

RFID systems for the UHF range



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RFID systems for the UHF range

SIMATIC RF600

Introduction

Overview



Identification tasks in the UHF range (865 to 868 MHz, 902 to 928 MHz, and 920 to 925 MHz) that demand a wide range of several meters are implemented with SIMATIC RF600. The system is suitable for storing and recording a unique identification according to the EPCglobal standard (Electronic Product Code) on products, containers or transport units. Storage of additional, freely-definable user data is also possible.

Various data carriers - from low-cost SmartLabels through to heat-resistant transponders that can be used for several thousand cycles - are available for industrial applications.

SIMATIC RF600 can be used with SIMATIC controllers and PC/IT systems.

Benefits

get Designed for Industry

SIMATIC RF600 has been specially developed for the requirements of industry. It enables economical and reliable use of RFID in production, materials management and logistics.

- Cost savings and improvement in process quality through application of UHF RFID with maximum reliability in the industrial environment:
 - Application of a uniform RFID system throughout the entire production process and supplier chain as a result of inexpensive transponders and wide ranges (no technology gaps).
 - Maximum availability even in applications with a complex radio environment such as high reader density, strongly reflecting metal environments, dynamic surroundings.
 - Permanent RFID identification of products thanks to disposable transponders matched to the application, e.g. heat-resistant, high degree of protection.
 - Wide transponder portfolio and customized versions for cost-optimized use.
- Flexibility due to compact designs and remote antennas.
- Safe and selective individual acquisition or bulk identification is possible.
- High reading speed: Even fast-moving transponders are reliably detected.

- Simplified engineering, commissioning, diagnostics and maintenance through seamless integration into Totally Integrated Automation (TIA):
 - Integrated bus connection to an automation system, such as SIMATIC, SIMOTION or SINUMERIK via communication modules with PROFIBUS and PROFINET.
 - Direct interfacing to IT systems via Ethernet.
 - Integrated processing logic allows data preprocessing in the reader and saves costs for external PCs, software modules, etc.
 - Simple S7 software integration via ready-to-use function blocks.
 - Extensive diagnostic functions.
- High degree of investment protection thanks to
 - Open standards EPCglobal Class 1 Gen 2 / ISO 18000-6C or ISO 18000-6B.
 - Software compatibility between the RFID systems of Siemens.
 - Standardized communication interfaces.
 - Openness through connection possibilities to various bus systems from different manufacturers and PC environments via communication modules.
- Worldwide service and support.
 - Tried and tested in numerous customer projects.

Application

SIMATIC RF600 is used for the contactless identification of every kind of object, e.g. transport containers, pallets, production goods, or it can be used generally for recording goods in bulk. As a rule, these applications are open loops in which passive SmartLabels on goods, products, bulk containers or transport units are used. In this case, the system distinguishes itself due to its high reading speeds, large data transmission rates and the fact that it can handle long reading distances.

In addition, the system is suitable for reading and writing reusable transponders that are used in closed loops.

Typical applications include:

- Acquisition of deliveries in the incoming goods / outgoing goods departments.
- Identification of transport containers, barrels or containers at important stations in the process; creation of a "Container passport" for automatic creation of a usage history.
- Control of material flow and production in multi-variant, order-related production.
- Labeling of products under severe ambient conditions, e.g. dust, dirt, high temperatures.
- Stock monitoring and usage monitoring of tools and devices.
- Automation of warehouses and distribution centers with industrial trucks.

Design

The SIMATIC RF600 readers are available as variants with an integral antenna (RF685R) and with connection options for external antennas (RF650R, RF680R).

For quick and easy cabling, pre-assembled cables are available in various lengths.

Multicolored LEDs indicate the status of reader and transponder.

The high IP65 degree of protection of the reader enables it to be used in harsh industrial environments.

The SIMATIC RF600 series of transponders are used as mobile data carriers.

Transponders suitable for a wide variety of different requirements can be selected from an extensive range: For example, low-cost, heat-resistant SmartLabels for temperatures up to 230 °C, in rugged credit card format, or screw-fit transponders that can be attached by robots.

The transponders are attached to the object to be identified, e.g. by means of screws, adhesive or pre-assembled spacer.

Function

All SIMATIC RF600 readers are suitable for reliable writing and reading tasks in the UHF range from 865 to 868 MHz (ETSI), 902 to 928 MHz (FCC), and 920 to 925 MHz (CMIIT), with very large ranges up to 8 m.

The SIMATIC RF680R/685R readers are particularly suitable for use in production environments where a high protection class and integration into SIMATIC controllers are required. These two new readers also offer an extensive toolset for commissioning and diagnostics.

User-friendly function blocks simplify programming in Step 7 or the TIA Portal. Special functions are available in areas hostile to wireless communication encountered in production environments, such as reflections and dead zones resulting from metal or superimposed radio fields due to a high reader density.

In this manner, process stability is substantially increased by automatic adaptation of the transmit power and intelligent filtering of the reading results. The multi-stage filter concept ensures that, based on the wireless properties, the correct transponder within the RF field of the reader is always processed. The appropriate data storage medium is automatically selected on the basis of various indicators, such as the evaluation of the RSSI value (Received Signal Strength Indicator), the reading frequency, or the transmit power required.

Transponders that have already been processed can be stored in a "blacklist" in the reader and thus filtered out. Various mechanisms can be activated according to requirements.

One special feature of the RF685R is the integrated adaptive antenna. Whether linear (horizontal/vertical), circular or automatic polarization, the integrated antenna of the RF685R achieves the best reading rates, even in difficult radio reception environments.

The RF650R and RF680R/685R readers can be set and diagnosed by means of a Web browser. The RF680R/685R can also optionally be commissioned and diagnosed in the TIA Portal.

The RF650R reader is used mainly in logistics applications where a high degree of protection and SIMATIC integration are of lesser importance. With its four external antenna connections, as many as four individual reading stations or large gate applications can be implemented. The integrated processing logic allows comprehensive filter functions and control of the digital inputs/outputs in the reader itself. Configuration, commissioning and diagnostics are easily possible by means of a web browser, without the need for installing additional software.

External sensor technology (e.g. light barriers or motion detectors) and indicator lamps or acoustic sensors are integrated by means of the four digital inputs and outputs.

Integration

A wide range of communication modules, function blocks, as well as high-performance drivers and function libraries enable easy and quick integration into user applications.

In PC/IT environments, the RF650R, RF680R and RF685R devices can be integrated by means of a simple XML protocol. Programming examples are available for this purpose.

Because the RF680R and RF685R readers are part of Totally Integrated Automation (TIA), integration into automation systems such as SIMATIC S7 is Plug & Play. The device information is contained as standard in the TIA Portal as from V13 SP1, in the same way as the easy-to-operate Identification Profile function blocks.

SIMATIC Ident Configuration Guide

Here is a compact configuration tool for setting up RFID systems:

<http://support.automation.siemens.com/WWW/view/en/67384964>

Technical specifications

RFID system	SIMATIC RF600
Transmission frequency	865 ... 868 MHz (ETSI) 902 ... 928 MHz (FCC) 920 ... 925 MHz (CMIIT)
Range	Max. 8 m
Protocol (air interface)	<ul style="list-style-type: none"> EPCglobal Class 1 Gen 2 ISO 18000-6B ISO 18000-6C
Approvals	<ul style="list-style-type: none"> ETSI EN 302208, CE FCC UL CMIIT
Memory capacity	Max. 496 bits EPC, 3 424 bytes user memory
Data transfer rate for wireless transmission	Max. 300 kbps
Multitag/Bulk capability	Yes
Special features	<ul style="list-style-type: none"> SIMATIC or PC/IT integration Configurable data processing in the readers Special antennas for industrial applications Powerful diagnostics functions

RFID systems for the UHF range

SIMATIC RF600 transponders

Introduction

Overview

SIMATIC RF600 offers a variety of transponders for numerous applications. All transponders are designed to be passive and maintenance-free and thus ensure problem-free operation.

The transponders support the EPCglobal Class 1, Gen 2 / ISO 18000-6C standard, and can be used with all SIMATIC RF600 readers.

Transponder	Features	Page
RF622L 	Large memory UHF SmartLabel with 4 KB FRAM.	3/5
RF630L 	SmartLabel based on UHF Class 1 Gen 2 technology. This SmartLabel is available in several versions.	3/6
RF640L 	The SIMATIC RF640L (on-metal label) is designed for direct mounting on metal surfaces and has a read range of up to 4 m.	3/9
RF680L 	Heat-resistant UHF SmartLabel for identifying objects with high temperature requirements.	3/11
RF690L 	Heat-resistant UHF SmartLabel for mounting directly on metal.	3/12
RF610T 	A flexible card in ISO format that is suitable for a wide variety of applications, e.g. for identification of containers, pallets, or vessels. The SIMATIC RF610T can be attached to the most diverse materials, including plastic, wood, glass and metal (with spacer).	3/14
RF620T 	The RF620T container transponder is suitable for identifying transport containers or pallets. It can be attached to metal if spacers are used.	3/16
RF622T 	Large memory RF622T transponder with large 4 KB FRAM memory enables the storage of larger volumes of data. It is therefore especially suited to use in distributed configurations. If spacers are used, the RF622T can also be mounted on metal surfaces.	3/18
RF625T 	The RF625T disk transponder is suitable for use in industrial environments, such as in the equipping of tools, machines and plants.	3/20

Transponder	Features	Page
RF630T 	The RF630T screw transponder (M6) is particularly suitable for controlling and monitoring production processes.	3/22
RF640T 	The RF640T tool transponder can be mounted directly on metal, and is therefore particularly suitable for tracking tools, containers and metallic equipment.	3/24
RF680T 	High-temperature transponder up to 220 °C and high degree of protection IP68/IPx9K. It is suitable for industrial applications with high thermal stress.	3/26

Benefits

get Designed for Industry

The comprehensive portfolio of SIMATIC RF600 transponders with long ranges according to EPCglobal standard offers the appropriate solution for every requirement in logistics and production:

- Low-cost SmartLabels and transponders.
- Heat-resistant SmartLabels and transponders for high temperature ranges up to 230 °C for use in paint shops.
- Screw-fit transponders for automatic attachment by robots.
- Screw-fit transponders for flush-mounting in metal for identifying workpieces or workpiece holders.
- Rugged transponders with high resistance to environmental influences.
- Customized solutions for SmartLabels and transponders on request.

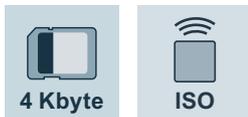
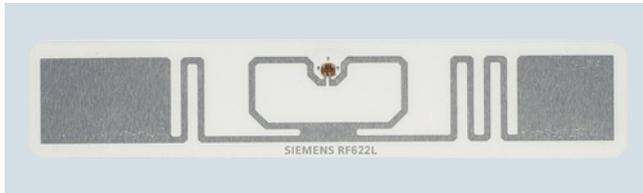
Technical specifications

Field data (operating/limit distance) of transponders and readers (all specifications in mm)

The field data of the RF600 UHF transponders in connection with RF600 readers is listed in the technical specifications of the RFID overview.

The listed technical data are typical values and are valid at operating temperature.

Overview



With a capacity of 4 KB FRAM, of which 3 424 bytes are available as user memory, the new RF622L UHF RFID SmartLabel enables larger volumes of data to be stored on tagged objects, as well as facilitating rapid access to them.

The large memory label offers a considerable reading range of up to 3 meters on non-metallic surfaces.

The RF622L SmartLabel is suitable for the permanent marking of products and can be individually printed from the roll, for example with plain text or additional optical codes.

Industrial plant management, RFID identification of tools, containers and non-metallic equipment. Suitable for a host of uses in a wide range of applications, e.g. logistics.

Technical specifications

Article number	6GT2810-4AC80
Product type designation	RF622L transponder
Suitability for operation	RF600
Wireless frequencies	
Operating frequency	860 ... 960 MHz
Electrical data	
Range maximum	3 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
http://support.automation.siemens.com/WW/view/en/67384964	
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s
Product feature multitag-capable	Yes
Polarization	Linear
Product component Backup battery	No

Article number	6GT2810-4AC80
Product type designation	RF622L transponder
Suitability for operation	RF600
Memory	
Type of memory	FRAM
Storage capacity of the user memory	3 424 byte
Type of memory organization	EPC memory 496 bits, user memory 3 424 bytes, TID memory 32 bytes
Number of read cycles at ambient temperature < 40 °C maximum	10 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	10 000 000 000
Data retention time at ambient temperature < 40 °C not less than	10 y
Property of memory	lock, unlock, write protection, password protection
Type of transponder chip used	Fujitsu MB97R803
Mechanical data	
Material	PET
Color	white
Mounting distance relating to metal surfaces recommended minimum	5 mm
Permitted ambient conditions	
Ambient temperature	
• during read/write access	-20 ... +85 °C
• outside the read/write area	-40 ... +85 °C
• during storage	13 ... 23 °C
Protection class IP	IP64, in glued condition
Resistance to mechanical stress	Torsion and bending stress conditionally permissible
Design, dimensions and weight	
Width	90 mm
Height	0.5 mm
Depth	18 mm
Net weight	1 g
Mounting type	one-side adhesive
Product properties, functions, components general	
Product feature	
• silicon-free	Yes
• printable	Yes
Printing process	Thermal transfer process

Selection and ordering data

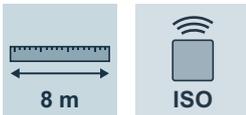
	Article No.
SIMATIC RF622L SmartLabel	6GT2810-2AC80
Frequency: 860 to 960 MHz, EPC: 496 bits, user memory: 3 424 bytes	
Plastic, self-adhesive, dimensions (mm): 90 x 18 x 0.5, order quantity 500 units (supplied on rolls) or a multiple thereof.	

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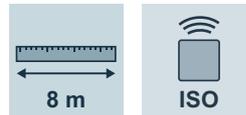
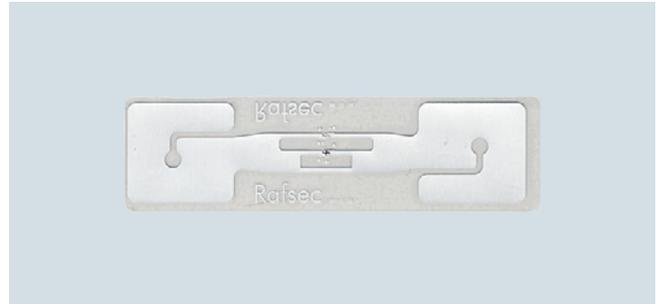
SIMATIC RF600 transponders

RF630L

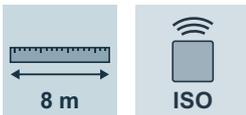
Overview



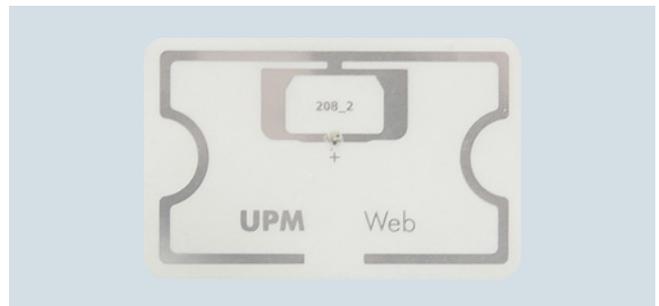
6GT2810-2AB00



6GT2810-2AB02-0AX0



6GT2810-2AB01



6GT2810-2AB03



6GT2810-2AE81-0AX1

The SIMATIC RF630L SmartLabels are suitable for (permanent) identification of products or shipping units with the Electronic Product Code (EPC) as well as with other user data. Thanks to its broadband design, the SIMATIC RF630L SmartLabel can be used in numerous countries.

Technical specifications

Article number	6GT2810-2AB00	6GT2810-2AB01	6GT2810-2AE81-0AX1	6GT2810-2AB02-0AX0	6GT2810-2AB03
Product type designation	RF630L transponder	RF630L transponder	RF630L transponder	RF630L transponder	RF630L transponder
Suitability for operation	RF600	RF600	RF600	RF600	RF600
Wireless frequencies					
Operating frequency	860 ... 960 MHz	860 ... 960 MHz	860 ... 960 MHz	860 ... 960 MHz	860 ... 960 MHz
Electrical data					
Range maximum	8 m; observe system manual RF600: overrange is possible, range is reader dependent: observe	8 m; observe system manual RF600: overrange is possible, range is reader dependent: observe	4 m; observe system manual RF600: overrange is possible, range is reader dependent: observe	8 m; observe system manual RF600: overrange is possible, range is reader dependent: observe	5 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
	http://support.automation.siemens.com/WW/view/en/67384964				
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s	320 kbit/s	320 kbit/s	320 kbit/s	320 kbit/s
Product feature multitag-capable	Yes	Yes	Yes	Yes	Yes
Polarization	Linear	Linear	Linear	Linear	Linear
Product component Backup battery	No	No	No	No	No
Memory					
Type of memory	EEPROM	EEPROM	EEPROM	EEPROM	EEPROM
Storage capacity of the user memory	12 byte	12 byte	16 byte	64 byte	64 byte
Type of memory organization	EPC memory 96 bits, TID memory 4 bytes	EPC memory 96 bits, TID memory 4 bytes	EPC memory 128 bits, TID memory 8 bytes	EPC memory 96/128 bits, user memory 64 bytes (512 bits), TID memory 4 bytes	EPC memory 96/240 bits, user memory 64 bytes (512 bits), TID memory 8 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000	100 000 000 000 000	100 000 000 000 000	100 000 000 000 000	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	100 000	100 000	100 000	100 000	100 000
Data retention time at ambient temperature < 40 °C not less than	10 y	10 y	30 y	10 y	10 y
Property of memory	lock, unlock, kill, write protection, password protection	lock, unlock, kill, write protection, password protection	lock, unlock, kill, write protection, password protection	lock, unlock, kill, write protection, password protection	lock, unlock, kill, write protection, password protection
Type of transponder chip used	IMPINJ MONZA 2	IMPINJ MONZA 2	NXP G2iL	IMPINJ MONZA 4QT	NXP G2XM
Mechanical data					
Material	Paper	Paper	PET	PET	PET
Color	white	white	white	transparent	transparent
Mounting distance relating to metal surfaces recommended minimum	3 mm	3 mm	3 mm	3 mm	3 mm
Permitted ambient conditions					
Ambient temperature					
• during read/write access	-40 ... +65 °C	-40 ... +65 °C	-25 ... +85 °C	-40 ... +65 °C	-40 ... +65 °C
• outside the read/write area	-40 ... +80 °C	-40 ... +80 °C	-40 ... +160 °C	-40 ... +80 °C	-40 ... +80 °C
• during storage	15 ... 25 °C	15 ... 25 °C	5 ... 25 °C	15 ... 25 °C	15 ... 25 °C
Ambient condition for operation	Maximum storage life 2 years at 40 to 60 % humidity, operating temperature permanent up to 65 °C, up to 80 °C for 200 cycles	Maximum storage life 2 years at 40 to 60 % humidity, operating temperature permanent up to 65 °C, up to 80 °C for 200 cycles	Maximum storage life 2 years at 45 to 55 % humidity, operating temperature permanent up to 85 °C, short term -40 °C to 160 °C for 90 minutes	Maximum storage life 2 years at 40 to 60 % humidity, operating temperature permanent up to 65 °C, up to 80 °C for 200 cycles	Maximum storage life 2 years at 40 to 60 % humidity, operating temperature permanent up to 65 °C, up to 80 °C for 200 cycles
Protection class IP	IP60, in glued condition, the label must be protected against humidity	IP60, in glued condition, the label must be protected against humidity	IP60, in glued condition, the label must be protected against humidity	IP65	IP65
Resistance to mechanical stress	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible

RFID systems for the UHF range

SIMATIC RF600 transponders

RF630L

Article number	6GT2810-2AB00	6GT2810-2AB01	6GT2810-2AE81-0AX1	6GT2810-2AB02-0AX0	6GT2810-2AB03
Product type designation	RF630L transponder	RF630L transponder	RF630L transponder	RF630L transponder	RF630L transponder
Suitability for operation	RF600	RF600	RF600	RF600	RF600
Design, dimensions and weight					
Width	101 mm	101 mm	30 mm	27 mm	34 mm
Height	0.3 mm	0.3 mm	0.3 mm	0.3 mm	0.3 mm
Depth	152 mm	50 mm	90 mm	97 mm	54 mm
Net weight	3 g	2 g	1 g	1 g	1 g
Mounting type	one-side adhesible onto paper / card-board	one-side adhesible onto paper / card-board	one-side adhesible	one-side adhesible onto plastic / foil	one-side adhesible onto plastic / foil
Product properties, functions, components general					
Product feature					
• printable	Yes	Yes	Yes	Yes	Yes
Printing process	Thermal transfer process	Thermal transfer process	Thermal transfer process	Thermal transfer process (currently only using Toshiba B-SX4T)	Thermal transfer process (currently only using Toshiba B-SX4T)

Selection and ordering data

	Article No.
SIMATIC RF630L SmartLabel	
Frequency 865 to 960 MHz (ETSI, FCC)	
<ul style="list-style-type: none"> Paper, adhesive on one side, 100 mm x 150 mm (4" x 6"); Ordering quantity 1 600 units (supplied on rolls) or a multiple thereof. 	6GT2810-2AB00
<ul style="list-style-type: none"> Paper, adhesive on one side, 101 mm x 50 mm (4" x 2"); Ordering quantity 1 000 units (supplied on rolls) or a multiple thereof. 	6GT2810-2AB01
<ul style="list-style-type: none"> Plastic PET, adhesive on one side, 90 mm x 30 mm (3.5" x 1.18"); Ordering quantity 7 000 units (supplied on rolls) or a multiple thereof. 	6GT2810-2AE81-0AX1
<ul style="list-style-type: none"> Plastic PET, adhesive on one side, 97 mm x 27 mm (3.8" x 1.1"); Ordering quantity 5 000 units (supplied on rolls) or a multiple thereof. 	6GT2810-2AB02-0AX0
<ul style="list-style-type: none"> Plastic PET, adhesive on one side, 54 mm x 34 mm (2.1" x 1.3"); Ordering quantity 2 000 units (supplied on rolls) or a multiple thereof. 	6GT2810-2AB03

Overview



The SIMATIC RF640L on-metal label is designed for direct mounting on metal surfaces and under these conditions achieves a read range of up to 3.5 m.

The on-metal label is suitable for applications in industrial plant management, RF identification of tools, containers and metallic equipment.

This transponder is available in two frequency versions for 865 to 868 MHz (ETSI) and 902 to 928 MHz (FCC, CMIIT).



Technical specifications

	6GT2810-2AC00	6GT2810-2AC10
Article number	6GT2810-2AC00	6GT2810-2AC10
Product type designation	RF640L transponder	RF640L transponder
Suitability for operation	RF600	RF600
Wireless frequencies		
Operating frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Range maximum	3.5 m; observe system manual RF600: overrange is possible, range is reader dependent: observe http://support.automation.siemens.com/WW/view/en/67384964	3.5 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s	320 kbit/s
Product feature multitag-capable	Yes	Yes
Polarization	Linear	Linear
Product component Backup battery	No	No
Memory		
Type of memory	EEPROM	EEPROM
Storage capacity of the user memory	64 byte	64 byte
Type of memory organization	EPC memory 96/480 bits, user memory 64/16 bytes (512/128 bits), TID memory 12 bytes	EPC memory 96/480 bits, user memory 64/16 bytes (512/128 bits), TID memory 12 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	500	500
Data retention time at ambient temperature < 40 °C not less than	50 y	50 y
Property of memory	lock, unlock, kill, write protection, password protection	lock, unlock, kill, write protection, password protection
Type of transponder chip used	Alien Higgs 3	Alien Higgs 3
Mechanical data		
Material	Top side: PET	Top side: PET
Color	white	white
Mounting distance relating to metal surfaces recommended minimum	0 mm	0 mm
Permitted ambient conditions		
Ambient temperature		
• during read/write access	-20 ... +85 °C	-20 ... +85 °C
• outside the read/write area	-25 ... +85 °C	-25 ... +85 °C
• during storage	13 ... 23 °C	13 ... 23 °C
Protection class IP	IP67	IP67
Resistance to mechanical stress	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible

RFID systems for the UHF range

SIMATIC RF600 transponders

RF640L

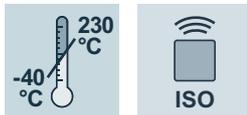
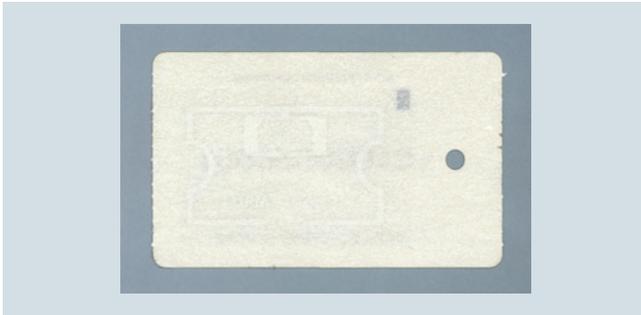
	6GT2810-2AC00	6GT2810-2AC10
Article number	6GT2810-2AC00	6GT2810-2AC10
Product type designation	RF640L transponder	RF640L transponder
Suitability for operation	RF600	RF600
Design, dimensions and weight		
Width	50 mm	50 mm
Height	1.6 mm	1.6 mm
Depth	22.5 mm	22.5 mm
Net weight	4 g	4 g
Mounting type	one-side adhesible	one-side adhesible
Product properties, functions, components general		
Product feature		
• silicon-free	Yes	Yes
• printable	Yes	Yes
Printing process	Thermal transfer process	Thermal transfer process

3

Selection and ordering data

	Article No.
SIMATIC RF640L on-metal-label	
UHF Class 1 Gen2 technology (EPC 96 ... 480 bits; 16 ... 64 bytes of user memory)	
Ordering quantity 500 units (supplied on rolls) or a multiple thereof.	
• Frequency 865 ... 868 MHz (Europe)	6GT2810-2AC00
• Frequency 902 ... 928 MHz (USA, Canada)	6GT2810-2AC10

Overview



SIMATIC RF680L is a heat-resistant SmartLabel that is suitable for the identification of objects in production and logistics with high temperature requirements (e.g. for the identification of products in the paint shop/drying area).

The storage capacity is 96/240 bits for the Electronic Product Code (EPC) and 512 bits for user memory. Thanks to its broadband design, the SIMATIC RF680L SmartLabel can be used in numerous countries.

Technical specifications

Article number	6GT2810-2AG80
Product type designation	RF680L transponder
Suitability for operation	RF600
Wireless frequencies	
Operating frequency	860 ... 960 MHz
Electrical data	
Range maximum	4 m; observe system manual RF600: overrange is possible, range is reader dependent: observe http://support.automation.siemens.com/WW/view/en/67384964
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s
Product feature multitag-capable	Yes
Polarization	Linear
Product component Backup battery	No
Memory	
Type of memory	EEPROM
Storage capacity of the user memory	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 bytes (512 bits), TID memory 8 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	100 000
Data retention time at ambient temperature < 40 °C not less than	10 y
Property of memory	lock, unlock, kill, write protection, password protection
Type of transponder chip used	NXP G2XM

Article number	6GT2810-2AG80
Product type designation	RF680L transponder
Suitability for operation	RF600
Mechanical data	
Material	Paper
Color	beige
Mounting distance relating to metal surfaces recommended minimum	3 mm
Permitted ambient conditions	
Ambient temperature	
• during read/write access	-25 ... +85 °C
• outside the read/write area	-40 ... +230 °C
• during storage	-40 ... +85 °C
Ambient condition for operation	Operating temperature permanent up to 85 °C, for 6 hours up to 200 °C, for 1 hour up to 220 °C, short-term up to 230 °C
Protection class IP	IP60, the label must be protected against humidity
Resistance to mechanical stress	Torsion and bending stress conditionally permissible
Design, dimensions and weight	
Width	54 mm
Height	0.3 mm
Depth	89 mm
Net weight	3 g
Mounting type	gluing, cable tie, screwing
Product properties, functions, components general	
Product feature	
• silicon-free	Yes
• printable	Yes
Printing process	Thermal transfer process

Selection and ordering data

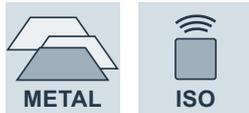
	Article No.
SIMATIC RF680L SmartLabel	6GT2810-2AG80
Frequency 865 to 960 MHz (ETSI, FCC)	
Ordering quantity 1 000 units (supplied on rolls) or a multiple thereof.	

RFID systems for the UHF range

SIMATIC RF600 transponders

RF690L

Overview



The SIMATIC RF690L heat-resistant on-metal label is designed for direct mounting on metal surfaces and under these conditions achieves a read range of up to 5 m.

This transponder is available in two frequency versions for 865 to 868 MHz (ETSI) and 902 to 928 MHz (FCC, CMIIT).

Technical specifications

Article number	6GT2810-2AG00	6GT2810-2AG10
Product type designation	RF690L transponder	RF690L transponder
Suitability for operation	RF600	RF600
Wireless frequencies		
Operating frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Range maximum	5 m; observe system manual RF600: overrange is possible, range is reader dependent: observe http://support.automation.siemens.com/WW/view/en/67384964	5 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s	320 kbit/s
Product feature multitag-capable	Yes	Yes
Polarization	Linear	Linear
Product component Backup battery	No	No
Memory		
Type of memory	EEPROM	EEPROM
Storage capacity of the user memory	64 byte	64 byte
Type of memory organization	EPC memory 96/480 bits, user memory 64/16 bytes (512/128 bits), TID memory 12 bytes	EPC memory 96/480 bits, user memory 64/16 bytes (512/128 bits), TID memory 12 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	500	500
Data retention time at ambient temperature < 40 °C not less than	50 y	50 y
Property of memory	lock, unlock, kill, write protection, password protection	lock, unlock, kill, write protection, password protection
Type of transponder chip used	Alien Higgs 3	Alien Higgs 3
Mechanical data		
Material	Top side: PET	Top side: PET
Color	beige / silver	beige / silver
Mounting distance relating to metal surfaces recommended minimum	0 mm	0 mm
Permitted ambient conditions		
Ambient temperature		
• during read/write access	-25 ... +85 °C	-25 ... +85 °C
• outside the read/write area	Higher temperatures on request	Higher temperatures on request
• during storage	13 ... 23 °C	13 ... 23 °C
Ambient condition for operation	Operating temperature permanent up to 85 °C, higher temperatures on request	Operating temperature permanent up to 85 °C, higher temperatures on request
Protection class IP	IP67	IP67
Resistance to mechanical stress	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible

RFID systems for the UHF range

SIMATIC RF600 transponders

RF690L

Article number	6GT2810-2AG00	6GT2810-2AG10
Product type designation	RF690L transponder	RF690L transponder
Suitability for operation	RF600	RF600
Design, dimensions and weight		
Width	88 mm	75 mm
Height	1.6 mm	1.6 mm
Depth	25 mm	25 mm
Net weight	5 g	5 g
Mounting type	one-side adhesible	one-side adhesible
Product properties, functions, components general		
Product feature		
• silicon-free	Yes	Yes
• printable	Yes	Yes
Printing process	Thermal transfer process	Thermal transfer process

Selection and ordering data

	Article No.
SIMATIC RF690L heat-resistant on-metal-label UHF Class 1 Gen2 technology (EPC 96 ... 480 bits; 16 ... 64 bytes of user memory) Ordering quantity 400 units (supplied on rolls) or a multiple thereof.	
<ul style="list-style-type: none"> • Frequency 865 ... 868 MHz (Europe) 	6GT2810-2AG00
<ul style="list-style-type: none"> • Frequency 902 ... 928 MHz (USA, Canada) 	6GT2810-2AG10

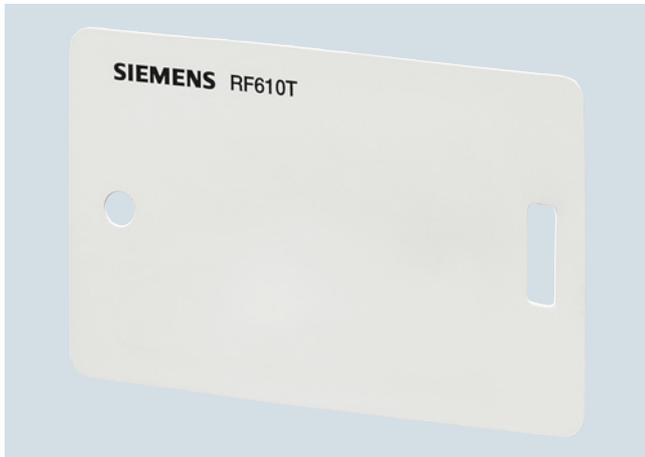
3

RFID systems for the UHF range

SIMATIC RF600 transponders

RF610T

Overview



The SIMATIC RF610T transponder is a flexible card in ISO format that is suitable for a wide variety of applications, e.g. for identification of containers, pallets, vessels, or trolleys. SIMATIC RF610T can be attached to the most diverse materials, including plastic, wood, glass and, with a spacer, metal.

The plastic enclosure is designed for food safety and is therefore also suitable for use with food and beverages. Thanks to its broadband design, the transponder can be used in numerous countries.

3



6GT2810-2BB80



6GT28102BB80-0AX1

Technical specifications

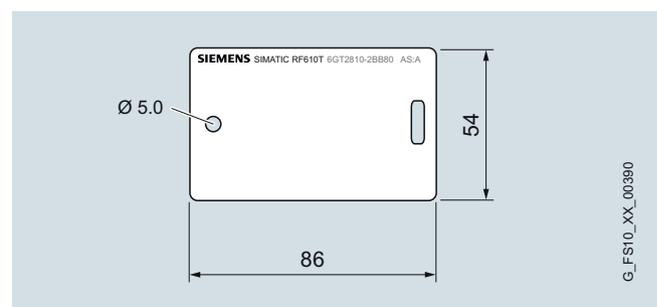
	6GT2810-2BB80	6GT2810-2BB80-0AX1
Article number	6GT2810-2BB80	6GT2810-2BB80-0AX1
Product type designation	RF610T transponder	RF610T transponder
Suitability for operation	RF600	RF600
Wireless frequencies		
Operating frequency	860 ... 960 MHz	860 ... 960 MHz
Electrical data		
Range maximum	5 m; observe system manual RF600: overrange is possible, range is reader dependent: observe http://support.automation.siemens.com/WW/view/en/67384964	5 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s	320 kbit/s
Product feature multitag-capable	Yes	Yes
Polarization	Linear	Linear
Product component Backup battery	No	No
Memory		
Type of memory	EEPROM	EEPROM
Storage capacity of the user memory	64 byte	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 bytes (512 bits), TID memory 8 bytes	EPC memory 96/240 bits, user memory 64 bytes (512 bits), TID memory 8 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	100 000	100 000
Data retention time at ambient temperature < 40 °C not less than	10 y	10 y
Property of memory	lock, unlock, write protection, password protection	lock, unlock, write protection, password protection
Type of transponder chip used	NXP G2XM	NXP G2XM

Article number	6GT2810-2BB80	6GT2810-2BB80-0AX1
Product type designation	RF610T transponder	RF610T transponder
Suitability for operation	RF600	RF600
Mechanical data		
Material	PVC, food-safe	PVC, food-safe
Color	white	white
Mounting distance relating to metal surfaces recommended minimum	3 mm	3 mm
Permitted ambient conditions		
Ambient temperature		
• during read/write access	-25 ... +85 °C	-25 ... +85 °C
• outside the read/write area	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Protection class IP	IP67	IP67
Shock resistance	According to DIN EN 60721-3-7 Class 7 M3	According to DIN EN 60721-3-7 Class 7 M3
Shock acceleration	1 000 m/s ²	1 000 m/s ²
Vibrational acceleration	500 m/s ²	500 m/s ²
Resistance to mechanical stress	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible
Design, dimensions and weight		
Width	54 mm	54 mm
Height	0.4 mm	0.4 mm
Depth	86 mm	86 mm
Net weight	3 g	3 g
Mounting type	gluing, cable tie, screwing	gluing, cable tie, screwing
Product properties, functions, components general		
Product feature		
• printable	Yes	Yes
Printing process	Thermal transfer process	Thermal transfer process
Standards, specifications, approvals		
Certificate of suitability		Ex: II 3 G Ex ic IIB T6 to T4, II 3 D Ex ic IIIB T120°C, -25 °C < Ta < +85 °C
MTBF	1 712 y	1 712 y
Accessories		

Selection and ordering data

	Article No.		Article No.
SIMATIC RF610T ISO card transponder		Spacer	6GT2190-0AA00
<ul style="list-style-type: none"> Frequency 865 MHz to 960 MHz (ETSI, FCC). Ordering quantity 500 units or a multiple thereof. Same as before but with ATEX certification Ordering quantity 1 000 units or a multiple thereof. 	6GT2810-2BB80	to metal surfaces, in combination with fixing pocket 6GT2190-0AB00. Ordering quantity 50 units or a multiple thereof.	
Accessories			
Fixing pocket	6GT2190-0AB00		
For SIMATIC RF610T, for attaching to metal surfaces in combination with spacer 6GT2190-0AA00. Ordering quantity 50 units or a multiple thereof.			
			

Dimensional drawings



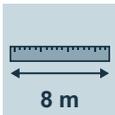
SIMATIC RF610T transponder

RFID systems for the UHF range

SIMATIC RF600 transponders

RF620T

Overview



The SIMATIC RF620T container transponder is designed for industrial requirements and has a high immunity to environmental effects and detergents. It can be attached to plastic, wood or glass. The RF620T can also be mounted on metal and ESD plastic with a spacer.

The SIMATIC RF620T transponder is suitable for identification of transport containers, pallets or vessels. The plastic enclosure is food safe. Thanks to its broadband design, the transponder can be used in numerous countries.

Technical specifications

Article number	6GT2810-2HC81
Product type designation	RF620T transponder
Suitability for operation	RF600
Wireless frequencies	
Operating frequency	860 ... 960 MHz
Electrical data	
Range maximum	8 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
http://support.automation.siemens.com/WWW/view/en/67384964	
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s
Product feature multitag-capable	Yes
Polarization	Linear
Product component Backup battery	No
Memory	
Type of memory	EEPROM
Storage capacity of the user memory	64 byte
Type of memory organization	EPC memory 96/128 bits, user memory 64 bytes (512 bits), TID memory 4 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	100 000
Data retention time at ambient temperature < 40 °C not less than	10 y
Property of memory	lock, unlock, write protection, password protection
Type of transponder chip used	IMPINJ MONZA 4QT

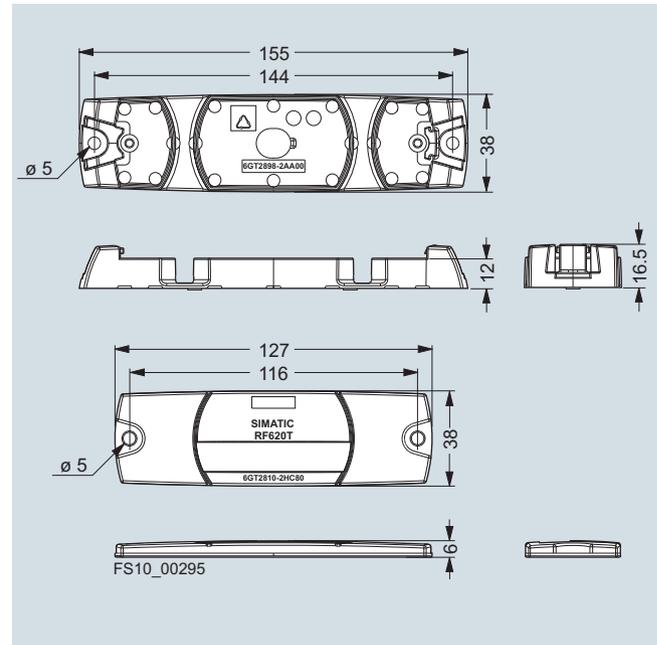
Article number	6GT2810-2HC81
Product type designation	RF620T transponder
Suitability for operation	RF600
Mechanical data	
Material	PP (polypropylene)
Color	anthracite
Tightening torque of the screw for securing the equipment maximum	1.2 Nm
Mounting distance relating to metal surfaces recommended minimum	0 mm
Permitted ambient conditions	
Ambient temperature	
• during read/write access	-25 ... +85 °C
• outside the read/write area	-40 ... +85 °C
• during storage	-40 ... +80 °C
Protection class IP	IP67
Shock resistance	According to DIN EN 60721-3-7 Class 7 M3
Shock acceleration	1 000 m/s ²
Vibrational acceleration	500 m/s ²
Resistance to mechanical stress	Torsion and bending stress not per- missible
Design, dimensions and weight	
Width	38 mm
Height	6 mm
Depth	127 mm
Net weight	18 g
Mounting type	gluing, 2 x M5 screws, spacer (see accessories)
Product properties, functions, components general	
Product feature	
• printable	Yes
Printing process	Laser inscription
Accessories	
Accessories	Spacers

Selection and ordering data

	Article No.
SIMATIC RF620T container transponder Frequency 860 MHz to 960 MHz (ETSI, FCC) Ordering quantity 20 units or a multiple thereof.	6GT2810-2HC81
Accessories	
Spacer For SIMATIC RF620T, for mounting on metal; dimensions L x W x H (mm) 155 x 38 x 12 Ordering quantity 20 units or a multiple thereof.	6GT2898-2AA00



Dimensional drawings



SIMATIC RF620T container transponder

RFID systems for the UHF range

SIMATIC RF600 transponders

RF622T

Overview



4 Kbyte



ISO

The SIMATIC RF622T transponder has a capacity of 4 KB FRAM, and enables the storage of up to 3 424 bytes of user data on tagged objects, as well as facilitating rapid access to them. It is therefore ideally suited to use in distributed configurations in the fields of production control, asset management and intra-logistics.

The SIMATIC RF622T offers a considerable reading range of up to 3 meters on non-metallic surfaces. It can also be fixed directly to metal surfaces using the optional spacer.

Technical specifications

Article number	6GT2810-4HC80
Product type designation	RF622T transponder
Suitability for operation	RF600
Wireless frequencies	
Operating frequency	860 ... 960 MHz
Electrical data	
Range maximum	3 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
http://support.automation.siemens.com/WWW/view/en/67384964	
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s
Product feature multitag-capable	Yes
Polarization	Linear
Product component Backup battery	No
Memory	
Type of memory	FRAM
Storage capacity of the user memory	3 424 byte
Type of memory organization	EPC memory 496 bits, user memory 3 424 bytes, TID memory 32 bytes
Number of read cycles at ambient temperature < 40 °C maximum	10 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	10 000 000 000
Data retention time at ambient temperature < 40 °C not less than	10 y
Property of memory	lock, unlock, write protection, pass- word protection
Type of transponder chip used	Fujitsu MB97R803

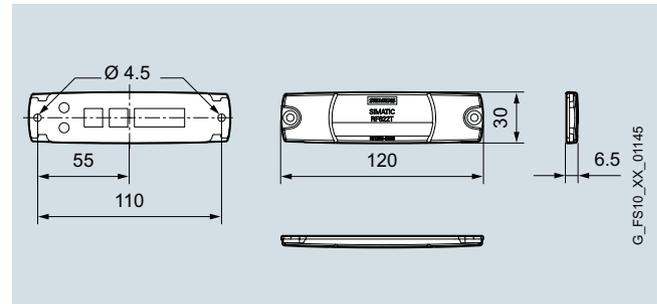
Article number	6GT2810-4HC80
Product type designation	RF622T transponder
Suitability for operation	RF600
Mechanical data	
Material	PA12
Color	anthracite
Tightening torque of the screw for securing the equipment maximum	1 Nm
Mounting distance relating to metal surfaces recommended minimum	5 mm
Permitted ambient conditions	
Ambient temperature	
• during read/write access	-20 ... +85 °C
• outside the read/write area	-40 ... +85 °C
• during storage	-40 ... +80 °C
Protection class IP	IP67
Shock resistance	According to DIN EN 60721-3-7 Class 7 M3
Shock acceleration	1 000 m/s ²
Vibrational acceleration	500 m/s ²
Resistance to mechanical stress	Torsion and bending stress not permissible
Design, dimensions and weight	
Width	120 mm
Height	6.5 mm
Depth	30 mm
Net weight	4 g
Mounting type	2 screws M4, spacer (see accessories)
Product properties, functions, components general	
Product feature	
• silicon-free	Yes
• printable	Yes
Printing process	Laser inscription
Accessories	
Accessories	Spacers

Selection and ordering data

	Article No.
SIMATIC RF622T SmartLabel Frequency: 860 to 960 MHz, EPC: 496 bits, user memory: 3 424 bytes Plastic, dimensions (mm): 120 x 30 x 6.5; ordering quantity 10 units or a multiple thereof.	6GT2810-4HC80
Accessories	
Spacer Spacer, necessary for fixing to metal surfaces Dimensions (mm): 130 x 31.5 x 12; ordering quantity 10 units or a multiple thereof.	6GT2898-3AA00



Dimensional drawings



RF622T large-memory transponder

RFID systems for the UHF range

SIMATIC RF600 transponders

RF625T

Overview



The SIMATIC RF625T disk transponder can be recessed in metal, as well as flush-mounted on metal and on non-metallic surfaces.

Thanks to its rugged design and high IP68 degree of protection, it is ideal for use in industrial environments, even for demanding production processes.

The SIMATIC RF625T can not only be used for applications in the field of installation, production and logistics, but also for the permanent equipping of tools, machines and plants for RFID-based asset management.

This transponder is available in two frequency versions for 865 to 868 MHz (ETSI) and 902 to 928 MHz (FCC, CMIIT).



Technical specifications

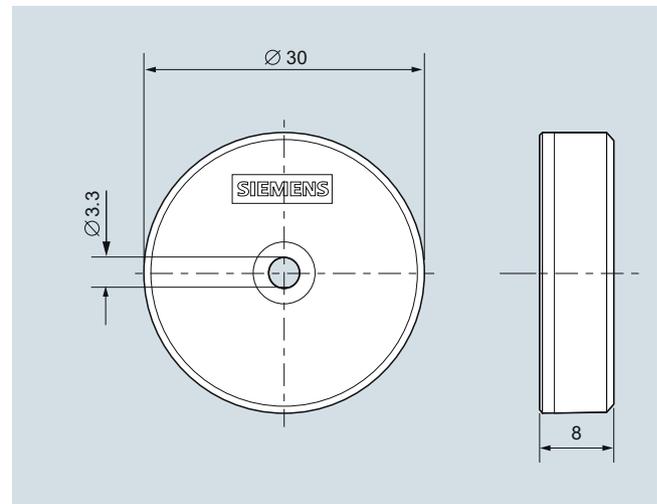
	6GT2810-2EE00	6GT2810-2EE01
Article number	6GT2810-2EE00	6GT2810-2EE01
Product type designation	RF625T transponder	RF625T transponder
Suitability for operation	RF600	RF600
Wireless frequencies		
Operating frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Range maximum	1.5 m; observe system manual RF600: overrange is possible, range is reader dependent: observe http://support.automation.siemens.com/WW/view/en/67384964	1.5 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s	320 kbit/s
Product feature multitag-capable	Yes	Yes
Polarization	Linear	Linear
Product component Backup battery	No	No
Memory		
Type of memory	EEPROM	EEPROM
Storage capacity of the user memory	64 byte	64 byte
Type of memory organization	EPC memory 96/128 bits, user memory 64 bytes (512 bits), TID memory 4 bytes	EPC memory 96/128 bits, user memory 64 bytes (512 bits), TID memory 4 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	100 000	100 000
Data retention time at ambient temperature < 40 °C not less than	10 y	10 y
Property of memory	lock, unlock, write protection, password protection	lock, unlock, write protection, password protection
Type of transponder chip used	IMPINJ MONZA 4QT	IMPINJ MONZA 4QT
Mechanical data		
Material	PA6.6	PA6.6
Color	black	black
Tightening torque of the screw for securing the equipment maximum	1 Nm	1 Nm
Mounting distance relating to metal surfaces recommended minimum	0 mm	0 mm

Article number	6GT2810-2EE00	6GT2810-2EE01
Product type designation	RF625T transponder	RF625T transponder
Suitability for operation	RF600	RF600
Permitted ambient conditions		
Ambient temperature		
• during read/write access	-25 ... +85 °C	-25 ... +85 °C
• outside the read/write area	-40 ... +125 °C	-40 ... +125 °C
• during storage	-40 ... +125 °C	-40 ... +125 °C
Protection class IP	IP68 / IPx9K	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 Class 7 M3	According to DIN EN 60721-3-7 Class 7 M3
Shock acceleration	1 000 m/s ²	1 000 m/s ²
Vibrational acceleration	500 m/s ²	500 m/s ²
Design, dimensions and weight		
Height	8 mm	8 mm
Diameter	30 mm	30 mm
Mounting type	gluing, M3 screw	gluing, M3 screw
Product properties, functions, components general		
Product feature		
• printable	No	No
Standards, specifications, approvals		
MTBF	1 141 y	1 141 y

Selection and ordering data

	Article No.
SIMATIC RF625T disk transponder	
Ordering quantity 20 units or a multiple thereof.	
• Frequency 865 MHz to 868 MHz (ETSI)	6GT2810-2EE00
• Frequency 902 MHz to 928 MHz (FCC)	6GT2810-2EE01

Dimensional drawings



SIMATIC RF625T disk transponder

RFID systems for the UHF range

SIMATIC RF600 transponders

RF630T

Overview



The SIMATIC RF630T screw transponder is particularly suitable for controlling and monitoring production processes. It can be automatically screwed on to products such as motors or gearbox casings by means of robots and using the M6 grub screw.

The SIMATIC RF630T is suitable for industrial requirements. Its rugged and highly resistant to detergents.

It can be attached to materials such as plastic or wood as well as directly onto metal.

This transponder is available in two frequency versions for 865 to 868 MHz (ETSI) and 902 to 928 MHz (FCC, CMIIT).



Technical specifications

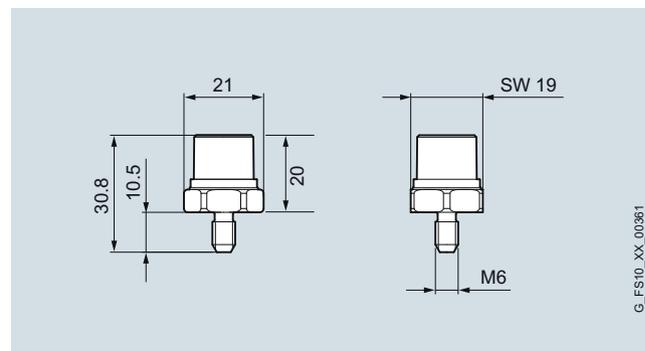
	6GT2810-2EC00	6GT2810-2EC10
Article number	RF630T transponder	RF630T transponder
Product type designation	RF600	RF600
Suitability for operation		
Wireless frequencies		
Operating frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Range maximum	2 m; observe system manual RF600: overrange is possible, range is reader dependent: observe http://support.automation.siemens.com/WW/view/en/67384964	2 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s	320 kbit/s
Product feature multitag-capable	Yes	Yes
Polarization	Linear	Linear
Product component Backup battery	No	No
Memory		
Type of memory	EEPROM	EEPROM
Storage capacity of the user memory	64 byte	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 bytes (512 bits), TID memory 8 bytes	EPC memory 96/240 bits, user memory 64 bytes (512 bits), TID memory 8 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	100 000	100 000
Data retention time at ambient temperature < 40 °C not less than	10 y	10 y
Property of memory	lock, unlock, write protection, password protection	lock, unlock, write protection, password protection
Type of transponder chip used	NXP G2XM	NXP G2XM
Mechanical data		
Material	PA6.6 GF / stainless steel	PA6.6 GF / stainless steel
Color	black silver	black silver
Tightening torque of the screw for securing the equipment maximum	6 Nm	6 Nm
Mounting distance relating to metal surfaces recommended minimum	0 mm	0 mm

Article number	6GT2810-2EC00	6GT2810-2EC10
Product type designation	RF630T transponder	RF630T transponder
Suitability for operation	RF600	RF600
Permitted ambient conditions		
Ambient temperature		
• during read/write access	-25 ... +85 °C	-25 ... +85 °C
• outside the read/write area	-40 ... +125 °C	-40 ... +125 °C
• during storage	-40 ... +125 °C	-40 ... +125 °C
Protection class IP	IP68 / IPx9K	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 Class 7 M3	According to DIN EN 60721-3-7 Class 7 M3
Shock acceleration	1 000 m/s ²	1 000 m/s ²
Vibrational acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weight		
Height	20 mm	20 mm
Diameter	21 mm	21 mm
Net weight	22 g	22 g
Mounting type	screwing (M6)	screwing (M6)
Product properties, functions, components general		
Product feature		
• printable	No	No
Standards, specifications, approvals		
MTBF	1 712 y	1 712 y

Selection and ordering data

	Article No.
SIMATIC RF630T screw transponder	
Ordering quantity 10 units or a multiple thereof.	
• Frequency 865 to 868 MHz (ETSI)	6GT2810-2EC00
• Frequency 902 to 928 MHz (FCC)	6GT2810-2EC10

Dimensional drawings



SIMATIC RF630T screw transponder

RFID systems for the UHF range

SIMATIC RF600 transponders

RF640T

Overview



The SIMATIC RF640T tool transponder can be used directly on metal, and is therefore particularly suitable for tracking tools, containers and metallic equipment (asset management).

Its rugged and yet compact design, its high degree of protection (IP68/IPx9K) and resistance to mineral oils, lubricants and cleaning agents make it the first choice in industrial environments. The European version has ATEX approval.

This transponder is available in two frequency versions for 865 to 868 MHz (ETSI) and 902 to 928 MHz (FCC, CMIIT).



Technical specifications

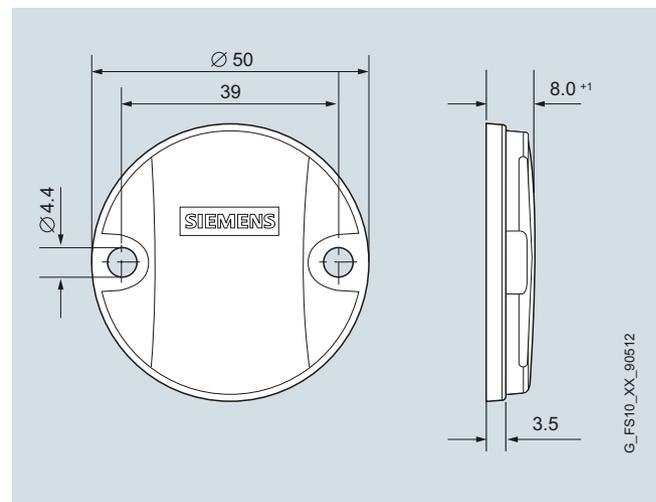
	6GT2810-2DC00	6GT2810-2DC10
Article number	6GT2810-2DC00	6GT2810-2DC10
Product type designation	RF640T transponder	RF640T transponder
Suitability for operation	RF600	RF600
Wireless frequencies		
Operating frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Range maximum	4 m; observe system manual RF600: overrange is possible, range is reader dependent: observe http://support.automation.siemens.com/WWW/view/en/67384964	4 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s	320 kbit/s
Product feature multitag-capable	Yes	Yes
Polarization	Linear	Linear
Product component Backup battery	No	No
Memory		
Type of memory	EEPROM	EEPROM
Storage capacity of the user memory	64 byte	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 bytes (512 bits), TID memory 8 bytes	EPC memory 96/240 bits, user memory 64 bytes (512 bits), TID memory 8 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	100 000	100 000
Data retention time at ambient temperature < 40 °C not less than	10 y	10 y
Property of memory	lock, unlock, write protection, password protection	lock, unlock, write protection, password protection
Type of transponder chip used	NXP G2XM	NXP G2XM

Article number	6GT2810-2DC00	6GT2810-2DC10
Product type designation	RF640T transponder	RF640T transponder
Suitability for operation	RF600	RF600
Mechanical data		
Material	PA12	PA12
Color	anthracite	anthracite
Tightening torque of the screw for securing the equipment maximum	1.2 Nm	1.2 Nm
Mounting distance relating to metal surfaces recommended minimum	0 mm	0 mm
Permitted ambient conditions		
Ambient temperature		
• during read/write access	-25 ... +85 °C	-25 ... +85 °C
• outside the read/write area	-40 ... +125 °C	-40 ... +125 °C
• during storage	-40 ... +125 °C	-40 ... +125 °C
Protection class IP	IP68 / IPx9K	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 Class 7 M3	According to DIN EN 60721-3-7 Class 7 M3
Shock acceleration	1 000 m/s ²	1 000 m/s ²
Vibrational acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weight		
Height	8 mm	8 mm
Diameter	50 mm	50 mm
Net weight	13 g	13 g
Mounting type	2 x M4 screws	2 x M4 screws
Product properties, functions, components general		
Product feature		
• silicon-free	Yes	Yes
• printable	No	No
Standards, specifications, approvals		
Certificate of suitability	Ex: II 2 G Ex ib IIC T6 to T3, II 2 D Ex ibD 21 T140°C, -25 °C < Ta° < +85 °C	
MTBF	1 757 y	1 757 y

Selection and ordering data

	Article No.
SIMATIC RF640T tool transponder	
Ordering quantity 10 units or a multiple thereof.	
• Frequency 865 MHz to 868 MHz (ETSI)	6GT2810-2DC00
• Frequency 902 MHz to 928 MHz (FCC)	6GT2810-2DC10

Dimensional drawings



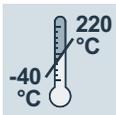
SIMATIC RF640T tool transponder

RFID systems for the UHF range

SIMATIC RF600 transponders

RF680T

Overview



The heat-resistant SIMATIC RF680T transponder has a wide range and, thanks to its high IP68/IPx9K degree of protection and its resistance to chemicals, it can even be used in harsh industrial applications, for example, in automotive production (including identification of skids in paint shops) or in the chemical industry. The transponder is silicon-free and withstands temperatures up to 220 °C. The storage capacity is 96/240 bit Electronic Product Code (EPC) plus 512-bit user memory. Thanks to its broadband design, the transponder can be used in numerous countries. The European version has ATEX approval.

Technical specifications

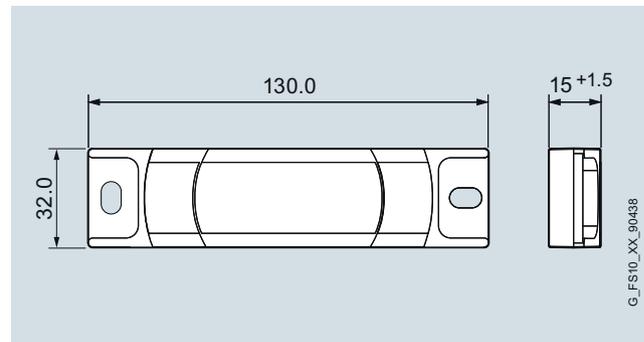
Article number	6GT2810-2HG80
Product type designation	RF680T transponder
Suitability for operation	RF600
Wireless frequencies	
Operating frequency	865 ... 928 MHz
Electrical data	
Range maximum	4 m; observe system manual RF600: overrange is possible, range is reader dependent: observe
http://support.automation.siemens.com/WWW/view/en/67384964	
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with radio transmission maximum	320 kbit/s
Product feature multitag-capable	Yes
Polarization	Linear
Product component Backup battery	No
Memory	
Type of memory	EEPROM
Storage capacity of the user memory	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 bytes (512 bits), TID memory 8 bytes
Number of read cycles at ambient temperature < 40 °C maximum	100 000 000 000 000
Number of write cycles at ambient temperature < 40 °C maximum	100 000
Data retention time at ambient temperature < 40 °C not less than	10 y
Property of memory	lock, unlock, write protection, password protection
Type of transponder chip used	NXP G2XM

Article number	6GT2810-2HG80
Product type designation	RF680T transponder
Suitability for operation	RF600
Mechanical data	
Material	PPS
Color	black
Tightening torque of the screw for securing the equipment maximum	1 Nm
Mounting distance relating to metal surfaces recommended minimum	0 mm
Permitted ambient conditions	
Ambient temperature	
• during read/write access	-25 ... +100 °C
• outside the read/write area	-40 ... +220 °C
• during storage	-40 ... +100 °C
Ambient condition for operation	Operating temperature permanent up to 140 °C, for 5 000 hours or 3 000 cycles up to 200 °C, for 2 000 hours or 1 500 cycles up to 220 °C
Protection class IP	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 Class 7 M3
Shock acceleration	1 000 m/s ²
Vibrational acceleration	200 m/s ²
Resistance to mechanical stress	Torsion and bending stress not permissible
Design, dimensions and weight	
Width	32 mm
Height	15 mm
Depth	130 mm
Net weight	50 g
Mounting type	2 x M6 screws
Product properties, functions, components general	
Product feature	
• silicon-free	Yes
• printable	No
Standards, specifications, approvals	
Certificate of suitability	II 2G Ex ib IIB T6 to T2 Gb, II 2D Ex ib IIB T135 °C Db
MTBF	1 940 y

Selection and ordering data

	Article No.
SIMATIC RF680T high-temperature transponder Frequency 865 to 928 MHz (ETSI, FCC, CMIIT). Ordering quantity 10 units or a multiple thereof.	6GT2810-2HG80

Dimensional drawings



SIMATIC RF680T high-temperature transponder

RFID systems for the UHF range

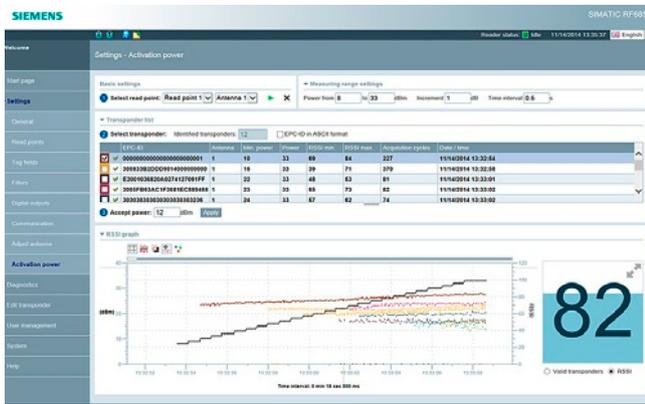
SIMATIC RF600 readers

Introduction

Overview

Reader	Features	Page	Reader	Features	Page
RF650R 	<p>The SIMATIC RF650R reader is a powerful UHF-RFID reader for use with as many as four external antennas.</p> <p>The reader is connected to the IT level via Ethernet and TCP/IP (XML protocol).</p>	3/30	RF650M 	<p>The SIMATIC RF650M mobile handheld terminal is a powerful and compact RFID reader for applications in the field of production logistics, warehouse management, inventories and service.</p> <p>Transponder data can be displayed and edited using a preinstalled application. Furthermore, specific Windows applications can be developed for the device.</p> <p>The handheld forwards the data stored on the transponder to the downstream systems via either WLAN or the interfaces of the docking station (USB, Ethernet).</p>	3/41
RF680R 	<p>The SIMATIC RF680R reader is a powerful UHF-RFID reader for use with as many as four external antennas.</p> <p>There are two methods of integrating the reader into an automation system: Either directly via the integrated PROFINET interface or via the ASM 456 communication module on PROFIBUS.</p> <p>The readers are connected to the IT level via Ethernet with TCP/IP and XML.</p>	3/33			
RF685R 	<p>The SIMATIC RF685R reader is a powerful UHF RFID reader with an integral antenna and a connection for an external antenna.</p> <p>There are two methods of integrating the reader into an automation system: Either directly via the integrated PROFINET interface or via the ASM 456 communication module on PROFIBUS.</p> <p>The readers are connected to the IT level via Ethernet with TCP/IP and XML.</p>	3/37			

Overview



Software installations for commissioning or diagnostics are a thing of the past with the SIMATIC RF650R, RF680R and RF685R readers. The user interface can be easily called up with an Internet browser. In this way, maintenance engineers, for example, can connect remotely to a reader and carry out the relevant tasks from the office.

The orientation of the antennas is accomplished within a few minutes with the aid of the corresponding menu. The Web-based interface gives the user immediate feedback about how changing the antenna position or orientation affects the acquisition. Especially practical: The same information is also shown via a brightly lit LED row on the housing of the reader – so that the setup can also be performed in obstructed installations.

In the Diagnostics menu, all information necessary to assess the quality of the reading results during operation is displayed, e.g. the signal strength (RSSI), the acquisition frequency and the transmitting power effectively used.

Moreover, even the transponders filtered out on the basis of the "UHF for Industry" algorithms used are shown. The effect of these filter functions can thus be easily analyzed and their parameters quickly optimized.

A built-in diagnostics log records all events including read and write errors or changes made to the parameters of the reader. In this way, a "glimpse into the past" can be made to retrospectively analyze a sporadically occurring error, for example.

RFID systems for the UHF range

SIMATIC RF600 readers

RF650R

Overview



The high-performance SIMATIC RF650R reader has four antenna connections that can be configured as required for individual read stations, or as gates. The high radiated power of up to 2 W ERP / 4 W EIRP (dependent on antenna and cable) permits long ranges of up to 8 m in portal applications.

The integrated processing logic of the reader enables numerous functions of the higher-level software layers to be executed in the device itself. If necessary, the digital outputs for signaling functions are automatically controlled. The advantage of the SIMATIC RF650R is that its intelligence considerably reduces the cost for additional software modules (RFID middleware).

Configuration, commissioning and diagnosis is performed via an easy-to-use Web interface that can be operated with a standard Internet browser.

The reader supports commissioning, such as the orientation of the antenna(s), or the determining of the necessary radiant power by means of corresponding tools. A variety of diagnostic displays, such as the live radio signal diagram or the diagnostic logbook considerably simplifies and speeds up troubleshooting.

Data communication in the SIMATIC RF650R is executed by means of an XML protocol via TCP/IP. The digital inputs and outputs (DI/DO) are used for simple process interfacing (sensors, actuators).

All antennas of the RF600 series are supported.

Application

The stationary SIMATIC RF650R reader with its integral antenna is ideal for typical gate applications in logistics, distribution, supply chain management and asset management.

The SIMATIC RF650R supports the established EPCglobal Class 1, Gen 2 standard, among others, and is offered in three versions: compliant with ETSI for Europe, FCC for USA/Canada, and CMIIT for China.

Technical specifications

Article number	6GT2811-6AB20-0AA0	6GT2811-6AB20-1AA0	6GT2811-6AB20-2AA0
Product type designation	RF650R ETSI reader	RF650R FCC reader	RF650R CMIIT reader
Suitability for operation	RF600 transponders, for connecting via Ethernet	RF600 transponders, for connecting via Ethernet	RF600 transponders, for connecting via Ethernet
Wireless frequencies			
Operating frequency	865 ... 868 MHz	902 ... 928 MHz	920 ... 925 MHz
Transmit power	3 ... 1 000 mW	3 ... 1 000 mW	3 ... 1 000 mW
Effective radiant power			
• for each external antenna maximum	2 000 mW		2 000 mW
Equivalent isotropically radiated power			
• for each external antenna maximum		4 000 mW	
Electrical data			
Range maximum	8 m; Observe system manual RF600: Overreaches are possible, range is dependent on transponder type: observe http://support.automation.siemens.com/WW/view/en/67384964	8 m; Observe system manual RF600: Overreaches are possible, range is dependent on transponder type: observe	8 m; Observe system manual RF600: Overreaches are possible, range is dependent on transponder type: observe
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6B/-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6B/-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6B/-6C
Transfer rate with radio transmission maximum	300 kbit/s	300 kbit/s	300 kbit/s
Product feature multitag-capable	Yes	Yes	Yes
Transmission time for user data			
• for write access per byte typical	2 ms	2 ms	2 ms
• for read access per byte typical	0.15 ms	0.15 ms	0.15 ms

RFID systems for the UHF range

SIMATIC RF600 readers

RF650R

Article number	6GT2811-6AB20-0AA0	6GT2811-6AB20-1AA0	6GT2811-6AB20-2AA0
Product type designation	RF650R ETSI reader	RF650R FCC reader	RF650R CMIIT reader
Interfaces			
Number of external antennas	4	4	4
Standard for interfaces for communication	Ethernet	Ethernet	Ethernet
Type of electrical connection			
• for external antenna(s)	RP-TNC	RP-TNC	RP-TNC
• for supply voltage	M12, 8-pin, connector	M12, 8-pin, connector	M12, 8-pin, connector
• for communications interface	RJ45	RJ45	RJ45
• at the digital inputs/outputs	M12, 12-pin, female connector	M12, 12-pin, female connector	M12, 12-pin, female connector
Number of digital inputs	4	4	4
Number of digital outputs	4	4	4
Mechanical data			
Material	Aluminum, Pocan	Aluminum, Pocan	Aluminum, Pocan
Color	silver, TI-Grey	silver, TI-Grey	silver, TI-Grey
Mounting distance relating to metal surfaces recommended minimum	0 mm	0 mm	0 mm
Supply voltage, current consumption, power loss			
Supply voltage			
• at DC Rated value	24 V	24 V	24 V
• at DC	20 ... 30 V	20 ... 30 V	20 ... 30 V
Consumed current at DC at 24 V			
• typical	0.37 A	0.37 A	0.37 A
• maximum	2 A	2 A	2 A
Permitted ambient conditions			
Ambient temperature			
• during operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Ambient condition for operation	With operating temperature below -20 °C: Warming-up time at least 10 minutes	With operating temperature below -20 °C: Warming-up time at least 10 minutes	With operating temperature below -20 °C: Warming-up time at least 10 minutes
Protection class IP	IP30	IP30	IP30
Shock resistance	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Shock, max. permissible	30 m/s ²	30 m/s ²	30 m/s ²
Vibration according to	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Vibration, max. permissible	30 m/s ²	30 m/s ²	30 m/s ²
Design, dimensions and weight			
Width	258 mm	258 mm	258 mm
Height	258 mm	258 mm	258 mm
Depth	80 mm	80 mm	80 mm
Net weight	2.4 kg	2.4 kg	2.4 kg
Mounting type	Vesa 100 with 4 x M4 screws, top-hat rail 35 mm, profile rail S7-300, S7-1200 or S7-1500	Vesa 100 with 4 x M4 screws, top-hat rail 35 mm, profile rail S7-300, S7-1200 or S7-1500	Vesa 100 with 4 x M4 screws, top-hat rail 35 mm, profile rail S7-300, S7-1200 or S7-1500
Cable length			
• of antenna cable minimum	1 m	1 m	1 m
• of antenna cable maximum	40 m	40 m	40 m
Product properties, functions, components general			
Display version	LED row with 6 LEDs	LED row with 6 LEDs	LED row with 6 LEDs
Product feature silicon-free	Yes	Yes	Yes
Standards, specifications, approvals			
Certificate of suitability	Wireless according to R&TTE guideline, CE, IEC 60950	Wireless according to FCC, IC (Canada), cULus	RaWireless according to CMIIT
MTBF	31 y	31 y	31 y
Accessories			
Accessories	up to 4 external antennas, set for mounting on top-hat rail or profile rail	up to 4 external antennas, set for mounting on top-hat rail or profile rail	up to 4 external antennas, set for mounting on top-hat rail or profile rail

RFID systems for the UHF range

SIMATIC RF600 readers

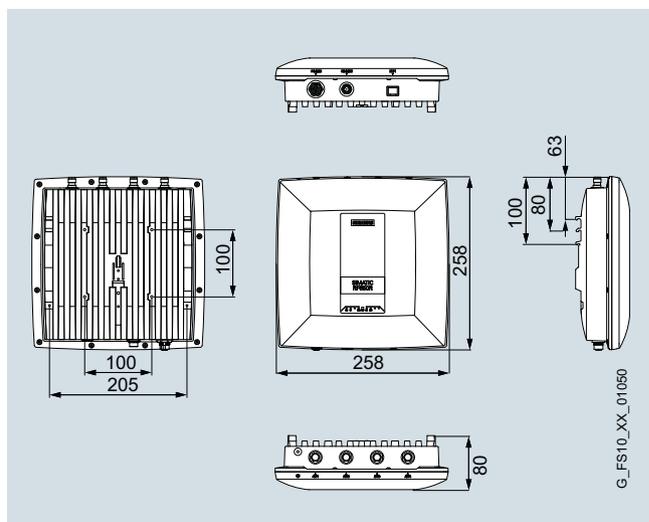
RF650R

Selection and ordering data

	Article No.
SIMATIC RF650R reader (ETSI) UHF RFID reader for frequencies from 865 to 868 MHz for connecting up to four external antennas, suitable for inclusion in IT systems via Ethernet/IP with TCP/IP.	6GT2811-6AB20-0AA0
SIMATIC RF650R reader (FCC) UHF RFID reader for frequencies from 902 to 928 MHz for connecting up to four external antennas, suitable for inclusion in IT systems via Ethernet/IP with TCP/IP.	6GT2811-6AB20-1AA0
SIMATIC RF650R reader (CMIIT) UHF RFID reader for frequencies from 920 to 925 MHz for connecting up to four external antennas, suitable for inclusion in IT systems via Ethernet/IP with TCP/IP.	6GT2811-6AB20-2AA0
Accessories	
Antennas For proper functioning of the SIMATIC RF650R Reader, we recommend using the following antennas: <ul style="list-style-type: none"> • RF620A (siehe page 3/45) • RF640A (siehe page 3/48) • RF642A (siehe page 3/48) • RF660A (siehe page 3/51) 	
DI/DO cable For the connection of digital sensors and actuators to SIMATIC RF650R. M12 connector on reader side, open stranded wires on sensor side. DI/DO cable, PUR material, black, shielded, M12, 12 x 0.14 mm ² , length 5 m	6GT2891-0CH50
	
Wide-range power supply Primary side: 100 ... 240 V AC, 120 ... 353 V DC, secondary side: 24 V DC, 3 A, with no-load protection, with continuous short-circuit protection <ul style="list-style-type: none"> • EU connector version • UK connector version • US connector version 	6GT2898-0AA00 6GT2898-0AA10 6GT2898-0AA20
Cable for wide-range power supply 24 V DC, PUR material, length 5 m.	6GT2891-0PH50
	
Cable for 24 V power supply 24 V DC, material PUR, trailable, length 5 m, open ends	6GT2891-4EH50
	

	Article No.
Ethernet connection <ul style="list-style-type: none"> • Ethernet cable RJ45 to RJ45, 10 m • Ethernet cable RJ45 to RJ45, trailable, metal connector, various lengths 	6XV1870-3QN10 6XV1871-5Bxxx
Set of protective caps To prevent contamination of unused connections, we recommend the use of protective caps. Contents: 3 protective caps for antenna connection, one protective cap for DI/DO connection, 2 protective caps for Ethernet connection.	6GT2898-4AA10
DIN rail mounting kit For mounting the reader on a DIN rail (35 mm) or mounting rail S7-300/S7-1500	6GT2890-0AB00
	

Dimensional drawings



SIMATIC RF650R reader

G_FS10_XX_01050

Overview



The high-performance SIMATIC RF680R reader has four antenna connections that can be configured as required for individual read stations, or as gates. The high radiated power of up to 2 W ERP / 4 W EIRP (dependent on antenna and cable) permits long ranges of up to 8 m in portal applications.

The integrated processing logic of the reader enables numerous functions of the higher-level software layers to be executed in the device itself. If necessary, the digital outputs for signaling functions are automatically controlled.

The advantage of the SIMATIC RF680R is that its intelligence considerably reduces the cost for additional software modules (RFID middleware).

The configuration, commissioning and diagnosis is performed via an easy-to-use Web interface that can be operated with a standard Internet browser. Access to the user interface data is also possible via the TIA Portal.

The reader supports commissioning, such as the orientation of the antenna(s), or determining the radiant power required by means of corresponding software tools and of the extended LED display.

A variety of diagnostic displays, such as the live radio signal diagram or the diagnostic logbook considerably simplifies and speeds up troubleshooting.

Data communication in the RF680R is executed either via an XML protocol with TCP/IP or via an S7 protocol via PROFINET. The reader can be operated with PROFIBUS via the communication module ASM 456. Two Ethernet interfaces are available for data and diagnostics, one of which has PROFINET capability. The digital inputs and outputs (DI/DO) are used for simple process interfacing (sensors, actuators). The digital I/Os can be mapped directly into the IO image of a SIMATIC controller.

All antennas of the RF600 series are supported.

Note:

If the reader is used together with the ASM 456 communication module, be aware that only one reader can be connected to this communication module at a time. Two connected readers would exceed the maximum permissible power consumption.

Application

The stationary SIMATIC RF680R reader is ideal for applications in production, production-level logistics, distribution, supply chain management, asset management, service processes or material flow control.

The SIMATIC RF680R supports the established EPCglobal Class 1, Gen 2 standard and is offered in three versions: compliant with ETSI for Europe, FCC for USA/Canada, and CMIIT for China.

Technical specifications

	6GT2811-6AA10-0AA0	6GT2811-6AA10-1AA0	6GT2811-6AA10-2AA0
Article number	6GT2811-6AA10-0AA0	6GT2811-6AA10-1AA0	6GT2811-6AA10-2AA0
Product type designation	RF680R ETSI reader	RF680R FCC reader	RF680R CMIIT reader
Suitability for operation	RF600 transponder, for direct connection to Ethernet/PROFINET or PROFIBUS via communication module	RF600 transponder, for direct connection to Ethernet/PROFINET or PROFIBUS via communication module	RF600 transponder, for direct connection to Ethernet/PROFINET or PROFIBUS via communication module
Wireless frequencies			
Operating frequency	865 ... 868 MHz	902 ... 928 MHz	920 ... 925 MHz
Transmit power	3 ... 2 000 mW	3 ... 2 000 mW	3 ... 2 000 mW
Effective radiant power			
• for each external antenna maximum	2 000 mW		2 000 mW
Equivalent isotropically radiated power			
• for each external antenna maximum		4 000 mW	

RFID systems for the UHF range

SIMATIC RF600 readers

RF680R

Article number	6GT2811-6AA10-0AA0	6GT2811-6AA10-1AA0	6GT2811-6AA10-2AA0
Product type designation	RF680R ETSI reader	RF680R FCC reader	RF680R CMIIT reader
Electrical data			
Range maximum	8 m; Observe system manual RF600: Over-reaches are possible, range is dependent on transponder type: observe http://support.automation.siemens.com/WW/view/en/67384964	8 m; Observe system manual RF600: Over-reaches are possible, range is dependent on transponder type: observe	8 m; Observe system manual RF600: Over-reaches are possible, range is dependent on transponder type: observe
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6B/-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6B/-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6B/-6C
Transfer rate with radio transmission maximum	300 kbit/s	300 kbit/s	300 kbit/s
Product feature multitag-capable	Yes	Yes	Yes
Transmission time for user data			
• for write access per byte typical	2 ms	2 ms	2 ms
• for read access per byte typical	0.15 ms	0.15 ms	0.15 ms
Interfaces			
Number of external antennas	4	4	4
Standard for interfaces for communication	Ethernet/PROFINET, RS422	Ethernet/PROFINET, RS422	Ethernet/PROFINET, RS422
Type of electrical connection			
• for external antenna(s)	RP-TNC	RP-TNC	RP-TNC
• for supply voltage	M12, 8-pin, connector	M12, 8-pin, connector	M12, 8-pin, connector
• for communications interface	2 x M12 4-pin D-coded, M12 8-pin (RS422)	2 x M12 4-pin D-coded, M12 8-pin (RS422)	2 x M12 4-pin D-coded, M12 8-pin (RS422)
• at the digital inputs/outputs	M12, 12-pin, female connector	M12, 12-pin, female connector	M12, 12-pin, female connector
Number of digital inputs	4	4	4
Number of digital outputs	4	4	4
Mechanical data			
Material	Aluminum, Pocan	Aluminum, Pocan	Aluminum, Pocan
Color	silver, TI-Grey	silver, TI-Grey	silver, TI-Grey
Mounting distance relating to metal surfaces recommended minimum	0 mm	0 mm	0 mm
Supply voltage, current consumption, power loss			
Supply voltage			
• at DC Rated value	24 V	24 V	24 V
• at DC	20 ... 30 V	20 ... 30 V	20 ... 30 V
Consumed current at DC at 24 V			
• typical	0.38 A	0.38 A	0.38 A
• maximum	2 A	2 A	2 A
Permitted ambient conditions			
Ambient temperature			
• during operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Ambient condition for operation	With operating temperature below -20 °C: Warming-up time at least 10 minutes	With operating temperature below -20 °C: Warming-up time at least 10 minutes	With operating temperature below -20 °C: Warming-up time at least 10 minutes
Protection class IP	IP65	IP65	IP65
Shock resistance	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Shock, max. permissible	30 m/s ²	30 m/s ²	30 m/s ²
Vibration according to	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Vibration, max. permissible	30 m/s ²	30 m/s ²	30 m/s ²

RFID systems for the UHF range

SIMATIC RF600 readers

RF680R

Article number	6GT2811-6AA10-0AA0	6GT2811-6AA10-1AA0	6GT2811-6AA10-2AA0
Product type designation	RF680R ETSI reader	RF680R FCC reader	RF680R CMIIT reader
Design, dimensions and weight			
Width	258 mm	258 mm	258 mm
Height	258 mm	258 mm	258 mm
Depth	80 mm	80 mm	80 mm
Net weight	2.4 kg	2.4 kg	2.4 kg
Mounting type	Vesa 100 with 4 x M4 screws, top-hat rail 35 mm, profile rail S7-300, S7-1200 or S7-1500	Vesa 100 with 4 x M4 screws, top-hat rail 35 mm, profile rail S7-300, S7-1200 or S7-1500	Vesa 100 with 4 x M4 screws, top-hat rail 35 mm, profile rail S7-300, S7-1200 or S7-1500
Cable length			
• of antenna cable minimum	1 m	1 m	1 m
• of antenna cable maximum	40 m	40 m	40 m
Product properties, functions, components general			
Display version	two LED rows with 8 and 9 LEDs	two LED rows with 8 and 9 LEDs	two LED rows with 8 and 9 LEDs
Product feature silicon-free	Yes	Yes	Yes
Standards, specifications, approvals			
Certificate of suitability	Wireless according to R&TTE guideline, CE, IEC 60950	Wireless according to FCC, IC (Canada), cULus	RaWireless according to CMIIT
MTBF	28 y	28 y	28 y
Accessories			
Accessories	up to 4 external antennas, set for mounting on top-hat rail or profile rail	up to 4 external antennas, set for mounting on top-hat rail or profile rail	up to 4 external antennas, set for mounting on top-hat rail or profile rail

RFID systems for the UHF range

SIMATIC RF600 readers

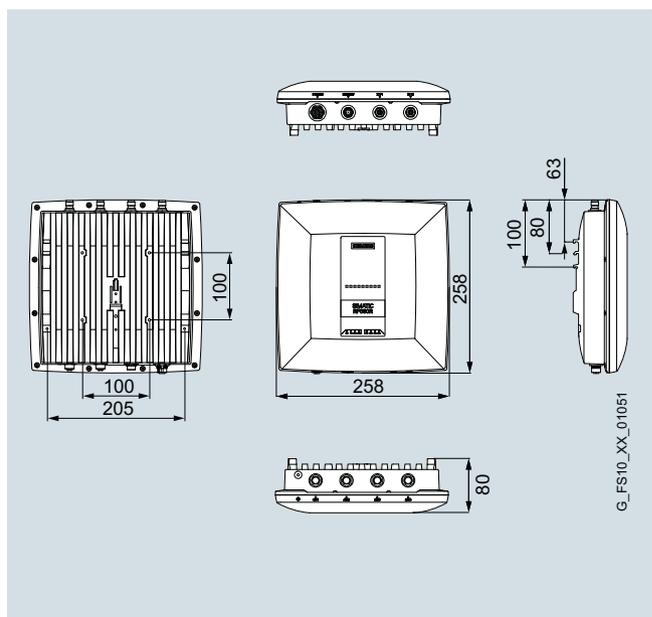
RF680R

Selection and ordering data

	Article No.
SIMATIC RF680R reader (ETSI) UHF RFID reader for frequencies from 865 to 868 MHz for connecting up to four external antennas, suitable for inclusion in IT systems and automation systems via Ethernet with TCP/IP and XML protocol or PROFINET.	6GT2811-6AA10-0AA0
SIMATIC RF680R reader (FCC) UHF RFID reader for frequencies from 902 to 928 MHz for connecting up to four external antennas, suitable for inclusion in IT systems and automation systems via Ethernet with TCP/IP and XML protocol or PROFINET.	6GT2811-6AA10-1AA0
SIMATIC RF680R reader (CMIIT) UHF RFID reader for frequencies from 920 to 925 MHz for connecting up to four external antennas, suitable for inclusion in IT and automation systems via Ethernet with TCP/IP and XML protocol or PROFINET.	6GT2811-6AA10-2AA0
Accessories	
Antennas	
For proper functioning of the SIMATIC RF680R Reader, we recommend using the following antennas: <ul style="list-style-type: none"> • RF620A (see page 3/45) • RF640A (see page 3/48) • RF642A (see page 3/48) • RF660A (see page 3/51) 	
DI/DO cable For the connection of digital sensors and actuators to SIMATIC RF680R. M12 connector on reader side, open stranded wires on sensor side. DI/DO cable, PUR material, black, shielded, M12, 12 x 0.14 mm ² , length 5 m	6GT2891-0CH50
	
Wide-range power supply Primary side: 100 ... 240 V AC, 120 ... 353 V DC, secondary side: 24 V DC, 3 A, with no-load protection, with continuous short-circuit protection <ul style="list-style-type: none"> • EU connector version • UK connector version • US connector version 	6GT2898-0AA00 6GT2898-0AA10 6GT2898-0AA20
Cable for wide-range power supply 24 V DC, PUR material, length 5 m.	6GT2891-0PH50
	
Cable for 24 V power supply 24 V DC, material PUR, trailable, length 5 m, open ends	6GT2891-4EH50
	

	Article No.
Ethernet connection <ul style="list-style-type: none"> • Ethernet cable M12 / RJ45, 5 m, RJ45 plug, obliquely angled, trailable 	6XV1871-5TH50
<ul style="list-style-type: none"> • Ethernet cable M12 / M12, 5 m, trailable. 	6XV1870-8AH50
Set of protective caps Unused connections must be fitted with a protective cap to ensure the IP65 safety class. Contents: 3 protective caps for antenna connection, one protective cap for DI/DO connection, 2 protective caps for Ethernet connection.	6GT2898-4AA10
DIN rail mounting kit For mounting the reader on a DIN rail (35 mm) or mounting rail S7-300/S7-1500	6GT2890-0AB00
	

Dimensional drawings



SIMATIC RF680R reader

Overview



The high-performance SIMATIC RF685R reader has a built-in adaptive antenna and a connection for an external antenna. This enables single reading stations with one or two antennas or two logical reading stations to be implemented for reading on conveyor systems. The high radiated power of up to 2 W ERP / 4 W EIRP (dependent on antenna and cable) permits long ranges. The high degree of protection (IP65) of the overall system enables problem-free use, even under the most difficult environmental conditions.

One special feature of the RF685R is the integrated adaptive antenna. Thanks to their variable polarization, they can achieve high reading rates, even in areas with poor radio reception. In addition, project planning and spare parts inventory management are considerably simplified. For individual reading points along a production line, the RF685R is the ideal choice of device.

Application

The SIMATIC RF685R stationary UHF reader is ideally suited for applications along a production line or for reading points that can be implemented with two antennas at maximum.

The integrated processing logic of the reader enables numerous functions of the higher-level software layers to be executed in the device itself. If necessary, the digital outputs for signaling functions are automatically controlled. The advantage of the SIMATIC RF685R is that its intelligence considerably reduces the cost for additional software modules (RFID middleware). Configuration, commissioning and diagnosis is performed via an easy-to-use Web interface that can be operated with a standard Internet browser. Access to the user interface data is also possible via the TIA Portal. The reader supports commissioning, such as the orientation of the antenna(s), or determining the radiant power required by means of corresponding software tools and the extended LED display.

A variety of diagnostic displays, such as the live radio signal diagram or the diagnostic logbook considerably simplifies and speeds up troubleshooting.

Data communication in the RF685R is executed either via an XML protocol with TCP/IP or via an S7 protocol via Profinet. Two Ethernet interfaces are available for data and diagnostics, of which one has Profinet capability.

The digital inputs and outputs (DI/DO) are used for simple process interfacing (sensors, actuators). The digital I/Os can be mapped directly into the IO image of a SIMATIC controller.

All antennas of the RF600 series are supported.

Note:

If the reader is used together with the ASM 456 communication module, be aware that only one reader can be connected to this communication module at a time. Two connected readers would exceed the maximum permissible power consumption.

RFID systems for the UHF range

SIMATIC RF600 readers

RF685R

Technical specifications

Article number	6GT2811-6CA10-0AA0	6GT2811-6CA10-1AA0	6GT2811-6CA10-2AA0
Product type designation	RF685R ETSI reader	RF685R FCC reader	RF685R CMIIT reader
Suitability for operation	RF600 transponder, for direct connection to Ethernet/PROFINET or PROFIBUS via communication module	RF600 transponder, for direct connection to Ethernet/PROFINET or PROFIBUS via communication module	RF600 transponder, for direct connection to Ethernet/PROFINET or PROFIBUS via communication module
Wireless frequencies			
Operating frequency	865 ... 868 MHz	902 ... 928 MHz	920 ... 925 MHz
Transmit power	3 ... 2 000 mW	3 ... 2 000 mW	3 ... 2 000 mW
Effective radiant power			
• for each external antenna maximum	2 000 mW		2 000 mW
• minimum	10 mW		10 mW
• maximum	2 000 mW		2 000 mW
Equivalent isotropically radiated power			
• for each external antenna maximum		4 000 mW	
• minimum		10 mW	
• maximum		4 000 mW	
Electrical data			
Range maximum	8 m; Observe system manual RF600: Overreaches are possible, range is dependent on transponder type: observe http://support.automation.siemens.com/WW/view/en/67384964	8 m; Observe system manual RF600: Overreaches are possible, range is dependent on transponder type: observe	8 m; Observe system manual RF600: Overreaches are possible, range is dependent on transponder type: observe
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6B/-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6B/-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6B/-6C
Transfer rate with radio transmission maximum	300 kbit/s	300 kbit/s	300 kbit/s
Product feature multitag-capable	Yes	Yes	Yes
Polarization	linear, circular, auto	linear, circular, auto	linear, circular, auto
Transmission time for user data			
• for write access per byte typical	2 ms	2 ms	2 ms
• for read access per byte typical	0.15 ms	0.15 ms	0.15 ms
Interfaces			
Number of external antennas	1	1	1
Standard for interfaces for communication	Ethernet/PROFINET, RS422	Ethernet/PROFINET, RS422	Ethernet/PROFINET, RS422
Type of electrical connection			
• for external antenna(s)	RP-TNC	RP-TNC	RP-TNC
• for supply voltage	M12, 8-pin, connector	M12, 8-pin, connector	M12, 8-pin, connector
• for communications interface	2 x M12 4-pin D-coded, M12 8-pin (RS422)	2 x M12 4-pin D-coded, M12 8-pin (RS422)	2 x M12 4-pin D-coded, M12 8-pin (RS422)
• at the digital inputs/outputs	M12, 12-pin, female connector	M12, 12-pin, female connector	M12, 12-pin, female connector
Number of digital inputs	4	4	4
Number of digital outputs	4	4	4
Mechanical data			
Material	Aluminum, Poca	Aluminum, Poca	Aluminum, Poca
Color	silver, TI-Grey	silver, TI-Grey	silver, TI-Grey
Mounting distance relating to metal surfaces recommended minimum	0 mm	0 mm	0 mm
Supply voltage, current consumption, power loss			
Supply voltage			
• at DC Rated value	24 V	24 V	24 V
• at DC	20 ... 30 V	20 ... 30 V	20 ... 30 V
Consumed current at DC at 24 V			
• typical	0.38 A	0.38 A	0.38 A
• maximum	2 A	2 A	2 A

RFID systems for the UHF range

SIMATIC RF600 readers

RF685R

Article number	6GT2811-6CA10-0AA0	6GT2811-6CA10-1AA0	6GT2811-6CA10-2AA0
Product type designation	RF685R ETSI reader	RF685R FCC reader	RF685R CMIIT reader
Permitted ambient conditions			
Ambient temperature			
• during operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Ambient condition for operation	With operating temperature below -20 °C: Warming-up time at least 10 minutes	With operating temperature below -20 °C: Warming-up time at least 10 minutes	With operating temperature below -20 °C: Warming-up time at least 10 minutes
Protection class IP	IP65	IP65	IP65
Shock resistance	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Shock, max. permissible	30 m/s ²	30 m/s ²	30 m/s ²
Vibration according to	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Vibration, max. permissible	30 m/s ²	30 m/s ²	30 m/s ²
Design, dimensions and weight			
Width	258 mm	258 mm	258 mm
Height	258 mm	258 mm	258 mm
Depth	80 mm	80 mm	80 mm
Net weight	2.47 kg	2.47 kg	2.47 kg
Mounting type	Vesa 100 with 4 x M4 screws, top-hat rail 35 mm, profile rail S7-300, S7-1200 or S7-1500	Vesa 100 with 4 x M4 screws, top-hat rail 35 mm, profile rail S7-300, S7-1200 or S7-1500	Vesa 100 with 4 x M4 screws, top-hat rail 35 mm, profile rail S7-300, S7-1200 or S7-1500
Cable length			
• of antenna cable minimum	1 m	1 m	1 m
• of antenna cable maximum	40 m	40 m	40 m
Product properties, functions, components general			
Display version	two LED rows with 8 and 9 LEDs	two LED rows with 8 and 9 LEDs	two LED rows with 8 and 9 LEDs
Product feature silicon-free	Yes	Yes	Yes
Standards, specifications, approvals			
Certificate of suitability	Wireless according to R&TTE guideline, CE, IEC 60950	Wireless according to FCC, IC (Canada), cULus	Wireless according to CMIIT
MTBF	29 y	29 y	29 y
Accessories			
Accessories	one external antenna, set for mounting on top-hat rail or profile rail	one external antenna, set for mounting on top-hat rail or profile rail	one external antenna, set for mounting on top-hat rail or profile rail

RFID systems for the UHF range

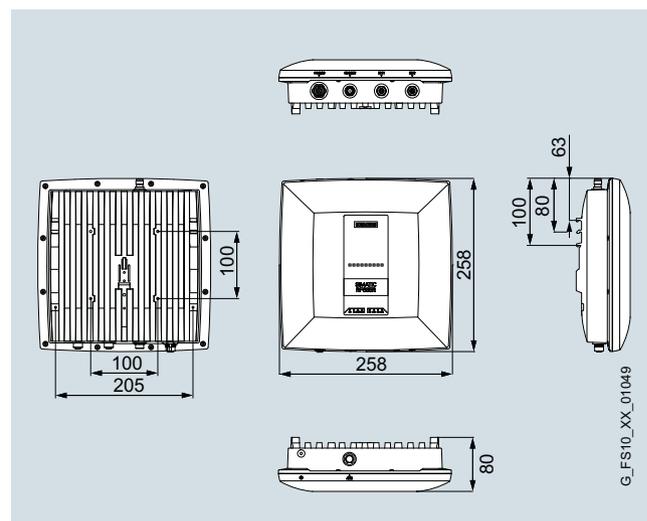
SIMATIC RF600 readers

RF685R

Selection and ordering data

	Article No.		Article No.
SIMATIC RF685R reader (ETSI) UHF RFID reader for frequencies from 865 to 868 MHz with integrated antenna. Connection for one external antenna is provided. Suitable for inclusion in IT and automation systems via Ethernet with TCP/IP and XML protocol or PROFINET.	6GT2811-6CA10-0AA0	Ethernet connection <ul style="list-style-type: none"> Ethernet cable M12 / RJ45, 5 m, RJ45 plug, obliquely angled, trailable 	6XV1871-5TH50
SIMATIC RF685R reader (FCC) UHF RFID reader for frequencies from 902 to 928 MHz with integrated antenna. Connection for one external antenna is provided. Suitable for inclusion in IT and automation systems via Ethernet with TCP/IP and XML protocol or PROFINET.	6GT2811-6CA10-1AA0	<ul style="list-style-type: none"> Ethernet cable M12 / M12, 5 m, trailable 	6XV1870-8AH50
SIMATIC RF685R reader (CMIIT) UHF RFID reader for frequencies from 920 to 925 MHz with integrated antenna. Connection for one external antenna is provided. Suitable for inclusion in IT and automation systems via Ethernet with TCP/IP and XML protocol or PROFINET.	6GT2811-6CA10-2AA0	Set of protective caps Unused connections must be fitted with a protective cap to ensure the IP65 safety class. Contents: 3 protective caps for antenna connection, one protective cap for DI/DO connection, 2 protective caps for Ethernet connection.	6GT2898-4AA10
Accessories Antennas For proper functioning of the SIMATIC RF685R Reader, we recommend using the following antennas: <ul style="list-style-type: none"> RF620A (see page 3/45) RF640A (see page 3/48) RF642A (see page 3/48) RF660A (see page 3/51) 		DIN rail mounting kit For mounting the reader on a DIN rail (35 mm) or mounting rail S7-300/S7-1500 	6GT2890-0AB00
DI/DO cable For the connection of digital sensors and actuators to SIMATIC RF685R. M12 connector on reader side, open stranded wires on sensor side. DI/DO cable, PUR material, black, shielded, M12, 12 x 0.14 mm ² , length 5 m 	6GT2891-0CH50		
Wide-range power supply Primary side: 100 ... 240 V AC, 120 ... 353 V DC, secondary side: 24 V DC, 3 A, with no-load protection, with continuous short-circuit protection <ul style="list-style-type: none"> EU connector version UK connector version US connector version 	6GT2898-0AA00 6GT2898-0AA10 6GT2898-0AA20		
Cable for wide-range power supply 24 V DC, PUR material, length 5 m. 	6GT2891-0PH50		
Cable for 24 V power supply 24 V DC, material PUR, trailable, length 5 m, open ends 	6GT2891-4EH50		

Dimensional drawings



SIMATIC RF685R reader

G_FS10_XX_01049

Overview



SIMATIC RF650M is a powerful and compact mobile RFID reader for applications in the field of production logistics, warehouse management, inventories and service. The device is also an important tool for the commissioning and testing of RFID systems. Thanks to the high transmit power, the RFID transponders can also be reliably detected at large distances.

Design

The SIMATIC RF650M handheld reader features a color touch display with a resolution of 240 x 320 pixels, rugged keypad and a large trigger button. This ensures reliable and user-friendly operation. To save space, users can fold down the RFID antenna.

The dimensions of just 147 x 60 x 39 mm mean that the device can easily be carried in a pocket. Its low weight of only 235 g including rechargeable battery enables the reader to be used for long periods without fatigue.

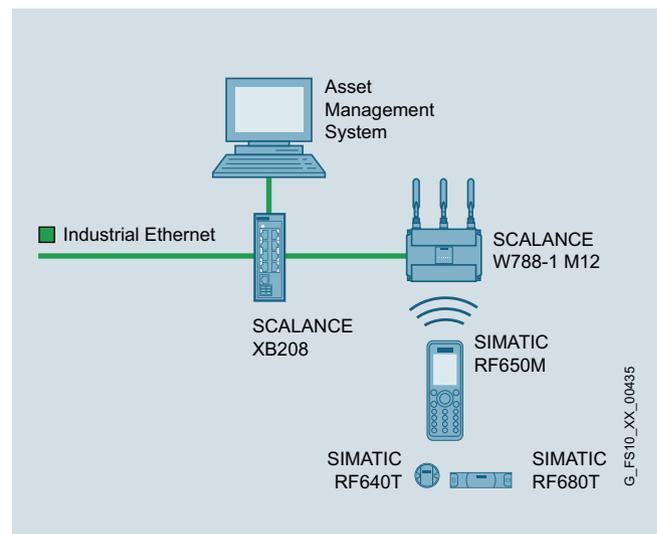
Function

The supplied and pre-installed RF600 software provides service and test functions for reading and writing the RF600 transponders and SmartLabels (compliant with ISO 18000-6C). Data that has been read can be saved in files. To locate objects that have been equipped with a transponder, the software offers a simple localization and search function.

Based on the operating system and communication standards (WIN CE), the device ensures easy integration in existing or planned IT networks or in the process infrastructure. For this purpose, various optional development tools for the PC (Software Development Kit) can be obtained directly from Nordic ID.

The read data can be forwarded to the IT infrastructure via the integrated WLAN or via USB or Ethernet port of the docking station.

Integration



Mobile RFID data acquisition system connected via SCALANCE components

RFID systems for the UHF range

SIMATIC RF600 readers

RF650M mobile handheld terminal

Technical specifications

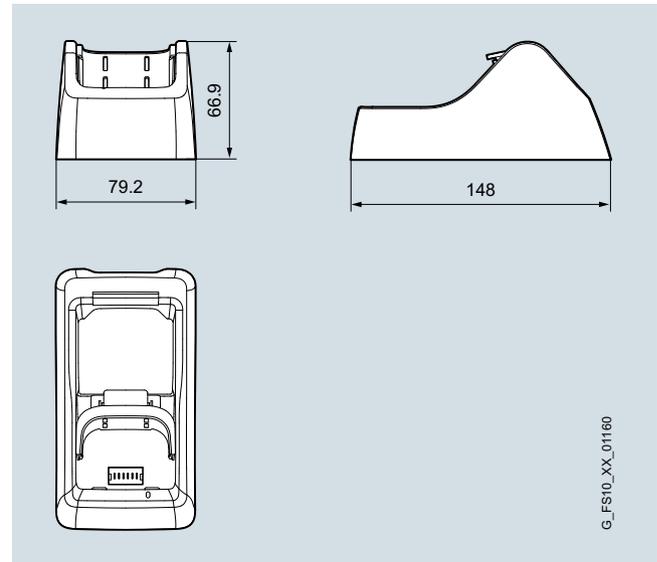
	6GT2813-0CA00	6GT2813-0CA10
Article number	6GT2813-0CA00	6GT2813-0CA10
Product type designation	RF650M ETSI mobile hand-held terminal	RF650M FCC mobile hand-held terminal
Suitability for operation	RF600 transponder	RF600 transponder
Range	2 500 mm, is dependent on transponder type	2 500 mm, is dependent on transponder type
Wireless frequencies		
Operating frequency	865.6 ... 867.6 MHz	902 ... 928 MHz
Effective radiant power	500 mW	
Equivalent isotropically radiated power		820 mW
Electrical data		
Protocol with radio transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Product feature multitag-capable	Yes	Yes
Polarization	Linear horizontal, vertical, automatic	Linear horizontal, vertical, automatic
Supply voltage, current consumption, power loss		
Type of current supply	Battery operation or mains operation	Battery operation or mains operation
Type of battery	Li-Polymer accumulator, replaceable	Li-Polymer accumulator, replaceable
Battery capacity	2.26 Ah	2.26 Ah
Operating period with standard battery typical	9 h	9 h
Permitted ambient conditions		
Ambient temperature		
• during operation	-20 ... +55 °C	-20 ... +55 °C
• during storage	-20 ... +60 °C	-20 ... +60 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %	95 %
Height of fall maximum	1.5 m	1.5 m
Protection class IP	IP54	IP54
Design, dimensions and weight		
Width	60 mm	60 mm
Height	147 mm	147 mm
Depth	39 mm	39 mm
Net weight	0.24 kg	0.24 kg
Product properties, functions, components general		
Design of the display	QVGA color touch screen 2.2 inch, 240 x 320 pixels	QVGA color touch screen 2.2 inch, 240 x 320 pixels
Operator element version	Alphanumeric	Alphanumeric
Design of acoustic signaling element	Speakers	Speakers
Design of the interface	WLAN, USB and Ethernet via charging station	WLAN, USB and Ethernet via charging station
Storage capacity		
• of the RAM	256 Mibyte	256 Mibyte
• of the data and program memory	288 Mibyte	288 Mibyte
• of the data memory can be used	256 Mibyte	256 Mibyte
Product functions management, configuration		
Operating system pre-installed	Windows Embedded CE 6.0	Windows Embedded CE 6.0
Product function of the software	Record, process, search of ISO 18000-6C transponder	Record, process, search of ISO 18000-6C transponder
Type of programming	Programming with MS Visual Studio 2008 API for several programming languages available	Programming with MS Visual Studio 2008 API for several programming languages available
Standards, specifications, approvals		
Certificate of suitability	EMC: EN 55022, EN 301 489, safety: EN 60950, RF: EN 302 208	EMC: EN 55022, EN 301 489, safety: EN 60950, RF: EN 302 208, FCC Part 15
MTBF	43 y	43 y
Accessories		
Accessories	Charging/docking station with USB- and Ethernet interface, changeable accumulator Li-Po 2260 mAh / 3.7 V, also included: charging device 100-240 V	Charging/docking station with USB- and Ethernet interface, changeable accumulator Li-Po 2260 mAh / 3.7 V, also included: charging device 100-240 V

Selection and ordering data

	Article No.
SIMATIC RF650M (ETSI) mobile handheld terminal Basic unit, suitable for transponders conforming to EPCglobal Class 1 Gen 2 / ISO 18000-6C, incl. charger and battery. Frequency 865 ... 868 MHz (ETSI), standard software preinstalled.	6GT2813-0CA00
SIMATIC RF650M (FCC) mobile handheld terminal Basic unit, suitable for transponders conforming to EPCglobal Class 1 Gen 2 / ISO 18000-6C, incl. charger and battery. Frequency 902 ... 928 MHz (FCC), standard software preinstalled.	6GT2813-0CA10
Accessories	
Charging/docking station For one RF650M mobile reader and one spare battery, including Ethernet port, USB port and USB cable.	6GT2898-0BB00
Replacement battery for SIMATIC RF650M mobile handheld terminal	6GT2898-0CB00
DVD „RFID-Systeme Software & Documentation“	6GT2080-2AA20



Dimensional drawings



Charging/docking station for RF650M mobile handheld terminal

RFID systems for the UHF range

SIMATIC RF600 antennas

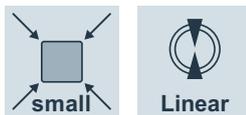
Introduction

Overview

SIMATIC RF600 UHF antennas are used in many different applications in production, material handling, and logistics. Thanks to their rugged design and high degree of protection, they are also suitable for harsh industrial environments.

Antenna	Features	Page	Antenna	Features	Page
RF620A 	Particularly compact antenna for applications in production, e.g. assembly lines or conveyor systems.	3/45	RF642A 	Compact antenna with linear polarization for strongly reflective environments.	3/48
RF640A 	Universal and compact standard antenna for wide ranges	3/48	RF660A 	Universal antenna with high degree of protection (IP67) for applications in production and logistics that require a greater range.	3/51

Overview



The SIMATIC RF620A antenna is characterized by an especially compact enclosure. It is particularly suitable for use in production, e.g. on assembly lines or track-guided conveyor systems. The effects of reflections and overshooting can be reliably reduced thanks to the linear polarization and high degree of signal attenuation.

The antenna can be operated with the UHF readers of the SIMATIC RF600 range.

Technical specifications

	6GT2812-1EA00	6GT2812-1EA01
Article number	6GT2812-1EA00	6GT2812-1EA01
Product type designation	RF620A, ETSI antenna	RF620A, FCC antenna
Suitability for operation	SIMATIC RF600	SIMATIC RF600
Wireless frequencies		
Transmission frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Impedance	50 Ω	50 Ω
Polarization	Linear	Linear
Antenna gain compared to spherical radiator		
• with linear radiation	-5 dB	-5 dB
Standing wave ratio (VSWR) maximum	2	2
Radiating angle of the antenna		
• horizontal	100°	130°
• vertical	75°	105°
Type of electrical connection of the antenna	RP-TNC	RP-TNC
Design of plug-in connection	male	male
Mechanical data		
Material	PA 12	PA 12
Color	Pastel turquoise	Pastel turquoise
Tightening torque of the screw for securing the equipment maximum	2 Nm	2 Nm
Mounting distance		
• relating to metal surfaces recommended minimum	0 m	0 m
Permitted ambient conditions		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Protection class IP	IP67	IP67
Shock resistance	according to EN 60068-2-27	according to EN 60068-2-27
Shock acceleration	500 m/s ²	500 m/s ²
Schwingbeschleunigung	200 m/s ²	200 m/s ²

RFID systems for the UHF range

SIMATIC RF600 antennas

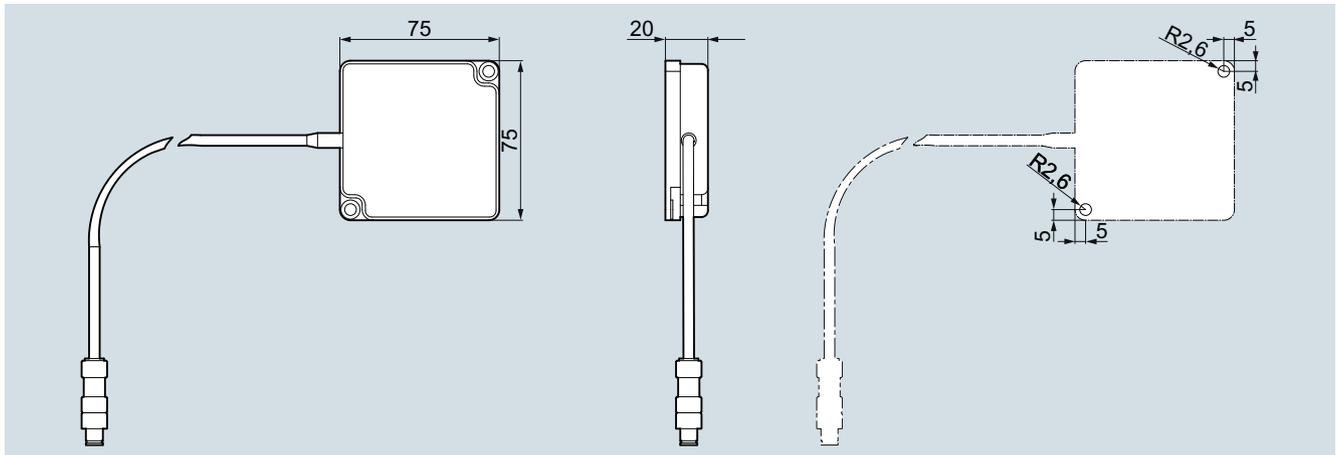
RF620A

Article number	6GT2812-1EA00	6GT2812-1EA01
Product type designation	RF620A, ETSI antenna	RF620A, FCC antenna
Design, dimensions and weight		
Width	75 mm	75 mm
Height	75 mm	75 mm
Depth	20 mm	20 mm
Net weight	100 g	100 g
Mounting type	2 screws M5	2 screws M5
Cable length of antenna cable	0 m	0 m
Product properties, functions, components general		
Product feature silicon-free	Yes	Yes
Standards, specifications, approvals		
Certificate of suitability	CE (ETSI EN 302208)	FCC (Title 47, Part 15.247), cULus
Accessories		
Accessories	Antenna cables 1 to 40 m	Antenna cables 1 to 40 m

Selection and ordering data

	Article No.		Article No.
SIMATIC RF620A (ETSI) compact antenna	6GT2812-1EA00	Accessories	
Linear polarized UHF antenna for frequency range 865 to 868 MHz.		Note: To ensure optimal functioning of the antenna, it is recommended that a Siemens antenna cable is used.	
SIMATIC RF620A (FCC) compact antenna	6GT2812-1EA01	Antenna cable	
Linear polarized UHF antenna for frequency range 902 to 928 MHz.		UV resistant, reverse TNC, UL certified, impedance 50 Ω	
		• Material: PE, halogen-free	
			
		- Length 1 m, Ø 5 mm, attenuation 0.5 dB	6GT2815-0BH10
		- Length 3 m, Ø 5 mm, attenuation 1 dB	6GT2815-0BH30
		- Length 10 m, Ø 5 mm, attenuation 4 dB	6GT2815-0BN10
		- Length 10 m, Ø 7.6 mm, attenuation 2 dB	6GT2815-1BN10
		- Length 20 m, Ø 7.6 mm, attenuation 4 dB	6GT2815-0BN20
		- Length 40 m, Ø 10.3 mm, attenuation 5 dB	6GT2815-0BN40
		• Material: PVC, Ø 5.5 mm, suitable for cable carriers	
		- 5 m long, 1.5 dB attenuation	6GT2815-2BH50
		- 15 m long, 4.5 dB attenuation	6GT2815-2BN15

Dimensional drawings



SIMATIC RF620A antenna

RFID systems for the UHF range

SIMATIC RF600 antennas

RF640A, RF642A

Overview



6GT2812-0GA08



Circular



6GT2812-1GA08



Linear

The SIMATIC RF640A/RF642A are rugged and compact antennas for industrial applications in production and logistics.

- The SIMATIC RF640A is a universal antenna for numerous applications. They are used, in particular, in applications where transponders in widely varying orientations have to be detected.
- The SIMATIC RF642A is, with its linear polarization, particularly suitable for severely metallic environments.

Both antennas can be used in Europe, the United States and China (broadband) and with the readers of the SIMATIC RF600 range.

Technical specifications

	6GT2812-0GA08	6GT2812-1GA08
Article number	6GT2812-0GA08	6GT2812-1GA08
Product type designation	RF640A antenna	RF642A antenna
Suitability for operation	SIMATIC RF600	SIMATIC RF600
Wireless frequencies		
Transmission frequency	865 ... 928 MHz	865 ... 928 MHz
Electrical data		
Impedance	50 Ω	50 Ω
Polarization	Circular	Linear
Antenna gain compared to spherical radiator		6 dB
• with linear radiation		
• with circular radiation	4 dB	
Standing wave ratio (VSWR) maximum	1.5	1.5
Radiating angle of the antenna		
• horizontal	80°	75°
• vertical	75°	70°
Type of electrical connection of the antenna	RP-TNC	RP-TNC
Design of plug-in connection	male	male
Mechanical data		
Material	PA 12	PA 12
Color	Pastel turquoise	Pastel turquoise
Tightening torque of the screw for securing the equipment maximum	2 Nm	2 Nm
Mounting distance		
• relating to metal surfaces recommended minimum	0 m	0 m

RFID systems for the UHF range

SIMATIC RF600 antennas

RF640A, RF642A

Article number	6GT2812-0GA08	6GT2812-1GA08
Product type designation	RF640A antenna	RF642A antenna
Permitted ambient conditions		
Ambient temperature		
• during operation	-25 ... +75 °C	-25 ... +75 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Protection class IP	IP65	IP65
Shock resistance	according to EN 60068-2-27	according to EN 60068-2-27
Shock acceleration	300 m/s ²	300 m/s ²
Vibrational acceleration	100 m/s ²	100 m/s ²
Design, dimensions and weight		
Width	185 mm	185 mm
Height	185 mm	185 mm
Depth	45 mm	45 mm
Net weight	600 g	600 g
Mounting type	4 screws M4 according to VESA 100, optional with articulated bracket by using antenna mounting kit	4 screws M4 according to VESA 100, optional with articulated bracket by using antenna mounting kit
Cable length of antenna cable	0 m	0 m
Product properties, functions, components general		
Product feature silicon-free	Yes	Yes
Standards, specifications, approvals		
Certificate of suitability	CE (according to R&TTE), FCC (Title 47, Part 15.247), cULus	CE (according to R&TTE), FCC (Title 47, Part 15.247), cULus
Accessories		
Accessories	Antenna cables 1 to 40 m, antenna mounting kit	Antenna cables 1 to 40 m, antenna mounting kit

3

Selection and ordering data

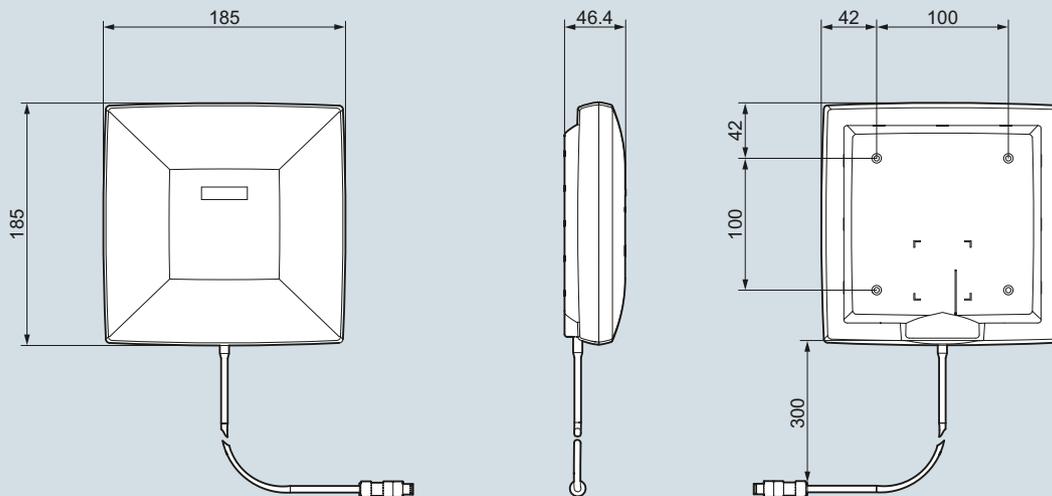
	Article No.		Article No.
SIMATIC RF640A	6GT2812-0GA08	<ul style="list-style-type: none"> Material: PVC, Ø 5.5 mm, suitable for cable carriers - 5 m long, 1.5 dB attenuation - 15 m long, 4.5 dB attenuation 	
Circular polarization antenna for UHF frequency 865 MHz to 928 MHz (ETSI, FCC, CMIIT).			6GT2815-2BH50
SIMATIC RF642A	6GT2812-1GA08		6GT2815-2BN15
Linear polarization antenna for UHF frequency 865 MHz to 928 MHz (ETSI, FCC, CMIIT).		Antenna mounting kit	6GT2890-0AA00
Accessories		For flexible mounting, with articulated bracket.	
Note:			
To ensure proper functioning of the antennas, it is recommended that Siemens antenna cables are used.			
Antenna cable			
UV resistant, reverse TNC, UL certified, impedance 50 Ω			
• Material: PE, halogen-free			
			
- Length 1 m, Ø 5 mm, attenuation 0.5 dB	6GT2815-0BH10		
- Length 3 m, Ø 5 mm, attenuation 1 dB	6GT2815-0BH30		
- Length 10 m, Ø 5 mm, attenuation 4 dB	6GT2815-0BN10		
- Length 10 m, Ø 7.6 mm, attenuation 2 dB	6GT2815-1BN10		
- Length 20 m, Ø 7.6 mm, attenuation 4 dB	6GT2815-0BN20		
- Length 40 m, Ø 10.3 mm, attenuation 5 dB	6GT2815-0BN40		

RFID systems for the UHF range

SIMATIC RF600 antennas

RF640A, RF642A

Dimensional drawings



SIMATIC RF640A, RF642A antennas

Overview



The universal UHF antenna RF660A is suitable for numerous applications in production and logistics that require a greater range. Typical applications are conveyor systems in material handling and logistics systems as well as gates, e.g. in the incoming goods department.

Thanks to its rugged design and high degree of protection, the SIMATIC RF660A antenna is also suitable for harsh industrial environments. The antenna can be operated with the readers of the SIMATIC RF600 range.



Circular

Technical specifications

	6GT2812-0AA00	6GT2812-0AA01
Article number	RF660A 865-868 EU antenna	RF660A 902-928 US antenna
Product type designation	SIMATIC RF600	SIMATIC RF600
Suitability for operation		
Wireless frequencies		
Transmission frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Impedance	50 Ω	50 Ω
Polarization	Circular	Circular
Antenna gain compared to spherical radiator		
• with circular radiation	7 dB	6 dB
Standing wave ratio (VSWR) maximum	2	2
Radiating angle of the antenna		
• horizontal	60°	70°
• vertical	60°	70°
Type of electrical connection of the antenna	RP-TNC	RP-TNC
Design of plug-in connection	male	male
Mechanical data		
Material	PA 12	PA 12
Color	Pastel turquoise	Pastel turquoise
Mounting distance		
• relating to metal surfaces recommended minimum	0 m	0 m
Permitted ambient conditions		
Ambient temperature		
• during operation	-25 ... +75 °C	-25 ... +75 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Protection class IP	IP67	IP67
Shock resistance	according to EN 60068-2-27	according to EN 60068-2-27
Shock acceleration	300 m/s ²	300 m/s ²
Vibrational acceleration	1 m/s ²	1 m/s ²

RFID systems for the UHF range

SIMATIC RF600 antennas

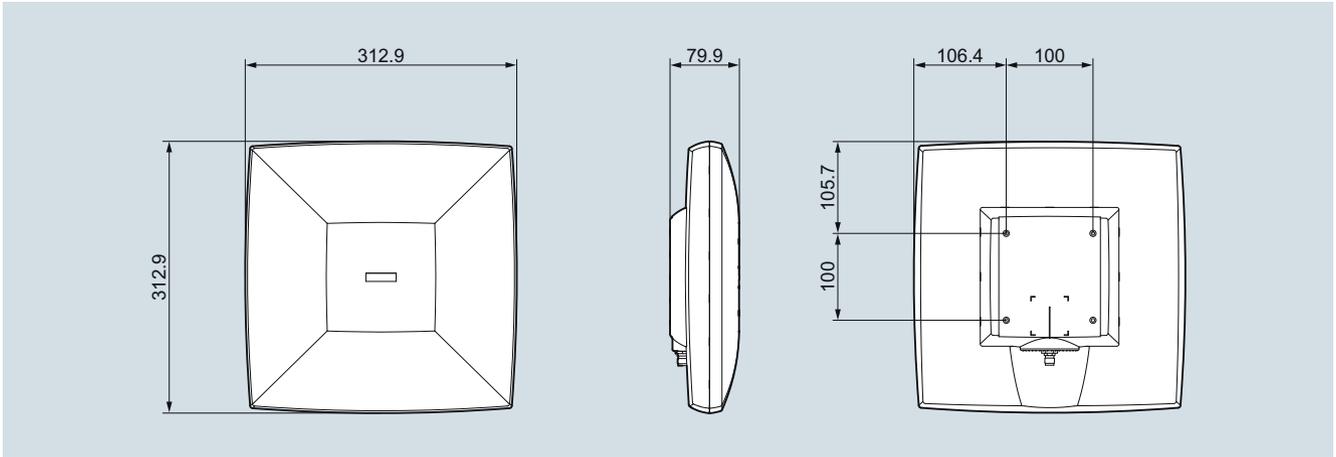
RF660A

Article number	6GT2812-0AA00	6GT2812-0AA01
Product type designation	RF660A 865-868 EU antenna	RF660A 902-928 US antenna
Design, dimensions and weight		
Width	313 mm	313 mm
Height	313 mm	313 mm
Depth	80 mm	80 mm
Net weight	1.6 kg	1.6 kg
Mounting type	4 screws M4 according to VESA 100, optional with articulated bracket by using antenna mounting kit	4 screws M4 according to VESA 100, optional with articulated bracket by using antenna mounting kit
Cable length of antenna cable	0 m	0 m
Product properties, functions, components general		
Product feature silicon-free	Yes	Yes
Standards, specifications, approvals		
Certificate of suitability	CE (ETSI EN 302208)	FCC (Title 47, Part 15.247), cULus
Accessories		
Accessories	Antenna cables 1 to 40 m, antenna mounting kit	Antenna cables 1 to 40 m, antenna mounting kit

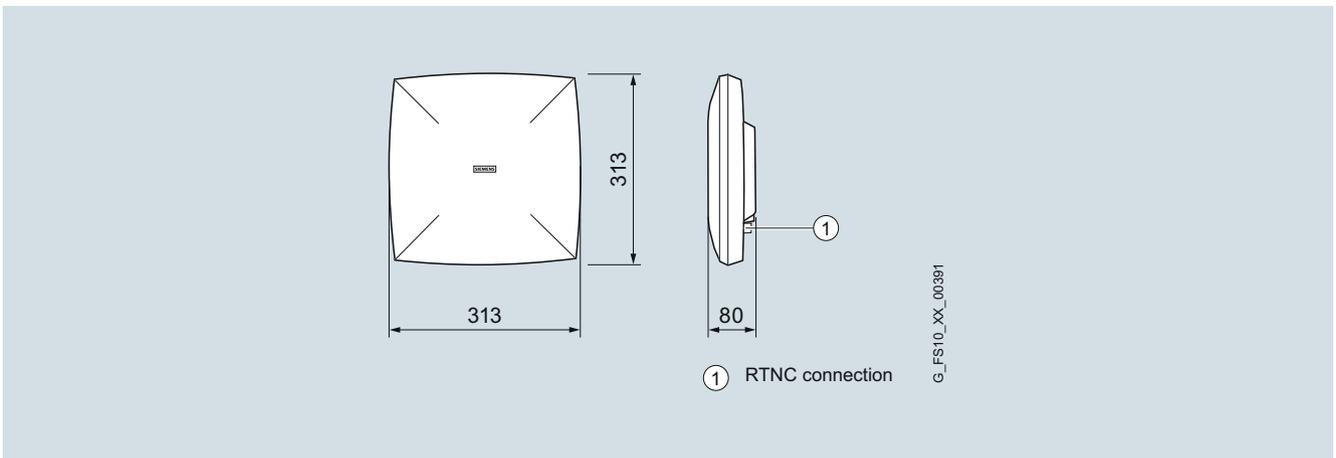
Selection and ordering data

	Article No.		Article No.
SIMATIC RF660A (ETSI) antenna	6GT2812-0AA00	Accessories	
Circular polarized UHF antenna for frequency range 865 to 868 MHz.			
SIMATIC RF660A (FCC) antenna	6GT2812-0AA01	Note:	
Circular polarized UHF antenna for frequency range 902 to 928 MHz.		To ensure proper functioning of the SIMATIC RF660A antenna, it is recommended that Siemens antenna cables are used..	
		Antenna cable	
		UV resistant, reverse TNC, UL certified, impedance 50 Ω	
		• Material: PE, halogen-free	
			
		- Length 3 m, Ø 5 mm, attenuation 1 dB	6GT2815-0BH10
		- Length 10 m, Ø 5 mm, attenuation 4 dB	6GT2815-0BH30
		- Length 10 m, Ø 7.6 mm, attenuation 2 dB	6GT2815-0BN10
		- Length 20 m, Ø 7.6 mm, attenuation 4 dB	6GT2815-1BN10
		- Length 40 m, Ø 10.3 mm, attenuation 5 dB	6GT2815-0BN20
		- Length 3 m, Ø 5 mm, attenuation 1 dB	6GT2815-0BN40
		• Material: PVC, Ø 5.5 mm, suitable for cable carriers	
		- 5 m long, 1.5 dB attenuation	6GT2815-2BH50
		- 15 m long, 4.5 dB attenuation	6GT2815-2BN15
		Antenna mounting kit	6GT2890-0AA00
		For flexible mounting, with articulated bracket.	
			

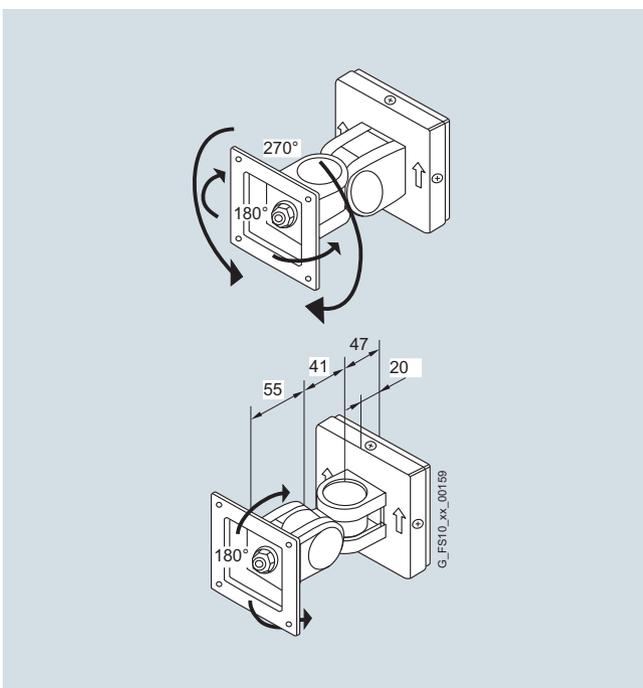
Dimensional drawings



SIMATIC RF660A antenna



SIMATIC RF660A antenna, position of connection



Antenna mounting kit

RFID systems for the UHF range

Notes
