

SIMATIC RTLS

Localization systems SIMATIC RTLS PCB OEM PULSE

Operating Instructions

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Legal information

Warning notice system

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

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

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

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

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

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Introduction

Purpose of the Operating Instructions

These operating instructions support you when installing and connecting up the SIMATIC RTLS PCB OEM PULSE device.

The configuration and the integration of the devices in a network are not described in these operating instructions.

Validity of the Operating Instructions

These operating instructions apply to the following device variants:

- RTLS PCB OEM PULSE (CE; article number: 6GT2700-8AF03)
- RTLS PCB OEM PULSE (FCC; article number: 6GT2700-8AF13)
- RTLS PCB OEM PULSE (CMIIT; article number: 6GT2700-8AF23)
- RTLS PCB OEM PULSE (IC; article number: 6GT2700-8AF33)

Further documentation

The system manual "Commissioning SIMATIC RTLS" provides information on other SIMATIC RTLS products that you can operate together with the devices in this product line in an Industrial Ethernet network.

You can find the system manual at the following link:
(<https://support.industry.siemens.com/cs/us/en/ps/25277>)

Trademarks

The following and possibly other names not identified by the registered trademark sign ® are registered trademarks of Siemens AG:

SIMATIC RTLS

Industry Online Support

In addition to the product documentation, the comprehensive online information platform of Siemens Industry Online Support offers support at the following Internet address:

(<https://support.industry.siemens.com/cs/start?lc=en-US>)

Apart from news, there you will also find:

- Project information: Manuals, FAQs, downloads, application examples etc.
- Contacts, Technical Forum
- The option submitting a support query: (<https://support.industry.siemens.com/My/us/en/>)
- Our service offer:

Right across our products and systems, we provide numerous services that support you in every phase of the life of your machine or system - from planning and implementation to commissioning, through to maintenance and modernization.

You will find contact information on the Internet at the following address:

(https://www.automation.siemens.com/aspa_app/?ci=yes&lang=en)

SITRAIN - Training for Industry

The training offer includes more than 300 courses on basic topics, extended knowledge and special knowledge as well as advanced training for individual sectors - available at more than 130 locations. Courses can also be organized individually and held locally at your location.

You will find detailed information on the training curriculum and how to contact our customer consultants at the following Internet address:

(<https://new.siemens.com/global/en/products/services/industry/sitrain/personal.html>)

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit: (<https://new.siemens.com/global/en/company/topic-areas/future-of-manufacturing/industrial-security.html>)

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customers' exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under: (<https://support.industry.siemens.com/cs/us/en/ps/15247/pm>)

Recycling and disposal



The products are low in harmful substances, can be recycled and meet the requirements of the Directive 2012/19/EU for disposal of waste electrical and electronic equipment (WEEE).

Do not dispose of the products at public disposal sites.

For environmentally compliant recycling and disposal of your electronic waste, please contact a company certified for the disposal of electronic waste or your Siemens representative.

Note the different national regulations.

Device description

2.1 Safety notices

NOTICE
Avoid contact with the RTLS transponder Avoid contact (e.g. with your hands) with the RTLS transponder in order to avoid contamination of and resulting damage to the RTLS transponder.
NOTICE
Precautionary measures against electrostatic discharge The RTLS transponder can be damaged by electrostatic discharge (ESD). Take suitable precautionary measures when unpacking and operating the transponder to avoid damage.

2.2 Order data RTLS PCB OEM PULSE

Table 2- 1 Order data RTLS PCB OEM PULSE

		Article number
SIMATIC RTLS PCB OEM PULSE	CE	6GT2700-8AF03
	FCC	6GT2700-8AF13
	CMIIT	6GT2700-8AF23
	IC	6GT2700-8AF33

2.3 Pin assignment

Solder contact P4

Pin	Description / Function
1	Grounding
2	Rx - Input on the transponder, 3.3 V
3	Tx - Output on the transponder, 3.3 V
4	Supply voltage 3.3 V

P1 connector

The individual pins are connected to the solder contacts (P4).

Type: JST SM04B-SRSS-TB

Pin	Description / Function
1	Rx - Input on the transponder, 3.3 V
2	Tx - Output on the transponder, 3.3 V
3	Grounding
4	Supply voltage, VCC, 3.3 V $\pm$ 100 mV

P2 connector

Internal interface for production and manufacturing test, do not use.

2.4 LED status indicator

The operating states of the transponder are indicated by the LEDs. The states can be off , on  and flashing .

LED	Meaning
	Flashes every three seconds when the transponder is active
	Is off when the transponder is inactive
	Lights up for 0.6 seconds on system start
	Flashes every 0.1 seconds after a watchdog reset

2.5 Dimension drawing

The antenna is connected to the PCB via a 5 cm long U.FL cable. The contacts used are P3 on the PCB and P1 on the antenna.

PCB

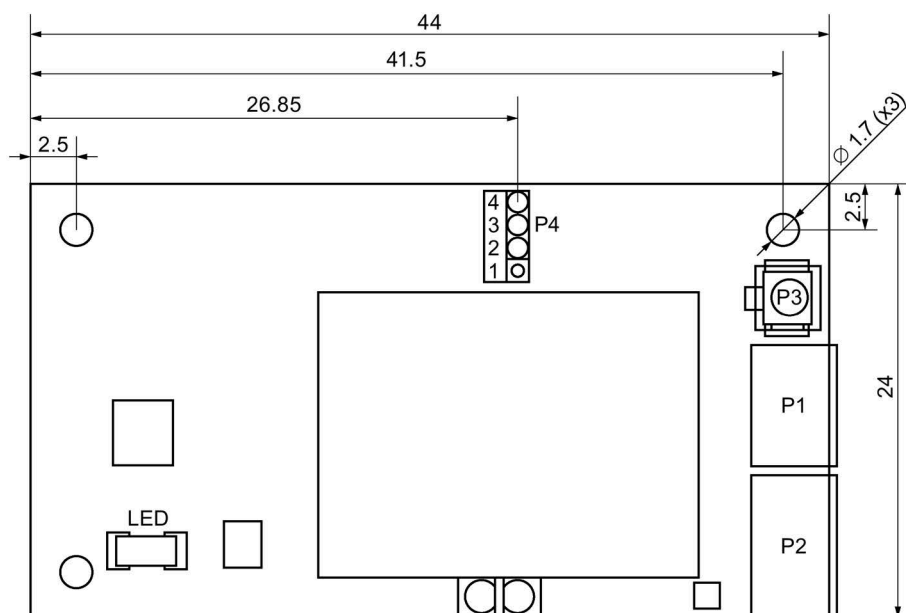


Figure 2-1 All dimensions specified in millimeters.

Antenna

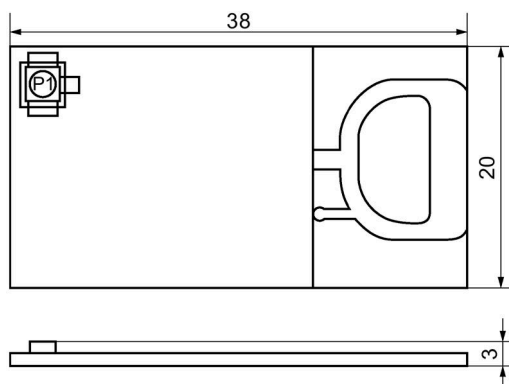


Figure 2-2 All dimensions specified in millimeters.

Installation & Operation

3.1 Notes on installation

Note

Before you install the devices, read this section carefully to ensure trouble-free installation and commissioning.

The devices can only be used in conjunction with the RTLS localization system.

An adhesive label with the serial number is attached to the transponder.

The transponder is installed in an enclosure so that it is no longer visible (e.g. electric screwdriver). After installing the transponder, you need to attach the adhesive label with the serial number to the enclosure in such a way that the serial number can be easily read from the outside and the label cannot be wiped off.

The label is required to identify the device with the installed transponder in the Locating Manager.

Technical specifications

Table 4- 1 Technical specifications of the transponder RTLS PCB OEM PULSE

6GT2700-8AF03, 6GT2700-8AF13 6GT2700-8AF23, 6GT2700-8AF33	
Product name	SIMATIC RTLS PCB OEM PULSE
PULSE radio frequencies (localization)	
Wireless method	IEEE 802.15.4-2011 UWB
Transmission speed	850 kbit/s
Operating frequency rated value	3993.6 MHz (UWB channel 2; CE, FCC) 6489.6 MHz (UWB channel 5; CE, FCC, CMIIT, IC)
Bandwidth	499.2 MHz
Frequency range	3100 MHz ... 4800 MHz (CE, FCC) 6000 MHz ... 7000 MHz (CE, FCC, CMIIT, IC)
Transmit power	0.037 mW (-41.3 dBm/MHz)
Range	30 m
Accuracy of the localization	0.2 m
Antenna	Connected via antenna cable
Range at 1 Mb	Indoors maximal 90 m (typical 60 m) Outdoors maximum 1000 m (typical 500 m)
Supply voltage, power consumption	
Supply voltage	3.3 V DC (±100 mV)
Energy intake	Maximum 0.3 A
Permitted ambient conditions	
Ambient temperature	- During write/read access - Outside write/read access - During storage
	0 ... +50 °C 0 ... +50 °C 0 ... +50 °C
Design, dimensions, weights and connectors	
Dimensions of board (L x W x H)	44 x 24 x 7.5 mm
Dimensions of antenna (L x W x H)	38 x 20 x 3 mm
Weight	10 g

6GT2700-8AF03, 6GT2700-8AF13
6GT2700-8AF23, 6GT2700-8AF33

Degree of protection	IP00
Method of securing	PCB: 3 screws, Ø 1.7 mm Antenna: provided by customer

Approvals

You can find the current EU Declaration of Conformity for these products on the Internet at Siemens Industry Online Support.

Link:

<https://support.industry.siemens.com/cs/products?dtp=Certificate&mf=ps&pnid=14970&lc=en-US>

The products described in this document meet the requirements of the following EU directives:

- **RoHS Directive 2011/65/EU**
Directive of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, official journal of the EU L174, 1 July 2011, pages 88-110
- **Radio Equipment Directive 2014/53/EU (RED)**
Directive of the European Parliament and of the Council of 16 April 2014 on the harmonization of the laws of the member states relating to placing radio equipment on the market; official journal of the EU L153, 22 May 2014, pages 62-106

RoHS directive (restriction of the use of certain hazardous substances)

The products described in these operating instructions meet the requirements of the EU directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Applied standard:

- **EN 50581**
Technical documentation for the assessment of electrical and electronic products with respect to restriction of hazardous substances

The products described in this document meet the requirements of the applied standards:

Article 3 (1) a) Protection of health and safety

- **EN 62311**
Assessment of electronic and electrical equipment related to human exposure restrictions in electromagnetic fields (0 Hz - 300 GHz)

The products described in these operating instructions meet the requirements of EU directive 2014/30/EU "Electromagnetic Compatibility" according to the designated standards for the following areas of application.

Article 3 (1) b) EMC

- ETSI EN 301 489-1
Electromagnetic compatibility and radio spectrum matters (ERM) - Electromagnetic compatibility for radio equipment and services - Part 1: Common technical requirements
- ETSI EN 301 489-33
Electromagnetic compatibility and radio spectrum matters (ERM) - Electromagnetic compatibility for radio equipment and services - Part 33:
Specific conditions for ultra-wideband (UWB) devices
- EN 55011
Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics – Limits and methods of measurement
- EN 55032 Class A, Class B
Electromagnetic compatibility of multimedia equipment – Emission requirements
- EN 55035
Electromagnetic compatibility of multimedia equipment - Immunity requirements
- EN 61000-6-1
Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
- EN 61000-6-2
Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
- EN 61000-6-3
Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
- EN 61000-6-4
Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

Article 3 (2) Efficient use of the radio spectrum

- ETSI EN 302 065-2
Short Range Devices (SRD) using ultra-wideband technology (UWB); Harmonized standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 2: Requirements for UWB location tracking

Note

The specified approvals are only valid if the corresponding symbol is printed on the device.

FCC information

Siemens SIMATIC RTLS PCB OEM PULSE (MLFB 6GT2700-8AF13); FCC ID NXWOEMPULSE

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

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

Caution

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

Note

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

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

Host labelling guidance for the end integrator

This is an advise for host manufacture to provide a physical / e-label on their host product stating, "Contains FCC ID: NXWOEMPULSE":

A permanently affixed label must be used. The modular transmitter must be labeled with its own FCC identification number, and, if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: NXWOEMPULSE" or "Contains FCC ID: NXWOEMPULSE". Any similar wording that expresses the same meaning may be used.

RF Exposure guidance

In order to comply with FCC RF Exposure requirements, this device must be installed to provide at least 20 mm separation from the human body at all times.

IC information

Siemens SIMATIC RTLS PCB OEM PULSE (MLFB 6GT2700-8AF33); IC ID 267X-OEMPULSE

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

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

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

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

Host labelling guidance for the end integrator

This is an advise for host manufacture to provide a physical / e-label on their host product stating, "Contains IC: 267X-OEMPULSE":

A permanently affixed label must be used. The modular transmitter must be labeled with its own IC identification number, and, if the IC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module IC: 267X-OEMPULSE" or "Contains IC: 267X-OEMPULSE". Any similar wording that expresses the same meaning may be used. The manual needs to include host labelling guidance for the end integrator.

Instructions d'étiquetage de l'hôte pour l'intégrateur final

Il est conseillé aux fabricants de l'hôte de prévoir une étiquette physique / électronique sur leur produit hôte indiquant : "Contient le CI : 267X-OEMPULSE" :

Utiliser une étiquette apposée de façon permanente. L'émetteur modulaire doit être étiqueté avec son propre numéro d'identification de CI et, si le numéro d'identification de CI n'est pas visible lorsque le module est installé à l'intérieur d'un autre matériel, l'extérieur du matériel dans lequel le module est installé doit également porter une étiquette faisant référence au module joint. Cette étiquette extérieure peut utiliser une formulation telle que la suivante : "Contient le module CI émetteur : 267X-OEMPULSE" ou "Contient le CI : 267X-OEMPULSE". Toute formulation de signification identique peut être utilisée. Le manuel doit inclure les instructions d'étiquetage de l'hôte pour l'intégrateur final.

RF Exposure guidance

In order to comply with ISED RF Exposure requirements, this device must be installed to provide at least 20 mm separation from the human body at all times.

Instructions relatives à l'exposition aux RF

Pour être conforme aux exigences de la ISED relatives à l'exposition aux radiofréquences, ce matériel doit être installé de manière à assurer à tout moment une distance d'au moins 20 mm du corps humain.