SIEMENS

SIMATIC Ident
RFID systems
SIMATIC RF675T
Compact Operating Instructions

Legal information
Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING
indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

1 Characteristics

SIMATIC RF675T is a passive and maintenance-free on-metal data storage medium. It is specially designed for mounting directly on metal surfaces. It operates based on the UHF Class 1 Gen 2 technology and is used to store the "Electronic Product Code" (EPC ID) of up to 16 bytes/128 bits. The transponder also has an 8-byte/64-bit user memory.

Note that this transponder cannot be disabled using a kill password.

SIMATIC RF675T	Characteristics	
	Area of application	The areas of application are industrial asset management, identification of pipes, containers and metallic equipment
	Frequency range	• ETSI: 865 to 868 MHz • FCC: 902 to 928 MHz
	Air interface	According to ISO 18000-63
	Memory	• EPC memory: 16...20 bytes / 128...160 bits • EPC ID: 12...16 bytes / 96...128 bits [1] • User memory: 4...8 bytes / 32...64 bits [1]
	Read range	Max. 4.0 m [2]
	Mounting	Screw-in or glue
	Mounting	Specially designed for mounting directly on metal surfaces.

[1] The user memory has a default size of 32 bits. If necessary, the user memory size can be expanded to 64 bits in increments of 16 bits at the cost of the EPC memory.

[2] Depending on the environment, the reader/the antennas and the set power.

NOTICE
Changing the memory size is irreversible
Note that changing the user memory size is irreversible.
You can expand the user memory from 4 to 8 bytes. Before doing so, make sure that the current EPC ID length is ≤ 12 bytes. Then, set the "Memory Map Selection" bit in the Reserved memory bank of the transponder chip (Impinj Monza R6-P) from 1 to 0.
Refer to the data sheet of the chip manufacturer for detailed information. If you have any questions, please contact Siemens Support.

2 Ordering data

Table 2-1   Ordering data

Product	Article number
SIMATIC RF675T (ETSI)	6GT2810-2EF00
SIMATIC RF675T (FCC)	6GT2810-2EF10

Delivery format

SIMATIC RF675T is supplied in the following form:

• 10 transponders per packaging unit incl. screw-in aid
  Minimum order quantity: 1 packaging unit (10 units)

3 Resistance to chemicals

Table 3-1   Resistance to chemicals - PBT (polybutylenterephthalate)

Substance	Evaluation
Mineral lubricants	+
Aliphatic hydrocarbons	+
Aromatic hydrocarbons	○
Gasoline	+
Weak mineral acids	+
Strong mineral acids	○
Weak organic acids	+
Strong organic acids	-
Oxidizing acids	-
Weak alkalis	+
Strong alkalis	-
Trichloroethylene	-
Perchloroethylene	○
Acetone	-
Alcohols	+
Hot water (hydrolysis resistance)	-
UV light and weathering	○

Explanation of the rating	
+	Resistant
○	Conditionally resistant
-	Not resistant

4 Presetting of the EPC memory

The first 12 bytes of the EPC memory ("0x00 - 0x0B") are preset. As of byte 13 ("0x0C") the EPC memory is not preset.

Table 4-1   Presetting of the EPC memory

Address UID	Address with FB (UID)	Value
0x00	0xFF00	0x00
...	...	...
0x04	0xFF04	0x00
0x05	0xFF05	Transponder type [1]
0x06	0xFF06	Year produced [1]
0x07	0xFF07	Month produced [1]
0x08	0xFF08	Day produced [1]
0x09	0xFF09	Consecutive number [1]
0x0A	0xFF0A	
0x0B	0xFF0B	

[1]   In the following table, these values are described in greater detail.

Table 4-2   Explanation of the values

Transponder type	Year produced	Month produced	Day produced	Consecutive number [1]		
RF675T = 0x53	2022 = 0x16	Jan. = 0x01	01 = 0x01	0x00	0x00	0x01
	2023 = 0x17	Feb. = 0x02	02 = 0x02	0x00	0x00	0x02
	...	...	...	...	...	...
	...	Dec. = 0x0C	31 = 0x1F	0xFF	0xFF	0xFF

[1]   The consecutive number is counted absolutely as of the respective production date and is therefore unique.

5   Mounting in metal

The transponder is mounted by screwing it into M20x1 threaded holes or gluing it into corresponding holes and adhering it flush onto or into the object to be identified.

Make sure that the polarization axes of the readers/antennas correspond to those of the transponder when it is mounted. You can achieve greater read/write ranges with this transponder by mounting the transponder in parallel to the polarization axis in/on a long metal surface. You reach an optimal range of up to 4 m with a metal surface of 20 × 150 mm.

Before commissioning, ensure through tests that the transponder is detected by all relevant readers/antennas. Optimize the read range, if necessary, by adapting the mounting position and alignment.

Mounting information for screws

You can screw the transponder into a pre-drilled threaded hole using the screw-in aid. To secure the transponder, for example to align the polarization axis, you can use screw locking varnish or acrylic adhesive. Note that this is not a detachable connection.

Mounting information for adhesion

As adhesive, Araldite AW2101/HW2951 or Loctite HY4090 can be used, for example.

• Drill installation hole

• The adhesive surfaces must be dry, free from dust, oil, stripping agents and other impurities

• Apply adhesive according to the manufacturer's processing instructions

• Press in transponder by hand, with antenna side outwards

• Remove residues of adhesive

• Allow to cure according to the manufacturer's instructions

6 Maximum read/write ranges

Table 6-1   Read ranges of the transponder (all ranges in meters [m])

	SIMATIC RF675T		
	Metal plate (75 × 75 mm)		
SIMATIC RF610R **SIMATIC RF615R** with internal antenna	0.2		
SIMATIC RF615R with RF642A	0.25		
	with RF650A	0.25	
	With RF662A	0.25	
	With RF680A (circular)	0.25	
SIMATIC RF650R with RF642A	0.5		
	with RF650A	0.35	
	With RF662A	0.35	
	With RF680A (circular)	0.35	
SIMATIC RF685R with internal antenna	0.45		
SIMATIC RF680R **SIMATIC RF685R** with RF642A	0.6		
	with RF650A	0.4	
	With RF662A	0.45	
	With RF680A (circular)	0.35	

Optimum read/write range

You can achieve an optimum read/write range by mounting the transponder in parallel to the polarization axis in/on a long metal surface.

Maximum write ranges

The reader antenna requires more power for writing than for reading data. When writing, the maximum range is reduced by approximately 60% compared with the read range.

7 Technical specifications

Table 7-1   Technical specifications of SIMATIC RF675T

	6GT2810-2EFx0
Product designation	SIMATIC RF675T
Radio frequency	
Operating frequency	
• ETSI	• 865 to 868 MHz
• FCC	• 902 to 928 MHz
Memory	
Chip (manufacturer/type)	Impinj Monza R6-P
Memory configuration	
• EPC	• 16...20 bytes / 128...160 bits
• User memory	• 4...8 bytes / 32...64 bits
• TID	• 12 bytes / 96 bits
Number of write cycles (< 40 °C)	> 100 000
Number of read cycles (< 40 °C)	> 10^{14}
Data retention time (< 40 °C)	20 years
Electrical data	
Read range (on the metallic support)	≤ 4.0 m [1]
Protocol	EPCglobal Class 1 Gen 2 / ISO 18000-63
Transmission speed	≤ 320 kbps
Polarization	Linear (long side = polarization axis)
Mechanical specifications	
Material	PBT and aluminum
Silicone-free	Yes
Color	Black/gray
Antenna material	Ceramic
Printing	No
Permitted ambient conditions	
Ambient temperature	
• In operation, during write/read access	• -40 ... +85 °C
• In operation, outside write/read access	• -40 ... +85 °C Special feature: Up to 160 °C: Tested up to 100 hours
• During transportation and storage	• -40 ... +85 °C
Distance from metal	0 mm Designed for mounting directly in/on metal.
Degree of protection	IP67
Shock according to DIN EN 60721-3-7 Class 7 M3 [2]	500 m/s^2
Vibrations according to EN 60068-2-6 [2]	200 m/s^2
Resistance to mechanical stress	Not permitted

Design, dimensions and weight

Dimensions (Ø × H)	20 × 6 (±0.2) mm
Weight	Approx. 3 g
Type of mounting	• Screw-in (M20 × 1); ≤ 1 Nm • Glued

[1] Depending on the environment

[2] The values for shock and vibration are maximum values and must not be applied continuously.
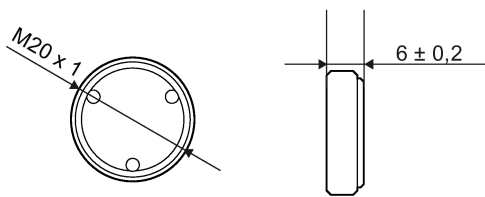

8   Dimension drawing

Figure 8-1   Dimension drawing SIMATIC RF675T

All dimensions in mm

9   Certificates and approvals

Table 9-1   Certificates and approvals

Labeling	Description
CE	Conformity with the RED directive 2014/53/EU Conformity with the RoHS directive 2011/65/EU
FC Federal Communications Commission	Passive labels and transponders comply with the valid regulations; certification is not required.

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.