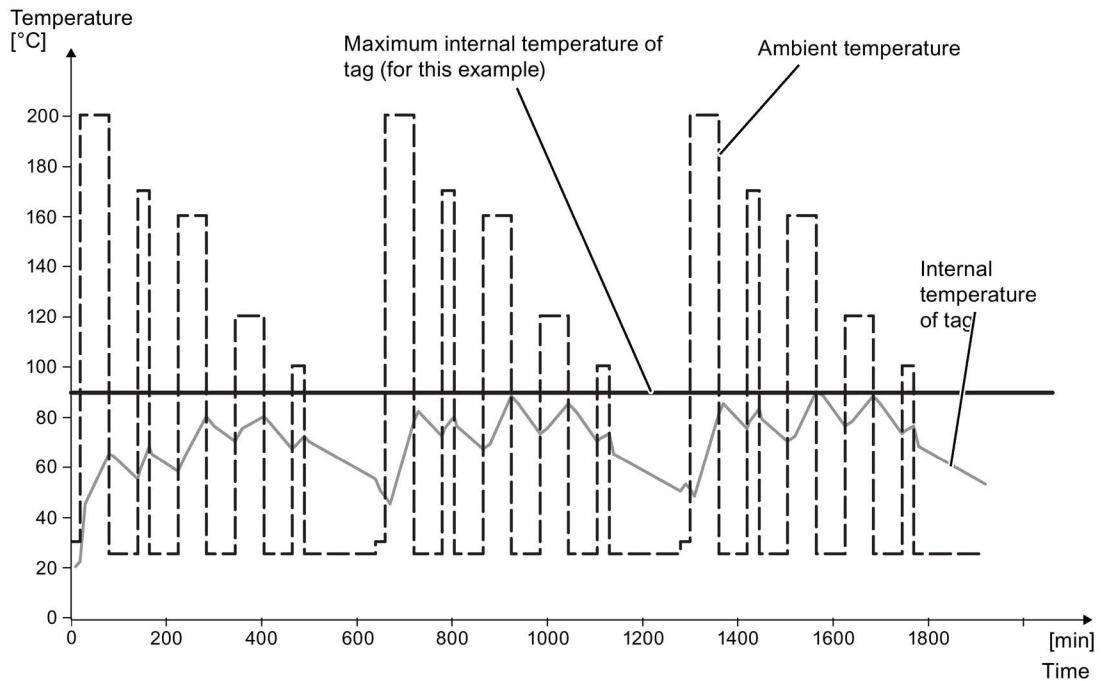


Figure 7-29 Complete temperature response due to simulation

## 7.8.5 Use of the transponder in the Ex protection area


The TÜV SÜD Automotive GmbH as approved test center as well as the TÜV SÜD Product Service GmbH as certification center, identification number 0123, as per Article 9 of the Directive of the European Council of 23 March 1994 (94/9/EC), has confirmed the compliance with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in hazardous areas as per Annex II of the Directive. The essential health and safety requirements are satisfied in accordance with the following standards:

Table 7- 22 Approvals

Document	Title
EN 60079-0: 2006	Electrical equipment for hazardous gas atmospheres - Part 0: General requirements
EN 60079-15: 2005	Electrical equipment for hazardous gas atmospheres - Part 15: Design, testing and identification of electrical equipment with type of protection "n"
DIN VDE 0848-5: 2001 (in parts)	Safety in electrical, magnetic and electromagnetic fields - Part 5: Explosion protection
ZLS SK 107.1	Central office of the states for safety; test components

## Identification

Table 7- 23 The identification of the electrical equipment as an encapsulated unit

	II 3G Ex nC IIB T5
-25°C to +70°C	
Um=30Vdc	

The equipment is assigned the following references:

XXXXYYZZZ [= serial number, is assigned during production]

TPS 09 ATEX 1 459 X [= certificate number]


"No use of the equipment in the vicinity of processes generating high charges"

### 7.8.5.1 Use of the transponder in hazardous areas for gases

#### Temperature class delineation for gases

The temperature class of the transponder for hazardous areas depends on the ambient temperature range:

Ambient temperature range	Temperature class
-25 °C to +70 °C	T5

 <b>WARNING</b>
<b>Ignitions of gas-air mixtures</b> <ul style="list-style-type: none"><li>• When using the RF380T transponder, check that the temperature class is kept to in conjunction with the requirements of the area of application. If the temperature ranges are exceeded during use of the transponder, gas-air mixtures may be ignited.</li><li>• The maximum transmit power of the transmitter used to operate the transponder must not exceed 2 W. If the transmit power is not kept to, gas-air mixtures may ignite.</li></ul>

### 7.8.5.2 Installation and operating conditions for the hazardous area

- a) Use of the equipment in the vicinity of processes generating high charges is not allowed.
- b) The equipment must be mechanically protected when installed.

### 7.8.6 Cleaning the mobile data memory

---

#### Note

Do not clean the transponder with mechanical tools, sand-blasting or pressure hose. These cleaning methods result in damage to the transponder.

Clean the transponder only with the chemical cleansing agents listed in Chapter Chemical resistance of the readers and transponders (Page 97).

---

## 7.8.7 Technical specifications

Table 7- 24 RF380T technical specifications

<b>6GT2800-5DA00</b>	
Product type designation	SIMATIC RF380T
<b>Memory</b>	
Memory organization	in bytes
Memory configuration	
• UID	• 4 bytes EEPROM
• User memory	• 32 KB FRAM
• OPT memory	• 20 bytes EEPROM
Read cycles (at < 40 °C)	> 10 <sup>10</sup>
Write cycles (at < 40 °C)	> 10 <sup>10</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>g</sub> )	Dependent on the reader used, see section "Field data of RF300 transponders (Page 52)"
MTBF (Mean Time Between Failures)	1177 years
<b>Mechanical specifications</b>	
Enclosure	
• Material	• PPS
• Color	• Anthracite
Recommended distance to metal	≥ 0 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 ... +110 °C • > 110 °C °C: cyclic operation possible
• outside the read/write field	• -40 ... +220 °C
• during storage	• -40 to +110 °C
Degree of protection to EN 60529	IP68
Shock-resistant acc. to EN 60721-3-7, Class 7 M3 <sup>1)2)</sup>	500 m/s <sup>2</sup>
Vibration-resistant to EN 60721-3-7, Class 7 M3 <sup>2)</sup>	50 m/s <sup>2</sup>
Torsion and bending load	Not permitted

6GT2800-5DA00

**Design, dimensions and weights**

Dimensions (Ø x H)	114 x 83 mm
Weight	900 g
Type of mounting	Holder (must be ordered separately)

- 1) Applies only in conjunction with the original support
- 2) The values for shock and vibration are maximum values and must not be applied continuously.

**7.8.8 Dimensional drawing**

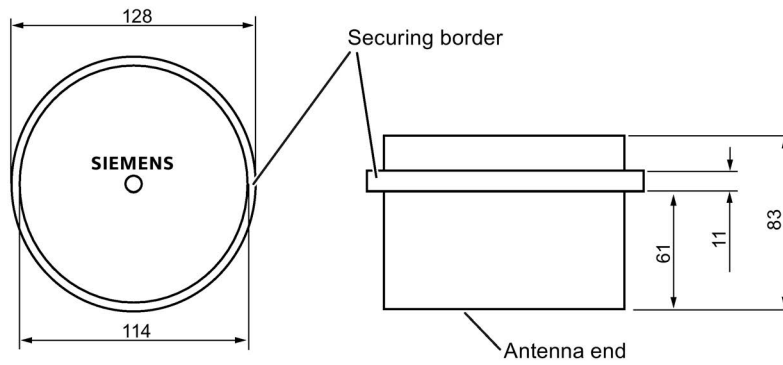


Figure 7-30 Dimension drawing RF380T

Dimensions in mm

# ISO transponder

## Features of the ISO transponders

The transponders (MDS D) that are compatible with ISO 15693 represent a cost-effective alternative to RF300 transponders. The performance that can be achieved with this (transmission speed, memory size), however, is considerably less than with RF300 transponders.

You will find more information on transmission speeds in the section "Communication between communications module, reader and transponder (Page 50)".

### 8.1 Memory configuration of ISO the transponders

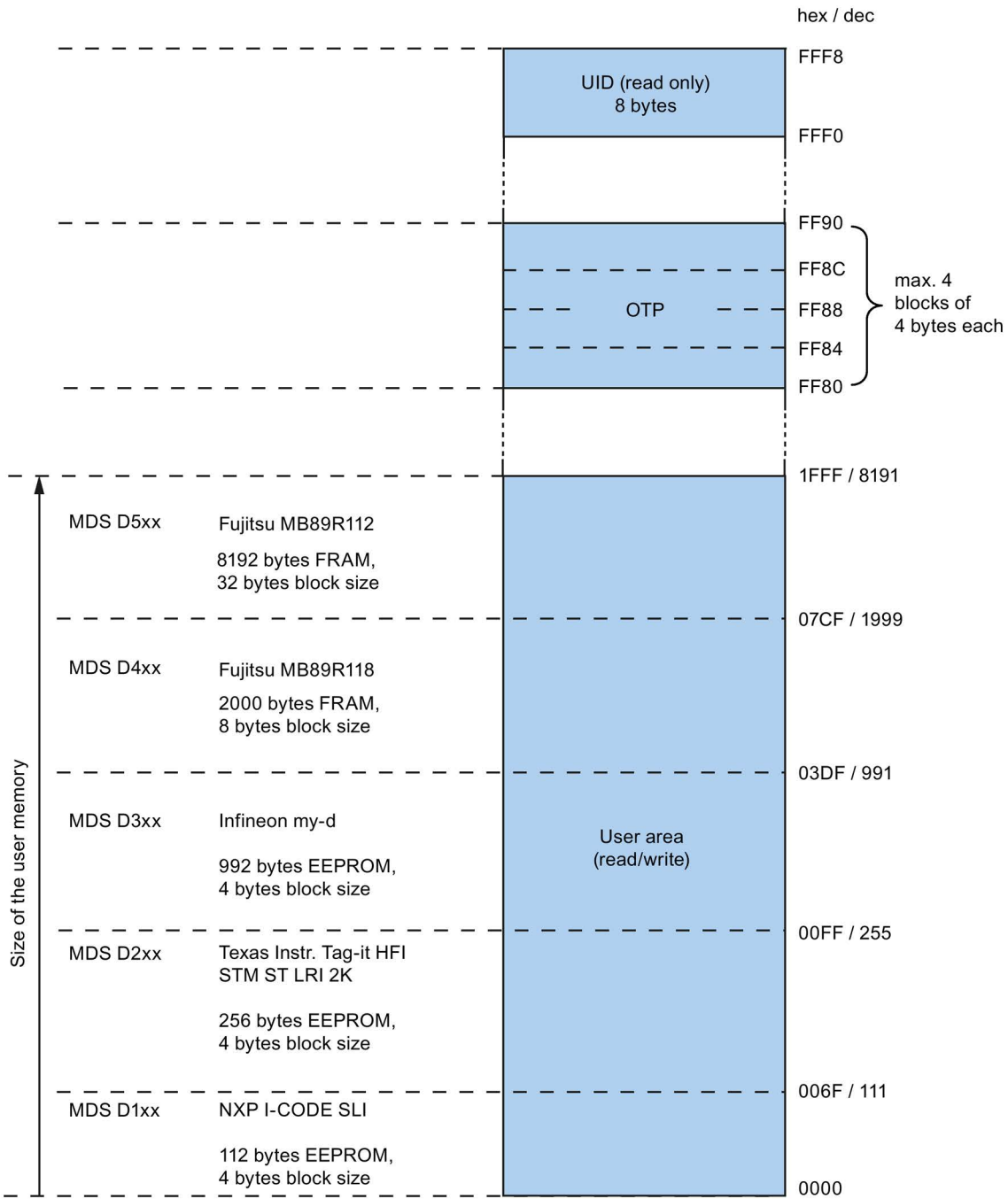


Figure 8-1 Memory configuration of ISO the transponders



## Memory areas

Depending on the manufacturer of the transponder chip, the memory configuration of an ISO transponder consists of varying sizes of user memory.

The typical sizes are 112 bytes, 256 bytes, 992 bytes EEPROM or 2000 bytes FRAM. Each ISO transponder chip has an 8-byte long unique serial number (UID, read only). This UID is transferred as an 8 byte value through a read command to address FFF0 with a length of 8.

## OTP area

For the OTP area, a 16-byte address space is always reserved at the end of the memory area. The blocks are divided up depending on the chip (see technical specifications). Note that the corresponding addresses for the user data are therefore not available to the application when the OTP area is used.

A total of 4 block addresses ("mapped" addresses) are provided:

- FF80
- FF84
- FF88
- FF8C

A write command to this block address with a valid length (4, 8, 12, 16 bytes depending on the block address) protects the written data from subsequent overwriting.

---

### Note

#### Exception Fujitsu chip (MDS D4xx and MDS D5xx)

The Fujitsu chip MB89R118 (MDS D4xx) has 8-byte blocks, which means that only 2 block addresses have to be addressed: FF80 and FF88 with the length 8 and 16 bytes).

The Fujitsu chip MB89R112 (MDS D5xx) has 32 byte blocks and can therefore not be addressed in the OTP area.

---

### Note

#### Restriction to the use of the OTP

Observe the following restrictions when using OTP:

- The OTP write/lock command can only be sent in static operation.
- The OTP write/lock command can not be sent as a chained command.

The Fujitsu chip MB89R112 (MDS D5xx) has 32 byte blocks and can therefore not be addressed in the OTP area.

---

### Note


#### Use of the OTP area is not reversible

If you use the OPT area, you cannot undo it, because the OPT area can only be written to once.

---

## 8.2 MDS D100

### 8.2.1 Characteristics

 <p>The image shows a rectangular Siemens MDS D100 transponder. It is light grey with a black 'SIEMENS' logo in the top left corner. The text 'MDS D100' is printed in the top right. Two small circular holes are visible in the center. At the bottom left, it says 'Siemens AG, DE-76181 Karlsruhe'. At the bottom right, there is a 'CE EAC' certification mark and the article number '6GT2600-0AD10 AS.10'.</p>	Characteristics	
	Area of application	From simple identification such as electronic barcode replacement/supplementation, through warehouse and distribution logistics, right up to product identification.
	Memory size	112 bytes of EEPROM user memory
	Write/read range	See section Field data of ISO transponders (MDS D) (Page 56).
	Mounting on metal	Yes, with spacer
	ISO standard	ISO 15693
	Degree of protection	IP68

### 8.2.2 Ordering data

Table 8- 1 Ordering data for MDS D100

	Article number
MDS D100	6GT2600-0AD10

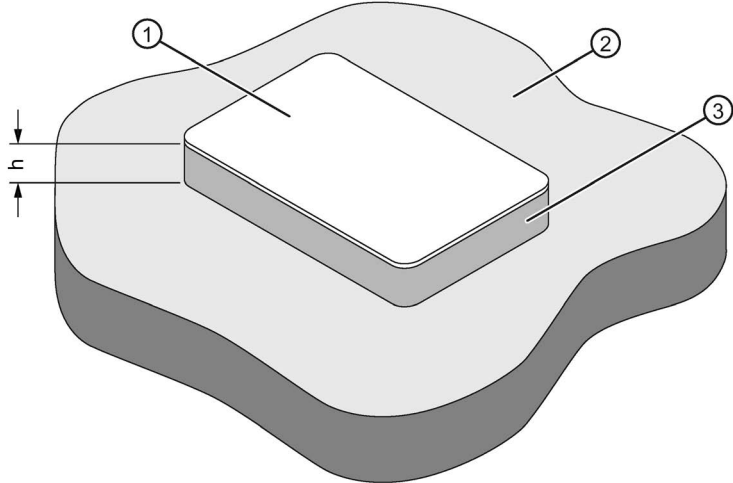
Table 8- 2 Ordering data for MDS D100 accessory

	Article number
Spacer (in conjunction with fixing pocket 6GT2190-0AB00)	6GT2190-0AA00
Fixing pocket (in conjunction with spacer 6GT2190-0AA00)	6GT2190-0AB00
Fixing pocket (not suitable for fixing directly onto metal)	6GT2390-0AA00

### 8.2.3 Metal-free area

Direct mounting of the MDS D100 on metal is not allowed. A distance of  $\geq 20$  mm is recommended. This can be achieved using the spacer 6GT2190-0AA00 in combination with the fixing pocket 6GT2190-0AB00.

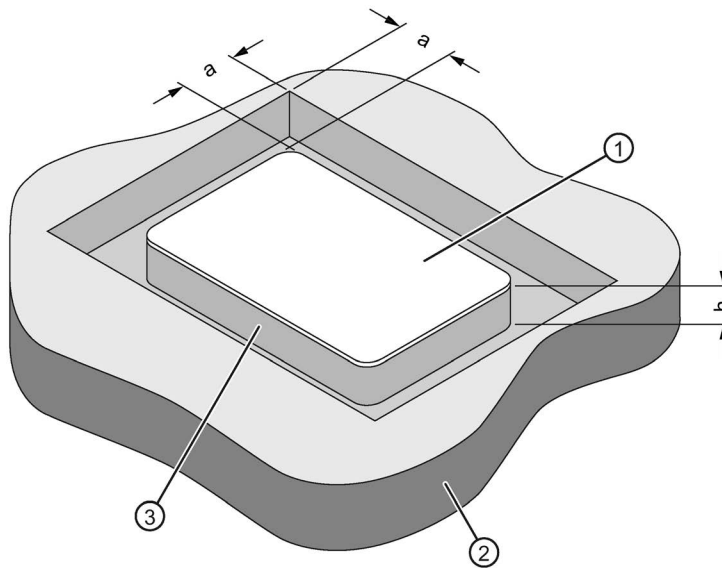
#### Mounting on metal



- h  $\geq 20$  mm
- ① Transponder
- ② Metal
- ③ Non-metal

Figure 8-2 Mounting of the MDS D100 on metal with spacer

## Flush-mounting



- a     $\geq 20$  mm  
h     $\geq 20$  mm  
①    Transponder  
②    Metal  
③    Non-metal

Figure 8-3    Flush-mounting of MDS D100 in metal with spacer

---

### Note

If the minimum guide values (h or a) are not observed, a reduction of the field data results.

---

## 8.2.4 Technical data

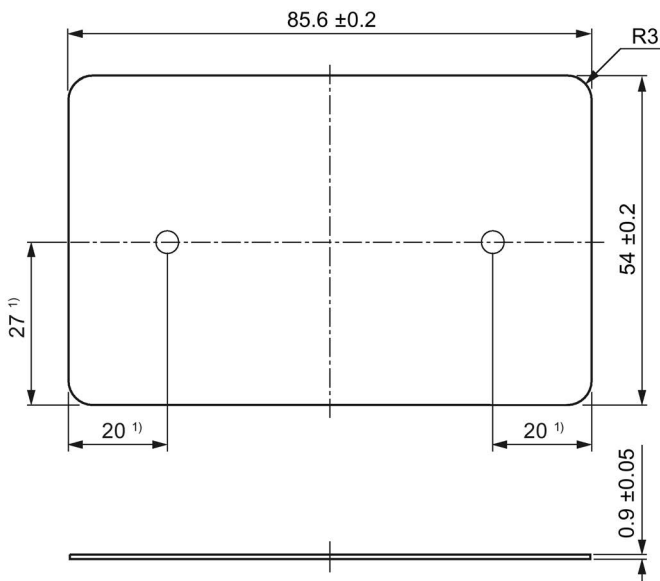
Table 8- 3 Technical specifications for MDS D100

<b>6GT2600-0AD10</b>	
Product type designation	SIMATIC MDS D100
<b>Memory</b>	
Memory configuration	
• UID	• 8 bytes
• User memory	• 112 bytes EEPROM
• OTP memory	• 16 bytes (EEPROM)
Read cycles (at < 40 °C)	> 10 <sup>14</sup>
Write cycles (at < 40 °C)	> 10 <sup>6</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>g</sub> )	Dependent on the reader used, see section "Field data of ISO transponders (MDS D) (Page 56)"
MTBF (Mean Time Between Failures)	228 years
<b>Mechanical specifications</b>	
Housing	
• Material	• PET
• Color	• White/black
Recommended distance to metal	≥ 20 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 to +80 °C
• outside the read/write field	• -25 to +80 °C
• during storage	• -25 to +80 °C
Degree of protection to EN 60529	IP68
Shock-resistant to EN 60721-3-7 class 7M3	ISO 10373 / ISO 7810 <sup>1)</sup>
Vibration-resistant to EN 60721-3-7, class 7M3	ISO 10373 / ISO 7810 <sup>1)</sup>
Torsion and bending load	ISO 10373/ISO 7816-1
<b>Design, dimensions and weight</b>	
Dimensions (L x W x H)	85.6 x 54 x 0.9 mm

<b>6GT2600-0AD10</b>	
Weight	5 g
Type of mounting	<ul style="list-style-type: none"> <li>• Fixing pocket</li> <li>• Glued <sup>2)</sup></li> </ul>

- 1) The values for shock and vibration are maximum values and must not be applied continuously.  
 2) The processing instructions of the adhesive manufacturer must be observed.

**8.2.5 Dimension drawing**




Dimensions in mm

- 1) Dimensions for mounting holes

Figure 8-4 MDS D100 dimension drawing

## 8.3 MDS D117

### 8.3.1 Features

MDS D117	Characteristics	
	Area of application	Very compact data carrier that can be cemented into objects where precise positioning is necessary; e.g. tool identification, workpiece holders etc..
	Memory size	112 bytes of EEPROM user memory
	Write/read range	See section "Field data of ISO transponders (MDS D) (Page 56)."
	Mounting in metal	Yes, flush-mounted in metal
	ISO standard	ISO 15693
	Degree of protection	IP68/IPx9K

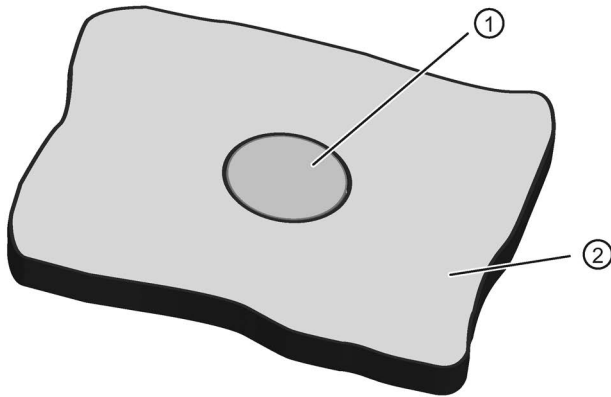
### 8.3.2 Ordering data

Table 8- 4 Ordering data for MDS D117

	Article number
MDS D117 Pack of 10	6GT2600-0AG00

### 8.3.3 Mounting in metal

#### Flush-mounted in metal



- ① Transponder
- ② Metal

### 8.3.4 Technical specifications

Table 8- 5 Technical specifications for MDS D117

<b>6GT2600-0AG00</b>	
Product type designation	SIMATIC MDS D117
<b>Memory</b>	
Memory configuration	
• UID	• 8 bytes
• User memory	• 112 bytes EEPROM
• OTP memory	• 16 bytes (EEPROM)
Read cycles (at < 40 °C)	> 10 <sup>14</sup>
Write cycles (at < 40 °C)	> 10 <sup>6</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>9</sub> )	Dependent on the reader used, see section "Field data of ISO transponders (MDS D) (Page 56)"
MTBF (Mean Time Between Failures)	228 years
<b>Mechanical specifications</b>	
Housing	
• Material	• PPS
• Color	• Black



<b>6GT2600-0AG00</b>	
Recommended distance to metal	≥ 0 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 to +85 °C
• outside the read/write field	• -40 to +125 °C
• during storage	• -40 to +125 °C
Degree of protection to EN 60529	IP68 2 hours, 2 bar, +20 °C
Shock according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	1000 m/s <sup>2</sup>
Vibration according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted
<b>Design, dimensions and weight</b>	
Dimensions (Ø x H)	4 x 5.2 mm
Weight	1 g
Type of mounting	<ul style="list-style-type: none"> <li>• Fixing pocket</li> <li>• Glued <sup>2)</sup></li> </ul>

<sup>1)</sup> The values for shock and vibration are maximum values and must not be applied continuously.

<sup>2)</sup> The processing instructions of the adhesive manufacturer must be observed.

**8.3.5 Dimension drawing**

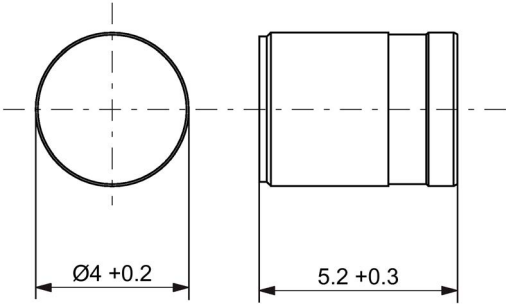



Figure 8-5 Dimensions in mm

## 8.4 MDS D124

### 8.4.1 Characteristics

MDS D124	Characteristics	
	Area of application	Application areas in production automation (e.g. small paintshops up to +180 °C)
	Memory size	112 bytes of EEPROM user memory
	Write/read range	See section "Field data of ISO transponders (MDS D) (Page 56)".
	Mounting on metal	Yes, with spacer
	ISO standard	ISO 15693
	Degree of protection	IP68/IPx9K

### 8.4.2 Ordering data

Table 8- 6 Ordering data for MDS D124

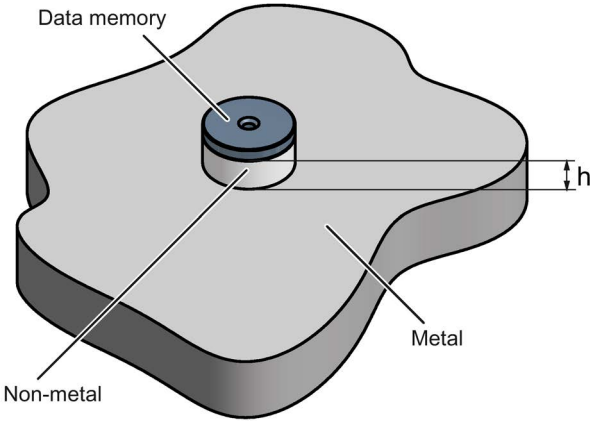
	Article number
MDS D124	6GT2600-0AC10

Table 8- 7 Ordering data for MDS D124 accessories

	Article number
Spacer	6GT2690-0AK00

### 8.4.3 Mounting on metal

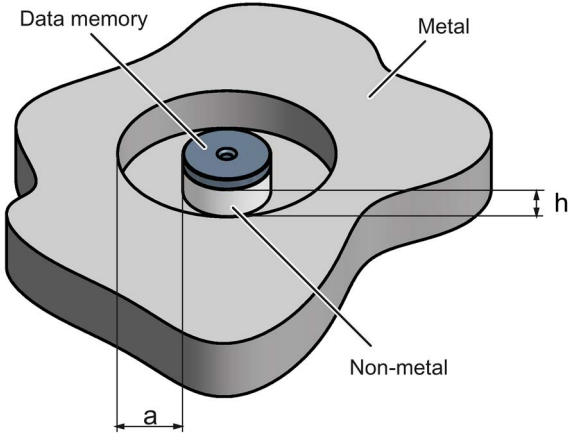
#### Mounting on metal



$h \geq 15 \text{ mm}$

Figure 8-6 Mounting the MDS D124/D324/D424/D524/E624 and RF320T on metal with spacer

#### Flush-mounting



$h \geq 15 \text{ mm}$

$a \geq 25 \text{ mm}$

Figure 8-7 Flush-mounting of the MDS D124/D324/D424/D524/E624 and RF320T in metal with spacer

**Note**

**Going below the distances**

If the distances (a and h) are not observed, a reduction of the field data results. It is possible to mount the MDS with metal screws (M3 countersunk head screws). This has no tangible impact on the range.

**8.4.4 Technical specifications**

Table 8- 8 Technical specifications for MDS D124

<b>6GT2600-0AC10</b>	
Product type designation	SIMATIC MDS D124
<b>Memory</b>	
Memory configuration	
• UID	• 8 bytes
• User memory	• 112 bytes EEPROM
• OTP memory	• 16 bytes (EEPROM)
Read cycles (at < 40 °C)	> 10 <sup>14</sup>
Write cycles (at < 40 °C)	> 10 <sup>6</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>g</sub> )	Dependent on the reader used, see section "Field data of ISO transponders (MDS D) (Page 56)"
MTBF (Mean Time Between Failures)	228 years
<b>Mechanical specifications</b>	
Housing	
• Material	• PPS
• Color	• Black
Recommended distance to metal	≥ 15 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 ... +140 °C
	• from +125 °C: 20% reduction in the limit distance
• outside the read/write field	• -40 to +180 °C

<b>6GT2600-0AC10</b>	
	<ul style="list-style-type: none"> <li>at +180 °C: Tested up to 5000 hours or 3000 cycles</li> </ul>
<ul style="list-style-type: none"> <li>during storage</li> </ul>	<ul style="list-style-type: none"> <li>-40 to +125 °C</li> </ul>
Degree of protection to EN 60529	<ul style="list-style-type: none"> <li>IP68 2 hours, 2 bar, +20 °C</li> <li>IPx9K steam jet: 150 mm; 10 to 15 l/min; 100 bar; 75 °C</li> </ul>
Shock according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	1000 m/s <sup>2</sup>
Vibration according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted

#### Design, dimensions and weight

Dimensions (Ø x H)	4 x 5.2 mm
Weight	5 g
Type of mounting	<ul style="list-style-type: none"> <li>1 x M3 screw <sup>2)</sup> ≤ 1 Nm</li> <li>Glued <sup>3)</sup></li> <li>With spacer</li> </ul>

<sup>1)</sup> The values for shock and vibration are maximum values and must not be applied continuously.

<sup>2)</sup> ) To prevent it loosening during operation, secure the screw with screw locking varnish.

<sup>3)</sup> The processing instructions of the adhesive manufacturer must be observed.

### 8.4.5 Use of the MDS D124 in hazardous area

The mobile data memory MDS D124, device group II, category 1G or 1D may be installed and operated in zones 0, 1 and 2 or in the zones 20, 21 and 22.

The following requirements of the 94/9/EC directive are met:

- EN 60079-0:2009
- EN 60079-11:2007
- EN 61241-11:2006
- EN 60079-26:2007

When used in hazardous areas, the MDS D124 must not be operated with field strengths > 5 A / m to avoid impermissible heating. This is not the case with readers from the SIMATIC RF range (MOBY D, RF200 and RF300).

Identification



II 1 G Ex ia IIC T3 to T6 Ga

or

II 1 D Ex ia IIIC T80 °C to T180 °C Da

TÜV 12 ATEX 084413 X

The temperature class or the maximum surface temperature depends on the maximum ambient temperature. The relationship between temperature class (gas) or maximum surface temperature (dust) can be found in the following table.

Table 8-9 Ambient temperature

Ambient temperature range	Temperature class	Max. surface temperature
-25 ... +150 °C	T3	T180
-25 ... +100 °C	T4	T130
-25 ... +65 °C	T5	T95
-25 ... +50 °C	T6	T80

Note

Safety markings for hazardous areas

Since there is not enough space on the MDS D124 for the safety mark, this is supplied as a label with the device.

This must be affixed immediately next to the MDS D124 so that the label clearly relates to the device.



**WARNING**

**Gefahr durch elektrostatische Entladungen**

**Potential electrostatic charging hazard**

**Danger potentiel de charges électrostatiques**

---

**Note**

**Installation and operating conditions for hazardous areas:**

- Use of the device in the vicinity of processes generating high charges is not allowed.
  - The device must be installed so that it is mechanically protected.
  - For applications requiring devices of category 1, the device must be mounted on a grounded, conductive base.
  - It must only be cleaned with a damp cloth.
  - The device is suitable for use in atmospheres containing dust, however not for full immersion in dust.
- 

### 8.4.6 Dimension drawing

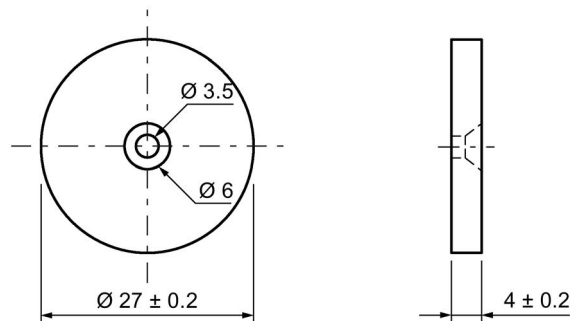



Figure 8-8 Dimension drawing of MDS D124

All dimensions in mm

## 8.5 MDS D126

### 8.5.1 Characteristics

MDS D126	Characteristics	
 <p>SIEMENS 6GT2600-0AE00 MDS D126 MOBY D AS: A</p>	Area of application	Compact and rugged ISO transponder; suitable for identification of transport units in production-related logistics; can also be deployed in harsh conditions
	Memory size	112 bytes of EEPROM user memory
	Write/read range	See section Field data of ISO transponders (MDS D) (Page 56)
	Mounting on metal	Yes, with spacer
	ISO standard	ISO-15693
	Degree of protection	IP68

### 8.5.2 Ordering data

Table 8- 10 Ordering data for MDS D126

	Article number
MDS D126	6GT2600-0AE00

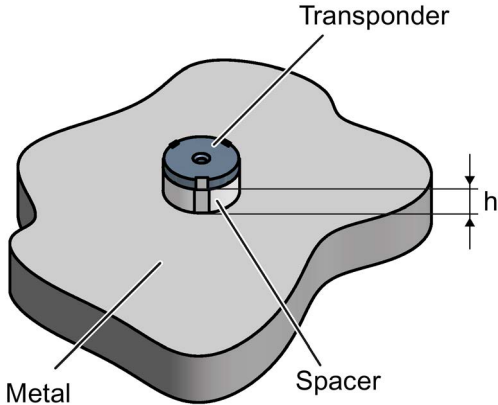
Table 8- 11 Ordering data for MDS D126 accessories

	Article number
Spacer	6GT2690-0AL00



### 8.5.3 Mounting on metal

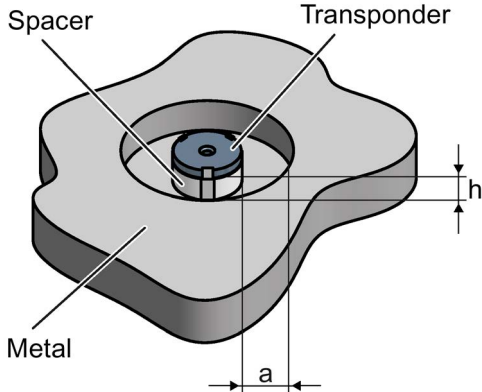
#### Mounting on metal



$h \geq 25 \text{ mm}$

Figure 8-9 Mounting the MDS D126 / D426 / D526 on metal with spacer

#### Flush-mounted in metal



$h \geq 25 \text{ mm}$   
 $a \geq 50 \text{ mm}$

Figure 8-10 Flush installation of the MDS D126 / D426 / D526 in metal with spacer

## 8.5.4 Technical specifications

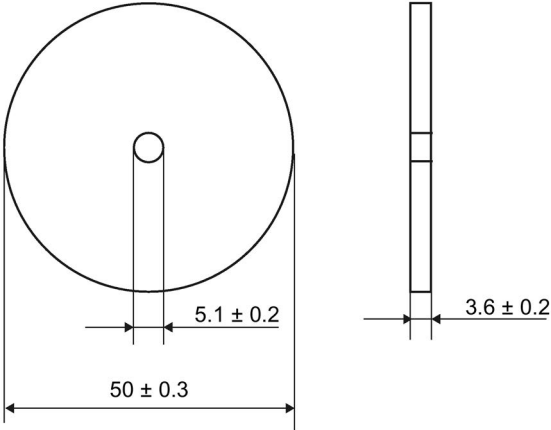
Table 8- 12 Technical specifications for the MDS D126

<b>6GT2600-0AE00</b>	
Product type designation	SIMATIC MDS D126
<b>Memory</b>	
Memory configuration	
• UID	• 8 bytes
• User memory	• 112 bytes EEPROM
• OTP memory	• 16 bytes (EEPROM)
Read cycles (at < 40 °C)	> 10 <sup>14</sup>
Write cycles (at < 40 °C)	> 10 <sup>6</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>9</sub> )	Dependent on the reader used, see section "Field data of ISO transponders (MDS D) (Page 56)"
MTBF (Mean Time Between Failures)	228 years
<b>Mechanical specifications</b>	
Housing	
• Material	• PA6.6 GF
• Color	• Black
Recommended distance to metal	≥ 25 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 to +85 °C
• outside the read/write field	• -40 to +100 °C
• during storage	• -40 to +100 °C
Degree of protection to EN 60529	IP68 2 hours, 2 bar, +20 °C
Shock according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	500 m/s <sup>2</sup>
Vibration according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted
<b>Design, dimensions and weight</b>	
Dimensions (Ø x H)	50 x 3.6 mm

6GT2600-0AE00	
Weight	13 g
Type of mounting	<ul style="list-style-type: none"><li>• 1 x M4 screw <sup>2)</sup> ≤ 1 Nm</li><li>• Glued <sup>3)</sup></li></ul>

- <sup>1)</sup> The values for shock and vibration are maximum values and must not be applied continuously.
- <sup>2)</sup> ) To prevent it loosening during operation, secure the screw with screw locking varnish.
- <sup>3)</sup> The processing instructions of the adhesive manufacturer must be observed.

**8.5.5 Dimension drawing**




Dimensions in mm

Figure 8-11 Dimension drawing of MDS D126

## 8.6 MDS D127

### 8.6.1 Features

<b>MDS D127</b>	<b>Characteristics</b>	
	Area of application	Very compact data carrier that can be screwed into areas where precise positioning is necessary; e.g. tool identification, workpiece holders etc.
	Memory size	112 bytes of EEPROM user memory
	Write/read range	See section "Field data of ISO transponders (MDS D) (Page 56)"
	Mounting on metal	Yes, flush-mounted in metal
	ISO standard	ISO 15693
	Degree of protection	IP68/IPx9K

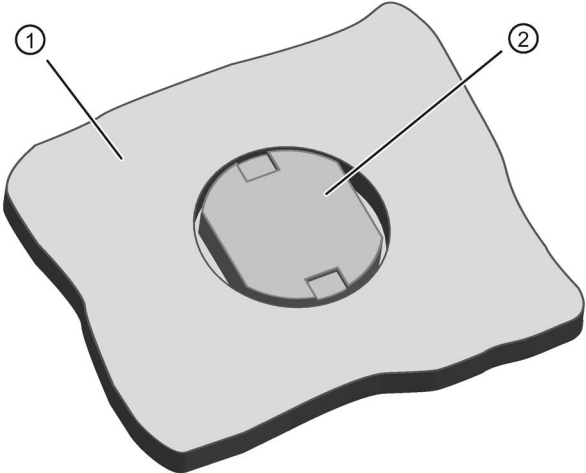
### 8.6.2 Ordering data

Table 8- 13 Ordering data for MDS D127

	Article number
MDS D127 Pack of 10 (A screw-in aid is supplied with each pack)	6GT2600-0AF00

### 8.6.3 Mounting in metal

#### Flush-mounted in metal



- ① Metal
- ② Transponders

---

**Note**  
**Damage to the transponder due to improper mounting**

To screw the MDS D127 into a suitable thread, use the supplied screw-in tool. This avoids damage to the MDS D127.

---



Figure 8-12 Screw-in aid for mounting the MDS D127

## 8.6.4 Technical specifications

Table 8- 14 Technical specifications for MDS D127

<b>6GT2600-0AF00</b>	
Product type designation	SIMATIC MDS D127
<b>Memory</b>	
Memory configuration	
• UID	• 8 bytes
• User memory	• 112 bytes EEPROM
• OTP memory	• 16 bytes (EEPROM)
Read cycles (at < 40 °C)	> 10 <sup>14</sup>
Write cycles (at < 40 °C)	> 10 <sup>6</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>9</sub> )	Dependent on the reader used, see section "Field data of ISO transponders (MDS D) (Page 56)"
MTBF (Mean Time Between Failures)	228 years
<b>Mechanical specifications</b>	
Housing	
• Material	• PA6
• Color	• Black
Recommended distance to metal	≥ 0 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 to +100 °C
• outside the read/write field	• -40 to +125 °C
• during storage	• -40 to +125 °C
Degree of protection to EN 60529	<ul style="list-style-type: none"> <li>• IP68 2 hours, 2 bar, +20 °C</li> <li>• IPx9K steam jet: 150 mm; 10 to 15 l/min; 100 bar; 75 °C</li> </ul>
Shock according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	1000 m/s <sup>2</sup>
Vibration according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted

6GT2600-0AF00

**Design, dimensions and weight**

Dimensions (Ø x H)	M6 x 5.8 mm
Weight	1 g
Type of mounting	<ul style="list-style-type: none"> <li>• Glued <sup>2)</sup></li> <li>• 1 x M3 screw</li> </ul>

1) The values for shock and vibration are maximum values and must not be applied continuously.

2) The processing instructions of the adhesive manufacturer must be observed.

**8.6.5 Dimension drawing**

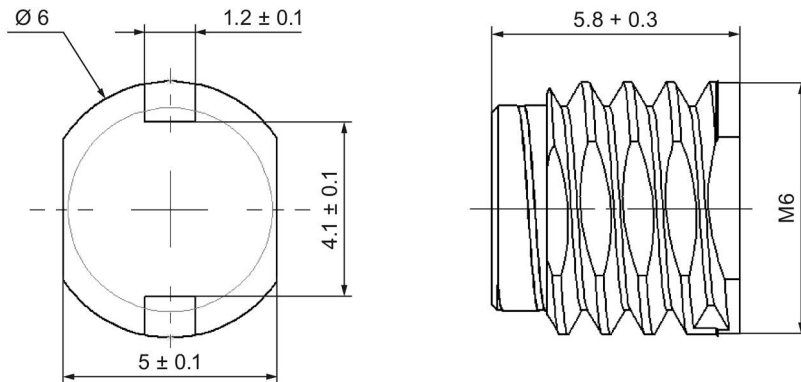



Figure 8-13 Dimensions in mm

## 8.7 MDS D139

### 8.7.1 Characteristics

<b>MDS D139</b>	<b>Characteristics</b>	
	Area of application	Applications in production logistics and in assembly lines subject to high temperatures (up to +220 °C) Typical application areas: <ul style="list-style-type: none"> <li>• Paintshops and their preparatory treatments)</li> <li>• Primer coat, electrolytic dip area, cataphoresis with the associated drying furnaces</li> <li>• Top coat area with drying furnaces</li> <li>• Washing areas at temperatures &gt; 85 °C</li> <li>• Other applications with higher temperatures</li> </ul>
	Memory size	112 bytes of EEPROM user memory
	Write/read range	See section Field data of ISO transponders (MDS D) (Page 56).
	Mounting on metal	Yes, with spacer
	ISO standard	ISO 15693
	Degree of protection	IP68/IPx9K

**Note**

**Compatibility with SIMATIC RF300 depending on the article number**

The transponder MDS D139 with article number 6GT2600-0AA10 is compatible with the SIMATIC RF300 system. The transponder MDS D139 with article number 6GT2600-0AA00 is not compatible.



### 8.7.2 Ordering data

Table 8- 15 Ordering data for MDS D139

	Article number
MDS D139	6GT2600-0AA10

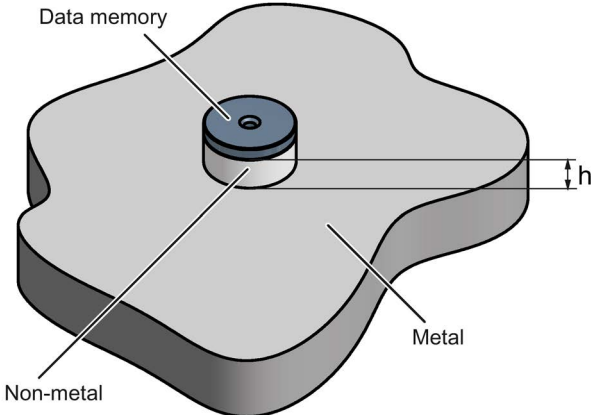
Table 8- 16 Ordering data for MDS D139 accessory

	Article number
Spacer	6GT2690-0AA00
Quick change holder (Ø x H): 22 x 60 mm	6GT2690-0AH00
Quick change holder (Ø x H): 22 x 47 mm	6GT2690-0AH10

### 8.7.3 Mounting on metal

Direct mounting of the MDS D139/D339 on metal is not allowed. A distance of  $\geq 30$  mm is recommended. This can be achieved using spacers (see "Ordering data (Page 441)").

#### Mounting on metal

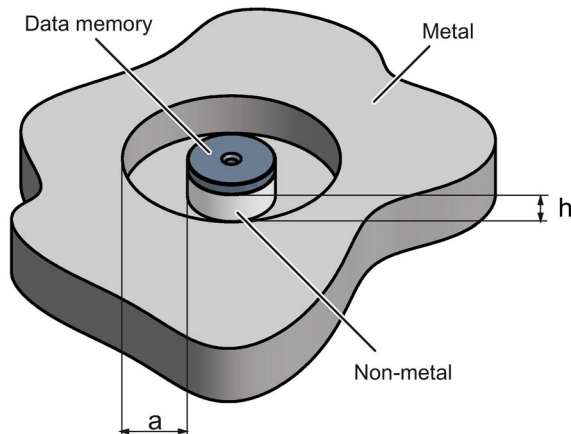


$h \geq 30 \text{ mm}$

Figure 8-14 Mounting the MDS D139/D339 on metal with spacer

## Flush-mounting

It is possible to mount the MDS D139/D339 in metal. With large antennas, for example ANT D5, this leads to a reduction of ranges.



$h \geq 30 \text{ mm}$

$a \geq 100 \text{ mm}$

Figure 8-15 Flush-mounting of the MDS D139/D339 in metal with spacer

---

### Note

#### Going below the distances

If the distances (a and h) are not observed, a reduction of the field data results. It is possible to mount the MDS with metal screws (M5). This has no tangible impact on the range. It is recommended that a test is performed in critical applications.

---

## 8.7.4 Cleaning the mobile data memory

---

### Note

Do not clean the transponder with mechanical tools, sand-blasting or pressure hose. These cleaning methods result in damage to the transponder.

Clean the transponder only with the chemical cleansing agents listed in Chapter Chemical resistance of the readers and transponders (Page 97).

---

## 8.7.5 Technical specifications

Table 8- 17 Technical specifications for MDS D139

<b>6GT2600-0AA10</b>	
Product type designation	SIMATIC MDS D139
<b>Memory</b>	
Memory configuration	
• UID	• 8 bytes
• User memory	• 112 bytes EEPROM
• OTP memory	• 16 bytes (EEPROM)
Read cycles (at < 40 °C)	> 10 <sup>14</sup>
Write cycles (at < 40 °C)	> 10 <sup>6</sup>
Data retention time (at < 40 °C)	> 10 years
Write/read distance (S <sub>g</sub> )	Dependent on the reader used, see section "Field data of ISO transponders (MDS D) (Page 56)"
MTBF (Mean Time Between Failures)	228 years
<b>Mechanical specifications</b>	
Housing	
• Material	• PPS
• Color	• Black
Recommended distance to metal	≥ 30 mm
Power supply	Inductive, without battery
<b>Permitted ambient conditions</b>	
Ambient temperature	
• during write/read access	• -25 ... +140 °C
	• from +125 °C: 20% reduction in the limit distance
• outside the read/write field	• -40 to +220 °C
	• at +200 °C: Tested up to 5000 hours or 6000 cycles
	• at +220 °C: Tested up to 2000 hours or 2000 cycles
• during storage	• -40 to +100 °C

<b>6GT2600-0AA10</b>	
Degree of protection to EN 60529	<ul style="list-style-type: none"> <li>• IP68 2 hours, 2 bar, +20 °C</li> <li>• IPx9K steam jet: 150 mm; 10 to 15 l/min; 100 bar; 75 °C</li> </ul>
Shock according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	500 m/s <sup>2</sup>
Vibration according to EN 60721-3-7 Class 7M3 <sup>1)</sup>	200 m/s <sup>2</sup>
Torsion and bending load	Not permitted
<b>Design, dimensions and weight</b>	
Dimensions (Ø x H)	85 x 15 mm
Weight	50 g
Type of mounting	1 x M5 screw <sup>2)</sup> 1.5 Nm

<sup>1)</sup> The values for shock and vibration are maximum values and must not be applied continuously.

<sup>2)</sup> For mounting with the spacer (6GT2690-0AA00), use a stainless steel M5 screw to avoid damaging the MDS in high temperatures (expansion coefficient).

### 8.7.6 Use of the MDS D139 in hazardous areas

The MDS D139 mobile data memory is classed as a piece of simple, electrical equipment and can be operated in Protection Zone 2, Device Group II, Category 3G.

The following requirements of the 94/9/EC directive are met:

- EN 60079-0:2006
- EN 60079-15:2005
- EN 61241-0:2006
- EN 61241-1:2004

## Identification



II 3 G Ex nA II T2

II 3 D Ex tD A22 IP68 T 220°C

KEMA 09 ATEX 0133 X

Ta: -25 ... +220°C



### WARNING

**Gefahr durch elektrostatische Entladungen**

**Potential electrostatic charging hazard**

**Danger potentiel de charges électrostatiques**

### Note

#### Installations- und Betriebsbedingungen für den Ex-Schutzbereich:

- a) Der Einsatz des Gerätes in der Nähe von stark ladungserzeugenden Prozessen ist untersagt.
- b) Das Gerät ist mechanisch geschützt zu montieren.
- c) Die Montage muss auf einem geerdeten, leitenden Untergrund erfolgen.
- d) Die Reinigung darf nur mit feuchtem Tuch erfolgen.

#### Installation and operating conditions for hazardous areas:

- a) Use of the equipment in the vicinity of processes generating high charges is not allowed.
- b) The equipment must be mechanically protected when installed.
- c) Installation must be performed on a grounded and conductive mounting surface.
- d) Cleaning only with a wet cloth

#### Conditions d'installation et de mise en oeuvre pour la zone de protection Ex :

- a) L'utilisation de l'appareil près de processus générant de fortes charges est interdite.
- b) L'appareil doit être monté de manière à être protégé mécaniquement.
- c) Le montage doit être effectué sur un socle conducteur mis à la terre.
- d) Nettoyage uniquement avec un chiffon humide

### 8.7.7 Dimension drawings

#### Dimensional drawing of MDS D139

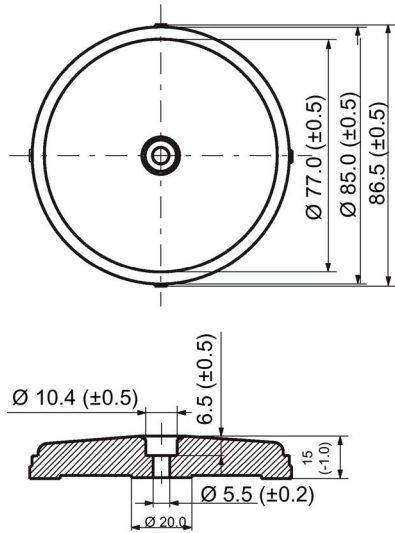


Figure 8-16 Dimensional drawing of MDS D139

Dimensions in mm