RFID systems

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RFID systems – for optimization of material flow and logistics

A constant flow of information is essential for seamless, efficient processes. In a wide range of different sectors, the intelligent RFID systems MOBY D, MOBY E, MOBY I, MOBY R, MOBY U, SIMATIC RF300 and RF600 ensure that you are always in the picture. This system family offers you considerable advantages over conventional identification systems.

Important data accompany a product or object from the start. Contactless data transfer provides for high levels of industrial compatibility. And the uniform system integration ensures easy and low-cost integration in the application. In short: With the RFID systems, you can perfectly control and optimize your material flow and your logistics.

Highlights

- Save time in production and logistics
- Fully automatic, fast identification, with 100% transmission reliability
- Production and quality data can be saved directly on the product
- Insensitive to temperature fluctuations and contamination
- Broad range of repeatedly reusable data memories – from SmartLabels to 32 KB tags
- Flexible system integration: serial, via PROFIBUS or Ethernet
- Easy integration into SIMATIC reduces engineering costs
- Support for ISO 14443, ISO 15693, ISO 18000-2, ISO 18000-4 standards as well as EPCglobal and ISO/IEC 18000-6

Meaningful data from the outset

The RFID systems ensure that meaningful data accompanies a product or object from the very beginning. The mobile data memories (MDS or tag/transponder) are attached to the product, product carrier, object or its transport or packing unit and are written by non-contact methods. This means that all the application-specific data is available on the mobile data memory. This is true whether you are dealing with vehicle body parts in the automotive industry or order picking boxes. Up to 32 KB of data can be stored and individually read and supplemented when required at the various workstations or manufacturing stations. This all means that the flow of material and data is synchronized optimally.

Contactless data transfer and a high degree of industrial compatibility

Powerful write/read devices (SLG) in various rugged designs ensure fast and reliable data transfer between the mobile data memories and the higher-level systems (PLC, PC, ...).

The data and power are transmitted inductively by an electromagnetic alternating field or by radio waves. This principle of contactless data transfer works reliably in the presence of contamination or through non-metallic materials.

Perfectly matched components

The RFID systems consist of perfectly matched individual components:

- Mobile data memories (tags)
- Read/write devices and mobile handheld terminals (readers)
- Antennas
- Interfaces for connection to the automation system (PROFIBUS, Ethernet)
- Software for system integration

Suitable for every sector

- Assembly lines
- Conveyor systems
- Industrial manufacturing
- Warehouses
- Logistics
- Distribution
- Order picking

Broad range of mobile data memories

A wide range of different mobile data memories is available using a variety of storage technologies (fixed code, EEPROM or FRAM/SRAM) and geometric designs. Their strength is not only their high level of data security but also the excellent high degree of protection against ambient conditions such as contamination, temperature fluctuations, washing water or shock load.

Flexible system integration

No matter what the requirements are: The RFID systems allow easy system integration into SIMATIC or SINUMERIK, in the PROFIBUS, Ethernet or a PC environment, and can be connected to any controller.

A wide range of communication modules, function blocks and powerful drivers and function libraries make integration into the application a quick an easy affair.

RFID systems for production – strong in performance and rugged

Conditions can sometimes be extremely harsh in the vicinity of assembly lines and industrial production. This is not a problem for the RFID systems and the systems specially developed for industrial applications. These are highly effective for both reading and writing as well as extremely reliable and feature high degrees of protection up to IP68.

They are characterized by a high level of data security and a large memory capacity, they can manage large volumes of data, communicate at lightning speed and are extremely resistant to interference. Because they are also especially easy to configure and install, they not only ensure reliable identification but also provide cost savings over the complete production line.

Finely graded systems are available for optimizing material flow and for controlling production to suit simple or complex tasks.

Application

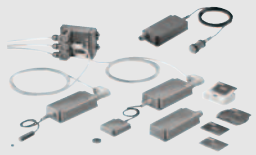
- Main assembly lines in the automotive industry such as body shop, paint shop, final assembly
- Production lines for engines, gearboxes or steering gear
- Conveyor systems for the assembly of anti-skid brake systems, airbags, brake systems, doors and cockpits
- Assembly lines for household electrical appliances, consumer electronics or electronic communication equipment
- Assembly lines for PCs, low-power motors, contactors or switches
- Production lines in the glass and ceramics industry

Highlights

- Suitable for use under the harshest conditions – high degree of protection up to IP68 as well as being insensitive to interference
- Large range of data memories – from the most compact sizes for flush mounting in conveyor systems with small workpiece holders through to high-temperature versions
- Seamless integration into SIMATIC reduces engineering costs
- Production and quality data can be saved directly on the product

	Production			
	MOBY E	**MOBY I**	**SIMATIC RF300**	**MOBY U**
Read/write distance	Up to 0.1 m	Up to 0.15 m	Up to 0.2 m	Up to 3.0 m
Frequency	13.56 MHz	1.81 MHz	13.56 MHz	2.4 GHz
Standards	ISO 14443-A			ISO 18000-4

Technical specifications

	MOBY E				MOBY I			
								
Write/read distance	Up to 100 mm				Up to 150 mm			
Data transmission rate	≥ 2.55 ms/byte reading, ≥ 2.8 ms/byte writing				Typically 0.8 ms/byte			
Memory	EEPROM				FRAM			
Standards	ISO 14443-A							
Approvals	ETS 300330 (Europe); FCC Part 15 (USA), UL/CSA				EN 300330 (Europe), FCC Part 15 (USA), UL/CSA			
Bulk capability	● (only with SIM)				–			
Multitag capability	● (only with SIM)				–			
Frequency	13.56 MHz				1.81 MHz			
Mobile data storage (tags)	**Designation**	**Memory size**	**Operating temperature**	**Degree of protection**	**Designation**	**Memory size**	**Operating temperature**	**Degree of protection**
	MDS E600 MDS E611 MDS E623 MDS E624	752 Byte 752 Byte 752 Byte 752 Byte	-25 ... +60 °C -25 ... +75 °C -25 ... +85 °C -25 ... +125 °C	IP68 IP67 IP67/IPX9K IP67/IPX9K	MDS 402 MDS 401 MDS 403 MDS 404 MDS 506 MDS 514 MDS 439E	8 KB FRAM 8 KB FRAM 8 KB FRAM 8 KB FRAM 32 KB FRAM 32 KB FRAM 8 KB FRAM	-25 ... +70 °C -25 ... +85 °C -25 ... +85 °C -25 ... +70 °C -25 ... +70 °C -25 ... +85 °C -25 ... +110 °C (+220 °C)	IP68/IPX9K IP67 IP68/IPX9K IP68/IPX9K IP68 IP68/IPX9K IP68
Write/read devices	**Designation**	**Operating temperature**	**Degree of protection**		**Designation**	**Operating temperature**	**Degree of protection**	
Stationary, with detached antenna	SIM 70 with ANT 0 SIM 70 with ANT 1 SLG 75	-25 ... +75 °C -25 ... +75 °C -25 ... +75 °C	IP65/IP67 IP65/IP67 IP65		SLG 40S (incl. antenna) SLG 40 (incl. antenna)	-25 ... +70 °C -25 ... +70 °C	IP65 IP65	
Stationary, with integrated antenna	SLG 72 SIM 72	-25 ... +75 °C -25 ... +75 °C	IP65 IP65		SLG 41S SLG 41 SLG 42 SLG 43 SIM 41	-25 ... +70 °C -25 ... +70 °C -25 ... +70 °C -25 ... +70 °C 0 ... +60 °C	IP65 IP65 IP65 IP65 IP54	
Mobile handheld terminal with integrated antenna	STG E	-20 ... +50 °C	IP54		STG I	-20 ... +50 °C	IP54	
Antennas	**Designation**	**Operating temperature**	**Degree of protection**		**Designation**	**Operating temperature**	**Degree of protection**	
	SLA 71 ANT 1 ANT 12 ANT 18 ANT 30 ANT 4	-25 ... +70 °C -25 ... +70 °C -25 ... +70 °C -25 ... +70 °C -25 ... +70 °C -25 ... +70 °C	IP65 IP65 IP65 IP65 IP65 IP65					
Connection to the automation system	**directly**		**via communication module (ASM)**		**directly**		**via communication module (ASM)**	
SIMATIC S7-300, S7-400			●				●	
PROFIBUS DP			●				●	
PROFINET			●				●	
Serial interface to other controllers, PCs, any other systems	●		●		●		●	
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SIMATIC RF300				MOBY U				
								
up to 200 mm[1]				150 … 3,000 mm				Write/read distance
50 byte/s or 3 KB/s				Approx. 8 or 4.8 KB/s without bulk (net)				Data transmission rate
FRAM/EEPROM				RAM				Memory
				ISO 18000-4				Standards
CE, UL[1], FCC, CSA				EN 300440-2, FCC Part 15C, UL/CSA				Approvals
•				• (max. 12)				Bulk capability
• (max. 4)				• (max. 12)				Multitag capability
13.56 MHz				2.4 GHz ... 2.4835 GHz				Frequency
Designation	**Memory size**	**Operating temperature**	**Degree of protection**	**Designation**	**Memory size**	**Operating temperature**	**Degree of protection**	**Mobile data storage (tags)**
RF320T	20 bytes	-25 ... +85 °C	IP67/IPX9K	MDS U315	2 KB RAM		IP65	
RF340T	8188 bytes	-25 ... +85 °C	IP68/IPX9K	MDS U524	32 KB RAM	-25 ... +70 °C	IP68	
RF350T	32765 bytes	-25 ... +85 °C	IP68	MDS U525	32 KB RAM	-25 ... +85 °C	IP65	
RF360T	8188 bytes	-25 ... +75 °C	IP67	MDS U589	32 KB RAM	-25 ... +85 °C	IP68	
RF370T	65276 bytes	-25 ... +85 °C	IP68			-25 ... +85 °C		
RF380T	32765 bytes	-25 ... +110 °C (+220 °C)	IP68	MDS U Service	32 KB RAM	to 220 °C cycl. -25 ... +70 °C	IP40	
Designation	**Operating temperature**	**Degree of protection**		**Designation**	**Operating temperature**	**Degree of protection**		**Write/read devices**
RF350R	-25 ... +70 °C	IP65						Stationary, with detached antenna
RF310R	-25 ... +70 °C	IP67		SLG U92	-25 ... +70 °C	IP65		Stationary, with integrated antenna
RF340R	-25 ... +70 °C	IP67						
RF310M	-10 ... +50 °C	IP54		STG U	-20 ... +60 °C	IP54		Mobile handheld terminal with integrated antenna
Designation	**Operating temperature**	**Degree of protection**		**Designation**	**Operating temperature**	**Degree of protection**		**Antennas**
directly		**via communication module (ASM)**		**directly**		**via communication module (ASM)**		**Connection to the automation system**
		•				•		SIMATIC S7-300, S7-400
		•				•		PROFIBUS DP
		•				•		PROFINET
• (via RS422)				•				Serial interface to other controllers, PCs, any other systems
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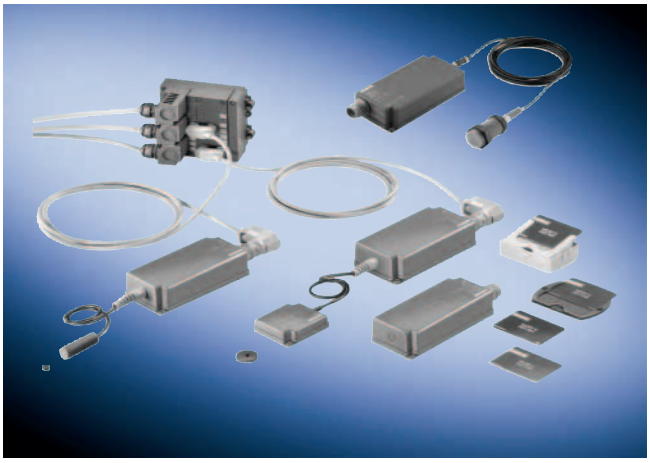
[1] Available soon

MOBY E

Introduction

Overview



MOBY E is a contactless identification system that has been specially designed for applications in logistics, distribution and industrial production.

Depending on requirements (EEPROM, size, ambient conditions, large clearance etc.), different data memories and write/read devices are available. Thanks to their low price, these data memories can be used, for example, as an "electronic barcode substitute" or "delivery note".

The MOBY E identification system boasts the following features:

- 13.56 MHz identification system with write/read distance of up to 100 mm
- Designed for the upper and medium performance range
- Extensive range of battery-free data memories (752 bytes EEPROM, up to + 150 °C) including a special data memory for tool identification.
- Very high level of reliability even in the presence of contamination, temperature fluctuations and electromagnetic interference.
- Simple integration into SIMATIC and the PROFIBUS DP
- Can be connected via serial interface to any system, e.g. PC with DOS / Windows 95/NT

Benefits

- The standard MOBY E components permit the secure and quick construction of application-specific identification systems, so that capacities are freed up for the generation of the application software.
- Worldwide support, configuration and service support.

Application

MOBY E is used wherever containers, boxes, carriers, workpiece carriers, tools and hangers have to be identified reliably, quickly, automatically and without contact.

The main applications for MOBY E are:

- Logistics (identification of pallets, charge carriers, containers etc.)
- Distribution (data memory as "electronic barcode supplement" or "delivery note")
- Parts identification (e.g. data storage is attached to products/pallets).
- Assembly lines (e.g. data memory is attached to workpiece carriers)
- Conveyor systems (e.g. data memory is attached to the hanger of an overhead conveyor).

Function

MOBY identification systems ensure that important data accompanies the product from the very beginning.

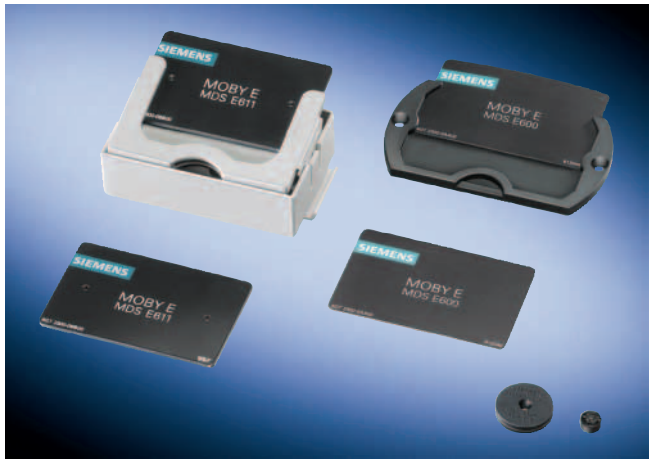
Mobile data memories ("electronic goods notes") are used in place of barcodes and already contain all product-specific data in addition to the product number. Up to 752 byte of user data can be stored and managed in this way. Enough to enable quality data to be stored as well.

Using stationary as well as mobile read/write devices (SLGs), the necessary information (production data, transport routes, etc.) can be read without contact (inductively), and even be supplemented or modified without the need for a direct line-of-sight link. MOBY records the data of objects quickly and reliably. MOBY thereby ensures effective and cost-effective automation.

Technical specifications

Type	**Contactless RF identification system for the lower and medium performance range**
Transmission frequency data/energy	13.56 MHz
Memory capacity	752 byte user memory 4 byte fixed code as serial number
Memory type	EEPROM
Write/read cycles	> 1 000 000/unlimited
Data management	Bytewise access (16-byte block organization internally)
Data transmission rate from mobile data storage unit to read/write device	≥ 2.8 ms/byte
Read/write distance	Up to 100 mm
Operating temperature	-25 to +125 °C
Degree of protection	IP67, IP68
Can be connected to	SIMATIC S5/S7, PC, non-Siemens PLC, PROFIBUS DP
Special features	• CRC checksums for secure data transmission • High resistance to interference frequencies • Multitag and password function (SIM only)
Approvals	ETS 300330 (Europe), FCC Part 15 (USA), UL/CSA

Overview



Type	Feature
MDS E600	Universal data storage unit (752 byte EEPROM) in credit card format (85 mm x 54 mm x 0.8 mm) • Degree of protection IP68 • Temperature range up to +60 °C • Max. read/write distance 70 mm
MDS E611	Universal data storage unit (752 byte EEPROM) in credit card format (85 mm x 54 mm x 2.5 mm) This mobile data medium can also be used in harsh environments and under extreme conditions • Degree of protection IP67 • Temperature range up to +75 °C • Max. read/write distance 100 mm
MDS E623	Small data memory (752 byte EEPROM, Ø 10 mm x 4.5 mm), specially for tool coding according to DIN 69873 • Degree of protection IP67/IPX9K [1]) to DIN EN 60529 / VDE 0470-1 • Temperature range up to +85 °C • Max. read/write distance 6 mm
MDS E624	Universal compact data memory (752 byte EEPROM), Ø 27 mm x 4 mm • Degree of protection IP67/IPX9K [1)] to DIN EN 60529 / VDE 0470-1 • Temperature range up to +125 °C • Max. read/write distance 40 mm

1) Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

Design

The MOBY E data storage mainly comprises logic, an antenna and an EEPROM memory.

Function

If an MDS moves into the transmission field of the SLG, the necessary power for all circuit components is generated and monitored by means of the energy supply unit. The pulse-coded information is prepared in such a way that it can be processed further as pure digital signals. The handling of data, including check routines, is performed by the control unit which also manages the user memory.

Technical specifications

Field data of MDS and SLG (all dimensions in mm)

The field data for all MOBY E components of the MDS and SLG are shown in the tables below. Thus it becomes particularly easy to select the right MDS and SLG. All the technical data listed is typical data and is applicable for an ambient temperature of between 0 °C and +50 °C and a supply voltage of between 22 V and 27 V DC.

Operating/limit distance (without influence of metal)

Type	MDS E600	MDS E611	MDS E623	MDS E624
SLG 70 with ANT 0/ SIM 70 with ANT 0	-	-	0 - 4/6	0 - 8/15
SLG 70 with ANT 1/ SIM 70 with ANT 1	0 - 50/70	10 - 70/100	-	0 - 25/40
SLG 72 / SIM 72	0 - 50/70	10 - 70/100	-	0 - 30/40
SLA 71	0 - 50/70	10 - 70/100	-	0 - 25/40
SLG 75 with ANT 1	0 - 50/70	10 - 70/100	-	0 - 25/40
SLG 75 with ANT 4	0 - 50/70	10 - 70/100	-	0 - 25/40
SLG 75 with ANT 12	-	-	0 - 4/5	-
SLG 75 with ANT 18	-	-	0 - 4/6	0 - 8/15
SLG 75 with ANT 30	-	-	-	0 - 18/24

Distance from MDS to MDS

Type	MDS E600	MDS E611	MDS E623	MDS E624
SIM 70 with ANT 0	-	-	> 30	> 50
SIM 70 with ANT 1	> 400	> 400	-	> 250
SLG 72/SIM 72/ SLA 71	> 400	> 400	-	> 250
SLG 75 with ANT 1	> 400	> 400	-	> 250
SLG 75 with ANT 4	> 400	> 400	-	> 250
SLG 75 with ANT 12	-	-	> 20	-
SLG 75 with ANT 18	-	-	> 30	> 50
SLG 75 with ANT 30	-	-	-	> 60

Overview

Universal data memory (752 byte EEPROM) in credit card format (85 mm x 54 mm x 0.8 mm), degree of protection IP68, temperature range up to +60 °C and a max. write/read distance of 70 mm.

Technical specifications

Mobile data storage unit MDS E600	
Memory size	752 byte of EEPROM available
MTBF	2 x 10^6 hours
Read cycles	Unlimited
Write cycles, min.	200000
at ≤ 40 °C, typical	> 1000000
Data retention time	> 10 years (at < +40 °C)
Read/write distance, max.	70 mm (see field data)
Memory organization	Bytewise access (16-byte block organization internally)
Energy source	Inductive power transmission
Shock/vibration	ISO 10373/ISO 7810
Torsion and bending load	ISO 10373/ISO 7816-1
Mounting technique	Fixing lug/adhesive
Recommended distance to metal	≥ 20 mm, e.g. using spacer 6GT2190-0AA00 in conjunction with fixing lug 6GT2190-0AB00
Degree of protection to EN 60529	IP68
Resistance to chemicals	See configuration manual
Housing	ISO card
• Dimensions (Lx W x H) in mm	85.6. x 54 x 0.8
• Color/material	Anthracite/white/PVC
Ambient temperature	
• During operation	-25 … +60 °C
• During storage and transport	-25 … +60 °C
Weight, approx.	6 g

Field data in mm

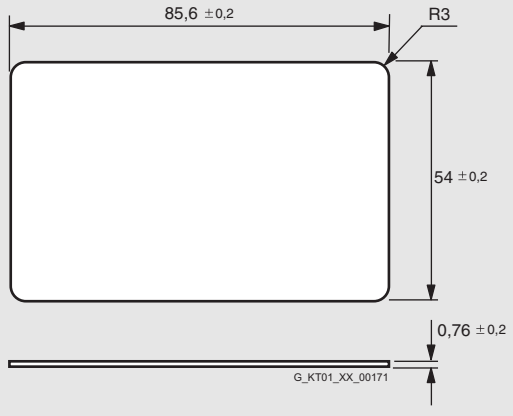
MDS E600 to:	**SIM 70 with ANT 1 SLG 75 with ANT 1**	**SLG 75 with ANT 4**	**SLG 72/SIM 72**	**SLA 71**
Operating distance (S_a)	0 ... 50	0 ... 50	0 ... 50	0 ... 50
Limit distance (S_g)	70	70	70	70
Transmission window (L)	60	220	75 / 50	60
Minimum distance from MDS to MDS	> 400	> 400	> 400	> 400

Selection and Ordering data

		Order No.
Mobile data storage MDS E600	A	**6GT2 300-0AA00**
Minimum order quantity: 50 units		
Accessories		
Fixing lug	A	**6GT2 390-0AA00**
For MDS E600		
Fixing lug		**6GT2 190-0AB00**
For MDS E600/E611		
Spacer		**6GT2 190-0AA00**
For fixing lug, thickness 20 mm		

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



MOBY E mobile data storage unit

MDS E611

Overview

Universal data memory (752 byte EEPROM) in credit card format (85 mm x 54 mm x 2.5 mm), degree of protection IP67, temperature range up to +85 °C and a max. write/read distance of 100 mm.

Technical specifications

Mobile data storage unit MDS E611	
Memory size	752 byte of EEPROM available
MTBF	2 500 000 h
Read cycles	unlimited
Write cycles, min.	200 000
at ≤ 40 °C, typical	> 1 000 000
Data retention time	> 10 years (at < +40 °C)
Read/write distance, max.	100 mm (see field data)
Memory organization	Byte-oriented access (16-byte internal block organization)
Energy source	Inductive power transmission
Shock/vibration	50 *g*/20 *g* to EN 60721-3-7
Torsion and bending load	none
Fixing	Fixing lug/screws
Recommended distance from metal	≥ 20 mm
Degree of protection as per EN 60529	IP67
Chemical stability	See Configuration Manual
Housing	EPOXY card
• Dimensions (L x W x H) in mm	85.8 x 54.1 x 2.5
• Color/material	Anthracite/black/epoxy plate
Ambient temperature	
• in operation	-25 to +75 °C
• During transportation and storage	-40 to +85 °C
Weight, approx.	21 g

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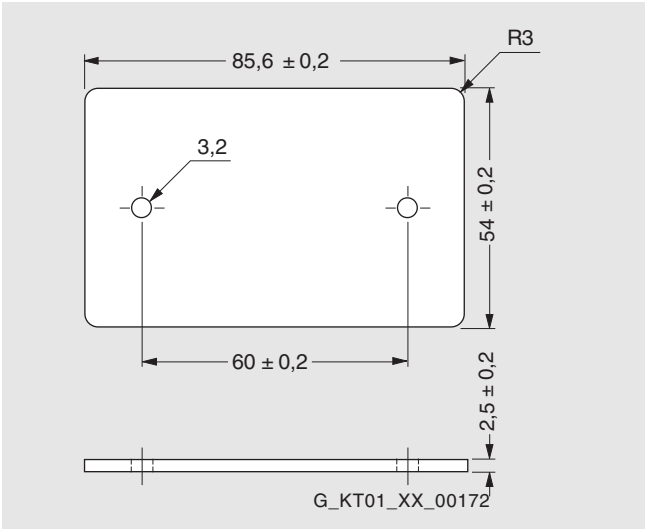
Field data in mm

MDS E611 to:	**SIM 70 with ANT 1 SLG 75 with ANT 1**	**SLG 75 with ANT 4**	**SLG 72/SIM 72**	**SLA 71**
Operating distance (S_a)	20 ... 70	10 ... 70	20 ... 70	10 ... 70
Limit distance (S_g)	100	100	100	100
Transmission window (L)	80	250	90 / 60	80
Minimum distance from MDS to MDS	> 400	> 400	> 400	> 400

Selection and Ordering data

	Order No.
Mobile data storage MDS E611 Minimum order quantity: 10 units	**6GT2 300-0BB00**
Accessories	
Fixing lug For MDS E600/E611	**6GT2 190 0AB00**
Spacer For fixing lug, thickness 20 mm	**6GT2 190-0AA00**

Dimensions



Overview

Small data storage unit (Ø 10 mm x 4.5 mm, 752 byte EEPROM) specially designed for tool coding according to DIN 69873.
It can be mounted flush in metal and can also be used in small workpiece holders.

Technical specifications

Mobile data storage unit MDS E623	
Memory size	752 byte of EEPROM available
MTBF	2 500 000 h
Read cycles	Unlimited
Write cycles, min.	200 000
at ≤ 40 °C, typical	> 1 000 000
Data retention time	> 10 years (at < +40 °C)
Read/write distance, max.	6 mm (see field data)
Memory organization	Byte-oriented access (16-byte internal block organization)
Energy source	Inductive power transmission
Shock/vibration to EN 60721-3-7,Class 7 M3	100 *g* /20 *g*
Torsion and bending load	Not permissible
Fixing	Glue, e.g. UHU Plus endfest 300
Recommended distance from metal	Flush mounted
Degree of protection to	
• EN 60 529	IP67
• DIN EN 60529 / VDE 0470-1	IPX9K[1)]
Resistance to chemicals	See Configuration Manual
Housing	DIN pill
• Dimensions	Ø 10 mm x 4.5 mm to DIN 69873
• Color/material	Black/epoxy resin
Ambient temperature	
• During operation	-25 to +85 °C
• During transportation and storage	-40 to +100 °C
Weight, approx.	4 g

Field data in mm

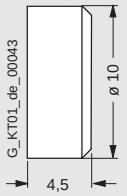
MDS E623 to:	**SIM 70 ANT 0, SLG 75 with ANT 18**	**SLG 75 with ANT 12**
	Metal-free installation	
Operating distance (S_a)	0 to 6	0 - 4
Limit distance (S_g)	6	5
Transmission window (L)	4 (center deviation ±2)	8 (center deviation ±4)
	Flush-mounted in metal	
Operating distance (S_a)	0 to 3.5	0 to 3
Limit distance (S_g)	4	4
Transmission window (L)	3 (center deviation ±2)	4 (center deviation ±2)
Minimum distance from MDS to MDS	> 30	> 20

1) Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

Selection and Ordering data

	Order No.
Mobile data storage unit MDS E623 Minimum order quantity: 10 units	**6GT2 300-0CD00**

Dimensions



MDS E624

Overview

Universal compact data memory (Ø 27 mm × 4 mm, 752 byte EEPROM) with degree of protection IP67/IP X9K [1], a temperature range of up to +125 °C and a max. write/read distance of 40 mm.

Technical specifications

Mobile data storage unit MDS E624	
Memory size	752 byte of EEPROM available
MTBF	2 500 000 h
Read cycles	Unlimited
Write cycles, min.	200 000
at ≤ 40 °C, typical	> 1 000 000
Data retention time	> 10 years (at < +50 °C)
Read/write distance, max.	40 mm (see field data)
Memory organization	Byte-oriented access (16-byte internal block organization)
Energy source	Inductive power transmission
Shock/vibration to EN 60721-3-7, Class 7 M3	100 *g*/20 *g*
Torsion and bending load	Not permissible
Fixing	Adhesive/M3 screws
Recommended distance from metal	≥ 20 mm
Degree of protection to	
• EN 60 529	IP67
• DIN EN 60529 / VDE 0470-1	IPX9K[1]
Ex approval	ATEX Zone 2G
Resistance to chemicals	See Configuration Manual
Housing	Button
• Dimensions	Ø 27 mm x 4 mm
• Color/material	Black/epoxy resin
Ambient temperature	
• During operation	-25 to +125 °C
• During transportation and storage	-40 to +150 °C
Weight, approx.	5 g

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Field data in mm

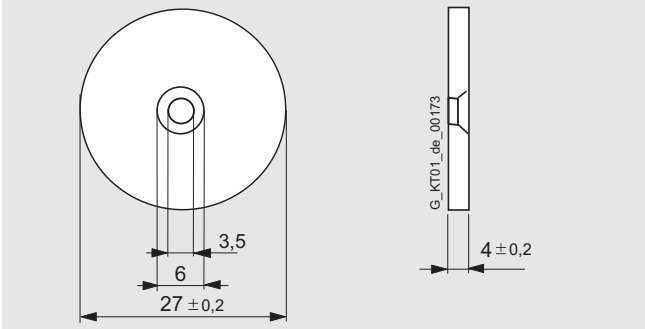
MDS E624 to:	SIM 70 with ANT 0	SLG 75 with ANT 1	SLG 75 with ANT 4	SLG 75 with ANT 18	SIM 70 with ANT 1, SLA 71	SLG 72	SLG 75 with ANT 30
Operating distance (S_a)	0 to 8	0 to 25	0 to 25	0 to 8	0 to 25	0 to 30	0 to 18
Limit distance (S_g)	15	40	35	15	40	40	24
Transmission window (L)	12	38	200	12	38	60	14
Minimum distance from MDS to MDS	> 50	> 250	> 250	> 50	> 250	> 250	> 60

[1] Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

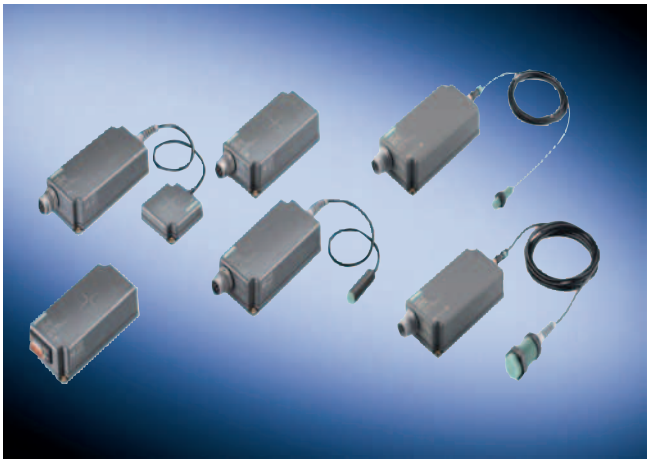
Selection and Ordering data

	Order No.
Mobile data storage unit MDS E624 Minimum order quantity: 20 units	**6GT2 300-0CE00**

Dimensions



Overview



The SLG/SIM ensures inductive communication and energy supply to the MDS and for the serial connection to various systems (SIMATIC, PC, etc.).

Various different SLGs/SIMs are available for small, medium and large distances to the MDS to satisfy specific customer requirements.

A rugged enclosure supports use under harsh industrial conditions and ensures high resistance to many chemical substances.

Type	Feature
SIM 70 with ANT 0	A write/read device with separate antenna optimized for use in small assembly lines (dimensions (mm) Ø 18 x 1 x 50) • Max. read/write distance 15 mm • Degree of protection IP65 • Temperature range up to +70 °C • With RS232/RS422 interface for connection to PC/PLC
SIM 70 with ANT 1	Universal write/read device with detached antenna (dimensions (mm) 75 x 75 x 20) • Max. read/write distance 100 mm • Degree of protection IP65 • Temperature range up to +70 °C • With RS232/RS422 interface for connection to PC/PLC
SLA 71	Universal low-cost, compact write/read antenna for connection to ASM 724/754 (dimensions (mm) 75 x 75 x 20) • Max. read/write distance 100 mm • Degree of protection IP65 • Temperature range up to +70 °C
SLG 72	Universal Universal write/read device with integrated antenna (dimensions (mm) 160 x 80 x 40) • Max. read/write distance 100 mm • Degree of protection IP65 • Temperature range up to +70 °C • RS 422 interface for connection to ASM 475/473/452/456 ...
SIM 72	Same as above but with RS232/RS422 interface for connection to PC/PLC
SLG 75	Write/read device with connector for an external antenna, with RS 422 interface for connection to ASM 475/473/452/456 ...
ANT1	Universal compact antenna (dimensions (mm) 75 x 75 x 20) • Max. read/write distance 100 mm • Degree of protection IP65 • Temperature range up to +70 °C • Cable length 3 m
ANT 4	Antenna for production systems and assembly lines (dimensions (mm) 320 x 80 x 30) For high speeds over a long transmission field • Max. read/write distance 100 mm • Degree of protection IP65 • Temperature range up to +70 °C • Cable length 1 m, plugged in on electronics side
ANT12	Small antenna (dimensions (mm) Ø 12 x 1.5 x 40) for tool identification (with MDS E623) • Max. read/write distance 5 mm • Degree of protection IP65 • Temperature range up to +70 °C • Cable length 3 m
ANT18	Universal compact antenna (dimensions (mm) Ø 18 x 1.5 x 58) for assembly lines with small workpiece holders • Max. read/write distance 100 mm • Degree of protection IP65 • Temperature range up to +70 °C • Cable length 3 m
ANT 30	Universal compact antenna (dimensions (mm) Ø 30 x 1.5 x 58) for assembly lines with small workpiece holders • Max. read/write distance 24 mm • Degree of protection IP65 • Temperature range up to +70 °C • Cable length 3 m

Introduction

Function

The SLG/SLA converts the commands (read MDS, etc.) received by the interface module (ASM) and generates via the antenna a magnetic alternating field for the contactless communication and transmission of power to the MDS. The transmittable volume of data between SLG/SLA/SIM and MDS depends on:

- the speed at which the MDS moves through the transmission window of the SLG/SLA
- the length of the transmission window

Failsafe protocols and access mechanisms achieve a high degree of data security and guarantee fast, secure and noise-resistant communication.

The SIM combines an ASM and an SLG in one rugged enclosure. It can be supplied with an RS422/RS232 interface so that it can be connected to any higher-level system:

- PC
- Computer
- Non-Siemens PLC

All SIM versions are operated with a 3964R procedure.
The following C libraries are available on the "RFID Systems Software & Documentation" CD for quick and easy integration into the application:

- CCT32 (for Windows 95/NT 4.0), extended function range including password protection, access authorization and multitag recognition

Technical specifications

Field data

Minimum distance from SLG to SLG (antennas)		
SIM 70 with ANT 0	SIM 70 with ANT 0	> 125 mm
SIM 70 with ANT 1	SIM 70 with ANT 1	> 800 mm
SLG 72 / SIM 72	SLG 72/SIM 72	> 800 mm
SLG 75 with ANT 1	SLG 75 with ANT 1	> 800 mm
SLG 75 with ANT 4	SLG 75 with ANT 4	> 800 mm
SLG 75 with ANT 12	SLG 75 with ANT 12	> 80 mm
SLG 75 with ANT 18	SLG 75 with ANT 18	> 125 mm
SLG 75 with ANT 30	SLG 75 with ANT 30	> 200 mm

SIM 70 with ANT 0

Overview

Optimized for use in small assembly lines, write/read device with detached antenna (dimensions (mm) Ø 18 × 1 × 50), max. write/read distance 15 mm, degree of protection IP65, temperature range up to +75 °C, with RS 232/RS 422 interface for connection to PC/PLC.

Selection and Ordering data

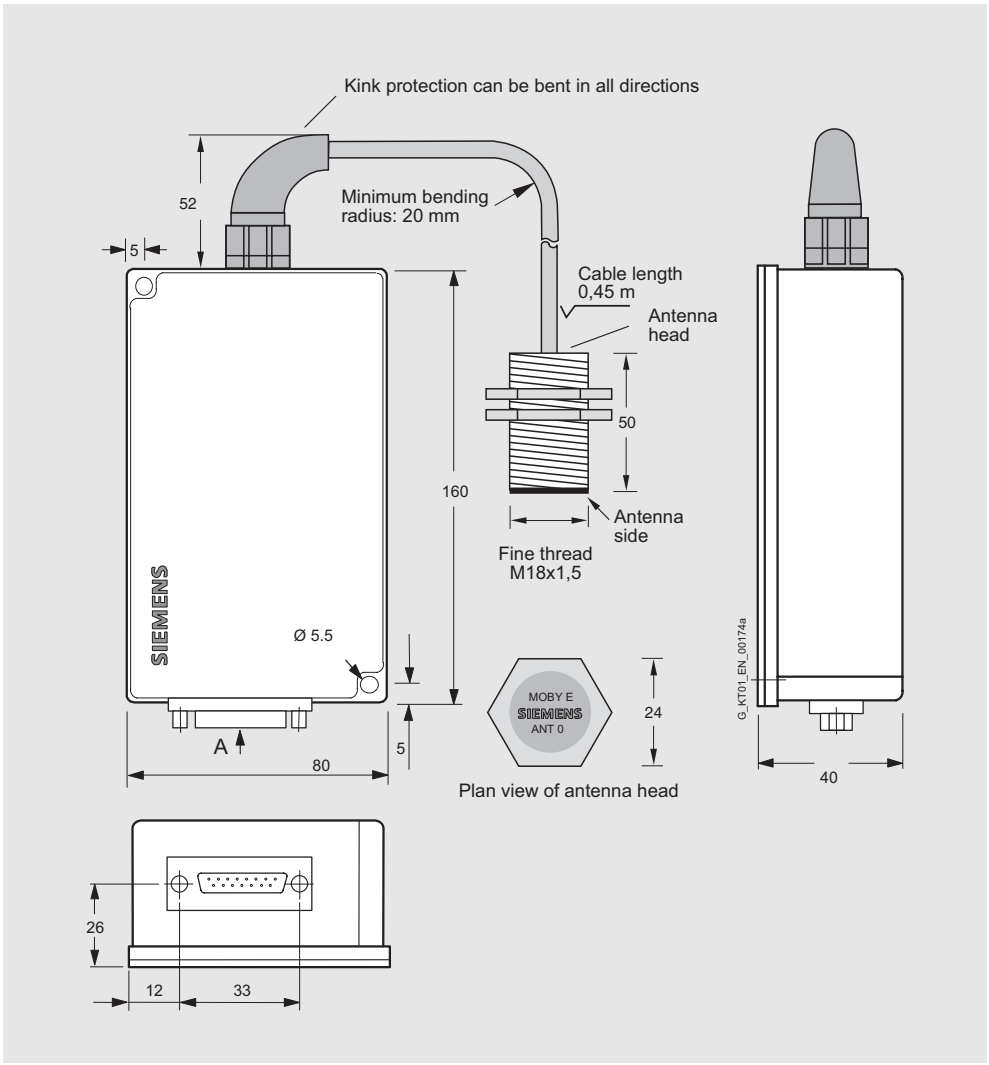
	Order No.
SIM 70 with ANT 0	**6GT2 305-0AA00**
Accessories	
MOBY software	**6GT2 080-2AA10**
FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program RFID documentation	

Technical specifications

Write/read device	**SIM 70 with ANT 0**
Inductive interface to the MDS	Remote antenna
Write/read distance	max. 15 mm, see MDS field data
Transmission frequency (energy/data)	13.56 MHz
Serial interface	RS 232/RS 422 to PC/PLC
Max. cable length at 24 V DC	30 m (RS-232)
Connector	15-pin subminiature connector (pin)
Data transmission rate	9600 baud
Procedure	3964 R
Software functions	
• Programming	Dependent on PC/PLC etc.
• Available software (included on MOBY software CD)	C-library for PC CT32 (Windows 95/NT 4.0)
• Commands	Read, write, initialize MDS ..., multitag and password function
Digital input/output via 15-pin sub-D connector	1/1, short-circuit proof
MTBF (at +25 °C)	2.5 x 10^5 hours
Rated supply voltage value/ permissible range	Via connectors 24 V DC / 12 V to 30 V DC
Power consumption (at room temperature)	
• Inrush current, momentary	Max. 700 mA
• Operation	typ. 180 mA
Enclosure	
• Dimensions in mm	
- for antenna head	M18 x 1.0 x 50
- for electronics without connector	160 x 80 x 40
• Color	
- antenna/SLG housing	Anthracite/anthracite
• Material	
- antenna/SIM/SLG housing	Krastin/PA 12
Degree of protection to EN 60529	
Enclosure/Antenna (front side)	IP67/IP67
Shock resistant to EN 60721-3-7	30 *g*, Class 7M2
Vibration resistant to EN 60721-3-7	1,5 *g*, Class 7M2
Attachment of enclosure	2 x M5 screws
Attachment of the antenna	2 plastic nuts M18 x 5
Ambient temperature	
• Operation	-25 °C to +75 °C
• Storage and transport	-40 °C to +85 °C
Weight, approx.	0.51 kg

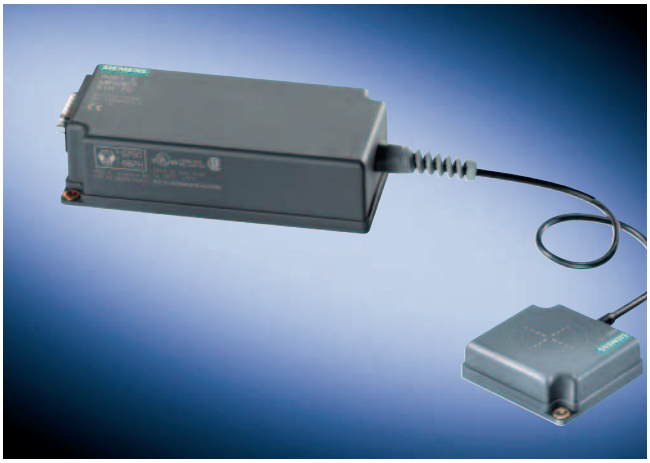
SIM 70 with ANT 0

Dimensions



SIM 70 with antenna ANT 0

Overview



Universal write/read device with detached antenna (dimensions (mm) 75 × 75 × 20), max. write/read distance 100 mm, degree of protection IP65, temperature range up to +75 °C, with RS 232/RS 422 interface for connection to PC/PLC.

Selection and Ordering data

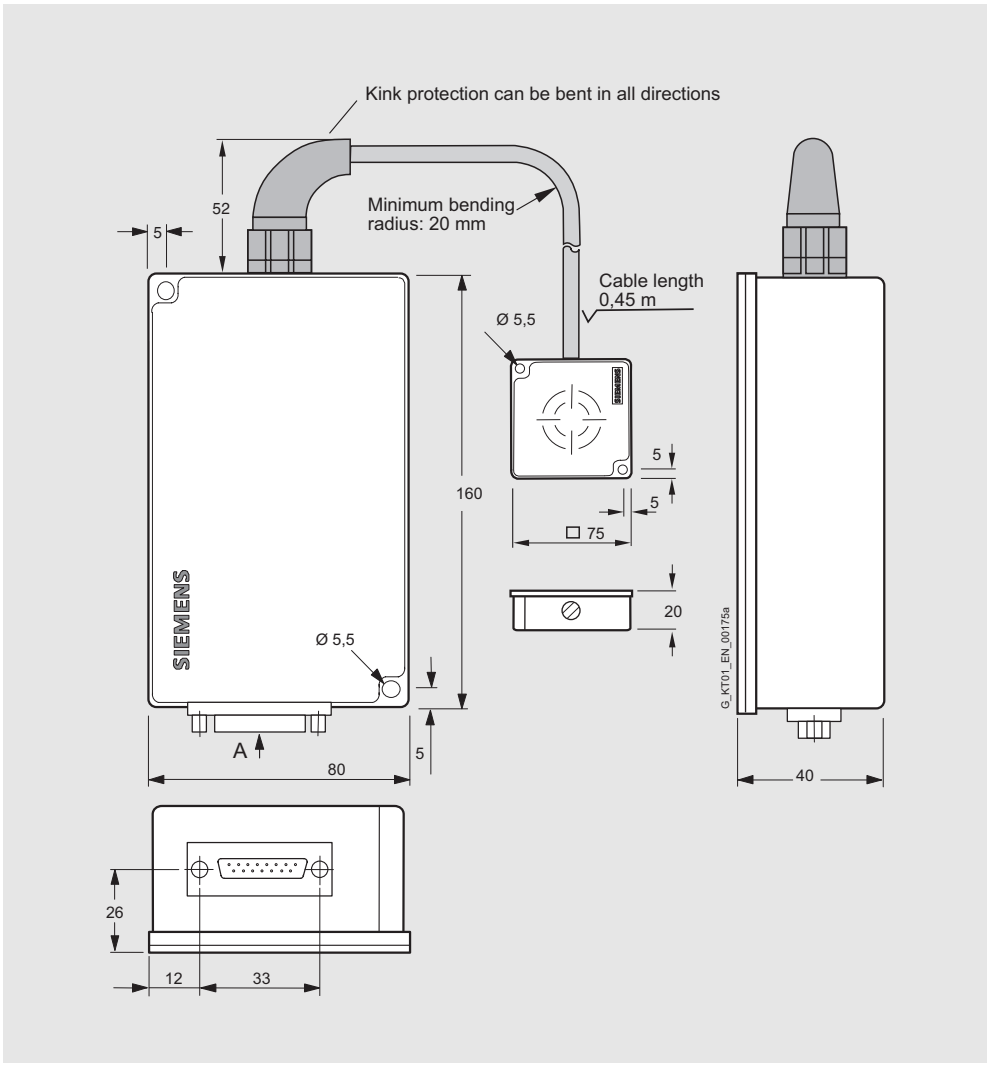
	Order No.
SIM 70 with ANT 0	**6GT2 305-0AB00**
Accessories	
MOBY software	**6GT2 080-2AA10**
FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program RFID documentation	

Technical specifications

Write/read device	**SIM 70 with ANT 1**
Inductive interface to the MDS	Remote antenna
Write/read distance	max. 100 mm, see MDS field data
Transmission frequency (energy/data)	13.56 MHz
Serial interface	RS 232/RS 422 to PC/PLC
Max. cable length at 24 V DC	30 m (RS 232)
Connector	15-pin subminiature connector (pin)
Data transmission rate	9600 baud
Procedure	3964 R
Software functions	
• Programming	Dependent on PC, PLC etc.
• Available software (included on MOBY software CD)	C-library for PC CCT32 (Windows 95/NT 4.0)
• Commands	Read, write, initialize MDS ..., multitag and password function
Digital input/output via 15-pin sub D connector	1/1, short-circuit proof
MTBF (at +25 °C)	2.5 x 10^5 hours
Rated supply voltage value/permissible range	Via connectors 24 V DC / 12 V to 30 V DC
Current input (at room temperature)	
• Inrush current, momentary	Max. 700 mA
• Operation	typ. 180 mA
Enclosure	
• Dimensions in mm	
- for antenna head	75 x 75 x 2
- for electronics without connector	160 x 80 x 40
• Color	
- antenna/SLG housing	Anthracite/anthracite
• Material	
- antenna/SIM/SLG housing	PA 12
Degree of protection to EN 60529	
Enclosure/antenna (front side)	IP65/IP67
Shock resistant to EN 60721-3-7	30 *g*, Class 7M2
Vibration resistant to EN 60721-3-7	1,5 *g*, Class 7M2
Attachment of enclosure	2 x M5 screws
Attachment of the antenna	2 x M5 screws
Ambient temperature	
• Operation	-25 °C to +75 °C
• Storage and transport	-40 °C to +85 °C
Weight, approx.	0.62 kg

SIM 70 with ANT 1

Dimensions



SIM 70 with antenna ANT 1

Overview

SLG 72

Universal write/read device with integral antenna (dimensions (mm) 160 x 80 x 40), max. write/read distance 100 mm, degree of protection IP65, temperature range up to +75 °C

SIM 72

Like the SLG 72, but with RS232/RS422 interface for connection to PC/PLC.

Technical specifications

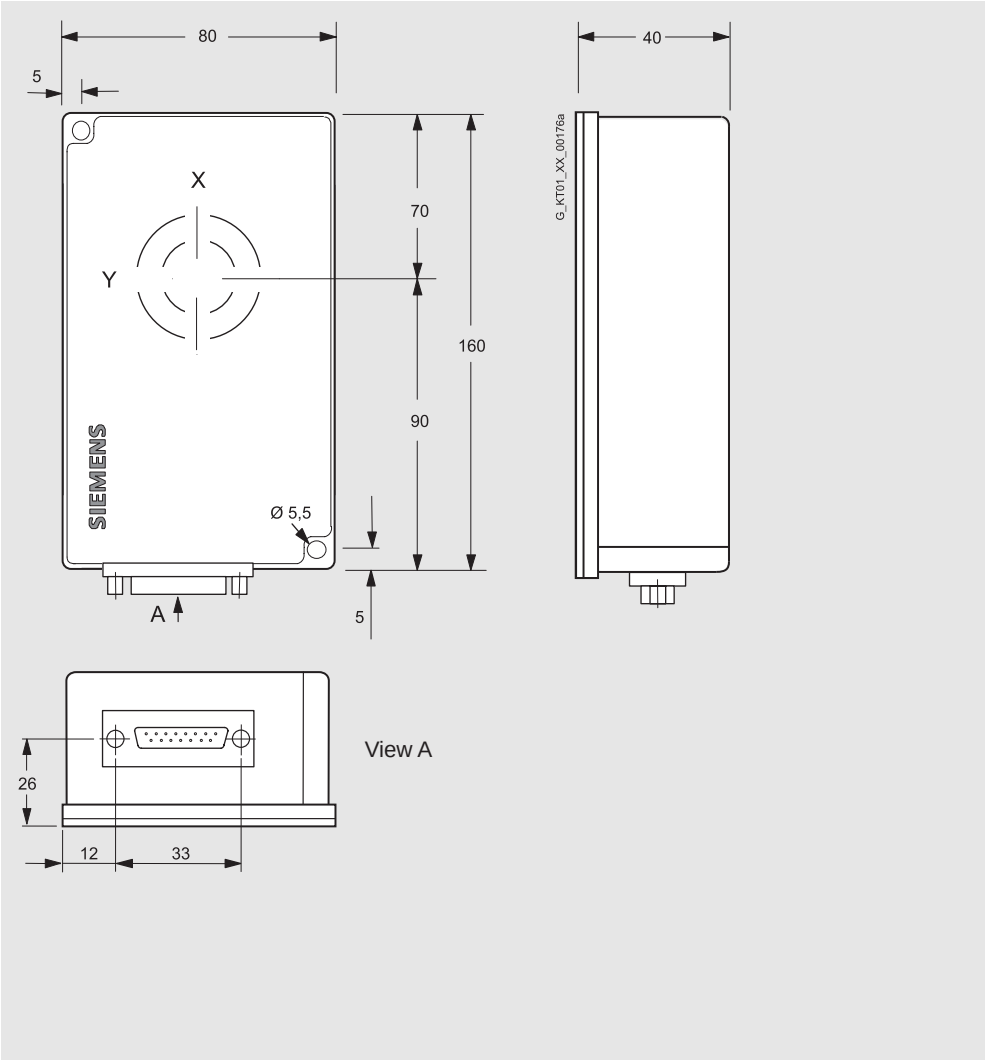
Write/read device	SLG 72	SIM 72
Inductive interface to the MDS		
Write/read distance	max. 100 mm, see MDS field data	
Transmission frequency (energy/data)	13.56 MHz	
Serial interface	RS 422 to ASM	RS 232/RS-422
Max. cable length at 24 V DC	1000 m (ASM-SLG)	30 m (RS 232)
Connector	6-pin SLG connector to DIN 43651	15-pin subminiature connector (pin)
Data transmission rate	19200 baud	9600 baud
Procedure	MOBY I procedure	3964 R
Software functions		
• Programming		Dependent on PC, PLC etc.
• Available software (included on MOBY software CD)	See ASM and associated S5/S7 – FB/FC	C-library for PC CCT32 (Windows 95/NT 4.0)
• Commands	Read, write, initialize MDS ...	
		Multitag and password function
Digital input/output via 15-pin sub-D connector	-	1/1, short-circuit proof
MTBF (at +25 °C)	2.5 x 10^5 hours	
Rated supply voltage value/permissible range	Via connectors 24 V DC / 20 V to 30 V DC	Via connectors 24 V DC / 12 V to 30 V DC
Current input		
(at room temperature)		
• Inrush current, momentary	Max. 700 mA	Max. 700 mA
• Operating (24 V DC)	typ. 180 mA	Typ. 180 mA without DO
Enclosure		
• Dimensions in mm	160 x 80 x 40	
• Color	Anthracite	
• Material	PA 12	
Degree of protection to EM 60529	IP65	
Shock resistant to EN 60721-3-7	30 *g*, Class 7M2	
Vibration resistant to EN 60721-3-7	1.5 *g*, Class 7M2	
Attachment of enclosure	2 x M5 screws	
Ambient temperature		
• Operation	-25 °C to +75 °C	
• Storage and transport	-40 °C to +85 °C	
Weight, approx.	0.55 kg	

SLG 72/SIM 72

Selection and Ordering data

	Order No.
Write/read device SLG 72 with integrated antenna	**6GT2 301-0CA00**
SIM 72 with integrated antenna	**6GT2 305-0CA00**
Accessories	
MOBY software FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program RFID documentation (German + English)	**6GT2 080-2AA10**

Dimensions



SIM 72 with integrated antenna

Overview

Write/read device with RS 422 interface for connection to ASM, with connector for an external antenna:

- ANT 1, universal compact antenna
  (dimensions (mm) 75 x 75 x 20)
- ANT 4, for production plants and assembly lines.
  Due to the long transmission field, high speeds are possible.
  Dimensions (mm) 320 x 80 x 30
- ANT 12, small antenna
  (dimensions (mm) Ø 12 x 1.5 x 40) for tool identification
  (with MDS E623)
- ANT 18, universal compact antenna
  (dimensions (mm) Ø 18 x 1.5 x 58) for assembly lines with
  small workpiece holders
- ANT 30, universal compact antenna
  (dimensions (mm) Ø 30 x 1.5 x 58) for assembly lines with
  small workpiece holders

Technical specifications

Write/read device	**SLG 75 with ANT x**
Interface to remote antennas	ANT 1, ANT 4, ANT 12, ANT 18 or ANT 30
Connector	4-pin (socket)
Serial interface	RS422 to ASM
Max. cable length at 24 V DC	1000 m (ASM-SLG)
Connector	6-pin SLG-connector to DIN 43651 (pin on device side)
Transmission rate	19200 baud
Procedure	MOBY I procedure
Software functions	
• Programming	See ASM and associated S5/S7 – FB/FC
• Commands	Read, write, initialize MDS ...
MTBF (at +25 °C)	2.5 x 10^5 hours
Rated supply voltage value/ permissible range	Via connectors 24 V DC / 20 V to 30 V DC
Power consumption (at room temperature)	
• Inrush current, momentary	max. 700 mA
• Operation	typ. 180 mA
Housing	
• Dimensions for electronics without connector (in mm)	160 x 80 x 40
• Color	Anthracite
• Material	PA 12
Degree of protection as per EN 60529	IP65
Shock-resistant to EN 60721-3-7, Class 7M2	30 *G*
Vibration-resistant to EN 60721-3-7, Class 7M2	1.5 *g*, 200-500 Hz
Attachment of enclosure	2 x M5 screws
Ambient temperature	
• Operating	-25 to +70 °C
• During transportation and storage	-40 to +85 °C
Weight, approx.	0.52 kg

SLG 75 with ANT x

Antenna	ANT 1	ANT 4	ANT 12	ANT 18	ANT 30
Inductive interface to the MDS	13.56 MHz				
Max. write/read distance ANT - MDS (S_g)	100 mm		5 mm	15 mm	24 mm
Interface to SLG 75					
Plug connection	4-pin (pins on antenna side)				
Antenna cable length (cannot be changed)	3 m	1 m	3 m		
Enclosure dimensions in mm	75 x 75 x 20 (L x W x H)	320 x 80x 30 (L x W x H)	M12 x 1,0 x 40 (Ø x thread x L)	M18 x 1,0 x 55 (Ø x thread x L)	M30 x 1,5 x 58 (Ø x thread x L)
Color	Anthracite		Pale turquoise		
Material	Plastic PA 12		Plastic Krastin		
Degree of protection as per EN 60 529	IP67		IP67 (front)		
Shock-resistant to EN 60 721-3-7, Class 7M2	50 *g* Maximum value, no continuous load				
Vibration-resistant to EN 60 721-3-7, Class 7M2	20 *g* (3 to 500 Hz) maximum value, no continuous load				
Ambient temperature					
• in operation	- 25 to + 70 °C				
• During transportation and storage	- 40 to + 85 °C				
MTBF (at 40 °C)	2.5 x 10^5 hours				
Weight, approx.	80 g	950 g	45 g	120 g	150 g

Field data SLG 75 with antenna

SLG 75	ANT 1	ANT 4	ANT 12	ANT 18	ANT 30
Operating distance (S_a), dependent on MDS	0 to 70 mm	0 to 70 mm	0 to 4 mm	0 to 8 mm	0 to 18 mm
Limit distance (S_g), dependent on MDS	100 mm	100 mm	5 mm	15 mm	24 mm
Diameter of the transmission window (L_d)	MDS-dependent	MDS-dependent	Ø 8 mm	MDS-dependent	Ø 14 mm
Minimum distance from SLG to SLG (D)	> 800 mm	> 800 mm	> 80 mm	> 125 mm	> 200 mm

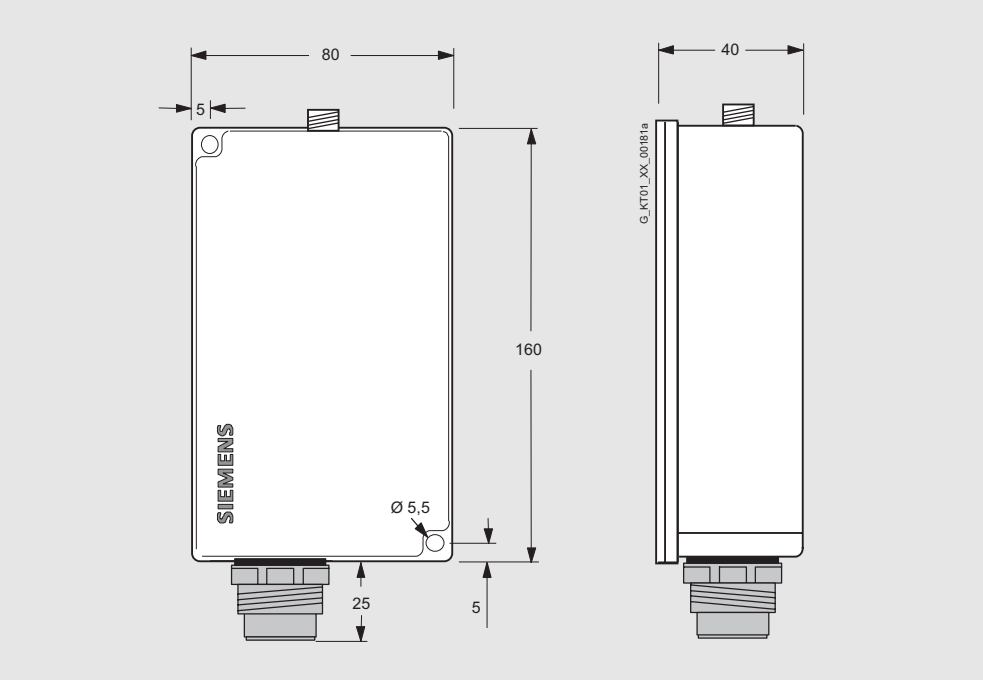
4

Selection and Ordering data

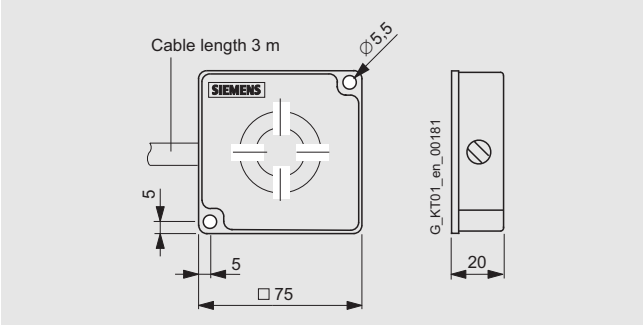
		Order No.
SLG 75		**6GT2 398-1AF00**
Without antenna		
ANT 1 antenna		**6GT2 398-1CB00**
For SLG 75		
ANT 4 antenna	A	**6GT2 398-1CE00**
For SLG 75		
ANT 12 antenna		**6GT2 398-1CC00**
For SLG 75		
ANT 18 antenna		**6GT2 398-1CA00**
For SLG 75		
ANT 30 antenna		**6GT2 398-1CD00**
For SLG 75		
Accessories		
CD "RFID Systems Software & Documentation"		**6GT2 080-2AA10**
FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program RFID documentation		

A: Subject to export regulations AL = N and ECCN = EAR99H

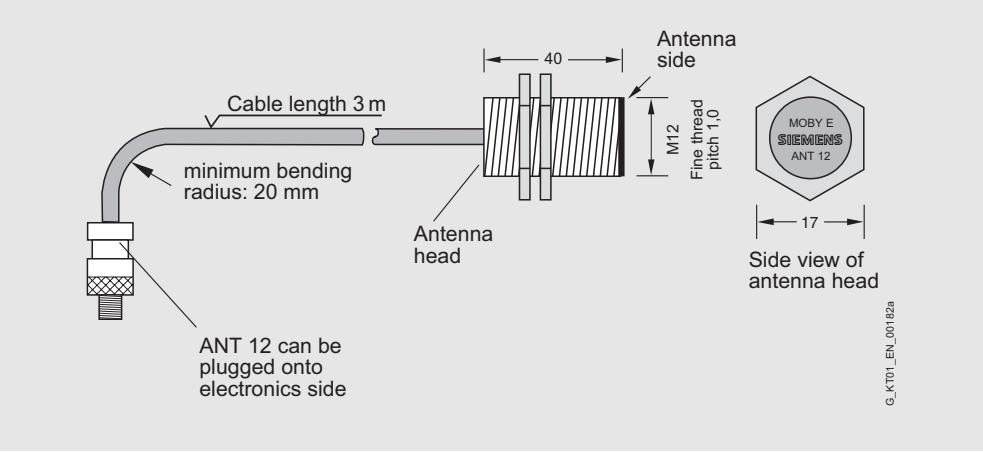
Dimensions



Write/read device SLG 75 without antenna

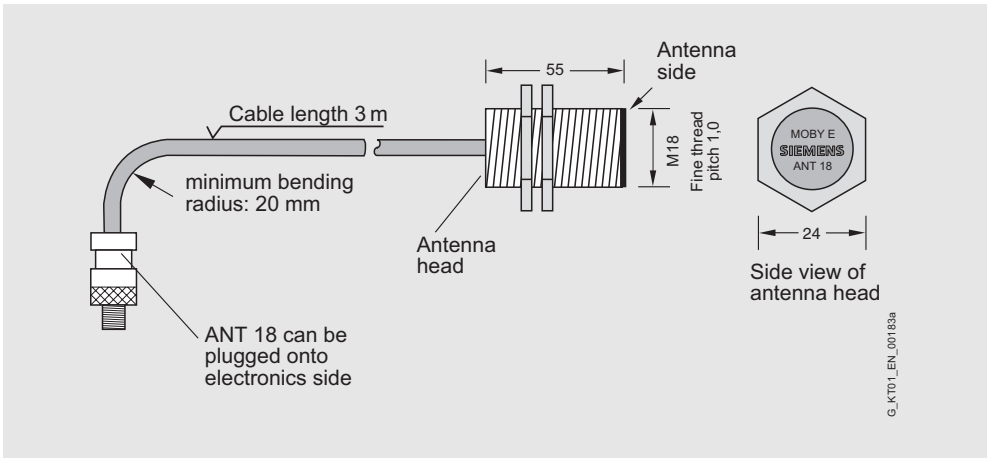


ANT 1 antenna

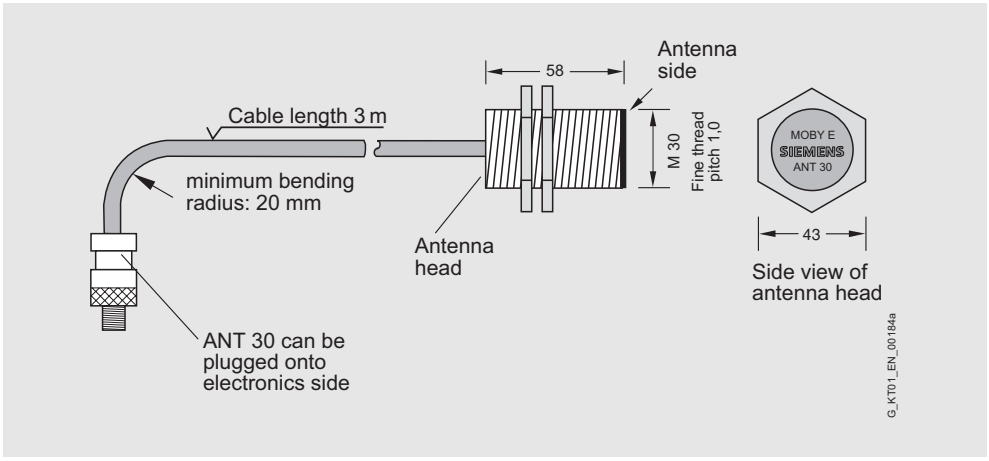


ANT 12 antenna

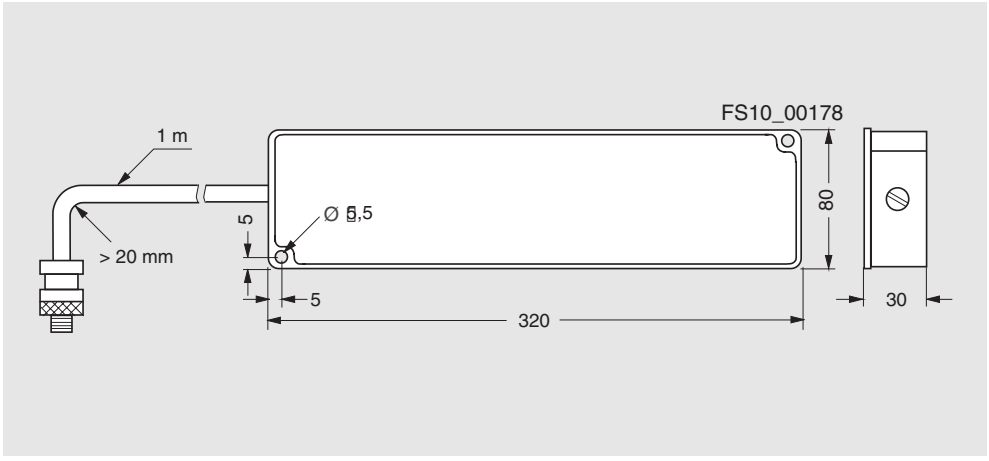
SLG 75 with ANT x



ANT 18 antenna



ANT 30 antenna



ANT 4 antenna

Overview

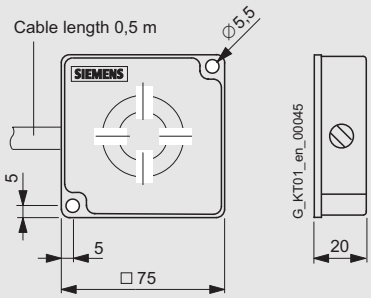
The SLA 71 is a low-cost and compact MOBY E write/read antenna with a maximum write/read distance of 100 mm.
The SLA 71 is connected to the interface modules ASM 724 or ASM 754 by means of an additional connecting cable (5 m).
The maximum cable length between SLA 71 and ASM can be extended to 55 m by means of two 25 m extension cables.

Due to the compact design and the high degree of protection (IP65), the SLA 71 can be used universally.

Technical specifications

Write/read antenna	**SLA 71**
Inductive interface to the MDS	
Data transmission frequency (energy/data)	13.56 MHz
Read/write distance to MDS, max.	100 mm (see field data under "Write/Read Devices")
Serial interface, connectable to	ASM 724/754
Max. cable length to SLA 71	55 m
Plug connection	0.5 m cable with 8-pin M12 connector (pin on device side); 5 m connecting cable 6GT2391-1AH50 required
Software functions	See ASM
Power supply	Via ASM
Enclosure	
• Dimensions (W x H x D) in mm	75 x 75 x 20
• Color	Anthracite
• Material	PA12
Degree of protection to EN 60 529	IP65
MTBF (at 40 °C)	1 x 10^5 hours
Mounting	2 x M5 screws
Ambient temperature	
• Operation	-25 … + 70 °C
• Storage and transport	-40 °C … +85 °C
Weight, approx.	0.15 kg

Dimensions



Selection and Ordering data

	Order No.
Write/read device SLA 71	**6GT2 301-2BB00**
Write/read antenna	
Accessories	
Extension connecting cable	
For antenna cable	
• 10 m	**6GT2 391-1BN10**
• 25 m	**6GT2 391-1BN25**
CD "RFID Systems Software & Documentation"	**6GT2 080-2AA10**
FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program, RFID documentation	

4

STG E mobile handheld terminal

Overview

The STG E is a powerful mobile handheld terminal with integral write/read antenna for applications in the field of production logistics, distribution and service. In addition, it is an indispensable tool for commissioning and testing.

Design

The STG E mobile handheld terminal consists of one basic unit (Basis PSION Workabout PRO) and a removable compact read/write head. It has a splash water-proof enclosure (IP54), LCD color monitor 1/4 VGA, 320 x 240 pixels, TFT portrait format, alphanumeric keyboard and various interfaces (for SD memory card, charging batteries, USB, Bluetooth, etc.).

Function

The pre-installed MOBY software provides service and test functions for reading, writing, etc. of the MOBY data memory:

- Reading data from the data memory
- Writing data to the data memory
- Reading and displaying the ID number of the data memory (to the extent available)
- Displaying and editing the data in hexadecimal, ASCII, decimal and binary formats
- Activate/deactivate password

User applications that were developed for the predecessor model Workabout MX can be transferred to this terminal with little effort. For this purpose, various optional development tools for the PC are available directly from PSION. This is opening up new applications in the field of logistics and distribution, for example, the handheld terminal enables commissioning data to be recorded or processed offline and forwarded to the PC/ computer with a time delay.

Technical specifications

STG E mobile handheld terminal	
Processor	400 MHz Intel Xscale PXA255
Operating system	Microsoft Windows CE .NET 4.20
RAM/Flash EEPROM memory	128 MB/32 MB
User program	MOBY standard application
Screen	TFT color touch display, ¼ VGA 320 x 240 (portrait format); adjustable backlighting
Keyboard	alphanumeric
Sound	Piezo signal transmitter
Power supply	• Lithium-ion battery (3.7 V; 3000 mAh) • Quick charging possible (automatic shut-off) or 3 x 1.5 V type AA • Backup battery: 3 V ML 2032 lithium cell
Interfaces	• LIF interface (low insertion force interface) for battery charging and communication with the PC using a docking and loading station (USB) • CF interface for expansion cards (e.g. WLAN)
Dimensions	305 x 90 x 44 [mm]
Weight (incl. battery)	Approx. 0.5 kg
Ambient temperature	
• During operation	-10 °C ...+50 °C
• Storage (without batteries)	-25 °C ...+60 °C
Relative humidity, non-condensing	5 ... 90 %
Degree of protection	IP54 (splash water proof)
EMC	EN 55022, EN 55024

Integral read/write head, inductive interface to MDS	
Read/write distance to MDS	up to 30 mm, depending on MDS
Energy/data transmission frequency	13.56 MHz
Serial interface (to basic unit)	TTL, 3964R protocol
Functionality of the SW application	Standard user interface for reading/writing of data memories, etc.

Selection and Ordering data

		Order No.
STG E mobile handheld terminal with MOBY E write/read head Basic unit (PSION Workabout PRO) with MOBY E read/write, battery, standard software pre-installed, without loading/docking station	D	**6GT2 303-0AA10**
Accessories		
Loading/docking station For a mobile handheld terminal as well as a spare battery, incl. wide-range plug-in power supply 100 ... 240 V AC and country-specific adapters as well as USB cable	A	**6GT2 898-0BA00**
MOBY E read/write head For basic unit (PSION Workabout mx and PSION Workabout PRO)		**6GT2 003-1CA00**
Basic unit Basic unit (PSION Workabout PRO) with adapter for MOBY RFID read/write heads	D	**6GT2 003-0AA10**
Spare battery For basic unit (PSION Workabout PRO), High Capacity 3000 mAh, Li-ion	A	**6GT2 898-0CA00**
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. MOBY documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H
D: Subject to export regulations AL = N and ECCN = 4A994

Accessories

For optional components, please visit http://www.psionteklogix.com

For example:

- SD expansion cards
- Handles, belt loops
- Vehicle holder with charging function

Configuring guide

Overview

Note

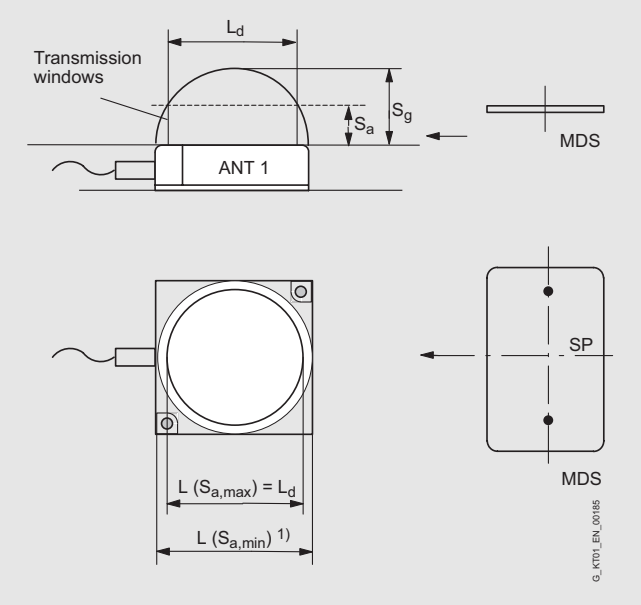
Detailed configuration and commissioning data is contained in the “Manual for Configuration, Assembly and Service”.

Transmission window

The write/read device generates an inductive alternating field. The field is at its strongest near the SLG and declines rapidly as the distance from the SLG increases. The distribution of the field depends on the structure and geometry of the antennas in the write/read device and MDS.

A prerequisite for the function of the MDS is a minimum field strength at the MDS that is achieved at a distance S_g from the write/read device.

The picture below shows the transmission window between MDS and SLG:



S_a: *Operating distance between MDS and SLG*

S_g: *Limit distance (maximum clear distance between upper surface of SLG and MDS at which transmission can still function under normal conditions)*

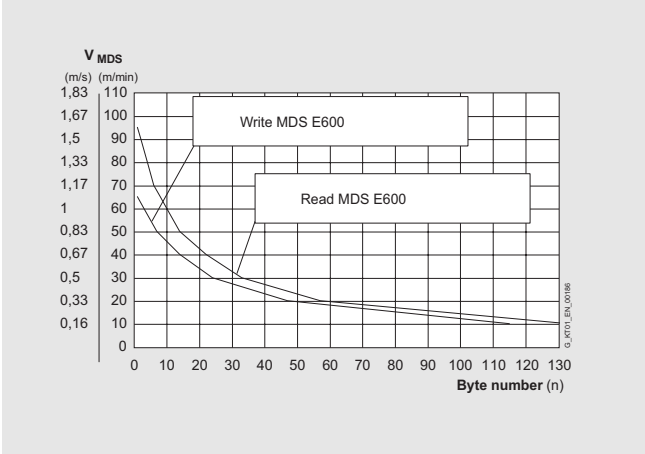
L: Length of a transmission window

SP: Intersection of the axes of symmetry of the MDS

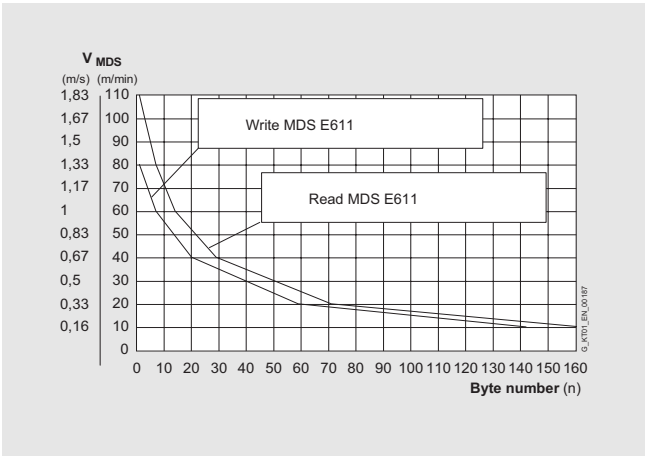
The active field for the MDS consists of a circle (see plan view). The MDS can be used as soon as the intersection of the MDS enters the circle of the transmission window. The direction of movement and rotation of the MDS has no effect.

Representation of speed relative to data quantity

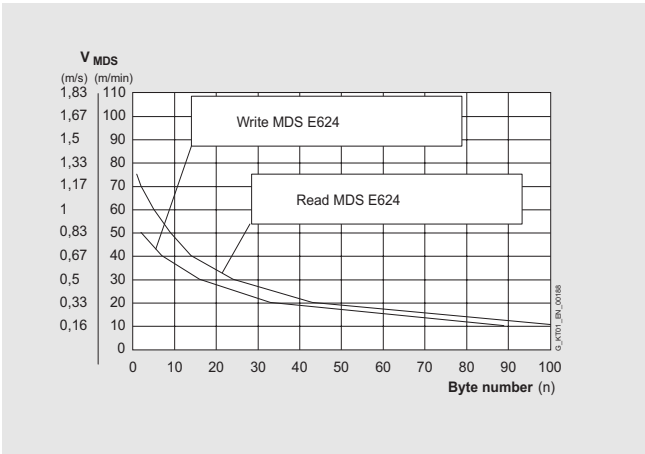
The characteristics shown here should make it easier to preselect
the MOBY E components MDS and SLG for dynamic use.
The characteristics apply for operation within the transmission window (L) and the operating distance (S_a).



SLG 75 ANT 1/SLA 71/SLG 72 with MDS E600



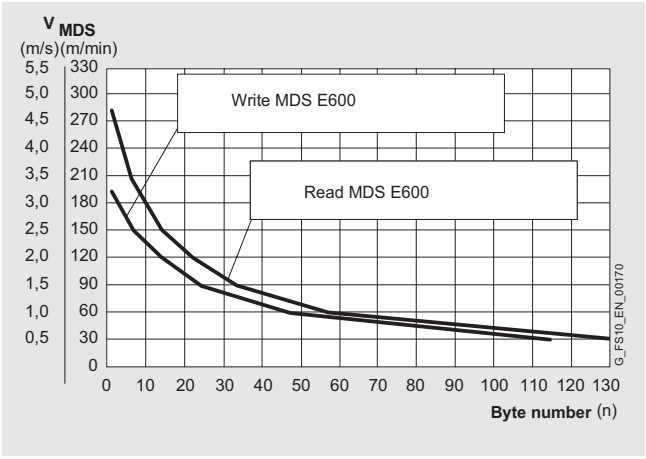
SLG 75 ANT 1/SLG 72 with MDS E611



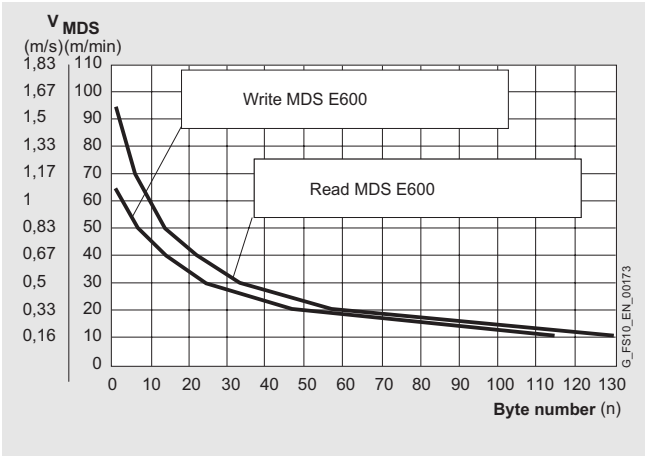
SLG 75 ANT 1/SLG 72 with MDS E624

Read transmission time of the ID number

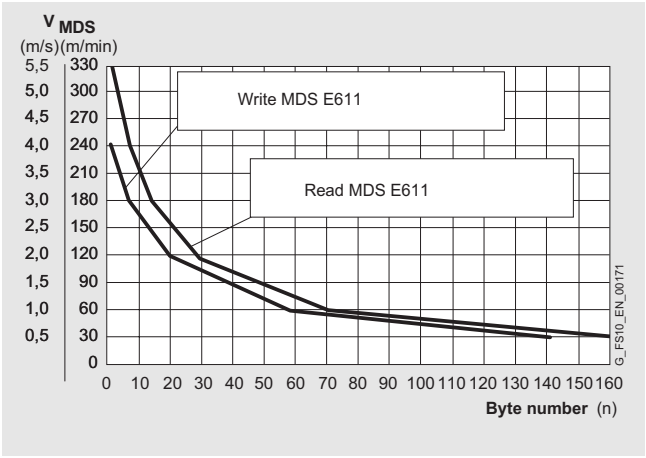
Type	Size of ID number	Read ID no.
MDS E6xx	4 byte	20 ms



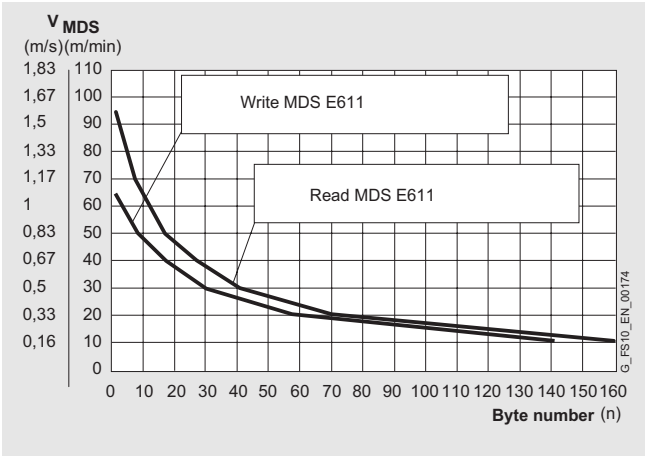
SLG 75 ANT 4 with MDS E600



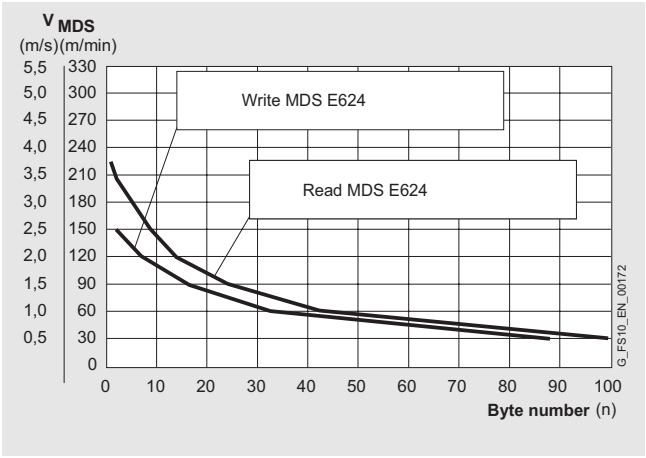
SLG 72 with MDS E600



SLG 75 ANT 4 with MDS E611



SLG 72 with MDS E611

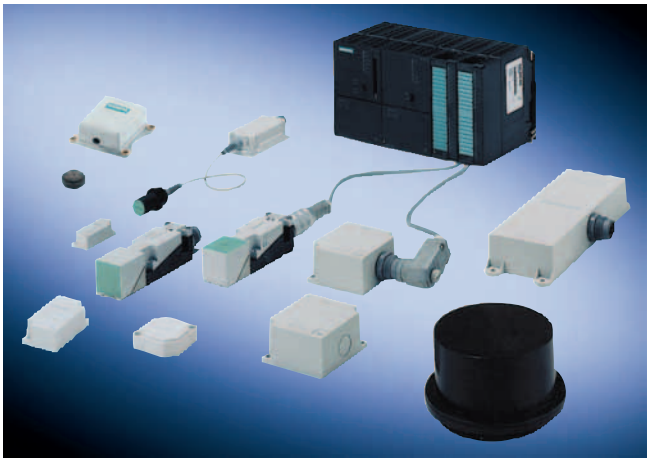


SLG 75 ANT 4 with MDS E624

MOBY I

Introduction

Overview



The MOBY I contactless identification system has been successfully used for many years in a host of applications worldwide. It is specially designed for industrial production applications where there is a great demand for reliability, dynamic writing and reading, high degree of protection etc.

Depending on requirements (size, ambient conditions, large distance etc.), different data memories and write/read devices are available.

Powerful communication modules including software interface are used for connection to SIMATIC, PROFIBUS DP or to PCs/non-Siemens PLCs.

The MOBY I identification system boasts the following features:

- 1.81 MHz identification system with write/read distance of up to 150 mm
- Designed for the upper and medium performance range
- In use worldwide for many years
- Extensive range of rugged, battery-free data memories (FRAM) for a vast range of applications
- Data memory with increased degree of protection IPX9K[1)] (steam jet-air ejector 100 bar ...)
- Heat-resistant data memory for the automotive industry (paint shops), up to +220 °C cyclically
- Very high level of reliability even in the presence of contamination, temperature fluctuations and electromagnetic interference
- Simple Integration into SIMATIC and the PROFIBUS DP
- Can be connected via serial interface to any system, e.g. PC with DOS / Windows 98/NT

Benefits

- The standard MOBY I components permit the secure and quick construction of application-specific identification systems, so that capacities are freed up for the generation of the application software.
- Worldwide support, configuration and service support.

Application

MOBY I is used, for example, where workpiece carriers, skids, hangers have to be automatically identified quickly and reliably without contact.

Main applications of MOBY I

- Assembly technology (data memory attached directly to the workpiece carrier)
- Processing production (e.g. data memory attached direct to product carrier)
- Conveyor systems (e.g. data memory attached to overhead monorail conveyor)
- Assembly lines in the automotive industry (e.g. heat resistant data storage).

Function

MOBY identification systems ensure that important data accompanies the product from the very beginning.

Mobile data memories are first attached to the product or its transport or packing unit, e.g. workpiece carrier, then inscribed, modified and read using non-contact methods. All the information that is important for manufacturing and material flow control is thus available on the product.

Technical specifications

Type	**Contact-free UHF identification system for the medium to upper performance range**
Transmission frequency data/energy	1.81 MHz/134 kHz
Memory capacity	8 KB or 32 KB
Memory type	FRAM
Write/read cycles	Depending on type of memory
Data management	File or address-oriented
Data transfer rate from mobile data storage unit to read/write device	Typically 0.8 ms/byte
Write/read distance	Up to 150 mm
Operating temperature	-25 to +85 °C or +220 °C
Degree of protection	IP65 to IP68/IPX9K[1)]
Can be connected to	SIMATIC S5/S7, PC, non-Siemens PLC, PROFIBUS DP/FMS
Special features	Optional DOS-like file management system
Approvals	ETS 300 330 (Europe), FCC [2)] Part 15 (USA), UL [2)]/CSA [2)]

1) Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

2) Not applicable for SIM 41, ASM 424

Overview

A rugged enclosure supports use under harsh industrial conditions and makes the MDS resistant to many chemical substances.

Type	Feature
MDS 401	Compact data memory (8 KB FRAM, button-shaped, can be flush-mounted into metal), for the identification of small workpiece holders • Enclosure dimensions (mm) Ø 27 x 9 • Degree of protection IP67 • Temperature range up to +85 °C
MDS 402	Compact data memory (8 KB FRAM), e.g. for the identification of small workpiece carriers (MDS 302 compatible) • Enclosure dimensions (mm) 47.5 x 25 x 15 • Degree of protection IP68/IPX9K[1)] • Temperature range up to +70 °C
MDS 403	Compact data memory (8 KB FRAM), with a write/read clearance of up to 70 mm, e.g. for the identification of small workpiece carriers (compatible with MDS 302 enclosure) • Enclosure dimensions (mm) 47.5 x 25 x 15 • Degree of protection IP68/IPX9K[1)] • Temperature range up to +85 °C
MDS 404	Universal data memory (8 KB FRAM) • Enclosure dimensions (mm) 50 x 50 x 20 (compatible to MDS 413E and MDS114) • Degree of protection IP68/IPX9K[1)] • Temperature range up to +85 °C
MDS 506	Universal data memory (32 KB FRAM) • Enclosure dimensions (mm) 75 x 75 x 40 • Degree of protection IP68 • Temperature range up to +70 °C
MDS 514	Universal data memory (32 KB FRAM) • Enclosure dimensions (mm) 50 x 50 x 20 • Degree of protection IP68/IPX9K [1)] • Temperature range up to +85 °C
MDS 439E	Designed for skid identification in paintshops, max. 220 °C cyclic, 8 KB FRAM • Enclosure dimensions (mm) Ø 114 x 83 • Degree of protection IP68

Note:
FRAM has the electrical properties of a RAM, however, no batteries are required.

[1)] Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

Introduction

Technical specifications

Field data (operating distance S_a /limit distance S_g in mm)

The field data for all MOBY I components of the MDS and SLG are shown in the table below. It is thus easy to select the right MDS and SLG.

Type	MDS 401 MDS 402	MDS 403	MDS 404 MDS 514	MDS 506	MDS 439E
SLG 40	2-8/10	-	-	-	-
SLG 40S	2-6/8	-	-	-	-
SLG 41/ SLG 41S	0-6/10	4-15/30	0-12/25	-	-
SLG 42	-	10-30/80	0-30/60	10-35/70	10-55/70
SLG 43	-	-	0-50/90	20-100/150	20-80/125
SIM 41	-	4-25/40	0-20/33	0-25/40	0-25/33

Note:

The listed field data are typical values and valid for a room temperature of +25 °C and a supply voltage of 24 V DC.

Overview

Compact data memory (8 KB FRAM, button shape, can be flush mounted in metal) for identifying small workpiece holders, enclosure dimensions Ø 27 mm x 9 mm, degree of protection IP67, temperature range up to +85 °C.

Technical specifications

Mobile data storage unit MDS 401	
Memory size	8 KB FRAM
MTBF	1,500,000 h
Write/read cycles	> 10^9
Read/write distance, max.	10 mm (see field data)
Memory organization	Byte-oriented access
Shock (DIN IEC 60068-2-29)	50 *g*
Vibration (DIN IEC 60068-2-6)	20 *g*
Direction-dependent	No
Mounting	Adhesive or bracket supplied by customer
Degree of protection according to DIN EN 60529 / VDE 0470-1	IP67
Enclosure	
• Color	Black
• Material	Macromelt Moulding
• Dimensions	Ø 27 mm x 9 mm
Ambient temperature	
• During operation	-25 to +85 °C
• During transportation and storage	-40 to +85 °C
Weight, approx.	7 g
Miscellaneous	Flush mounting in metal permissible

Field data in mm

MDS 401 to:	**SLG 40**	**SLG 40S**	**SLG 41/SLG 41S**
Operating distance (S_a)	2 to 8	2 to 6	0 to 6
Limit distance (S_g)	10	8	10
Transmission window			
• L: vertical	-	-	30
• 2L: horizontal	-	-	50
Diameter of the transmission window	Ø 18	Ø 9	-
Minimum distance from MDS to MDS	> 50	> 50	> 80

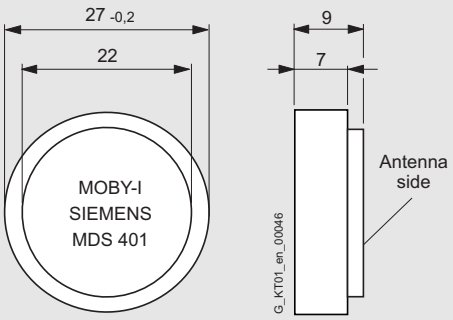
The field data apply to write and read operations of the MDS.

Selection and Ordering data

	Order No.
Mobile data storage MDS 401	**6GT2 000-0CA10**
8 KB FRAM	

For documentation, see Page 4/158

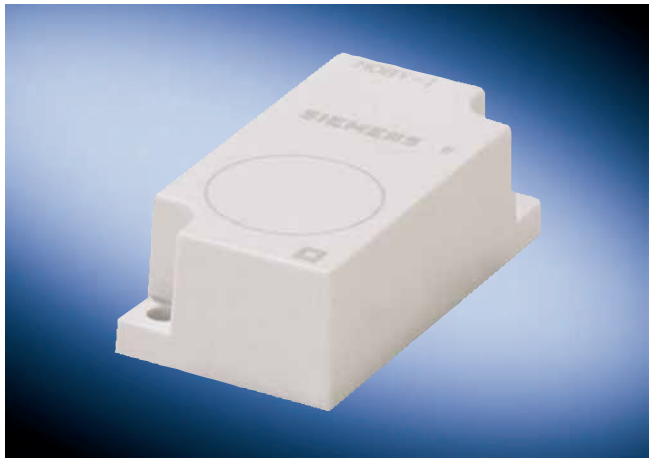
Dimensions



MOBY I mobile data storage unit

MDS 402

Overview



Compact data memory (8 KB FRAM) for identifying small workpiece holders for example (MDS 302 compatible), enclosure dimensions (in mm) 47.5 x 25 x 15, degree of protection IP68/IP X9K [1], temperature range up to +70 °C.

[1] Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

Technical specifications

Mobile data storage unit MDS 402	
Memory size	8 KB FRAM
MTBF (without battery, at 40 °C)	1,500,000 h
Write/read cycles	> 10^9
Read/write distance, max. (SLG-dependent)	10 mm
Memory organization	Byte-oriented access
Shock (DIN IEC 60068-2-29)	50 *g*
Vibration (DIN IEC 60068-2-6)	20 *g*
Mounting	2 x M3 screws
Degree of protection	IP68/IPX9K[1]
Enclosure	
• Dimensions (mm)	47.5 x 25 x 15
• Color/material	Ergo gray/polyamide 12
Ambient temperature	
• During operation	-25 to +70 °C
• During transportation and storage	-40 to +70 °C
Weight, approx.	25 g
Miscellaneous	MDS 302 compatible

Field data in mm

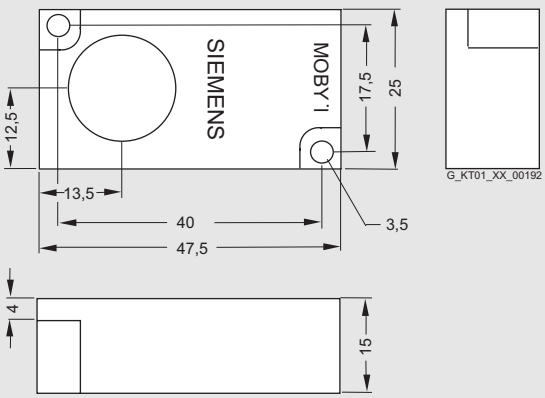
MDS 402 to:	**SLG 40**	**SLG 40S**	**SLG 41/SLG 41S**
Operating distance (S_a)	2 -8	2 - 6	0 - 6
Limit distance (S_g)	10	8	10
Transmission window			
• L: vertical	-	-	30
• 2L: horizontal	-	-	50
Diameter of the transmission window	Ø 18	Ø 9	-
Minimum distance from MDS to MDS	> 50	> 50	> 80

The field data apply to write and read operations of the MDS.

Selection and Ordering data

	Order No.
Mobile data storage MDS 402 8 KB FRAM	**6GT2 000-0CA20**

Dimensions



Overview

Compact data memory (8 KB FRAM) with a write/read distance of up to 30 mm for identifying, for example, small workpiece holders, MDS 302 compatible, enclosure dimensions 47.5 mm x 25 mm x 15 mm, degree of protection IP68, temperature range up to +85 °C.

Technical specifications

Mobile data storage unit MDS 403	
Memory size	8 KB FRAM
MTBF at 40 °C	1,500,000 h
Write/read cycles (at 25 °C)	> 10^9
Read/write distance, max. (SLG-dependent)	80 mm
Memory organization	Byte-oriented access
Shock (DIN IEC 60068-2-29)	50 *g*
Vibration (DIN IEC 60068-2-6)	20 *g*
Mounting	2 x M3 screws
Degree of protection according to DIN EN 60529 / VDE 0470-1	IP68/IPX9K[1)]
Enclosure	
• Color	Ergo gray
• Material	Polyamide 12
• Dimensions	47.5 mm x 25 mm x 15 mm
Ambient temperature	
• During operation	- 25 to + 85 °C
• During transportation and storage	- 40 to + 85 °C
Weight, approx.	25 g
Miscellaneous	• Same construction as MDS 402 enclosure • Dynamic reading/writing possible, polarized field by means of ferrite rod antenna

1) Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

Field data in mm

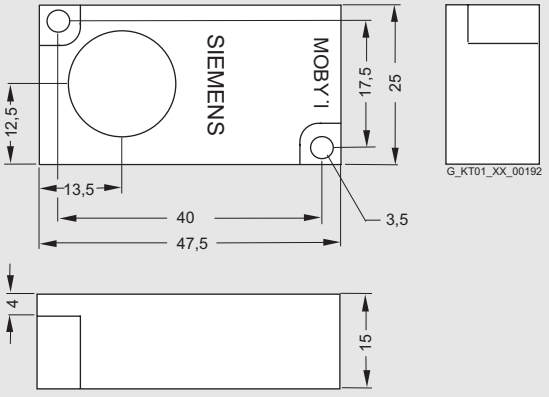
MDS 403 to:	**SLG 41/SLG 41S**	**SLG 42**	**SIM 41**
Operating distance (S_a)	4 - 15	10 - 30	0 - 25
Limit distance (S_g)	30	80	40
Transmission window (L x W)	65 x 25	110 x 50	80 x 45
Minimum distance from MDS to MDS	> 120	> 200	> 200

The field data apply to write and read operations of the MDS.

Selection and Ordering data

	Order No.
Mobile data storage MDS 403 8 KB FRAM	**6GT2 000-1CF00**

Dimensions



4

MDS 404

Overview

Data memory for universal applications (8 KB FRAM), enclosure dimensions 50 mm x 50 mm x 20 mm, degree of protection IP68, temperature range up to +70 °C/momentarily +85 °C.

Technical specifications

Mobile data storage unit MDS 404	
Memory size	8 KB FRAM
MTBF (at 40 °C)	1,500,000 h
Battery	Without battery
Write/read cycles	> 10^9
Read/write distance, max. (SLG-dependent)	90 mm
Memory organization	Byte-oriented access
Shock (DIN IEC 60068-2-29)	50 *g*
Vibration (DIN IEC 60068-2-6)	20 *g*
Mounting	2 x M4 screws
Degree of protection according to DIN EN 60529 / VDE 0470-1	IP68/IPX9K[1)]
Enclosure	
• Dimensions (mm)	50 x 50 x 20
• Color/material	Ergo gray/polyamide 12
Ambient temperature	
• During operation	-25 to +70 °C
• During transportation and storage	-40 to +70 °C
Weight	50 g

1) Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

Field data in mm

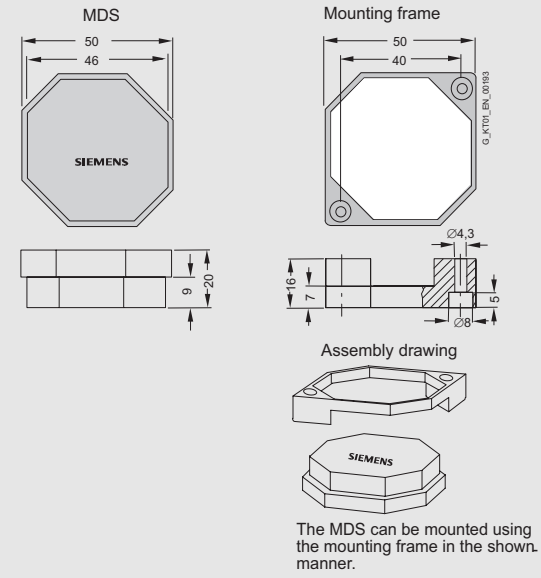
MDS 404 to:	**SLG 41/SLG 41S**	**SLG 42**	**SLG 43**	**SIM 41**
Operating distance (S_a)	0 - 12	0 - 30	0 - 50	0 - 20
Limit distance (S_g)	25	60	90	33
Transmission window				
• L: vertical	36	90	140	60
• 2L: horizontal	72	180	260	80
Minimum distance from MDS to MDS	> 90	> 250	> 500	> 200

The field data apply to write and read operations of the MDS.

Selection and Ordering data

	Order No.
Mobile data storage MDS 404 8 KB FRAM, with fixing frame	**6GT2 000-0EG00**

Dimensions



The MDS can be mounted using the mounting frame in the shown manner.

Overview

Data memory for universal applications (32 KB FRAM), enclosure dimensions 75 mm x 75 mm x 40 mm, degree of protection IP68, temperature range up to 70 °C.

Technical specifications

Mobile data storage unit MDS 506	
Memory size	32 KB FRAM
MTBF (without battery, at 40 °C)	1,500,000 h
Write/read cycles	> 10^9
Read/write distance, max. (SLG-dependent)	150 mm
Memory organization	Byte-oriented access
Shock (DIN IEC 60068-2-29)	50 *g*
Vibration (DIN IEC 60068-2-6)	20 *g*
Mounting	2 x M5 screws
Degree of protection according to DIN EN 60529 / VDE 0470-1	IP68
Enclosure	
• Dimensions (mm)	75 x 75 x 40
• Color/material	Ergo gray/polyamide 12
Ambient temperature	
• During operation	-25 to +70 °C
• During transportation and storage	-40 to +70 °C
Weight, approx.	200 g

Field data in mm

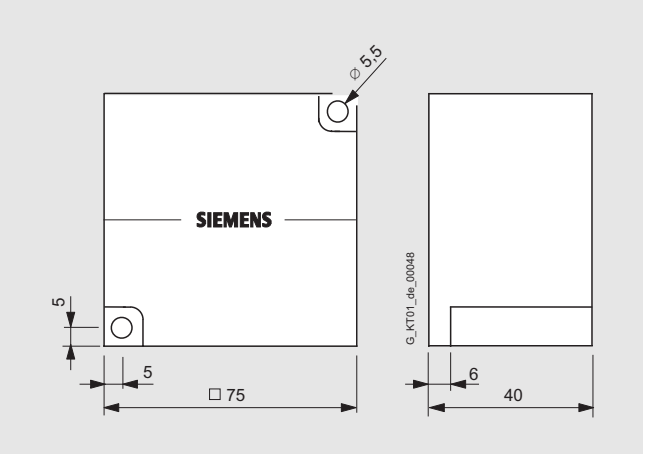
MDS 506 to:	**SLG 42**	**SLG 43**	**SIM 41**
Operating distance (S_a)	10 - 35	20 - 100	0 - 25
Limit distance (S_g)	70	150	40
Transmission window			
• L: vertical	120	220	85
• 2L: horizontal	190	400	100
Minimum distance from MDS to MDS	> 300	> 600	> 300

The field data apply to write and read operations of the MDS.

Selection and Ordering data

	Order No.
Mobile data storage MDS 506 32 KB FRAM	**6GT2 000-0DC00-0AA0**

Dimensions



4

MDS 514

Overview

Data memory for universal applications (32 KB FRAM), enclosure dimensions 50 mm x 50 mm x 20 mm, degree of protection IP68/IPX9K [1], temperature range up to +85 °C.

[1] Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

Technical specifications

Mobile data storage unit	MDS 514
Memory size	32 KB FRAM
MTBF (at 40 °C)	1,500,000 h
Write/read cycles	> 10^9
Read/write distance, max. (SLG-dependent)	90 mm
Memory organization	Byte-oriented access
Shock (DIN IEC 60068-2-29)	50 *G*
Vibration (DIN IEC 60068-2-6)	20 *G*
Mounting	2 x M4 screws
Degree of protection	IP68/IPX9K[1]
Enclosure	
• Dimensions	50 mm x 50 mm x 20 mm
• Color/material	Ergo gray/polyamide 12
Ambient temperature	
• During operation	-25 to +85 °C
• During transportation and storage	-40 to +85 °C
Weight	50 g

Field data in mm

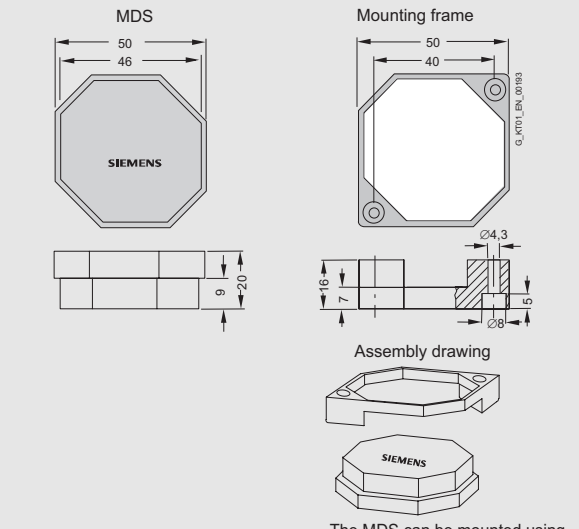
MDS 514 to:	SLG 41/SLG 41S	SLG 42	SLG 43	SIM 41
Operating distance (S_a)	0 - 12	0 - 30	0 - 50	0 - 20
Limit distance (S_g)	25	60	90	33
Transmission window				
• L: vertical	36	90	140	60
• 2L: horizontal	72	180	260	80
Minimum distance from MDS to MDS	> 90	> 250	> 500	> 200

The field data apply to write and read operations of the MDS.

Selection and Ordering data

	Order No.
Mobile data storage MDS 514 32 KB FRAM, with fixing frame	**6GT2 000-0DG10**

Dimensions



The MDS can be mounted using the mounting frame in the shown manner.

Overview

Typical applications:

- Primer coat, cataphoresis with the associated drying furnaces
- Top coat area with drying furnaces
- Washing areas at temperatures > +85 °C

Technical specifications

Mobile data storage unit MDS 439E	
Memory size	8 KB FRAM
MTBF (at 40 °C)	2,500,000 h
Write/read cycles	> 10^9
Read/write distance, max. (SLG-dependent)	125 mm
Memory organization	Byte-oriented access
Shock (DIN IEC 60068-2-29)	50 *G*
Vibration (DIN IEC 60068-2-6)	5 *G*
Mounting	By means of optional bracket
Degree of protection according to DIN EN 60529 / VDE 0470-1	IP68
Ex approval	ATEX Zone 2G
Enclosure	
• Dimensions in mm (excluding weld seam)	Ø 114 x 83
• Color/material	Brown/PPS
Ambient temperature	
• During operation	-25 °C to +110 °C/+220 °C cyclic
• During transportation and storage	-40 to +110 °C
Weight without bracket	900 g

Field data in mm

MDS 439E to:	SLG 42	SLG 43	SIM 41
Operating distance (S_a)	10 - 55	20 - 80	0 - 25
Limit distance (S_g)	70	125	33
Transmission window			
• L: vertical	120	190	75
• 2L: horizontal	210	330	100
Minimum distance from MDS to MDS	> 500	> 600	> 300

The field data apply to write and read operations of the MDS.

Cyclic operation of the MDS at temperatures > +100 °C

At ambient temperatures between +110 °C and +220 °C, care must be taken to ensure that the internal temperature of the MDS does not exceed the critical threshold of +110 °C. Each heating phase must therefore be followed by a cooling phase. Some limit cycles are listed in the table below:

Cooling up		Cooling down	
Temperature	**Time**	**Temperature**	**Time**
200 °C	2 h	25 °C	> 8 h
200 °C	1 h	25 °C	> 2 h
190 °C	2 h	25 °C	> 7 h
190 °C	1 h	25 °C	> 1 h 45 min
180 °C	2 h	25 °C	> 5 h 30 min
170 °C	2 h	25 °C	> 4 h 30 min

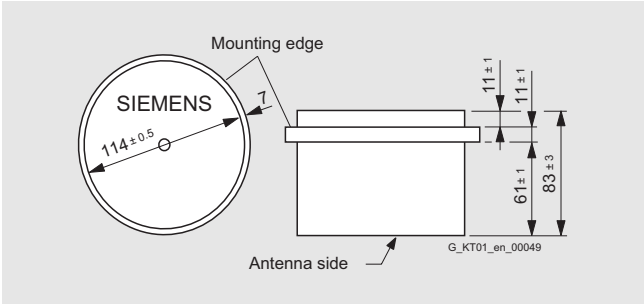
MDS 439E

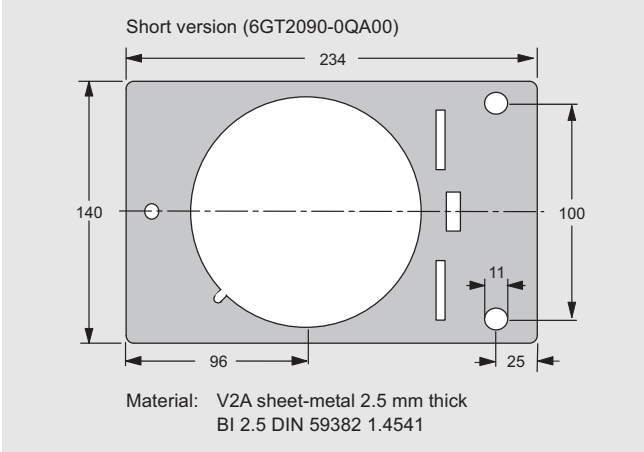
Selection and Ordering data

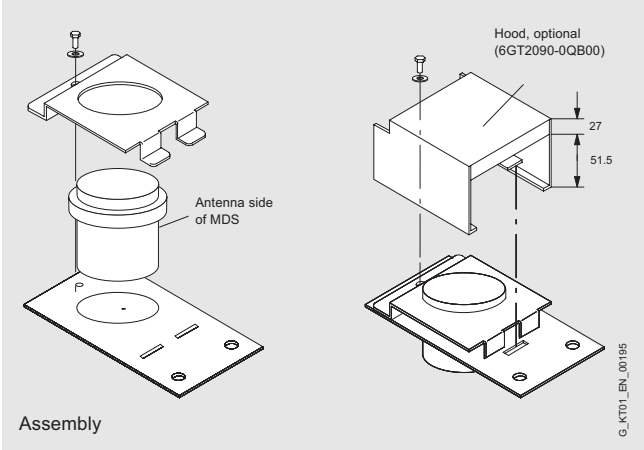
		Order No.
Mobile data storage unit MDS 439E 8 KB FRAM	A	**6GT2 000-0CD30-0AD0**
Accessories		
Holder for MDS 439E		
Short type	A	**6GT2 090-0QA00**
Covering hood For skid support	A	**6GT2 090-0QB00**

A: Subject to export regulations AL = N and ECCN = EAR99H

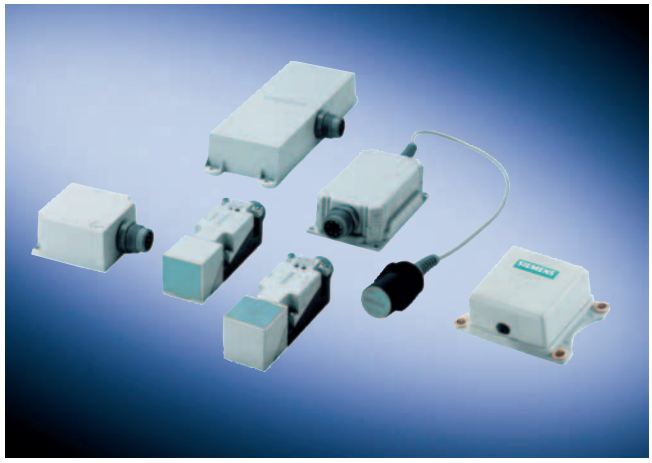
Dimensions







Overview



The write/read device (SLG) provides inductive communication with the mobile data memories (MDS) and serial coupling to the communication modules (ASM).

A range of different SLGs are available for small, medium and large distances to the MDS meeting all customer requirements.

Type	Features
SLG 40S	SLG with detached antenna (Ø 18 mm x 30 mm) e.g. for assembly lines with small workpiece holders • Max. read/write distance 8 mm • Degree of protection IP65 • Max. temperature: +70 °C
SLG 40	SLG with detached antenna (Ø 30 mm x 54 mm) e.g. for assembly lines with small workpiece holders • Max. read/write distance 10 mm • Degree of protection IP65 • Max. temperature: +70 °C
SLG 41	Universal compact SLG with rotating antenna head (BERO enclosure) • Max. read/write distance 30 mm • Enclosure dimensions (mm) 120 x 40 x 40 • Degree of protection IP65 • Max. temperature: +70 °C
SLG 41S	Same as SLG 41, but with antenna rotated by 90°
SLG 42	Universal SLG • Max. read/write distance 70 mm • Enclosure dimensions (mm) 75 x 75 x 40 • Degree of protection IP65 • Max. temperature: +70 °C
SLG 43	Universal SLG • Max. read/write distance 150 mm • Enclosure dimensions (mm) 75 x 75 x 40 • Degree of protection IP65 • Max. temperature: +70 °C
SIM 41	Universal SLG with serial interface to PC/PLC • Max. read/write distance 40 mm • Enclosure dimensions (mm) 75 x 75 x 40 • Degree of protection IP54 • Max. temperature: +70 °C

Function

The SLG implements the commands received from the communication modules. These commands and the data to be written or read must be converted through an appropriate modulator/demodulator circuit.

The communication between MDS and SLG takes place over inductive alternating fields.

The transmittable quantity of information between SLG and MDS depends on:

- the speed at which the MDS moves through the transmission window of the SLG
- the length of the transmission window

Technical specifications

Field data

Minimum spacing from SLG to SLG in mm	
SLG 40S	> 50
SLG 40	> 50
SLG 41, SLG 41S	200
SLG 42	800
SLG 43	2000
SIM 41	700

4

SLG 40 / SLG 40S

Overview

SLG 40

Of particular benefit is the small mounting clearance between several SLG 40 antennas. The antenna head can be positioned very precisely for any application using the two screw nuts.

SLG 40S

Of particular benefit is the small mounting clearance between several SLG 40S antennas. The antenna head can be positioned very precisely for any application using the two screw nuts.

Application

The SLG 40 and the SLG 40S can be used to great advantage on small assembly lines.

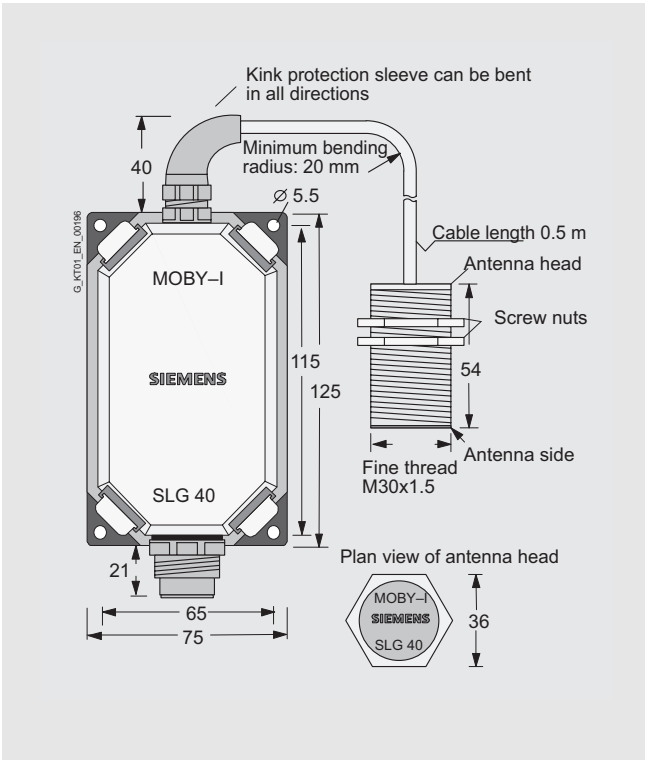
Technical specifications

Read/write device	**SLG 40**	**SLG 40S**
Inductive interface to the MDS		
Transmission speed MDS to SLG	Typically 0.8 ms/byte	
Read/write distance	max. 10 mm, see MDS field data	max. 8 mm, see MDS field data
Transmission frequency (data/energy)	1.81 MHz/134 kHz	
Distance SLG-to-SLG	min. 50 mm	
Special features	Only one transmission field, centered over the antenna head	
Serial interface to ASM	RS-422, 6-pin SLG-connector to DIN 43651	
Max. cable length (ASM-SLG) at 24 V DC	max. 360 m	
MTBF (at +40 °C)	2 x 10^6 hours	
Supply voltage		
• Rated value	24 V DC	
• Permissible range	20 V to 30 V DC	
Current consumption		
• No-load operation	25 mA	
• Operation	90 mA	
Casing		
• Dimensions in mm		
- Antenna head	M30 x 1.5 x 54	M18 x 1,0 x 30
- Electronics without connector	125 x 40 x 75	75 x 75 x 40
• Color		
- Antenna/SLG housing	Anthracite with pastel turquoise head/ergo-gray	
• Material		
- Antenna/SLG housing	Krastin/polyamide 12	
Degree of protection according to DIN EN 60529 / VDE 0470-1	IP65	
Shock (DIN IEC 60068-2-29)	50 *G*	
Vibration (DIN IEC 60068-2-6)	20 *G*	
Attachment of the SLG	4 screws	
Ambient temperature		
• During operation	-25 °C to +70 °C	
• During transportation and storage	-40 °C to +85 °C	
Weight, approx.	200 g	215 g

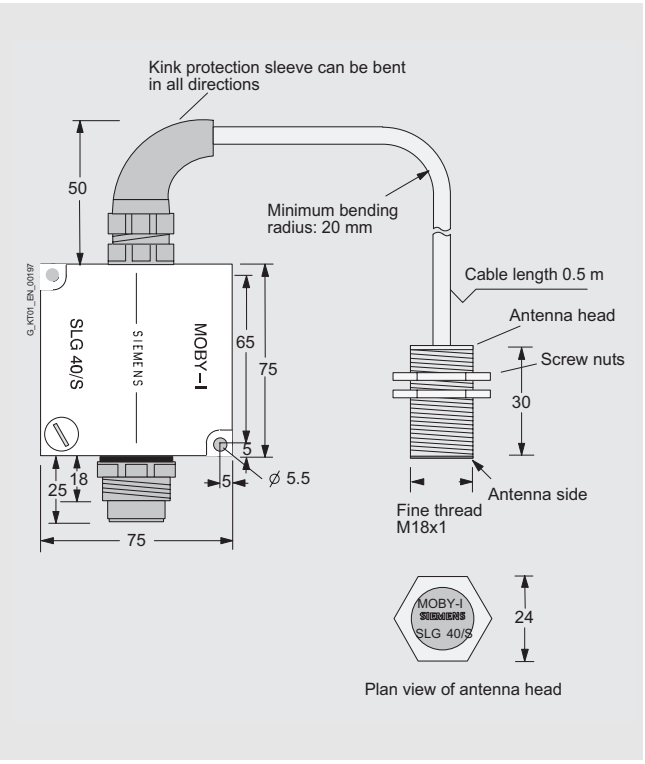
Selection and Ordering data

	Order No.
Write/read device for connection to ASM	
SLG 40S Write/read device for connection to ASM, with separate antenna (Ø 18 mm x 30 mm)	**6GT2 001-0EB00**
SLG 40 Write/read device for connection to ASM, with separate antenna (Ø 30 mm x 54 mm)	**6GT2 001-0EA10**
Accessories	
MOBY software FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C-libraries, PC presentation program, RFID documentation	**6GT2 080-2AA10**

Dimensions



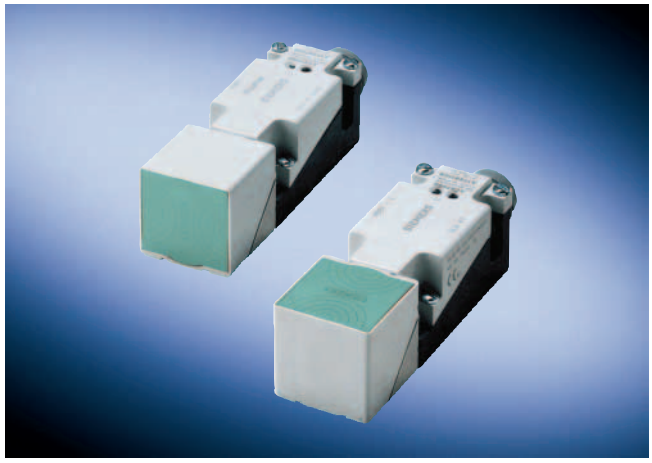
Write/read device SLG 40



Write/read device SLG 40S

SLG 41 / SLG 41S

Overview



SLG 41

The SLG 41 is a write/read device in the lower performance range. It can be used very effectively wherever the MDS carrier system (e.g. workpiece carrier) can be mechanically positioned with relative precision. Thanks to its swivel head (BERO enclosure), the SLG 41 can be adapted very well to the transport system.

In dynamic mode, only a small amount of data can be read or written between SLG 41 and the MDS.

SLG 41S

In contrast to the SLG 41, the antenna of the SLG 41S is rotated by 90 ° in the swivel head. This enables all positions of the transmission window to be implemented.

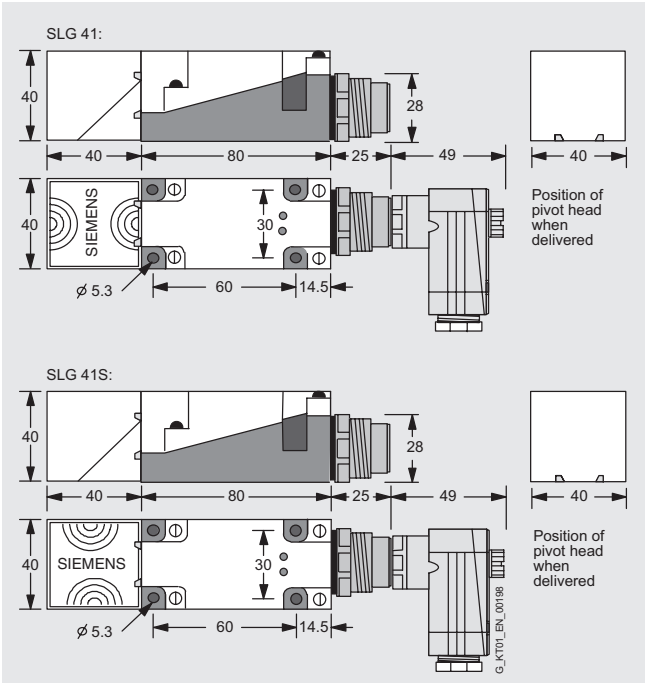
Technical specifications

Write/read device	**SLG 41 / SLG 41S**
Inductive interface to the MDS	
Transmission speed MDS to SLG	Typically 0.8 ms/byte
Read/write distance	max. 25 mm, see MDS field data
Transmission frequency (data/energy)	1.81 MHz/134 kHz
Distance SLG-to-SLG	min. 200 mm
Special features	BERO housing, swivel-mounted antenna head
Serial interface to ASM	RS-422, 6-pin SLG-connector to DIN 43651
Max. cable length (ASM-SLG) at 24 V DC	360 m
MTBF (at +40 °C)	2 x 10^6 hours
Supply voltage	
• Rated value	24 V DC
• Permitted range	20 V to 30 V DC
Current consumption	
• No-load operation	20 mA
• Operation	90 mA
Housing	
• Dimensions (mm)	120 x 40 40
• Color	Ergo gray
• Material	Polyamide 12
Degree of protection to DIN EN 60529 / VDE 0470-1	IP65
Shock to DIN IEC 60068-2-29	50 *g*
Vibration to DIN IEC 60068-2-6	20 *g*
Fixing	4 screws
Tightening torque (at room temperature)	M5 ≤ 3 Nm
Ambient temperature	
• Operating	-25 °C to +70 °C
• During transportation and storage	-40 °C to +85 °C
Weight, approx.	210 g

Selection and Ordering data

	Order No.
Write/read device for connecting to ASM	
Write/read device SLG 41 Distributed applications in the low-end performance range	**6GT2 001-0AA00**
Write/read device SLG 41S Same as SLG 41, but with antenna rotated by 90°	**6GT2 001-0AA00-0AX0**
Accessories	
MOBY software FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C-libraries, PC presentation program, RFID documentation	**6GT2 080-2AA10**

Dimensions



Overview

The SLG 42 is a write/read device in the mid-performance range. Due to the larger antenna dimensions, the SLG 42 creates a much larger field than the SLG 41. This means that using the same data memories, a larger range can be achieved. In dynamic operation, larger quantities of data can be read/written by the MDS.

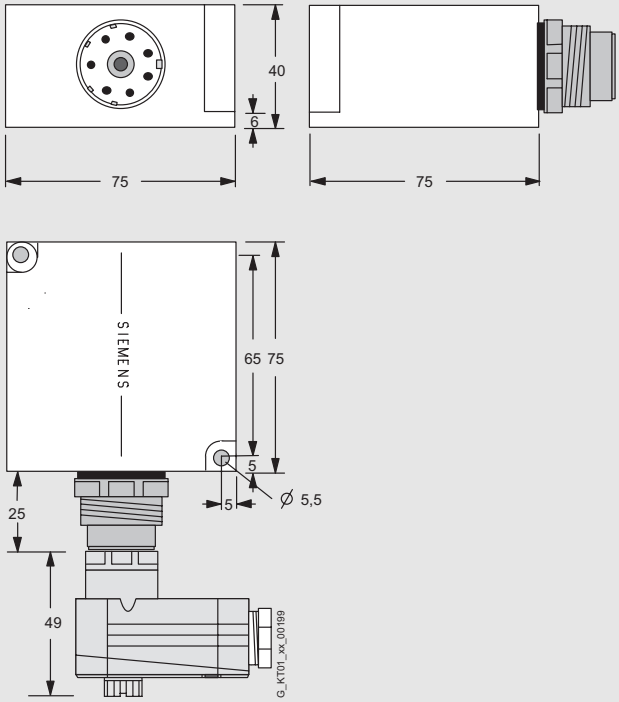
Technical specifications

Write/read device	**SLG 42**
Inductive interface to the MDS	
Transmission speed MDS to SLG	Typically 0.8 ms/byte
Read/write distance	max. 70 mm, see MDS field data
Transmission frequency (data/energy)	1.81 MHz/134 kHz
Distance SLG-to-SLG	min. 800 mm
Serial interface to ASM	RS422, 6-pin SLG-connector to DIN 43651
Max. cable length (ASM-SLG) at 24 V DC	max. 120 m
MTBF (at +40 °C)	2,000,000 h
Supply voltage	
• Rated value	24 V DC
• Permitted range	20 V to 30 V DC
Current consumption	
• No-load operation	60 mA
• Operation	180 mA
Housing	
• Dimensions (mm)	75 x 75 x 40
• Color	gray
• Material	Polyamide 12
Degree of protection to DIN EN 60529 / VDE 0470-1	IP65
Shock to DIN IEC 60068-2-29	50 *g*
Vibration to DIN IEC 60068-2-6	20 *g*
Fixing	2 screws
Tightening torque (at room temperature)	M5 ≤ 2 Nm
Ambient temperature	
• in operation	-25 °C to +70 °C
• During transportation and storage	-40 °C to +85 °C
Weight, approx.	250 g

Selection and Ordering data

	Order No.
Write/read devices for connecting to ASM	
Write/read device SLG 42 With TTY (20 mA current loop) interface	**6GT2 001-0BA00**
Accessories	
CD "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C-libraries, PC presentation program, RFID documentation	**6GT2 080-2AA10**

Dimensions



SLG 43

Overview

The SLG 43 is a high-performance write/read device. A particular advantage is that the device can be used with large MDS types (MDS 506/MDS 439E). An essential feature is the size of the transmission window. This compensates well for mechanical tolerances of the transport system. In dynamic mode, the large transmission window enables large quantities of data to be read or written.

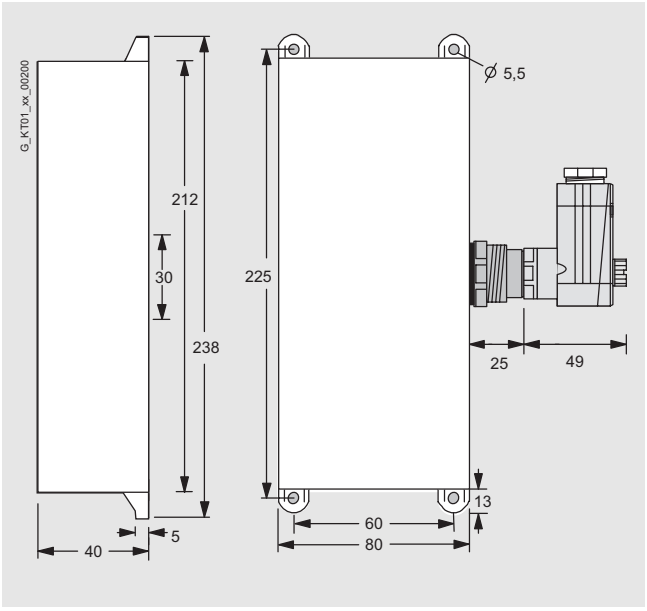
Technical specifications

Write/read device	**SLG 43**
Inductive interface to the MDS	
Transmission speed MDS to SLG	Typically 0.8 ms/byte
Read/write distance	max. 150 mm, see MDS field data
Transmission frequency (data/energy)	1.81 MHz/134 kHz
Distance SLG-to-SLG	> 2000 mm
Serial interface to ASM	RS422, 6-pin SLG-connector to DIN 43651
Max. cable length (ASM-SLG) at 24 V DC	max. 85 m
MTBF (at +40 °C)	2,000,000 h
Supply voltage	
• Rated value	24 V DC
• Permitted range	20 V to 30 V DC
Current consumption	
• No-load operation	60 mA
• Operation	250 mA
Housing	
• Dimensions (mm)	238 x 40 x 80
• Color	Ergo gray
• Material	Polyamide 12
Degree of protection to DIN EN 60529 / VDE 0470-1	IP65
Shock to DIN IEC 60068-2-29	50 *g*
Vibration to DIN IEC 60068-2-6	20 *g*
Fixing	4 screws
Ambient temperature	
• in operation	-25 °C to +70 °C
• During transportation and storage	-40 °C to +85 °C
Weight, approx.	800 g

Selection and Ordering data

	Order No.
Write/read device for connecting to ASM:	
Write/read device SLG 43 With TTY (20 mA current loop) interface	**6GT2 001-0CA10**
Accessories	
CD "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C-libraries, PC presentation program, RFID documentation	**6GT2 080-2AA10**

Dimensions



Overview

The SIM module is a write/read device with integral antenna and serial interface for connection to the following systems:

- Computer
- PC
- PLCs

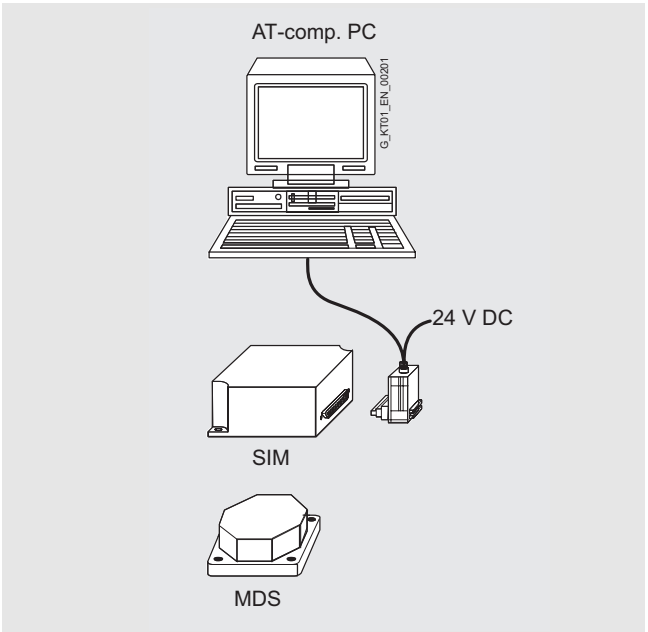
A rugged housing supports use under harsh conditions and makes the MDS resistant to many chemical substances.

Function

The SIM combines a communications module (ASM) and a write/read device (SLG) in one enclosure with V.24 (RS232) interface.

It can be operated by means of various procedures (3964R, Lauf, SINEC L1 and SINUMERIK protocol).

For quick and easy integration into the application (PC with Windows 98/NT), the C library MOBY API (included on the CD "RFID Systems Software & Documentation") is available with the MOBY basic functions (read, write, etc.).



Configurator

Technical specifications

Serial Interface Module SIM 41	
Inductive interface to the MDS	
Data transmission rate	Typically 0.8 ms/byte
For read/write distance, see MDS field data	max. 40 mm, see MDS field data
max. transmission frequency (data/energy)	1.81 MHz/134 kHz
Serial interface	25-pin sub D connector (pin) with interlocking screw
Data transmission rate	2400 to 9600 baud
Max. cable length	V.24: 30 m (shielded)
Software functions	Read, write, initialize MDS, set MDS type ...
Programming	Dependent on computer, PC
Available software (included on MOBY software CD)	MOBY API for Windows 98/NT 4.0, 3964R driver for DOS
Digital inputs	
Quantity	2
Electrical isolation	no
Input voltage	
• For logical "0"	-2 V to +5 V
• For logical "1"	+12 V to +33 V (Ri = 10 kΩ)
Delay time	< 10 ms
Digital outputs	
Quantity	2
Electrical isolation	No, (internal voltage supply) short-circuit-proof I_{max} = 200 mA (per DO, or for 2 DOs)
Power supply	
• Rated value	24 V DC
• Permissible range	20 to 30 V DC
Current consumption	max. 220 mA (DO with no load)
Shock to DIN IEC 60068-2-29	30 *g*
Degree of protection according to DIN EN 60529 / VDE 0470-1	IP54
Ambient temperature	
• During operation	0 °C to +60 °C
• During transportation and storage	-20 °C to +70 °C
Dimensions (mm)	75 x 75 x 40
Weight, approx.	0.3 kg

4

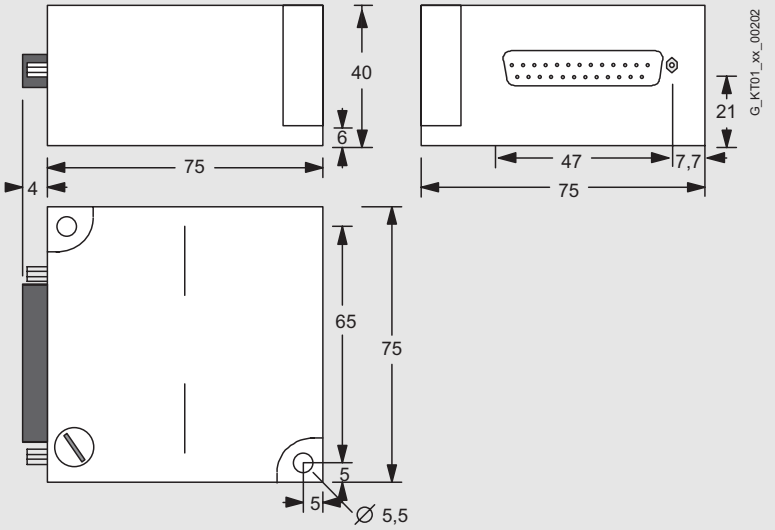
SIM 41

Selection and Ordering data

		Order No.
Write/read device for direct connection to the PC or PLC		
Write/read device SIM 41 with V.24 (RS 232) interface	A	**6GT2 005-0AA10**
Accessories		
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C-libraries, PC presentation program, RFID documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



Overview

The STG I is a powerful mobile handheld terminal with integral write/read antenna for applications in the field of logistics, distribution and service. In addition, it is an indispensable tool for commissioning and testing.

Design

The STG I mobile handheld terminal consists of one basic unit (Basis PSION Workabout PRO) and a removable compact read/write head. It has a splash water-proof enclosure (IP54), LCD color monitor 1/4 VGA, 320 x 240 pixels, TFT portrait format, alphanumeric keyboard and various interfaces (for SD memory card, charging batteries, USB, Bluetooth, etc.).

Function

The pre-installed MOBY software provides service and test functions for reading, writing, etc. of the MOBY data memory:

- Reading data from the data memory
- Writing data to the data memory
- Reading and displaying the ID number of the data memory (to the extent available)
- Displaying and editing the data in hexadecimal, ASCII, decimal and binary formats
- Activate/deactivate password
- MOBY file handler

User applications that were developed for the predecessor model Workabout MX can be transferred to this terminal with little effort. For this purpose, various optional development tools for the PC are available directly from PSION. This is opening up new applications in the field of logistics and distribution, for example, the handheld terminal enables commissioning data to be recorded or processed offline and forwarded to the PC/ computer with a time delay.

Technical specifications

STG I mobile handheld terminal	
Processor	400 MHz Intel Xscale PXA255
Operating system	Microsoft Windows CE .NET 4.20
RAM/Flash EEPROM memory	128 MB/32 MB
User program	MOBY standard application
Screen	TFT color touch display , ¼ VGA 320 x 240 (portrait format); adjustable backlighting
Keyboard	alphanumeric
Sound	Piezo signal transmitter
Power supply	• Lithium-ion battery (3.7 V; 3000 mAh) • Quick charging possible (automatic shut-off) or 3 x 1.5 V type AA • Backup battery: 3 V ML 2032 lithium cell
Interfaces	• LIF interface (low insertion force interface) for battery charging and communication with the PC using a docking and loading station (USB) • CF interface for expansion cards (e.g. WLAN)
Dimensions	305 x 90 x 44 [mm]
Weight (incl. battery)	Approx. 0.5 kg
Ambient temperature	
• During operation	-10 °C ...+50 °C
• Storage (without batteries)	-25 °C ...+60 °C
Relative humidity, non-condensing	5 ... 90 %
Degree of protection	IP54 (splash water proof)
EMC	EN 55022, EN 55024

Integral read/write head, inductive interface to MDS	**for MOBY I**
Read/write distance to MDS	up to 20 mm, depending on MDS
Energy/data transmission frequency	134 kHz/1.81 MHz
Serial interface (to basic unit)	TTL, 3964R protocol
Functionality of the SW application	Standard user interface for reading/writing of data memories, etc.

STG I mobile handheld terminal

Selection and Ordering data

		Order No.
Mobile handheld terminal STG I with MOBY I write/read head Basic unit (PSION Workabout PRO) with MOBY I read/write, battery, standard software pre-installed, without loading/docking station	D	**6GT2 003-0CA10**
Accessories		
Loading/docking station For a mobile handheld terminal as well as a spare battery, incl. wide-range plug-in power supply 100 ... 240 V AC and country-specific adapters as well as USB cable	A	**6GT2 898-0BA00**
MOBY I write/read head For basic unit (PSION Workabout mx and PSION Workabout PRO)		**6GT2 003-1CA00**
Basic unit Basic unit (PSION Workabout PRO) with adapter for MOBY RFID read/write heads	D	**6GT2 003-0AA10**
Spare battery For basic unit (PSION Workabout PRO), High Capacity 3000 mAh, Li-ion	A	**6GT2 898-0CA00**
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. MOBY documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H

D: Subject to export regulations AL = N and ECCN = 4A994

Accessories

For optional components, please visit http://www.psionteklogix.com

For example:

- SD expansion cards
- Handles, belt loops
- Vehicle holder with charging function

Overview

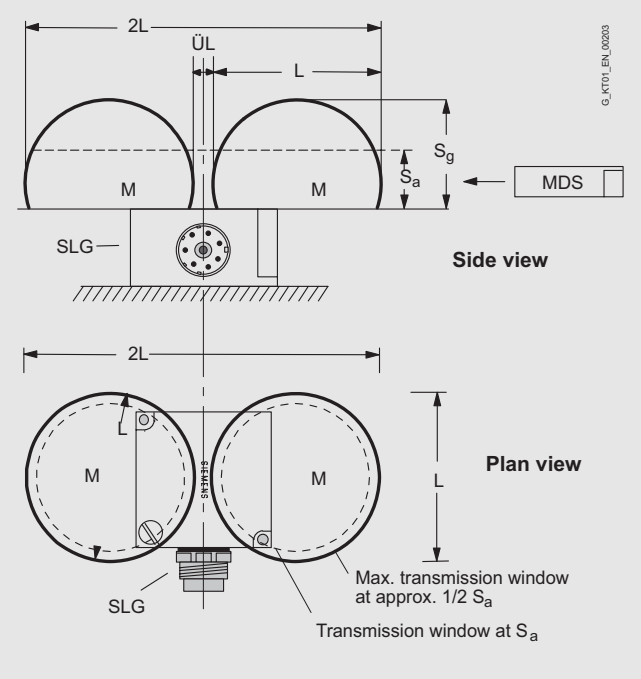
Configuring note

Detailed configuration and commissioning data is contained in the "Manual for Configuration, Assembly and Service". For ordering data, refer to "Documentation".

Transmission window

The write/read device generates an inductive alternating field. The field is at its strongest near the SLG and declines rapidly as the distance from the SLG increases. The distribution of the field depends on the structure and geometry of the antennas in the write/read device and MDS.

A prerequisite for the function of the MDS is a minimum field strength at the MDS that is achieved at a distance Sg from the write/read device. The drawing below shows the transmission window between MDS and SLG.



M: Center point of the transmission window

S_a: Operating range

S_g: Limit distance (maximum clear distance between upper surface of SLG and upper surface of MDS, at which the transmission can still function under normal conditions)

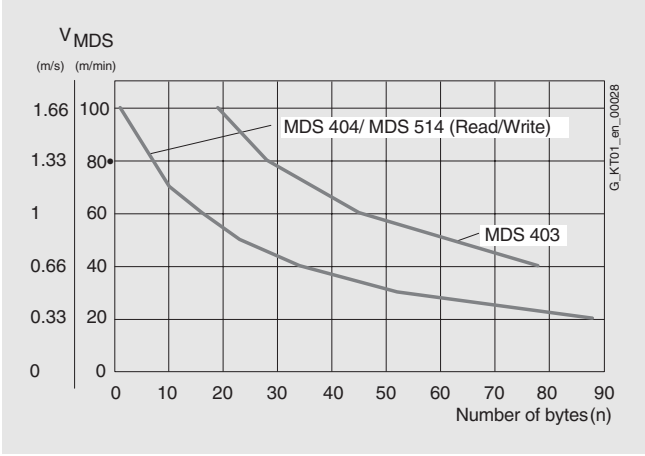
L: Length of a transmission window for vertical motion of the MDS

2L: Length of a transmission window for horizontal motion of the MDS

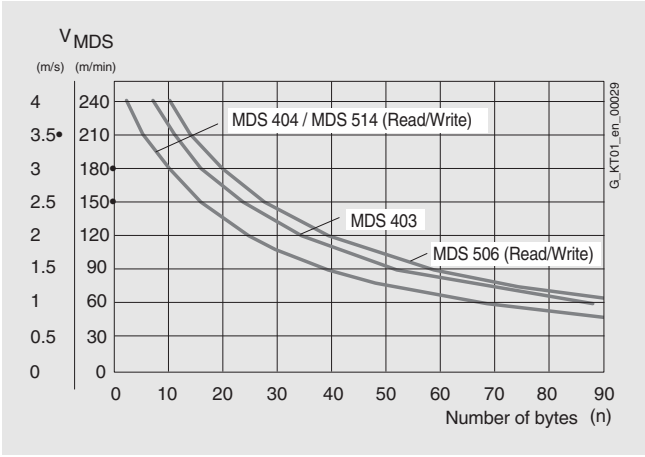
UL: The transmission gap lies between the two transmission windows. In this area it is not possible to work with the MDS. The transmission gap is a few millimeters long. In all further analyses, the UL is not taken into account (UL = 0 mm)

Representation of speed relative to data quantity

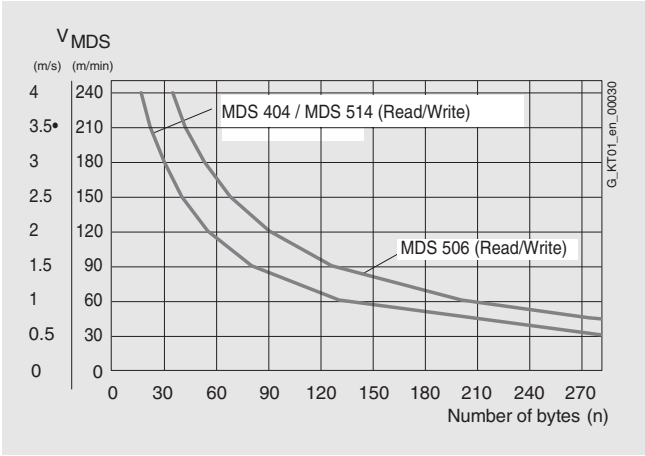
The characteristics shown should make it easier to preselect the MOBY I components MDS and SLG for dynamic use. The characteristics apply for vertical operation with single length of the transmission window (L) and the operating distance (S_a).



Example SLG 41



Example for SLG 42 (vertical operation)



Example for SLG 43 (vertical operation)

Introduction

Overview

SIMATIC RF 300 is a non-contact identification system specially designed for use in industrial production for the control and optimization of the material flow. Thanks to its compact modular structure, it is particularly suited for small assembly lines and conveyor systems with restricted space for installation. The rugged components feature an attractive price/performance ratio.

Depending on the demands on the identification system, two versions of the system are available:

- A particularly economical solution with a link to SIMATIC S7-300 over the IQ-Sense interface for low requirements in terms of speed and data volume
- Write/read devices for high demands in terms of speed and data volume for connection to SIMATIC, PROFIBUS, PC or non-Siemens controllers (available soon)

The SIMATIC RF300 identification system boasts the following features:

- 13.56 MHz operating frequency
- Passive (without battery) transponders (tags)
- Rugged, compact components
- Very high immunity to noise
- Extensive diagnostic functions
- Extremely fast data transmission (except for IQ-Sense interface)
- Simple integration into SIMATIC and the PROFIBUS DP

Benefits

Minimization of commissioning time by direct connection of system to S7-300, PROFIBUS, Ethernet and non-Siemens PLC or PC.

Minimization of downtimes thanks to:

- Fault-resistant data transmission
- Specific diagnostics information
- High data security under critical operating conditions

High-speed data processing thanks to high data transmission rates on the "air interface".

SIMATIC RF300 records the data of objects quickly and reliably. SIMATIC RF300 thereby ensures effective and cost-effective automation.

Application

The RFID system SIMATIC RF300 is used primarily for contact-free identification of containers, pallets and workpiece holders in a closed production cycle. This means that the data carriers (transponders, tags) remain in the production chain and are not shipped out with the products. Thanks to the compact enclosure dimensions of the transponders as well as of the write/read devices, SIMATIC RF300 is particularly suitable for (small) assembly lines where space is at a premium.

The main application areas of SIMATIC RF300 are:

- Assembly and handling systems, assembly lines (identification of workpiece carriers)
- Production logistics (material flow control, identification of containers and other vessels)
- Parts identification (e.g. transponder is attached to product or pallet)
- Conveyor systems (e.g. overhead monorail conveyors)

Function

The MOBY and SIMATIC RF300 RFID systems ensure that highly-informative data accompany a product right from the start.

Tags ("electronic delivery notes") are used in place of barcodes and contain all production-specific data in addition to the product number. Up to 32 KB of user data can be stored and managed in this way. Enough to enable quality data to be stored as well.

Using stationary as well as mobile read/write devices, the necessary information (production data, transport routes, etc.) can be read from the tag without contact (inductively) and can even be added to or modified without the need for a direct line-of-sight link.

Technical specifications

Type	Contactless, inductive RF identification system for industrial applications
Transmission frequency data/energy	13.56 MHz
Memory capacity	• 20 byte to 64 KB user memory (r/w) • 4 byte fixed code as serial number (ro)
Memory type	EEPROM / FRAM
Write cycles	EEPROM: > 100 000 FRAM: unlimited
Read cycles	unlimited
Data management	Byte-oriented access
Data transmission rate from mobile data storage unit to read/write device	3 KB/s (IQ-Sense: 50 byte/s)
Write/read distance (system limit)	Up to 150 mm
Operating temperature	Reader: -25 °C to +70 °C Tag: -40 °C to +85 °C
Degree of protection	Reader: IP65 to IP67 Tag: IP67 to IPx9K
Can be connected to	• SIMATIC S7-300 • PROFIBUS DP V1 • PROFINET • PC • Non-Siemens PLC
Special features	• High noise immunity • Compact components • Extensive diagnostic options • Reader with IQ-Sense interface
Approvals	• ETS 300330 (Europe) • FCC Part 15 (USA) • UL/CSA CE

SIMATIC RF300 mobile data storage unit

Introduction

Overview

Type	Features
SIMATIC RF320T	Universal, compact data storage unit (20 + 4 byte EEPROM) Ø 27 mm x 4 mm, not suitable for mounting directly on metal • Degree of protection IP67/IPX9K[1)] • Temperature range up to +85 °C
SIMATIC RF340T	Universal data storage unit (8 KB FRAM + 24 byte EEPROM), 48 mm x 25 mm x 15 mm • Degree of protection IP68/IPX9K[1)] • Temperature range up to +85 °C
SIMATIC RF350T	Universal data storage unit (32 KB FRAM + 24 byte EEPROM), 50 mm x 50 mm x 20 mm • Degree of protection IP68 • Temperature range up to +85 °C
SIMATIC RF360T	Universal data storage unit in credit card format (8 KB FRAM + 24 byte EEPROM), 85.5 mm x 54.1 mm x 2.5 mm • Degree of protection IP67 • Temperature range up to +75 °C
SIMATIC RF370T	Universal data storage unit (32 or 64 KB FRAM + 24 byte EEPROM), 75 mm x 75 mm x 40 mm • Degree of protection IP68 • Temperature range up to +85 °C
SIMATIC RF380T	Heat-resistant data memory, designed for skid identification in paint shops (32 KB FRAM + 24 byte EEPROM), housing dimensions (mm) Ø 114 x 83 • Degree of protection IP68 • Temperature range up to +220 °C (cyclic)

1) Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

Design

A SIMATIC RF 300 data storage unit essentially consists of an electronic module, an antenna and an EEPROM or FRAM memory built into a rugged plastic enclosure.

Function

If a tag moves into the transmission field of the reader, the necessary power for all circuit components is generated and monitored by means of the energy supply unit. The pulse-coded information is prepared in such a way that it can be processed further as pure digital signals. The handling of data, including check routines, is performed by the control unit which also manages the user memory.

Overview

Universal, compact tag (20 + 4 byte EEPROM) in button format (Ø 27 mm x 4 mm), not suitable for mounting directly on metal.

Mobile data storage unit	SIMATIC RF320T
Data retention time	> 10 years (at < +40 °C)
Write/read distance	(see field data)
Memory organization	Byte-oriented access, write protection possible in 4-byte blocks
Energy source	Inductive power transmission
Shock/vibration to EN 60721-3-7, Class 7 M3	100 *g*/20 *g*
Torsion and bending load	Not permissible
Mounting	Adhesive/M3 screws
Recommended distance to metal	≥ 10 mm
Degree of protection to	
• EN 60529	IP67
• DIN EN 60529 / VDE 0470-1	IPX9K[1)]
Enclosure	Button
• Dimensions	Ø 27 mm x 4 mm
• Color/material	Black/epoxy resin
Ambient temperature	
• During operation	-25 ... +85 °C
• During transportation and storage	-40 ... +125 °C
Weight, approx.	5 g

1) Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

Technical specifications

Mobile data storage unit	SIMATIC RF320T
Memory size	20 byte EEPROM (r/w), 4 byte UID (ro)
MTBF	2,500,000 h
Read cycles	Unlimited
Write cycles, min.	50 000
at ≤ 40 °C, typical	> 1 000 000

Field data in mm

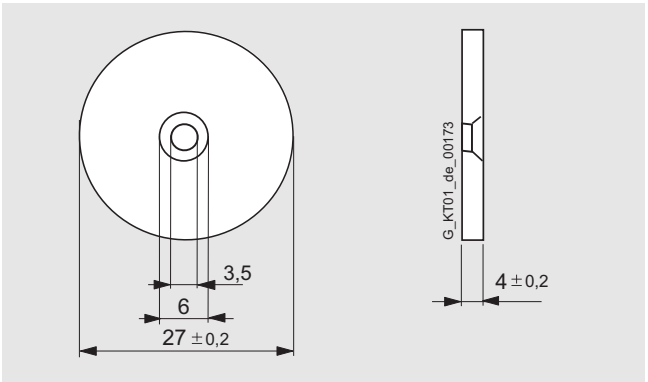
SIMATIC RF320T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30
Operating distance (S_a)	1 ... 10	1 ... 20	1 ... 20	0 ... 8	0 ... 11
Limit distance (S_g)	16	25	25	10	15
Transmission window (L)	30	45	45	10	15

Selection and Ordering data

		Order No.
SIMATIC RF320T tag	A	**6GT2 800-1CA00**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



SIMATIC RF340T

Overview

Universal data memory (8 KB FRAM + 24 byte EEPROM + 4 byte serial number), particularly suitable for small workpiece carriers.

Technical specifications

Mobile data storage unit	SIMATIC RF340T
Memory size	8 KB FRAM (r/w), 20 byte EEPROM (r/w), 4 byte UID (ro)
MTBF	1500000 h
Read cycles	Practically unlimited (>10^{10})
Write cycles	Practically unlimited (>10^{10})
Data retention time	> 10 years (at < +40°C)
Write/read distance	(see field data)
Memory organization	Byte-oriented access, write protection possible in 4-byte blocks for the 20-byte EEPROM area
Energy source	Inductive power transmission
Shock/vibration	to EN 60721-3-7, 50 *g* / 20 *g*
Torsion and bending load	Not permissible
Mounting	2 x M3 screws
Degree of protection to	
• EN 60529	IP67/IPX9K[1)]
Dimensions in mm	48 x 25 x 15
Color/material	Anthracite/polyamide 12
Ambient temperature	
• During operation	-25 to +85 °C
• During transportation and storage	-40 to +85 °C
Weight, approx.	25 g

1) Extract:
Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 0 to 15 l/min at 100 bar (75 °C)
Distance: 10 to 15 cm

4

Field data in mm

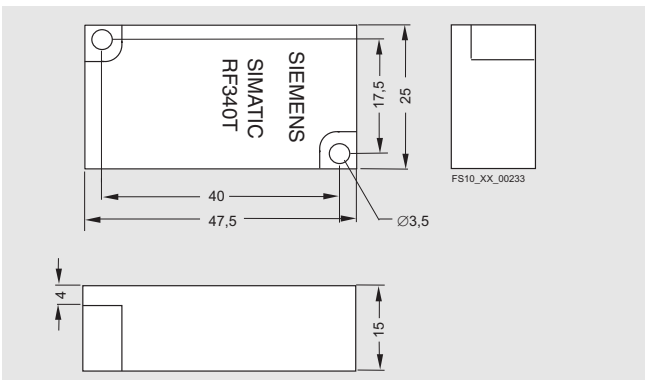
SIMATIC RF340T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30
Operating distance (S_a)	1 to 20	2 to 25	2 to 25	0 to 10	0 to 15
Limit distance (S_g)	26	35	35	13	20
Transmission window (L)	38	60	60	20	25

Selection and Ordering data

		Order No.
SIMATIC RF340T tag	A	**6GT2 800-4BB00**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



Overview

Universal data memory (32 KB FRAM + 24 byte EEPROM)

Technical specifications

Mobile data storage unit	SIMATIC RF350T
Memory size	32 KB FRAM (r/w), 20 bytes EEPROM (r/w), 4 bytes UID (ro)
MTBF	1500000 h
Read cycles	Practically unlimited (>10^{10})
Write cycles	Practically unlimited (>10^{10})
Data retention time	> 10 years (at < +40°C)
Read/write distance	(see field data)
Memory organization	Byte-oriented access, write protection possible in 4-byte blocks for the 20-byte EEPROM area
Energy source	Inductive power transmission
Shock/vibration to EN 60721-3-7, Class 7 M3	50 *g*/20 *g*
Torsion and bending load	Not permissible
Fixing	2 x M4 screws
Recommended distance to metal	Can be directly mounted onto metal
Degree of protection to EN 60529	IP68
Housing	8-sided, with fixing frame
L x W x H, in mm	50 x 50 x 20
Color/material	Anthracite/polyamide 12
Ambient temperature	
• During operation	-25 to + 85 °C
• During transportation and storage	-40 to +85 °C
Weight, approx.	25 g

Field data in mm

SIMATIC RF350T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30
Operating distance (S_a)	2 to 22	5 to 35	5 to 35	-	0 to 16
Limit distance (S_g)	30	50	50	-	22
Transmission window (L)	45	60	60	-	25

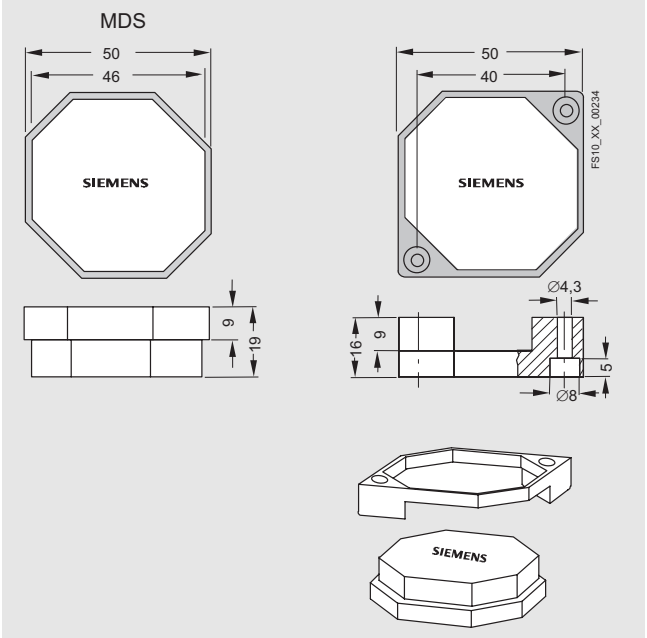
-: Combination reader tag not released

Selection and Ordering data

		Order No.
SIMATIC RF350T tag	A	**6GT2 800-5BD00**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



Left: Mobile data memory.
Upper right: Mounting frame.
Lower right: Installation diagram.
The MDS can be mounted with the mounting frame as shown.

SIMATIC RF360T

Overview

Universal data memory in credit card format
(8 KB FRAM + 24 byte EEPROM).

Technical specifications

Mobile data storage unit	SIMATIC RF360T
Memory size	8 KB FRAM (r/w), 20 bytes EEPROM (r/w), 4 bytes UID (ro)
MTBF	1500000 h
Read cycles	Practically unlimited (>10^{10})
Write cycles	Practically unlimited (>10^{10})
Data retention time	> 10 years (at < +40°C)
Read/write distance	(see field data)
Memory organization	Byte-oriented access, write protection possible in 4-byte blocks for the 20-byte EEPROM area
Energy source	Inductive power transmission
Shock/vibration to EN 60721-3-7	50 *g*/20 *g*
Torsion and bending load	Not permissible
Fixing	2 screws M3 or with fixing lug 6GT2190-0AB00
Recommended distance to metal	> 20 mm; e.g. using spacer 6GT2190-0AA00 in conjunction with fixing lug 6GT2190-0AB00
Degree of protection to EN 60529	IP68
Housing	Credit card format
L x W x H, in mm	85.8 x 54.8 x 2.5
Color/material	Anthracite / epoxy resin
Ambient temperature	
• During operation	-25 to +75 °C
• During transportation and storage	-40 to +85 °C
Weight, approx.	25 g

Field data in mm

SIMATIC RF360T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30
Operating distance (S_a)	2 to 26	8 to 40	8 to 40	-	-
Limit distance (S_g)	35	60	60	-	-
Transmission window (L)	45	70	70	-	-

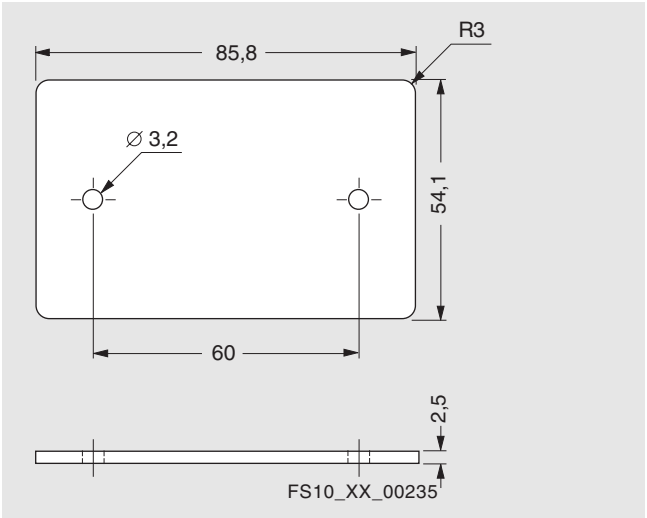
-: Combination reader tag not released

Selection and Ordering data

		Order No.
SIMATIC RF360T tag	A	**6GT2 800-4AC00**
Accessories		
Fixing lug		**6GT2 190-0AB00**
For SIMATIC RF360T		
Spacers		**6GT2 190-0AA00**
For fixing lug, thickness 20 mm The purpose of the spacer is to maintain the recommended distance to the metal when installing the tag.		

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



Overview

Universal data storage unit in square format (32 or 64 KB FRAM + 24 byte EEPROM), 75 mm x 75 mm x 40 mm.

Technical specifications

Mobile data storage unit	SIMATIC RF370T
Memory size	32 or 64 KB FRAM (r/w), 20 byte EEPROM (r/w), 4 byte UID (ro)
MTBF	10^7 h
Read cycles	Practically unlimited (>10^{10})
Write cycles	Practically unlimited (>10^{10})
Data retention time	> 10 years (at < +40°C)
Read/write distance	(see field data)
Memory organization	Byte-oriented access, write protection possible in 4-byte blocks for the 20-byte EEPROM area
Energy source	Inductive power transmission
Shock/vibration to EN 60721-3-7, Class 7 M3	50 *g*/20 *g*
Torsion and bending load	Not permissible
Fixing	2 M5 screws
Recommended distance to metal	Can be directly mounted onto metal
Degree of protection to EN 60529	IP68
Housing	Square format
L x W x H, in mm	75 x 75 x 40
Color/material	Anthracite/polyamide 12
Ambient temperature	
• During operation	-25 to +85 °C
• During transportation and storage	-40 to +85 °C
Weight, approx.	200 g

Field data in mm

SIMATIC RF370T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30
Operating distance (S_a)	-	15 ... 36	15 ... 45	-	-
Limit distance (S_g)	-	52	65	-	-
Transmission window (L)	-	75	70	-	-

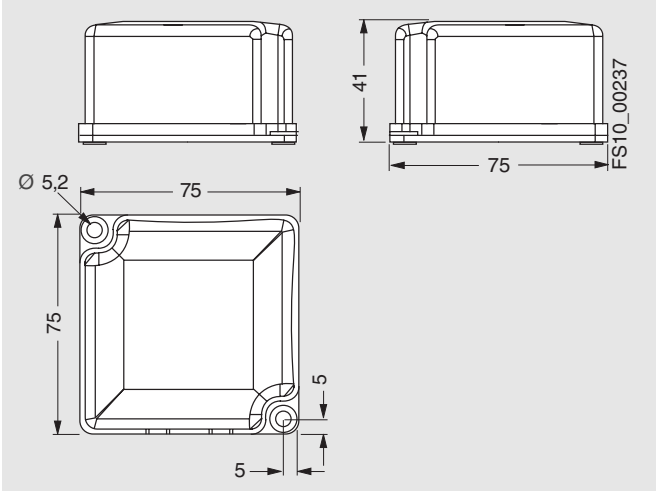
-: Combination reader tag not released

Selection and Ordering data

		Order No.
SIMATIC RF370T tag With 32 KB FRAM	A	**6GT2 800-5BE00**
SIMATIC RF370T tag With 64 KB FRAM	A	**6GT2 800-6BE00**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



4

SIMATIC RF380T

Overview

Heat-resistant data memory, designed for skid identification in paint shops (32 KB FRAM + 24 byte EEPROM), housing dimensions (mm) Ø 114 x 83, temperature range up to +220 °C (cyclic).

Application

Typical applications are:

- Primer application, cataphoresis with the associated drying ovens
- Outer paint coating area with drying ovens
- Washing area with temperatures > +85 °C

Technical specifications

	SIMATIC RF380T
Memory size	32 KB FRAM (r/w), 20 byte EEPROM (r/w), 4 byte UID (ro)
MTBF	10^7 h
Read cycles	Practically unlimited (>10^{10})
Write cycles	Practically unlimited (>10^{10})
Data retention time	> 10 years (at < +40 °C)
Write/read distance	(see field data)
Memory organization	Byte-oriented access, write protection possible in 4-byte blocks for the 20-byte EEPROM area
Energy source	Inductive power transmission
Shock/vibration to EN 60721-3-7	50 *g*/5 *g*
Torsion and bending load	Not permissible
Mounting	With special support (to be ordered separately)
Recommended distance to metal	Can be directly mounted on metal
Degree of protection to EN 60529	IP68
Enclosure	Round type
• Dimensions (Ø x H, in mm)	114 x 83
• Color/material	Brown / PPS
Ambient temperature	
• In operation (permanent)	-25 to 110 °C
• In operation (cyclic)	-25 to 220 °C
• During transportation and storage	-40 to 110 °C
Weight, approx.	900 g

Field data in mm

SIMATIC RF380T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30
Operating distance (S_a)	-	15 to 47	15 to 53	-	-
Limit distance (S_g)	-	55	65	-	-
Transmission window (L)	-	86	70	-	-

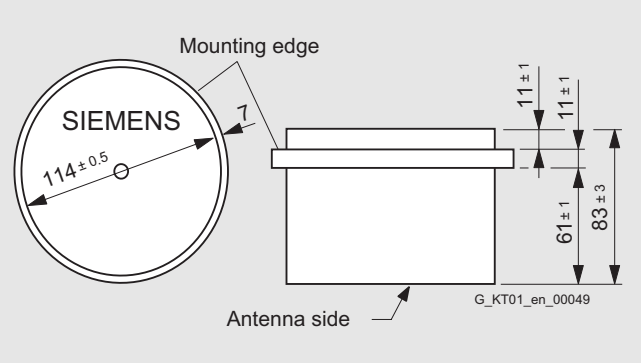
-: Combination reader tag not released

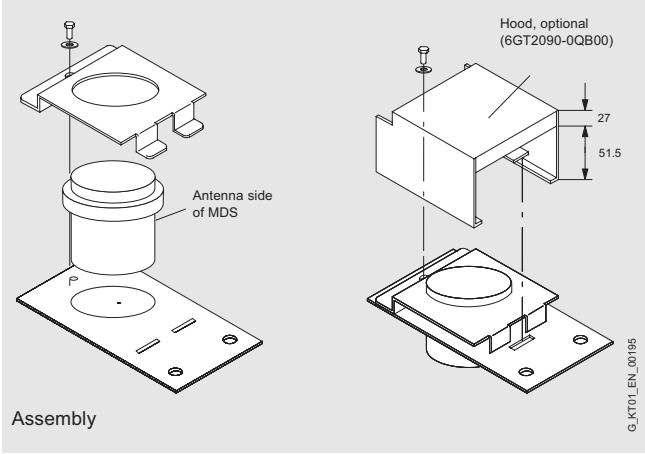
Selection and Ordering data

		Order No.
SIMATIC RF380T tag	A	**6GT2 800-5DA00**
With 32 KB FRAM		
Accessories		
Support for RF380T		
• Short type	A	**6GT2 090-0QA00**
• Long type	A	**6GT2 090-0QA00-0AX3**
Shrouding cover	A	**6GT2 090-0QB00**
For skid support		

A: Subject to export regulations AL = N and ECCN = EAR99H

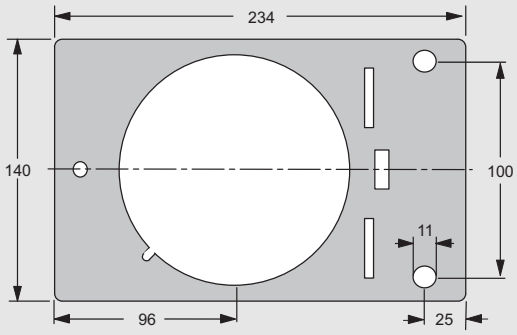
Dimensions





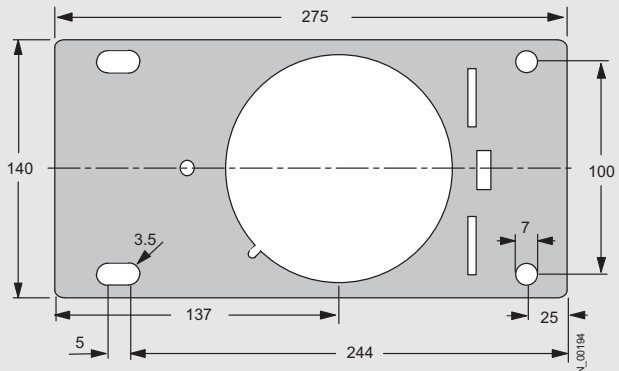
Assembly

Short version (6GT2090-0QA00)



Material: V2A sheet-metal 2.5 mm thick
BI 2.5 DIN 59382 1.4541

Long version (6GT2 090-0QA00-0AX3)



Material: V2A sheet-metal 2.5 mm thick
BI 2.5 DIN 59382 1.4541

Introduction

Overview

Type	Features
SIMATIC RF310R	Ideal for use on small assembly lines. Reader with integrated antenna. • Degree of protection IP67 • Temperature range up to +70 °C • Dimensions 55 mm x 75 mm x 30 mm • 2 interface versions (IQ-Sense and RS422)
SIMATIC RF340R	Ideal for use on assembly lines. Reader with integrated antenna. • Degree of protection IP67 • Temperature range up to +70 °C • Dimensions 75 mm x 75 mm x 40 mm • Interface RS422
SIMATIC RF350R	Ideal for use on assembly lines. Reader for the connection of external MOBY E antennas (ANT1, ANT18, ANT30). • Degree of protection IP65 • Temperature range up to +70 °C • Dimensions 75 mm x 75 mm x 40 mm • Interface RS422

Function

The reader implements the commands received from the communication module or the host system. These commands and the data to be written or read are processed by a corresponding digital/analog circuit in the reader and control communication with the tag.

The communication between tag and reader takes place over inductive alternating fields. The transmittable quantity of information between reader and tag depends on:

- the speed at which the tag moves through the transmission window of the reader
- the length of the transmission window
- the tag type (FRAM, EEPROM).

Overview

The SIMATIC RF310R is a write/read device (reader) in the lower performance range and can be used to great advantage in assembly lines thanks to its small, compact design.

This reader is available in two interface versions:

- With IQ-Sense interface for the 8xIQ-Sense module SM338 on S7-300/ET200M
- With RS 422 interface for the RFID communication modules ASM 456, 475, RF170C, RF180C

Thanks to the high degree of protection and the use of high-quality materials, the SIMATIC RF310R ensures problem-free use even under the toughest industrial conditions. Connection is either over a 4-pin M12 plug-in connector (IQ-Sense variant) or over an 8-pin M12 plug-in connector (RS 422 version).

Technical specifications

SIMATIC RF310R reader	6GT2801-0AA00 (for IQ-Sense)	6GT2801-1AA10 (for RS422)
Inductive interface to the tag		
Transmission frequency (energy/data)	13.56 MHz	13.56 MHz
Read/write distance to the tag	Max. 35 mm (see tag field data)	Max. 35 mm (see tag field data)
Port		
• to SIMATIC S7-300	8-IQ-Sense, 2-wire pole-independent; max. 2 readers on one module	-
• to RFID communication modules	-	RS422 (3964R protocol)
Baud rates	-	19200, 57600, 115200 bit/s
Cable length reader-master module	Max. 50 m (unshielded cable)	Max. 1000 m (shielded cable)
Data transfer rate, reader-tag		
• Writing, approx.	40 byte/s	3100 byte/s
• Reading, approx.	50 byte/s	3100 byte/s
Functions	Read, write, initialize tag	Read/write/initialize tag, scan status and diagnostics information, switch antenna on/off, repeat command, scan tag serial numbers (UID)
Multi-tag	No	Available soon
Power supply	Via IQ-Sense master module (24 V DC)	24 V DC
Display elements	2-color LED (operating voltage, presence, error)	2-color LED (operating voltage, presence, error)
Plug-in connector	M12, 4-pin	M12, 8-pin
Enclosure		
• Dimensions in mm	55 x 75 x 30 (without connector)	55 x 75 x 30 (without connector)
• Color	Anthracite	Anthracite
• Material	PA 12	PA 12
Degree of protection to EN 60529	IP67	IP67
Shock-resistant to EN 60721-3-7, Class 7 M2	50 *G*	50 *G*
Vibration-resistant to EN 60721-3-7, Class 7 M2	20 *g*	20 *g*
Mounting	4 x M5 screws	4 x M5 screws
Tightening torque (at room temperature)	≤ 2 Nm	≤ 2 Nm
Ambient temperature		
• During operation	-25 … +70 °C	-25 … +70 °C
• During transportation and storage	-40 … +85 °C	-40 … +85 °C
MTBF (at 40 °C)	1.3 x 10^6 h	1.4 x 10^6 h
Weight, approx.	200 g	200 g

SIMATIC RF310R

Field data in mm

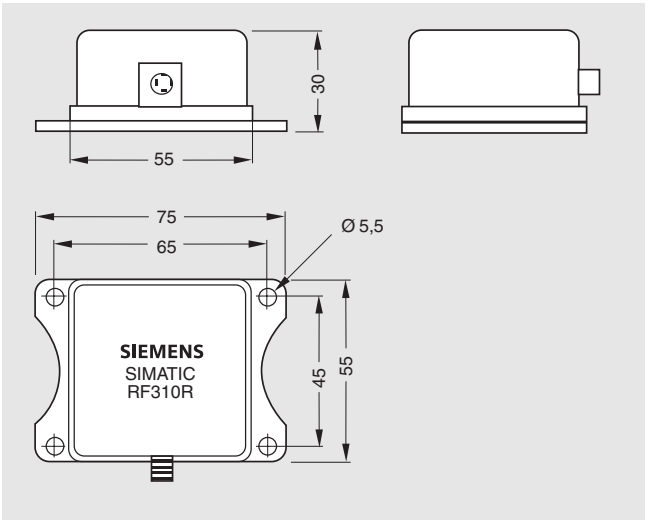
Reader	SIMATIC RF310R
Minimum distance from reader to reader	≥ 400 mm

Selection and Ordering data

		Order No.
SIMATIC RF310R reader		
• With IQ-Sense interface		**6GT2 801-0AA00**
• With RS422 interface (3964R protocol)	A	**6GT2 801-1AA10**
Accessories		
IQ-Sense module SM 338 for S7-300 and ET 200M		**6ES7 338-7XF00-0AB0**
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. MOBY documentation		**6GT2 080-2AA10**
M12 cable plug With PUR cable 4 x 0.34 mm², straight connector for SIMATIC RF310R (IQ-Sense)		
• 5 m		**3RX8 000-0CB42-1AF0**
• 10 m		**3RX8 000-0CB42-1AL0**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



SIMATIC RF340R

Overview

The SIMATIC RF340R is a write/read device (reader) with integrated antenna for the medium performance range and can be used to great advantage in assembly lines thanks to its compact design. This reader is also particularly suitable for dynamic applications, in which the data carrier does not stop during the write/read process.

This reader has an RS 422 interface with transmission procedure 3964R for connection to the RFID communication modules ASM 456, 475, RF170C, RF180C.

Thanks to the high degree of protection and the use of high-quality materials, the SIMATIC RF340R ensures problem-free use even under the toughest industrial conditions. It is connected by means of an 8-pin M12 connector.

Technical specifications

Reader	SIMATIC RF340R
Inductive interface to the tag	
• Transmission frequency (energy/data)	13.56 MHz
• Read/write distance to the tag	See "Mobile data storage units" field data
Port	RS422 (3964R protocol)
Transmission rates	19200, 57600, 115200 bit/s
Cable length reader-master module	Max. 1000 m (shielded cable)
Data transfer rate, reader-tag	Read / write: approx. 3,100 byte/s
Functions	Read/write/initialize tag, scan status and diagnostics information, switch antenna on/off, repeat command, scan tag serial numbers (UID)
Multi-tag	Available soon
Power supply	24 V DC
Display elements	2-color LED (operating voltage, presence, error)
Plug-in connector	M12, 8-pin
Enclosure	
• Dimensions in mm	75 x 75 x 40 (without device connector)
• Color	Anthracite
• Material	PA 12
Degree of protection to EN 60529	IP67
Shock-resistant to EN 60721-3-7, Class 7 M2	50 g
Vibration-resistant to EN 60721-3-7, Class 7 M2	20 *g*
Mounting	2 x M5 screws
Tightening torque (at room temperature)	≤ 2 Nm
Ambient temperature	
• During operation	-25 … +70 °C
• During transportation and storage	-40 … +85 °C
MTBF (at 40 °C)	1.2 x 10^6 hours
Weight, approx.	250 g

Field data in mm

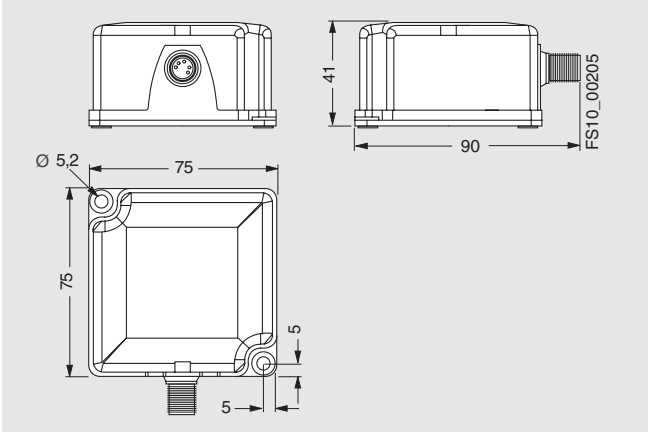
Reader	SIMATIC RF340R
Minimum distance from reader to reader	≥ 500 mm

Selection and Ordering data

		Order No.
Reader SIMATIC RF340R	A	**6GT2 801-2AA10**
with integrated antenna		
Accessories		
CD: "RFID Systems Software & Documentation"		**6GT2 080-2AA10**
FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. MOBY documentation		

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



Reader SIMATIC RF340R

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SIMATIC RF350R

Overview

The SIMATIC RF350R is a universal write/read device (reader) for use with external antennas. Due to the different, pluggable antenna designs (flat antenna, round antennas), there are many possible applications in the area of industrial production, especially in assembly lines.

This reader has an RS 422 interface with transmission procedure 3964R for connection to the RFID communication modules ASM 456, 475, RF170C, RF180C.

Thanks to the high degree of protection and the use of high-quality materials, the SIMATIC RF350R ensures problem-free use even under the toughest industrial conditions. It is connected by means of an 8-pin M12 connector.

One of each of the following antennas from the MOBY E spectrum can be operated on an RF350R:

- ANT 1, universal flat antenna, also for dynamic applications size (L x W x H in mm): 75 x 75 x 20
- ANT 18, universal round antenna in M18 design for assembly lines with small workpiece holders size (Ø x L in mm) M18 x 55
- ANT 30, universal round antenna for assembly lines with small workpiece holders size (Ø x L in mm) M30 x 58

Technical specifications

Reader	SIMATIC RF350R
Inductive interface to the tag	
• Transmission frequency (energy/data)	13.56 MHz
• Port	RS 422 (3964R protocol)
• Transmission rates	19200, 57600, 115200 bit/s
Cable length reader-master module	Max. 1000 m (shielded cable)
Data transmission rate, reader-tag	Read / write: approx. 3100 byte/s
Functions	Read/write/initialize tag, scan status and diagnostics information, switch antenna on/off, repeat command, scan tag serial numbers (UID)
Multi-tag	Available soon
Power supply	24 V DC
Display elements	2-color LEDs (operating voltage, presence, error)
Plug-in connector	M12, 8-pin
Housing	
• Dimensions in mm	75 x 75 x 40 (without device connector)
• Color	Anthracite
• Material	PA 12
Degree of protection to EN 60529	IP65
Shock-resistant to EN 60721-3-7, Class 7 M2	50 g
Vibration-resistant to EN 60721-3-7, Class 7 M2	20 *g*
Mounting technique	2 x M5 screws
Tightening torque (at room temperature)	≤ 2 Nm
Ambient temperature	
• During operation	-25 … + 70 °C
• During transportation and storage	-40 … + 85 °C
MTBF (at 40 °C)	1.2 x 10^6 hours
Weight, approx.	250 g

Antenna	ANT 1	ANT 18	ANT 30
Inductive interface to the tag	13.56 MHz		
Max. write/read distance ANT tag (Sg)	See "Mobile data storage units" field data		
Port to RF350R			
• Plug connection	4-pin (pins on antenna side)		
• Antenna cable length (cannot be changed)	3 m		
Housing dimensions in mm	75 x 75 x 20 (L x W x H)	M18 x 55 (Ø x L)	M30 x 58 (Ø x L)
Color	Anthracite	Pale turquoise	
Material	Plastic PA 12	Plastic Krastin	
Degree of protection to EN 60529	IP67	IP67 (front)	
Shock-resistant to EN 60721-3-7, Class 7M2	50 *g* Maximum value, no continuous load		
Vibration-resistant to EN 60721-3-7, Class 7M2	20 *g* (3 … 500 Hz) maximum value, no continuous load		
Ambient temperature			
• During operation	- 25 … + 70 °C		
• During transportation and storage	- 40 … + 85 °C		

Antenna	ANT 1	ANT 18	ANT 30
MTBF (at 40 °C)	2.5 x 10^5 hours		
Weight, approx.	80 g	120 g	150 g

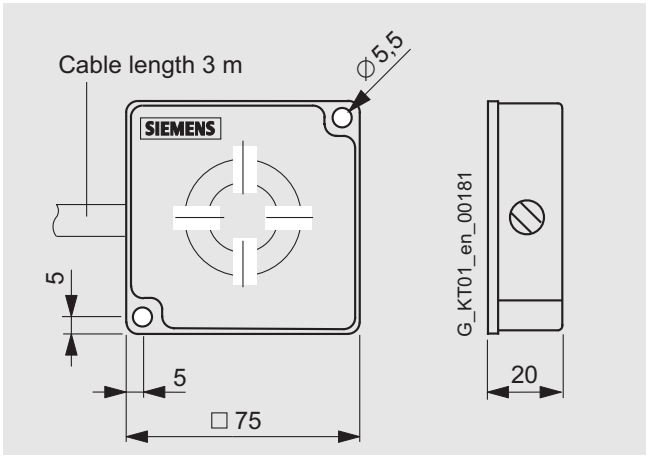
Field data

RF350R with antenna	ANT 1	ANT 18	ANT 30
Operating distance (S_a)	See "Mobile data storage units" field data		
Limit distance (S_g)			
Diameter of the transmission window (L_d)			
Minimum distance from antenna to antenna (D)			
ANT1	800	400	400
ANT18	400	125	200
ANT30	400	200	200

Selection and Ordering data

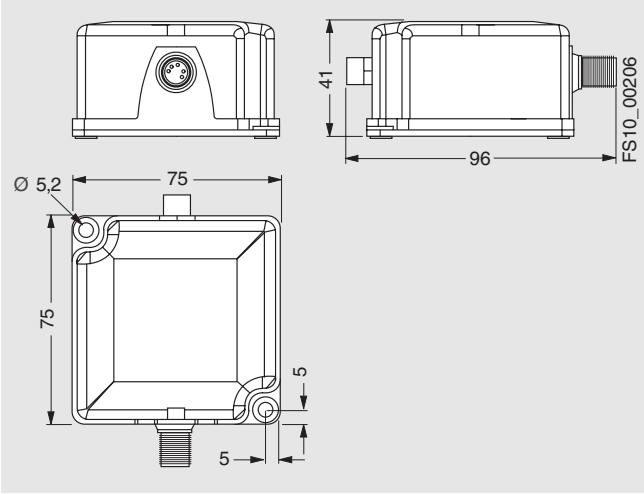
		Order No.
Reader SIMATIC RF350R Without antenna	A	**6GT2 801-4AA10**
ANT 1 antenna for RF350R and SLG 75 (MOBY E)		**6GT2 398-1CB00**
ANT 18 antenna for RF350R and SLG 75 (MOBY E)		**6GT2 398-1CA00**
ANT 30 antenna for RF350R and SLG 75 (MOBY E)		**6GT2 398-1CD00**
Accessories		
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. RFID documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H



ANT 1 antenna

Dimensions



Reader SIMATIC RF350

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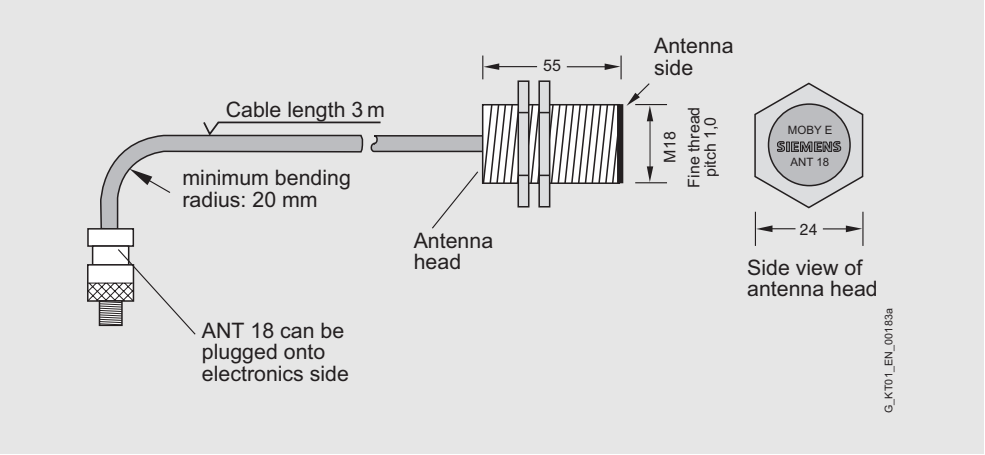
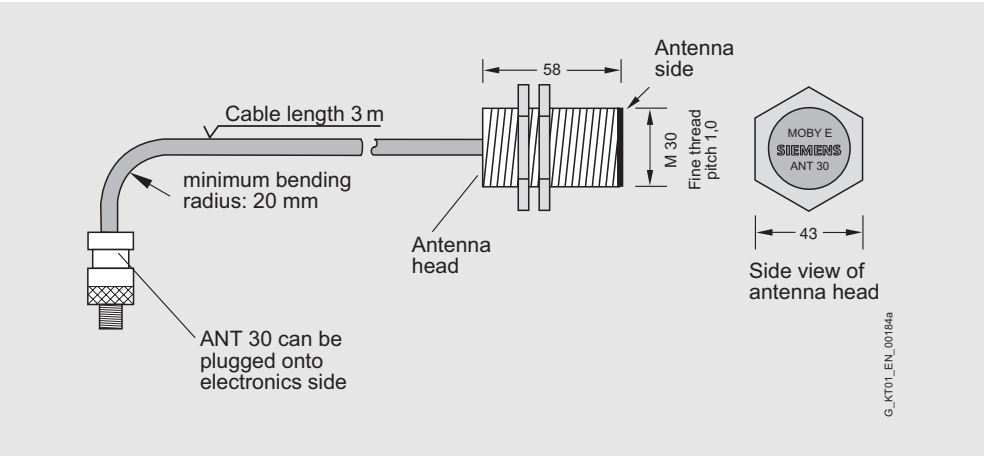


ANT 18 antenna



ANT 30 antenna

Overview

SIMATIC RF310M with loading/docking station

The SIMATIC RF310M is a powerful mobile handheld terminal with integral write/read antenna for applications in the field of production logistics, distribution and service. In addition, it is an indispensable tool for commissioning and testing.

Design

The SIMATIC RF310M mobile handheld terminal consists of one basic unit (Basis PSION Workabout PRO) and an integrated read/write unit for RF300 transponders (mobile data memory). It has a splash water-proof enclosure (IP54), LCD color monitor 1/4 VGA, 320 x 240 pixels, TFT portrait format, alphanumeric keyboard and various interfaces (for SD memory card, battery charging, USB, Compact Flash for expansion modules, Bluetooth, etc.).

Function

The supplied and pre-installed RF300 software provides service and test functions for reading, writing, etc. of the RF300 data memory:

- Reading data from the data memory
- Writing data to the data memory
- Reading and displaying the ID number of the data memory
- Displaying and editing the data in hexadecimal, ASCII, decimal and binary formats
- Activate/deactivate password

Based on the operating system and communication standard (WIN CE), the unit ensures simple integration into existing or planned infrastructures. Various optional development tools for the PC and a wide selection of accessories are available for this direct from PSION or Microsoft.

Technical specifications

Mobile handheld terminal	SIMATIC RF310M
Processor	400 MHz Intel Xscale PXA255
Operating system	Microsoft Windows CE .NET 4.20
RAM/Flash EEPROM memory	128 MB/64 MB
User program	RF300 application RF310M.EXE
Screen	TFT color touch display , ¼ VGA 320 x 240 (portrait format); adjustable backlighting
Keyboard	alphanumeric
Sound	Piezo signal transmitter
Power supply	• Lithium-ion battery (3.7 V; 3000 mAh) • Quick charging possible (automatic shut-off) or 3 x 1.5 V type AA • Backup battery: 3 V ML 2032 lithium cell
Interfaces	• LIF interface (low insertion force interface) for battery charging and communication with the PC, USB and Ethernet through loading station (USB) • CF interface for expansion cards (e.g. WLAN)
Dimensions	280 x 92 x 42 [mm]
Weight (incl. battery)	Approx. 0.5 kg
Ambient temperature	
• During operation	-10 °C ...+50 °C
• Storage (without batteries)	-25 °C ...+60 °C
Relative humidity, non-condensing	5 ... 95 %
Degree of protection	IP54 (splash water proof)
EMC	EN 55022
Electrostatic; RF; EFT	IEC 801-2; IEC 801-3; IEC 801-4

Integral read/write head, inductive interface to transponder	For SIMATIC RF300
Read/write distance to MDS	up to 25 mm, depending on MDS
Energy/data transmission frequency	13.56 MHz
Serial interface (internal, to basic unit)	RS232, 3964R protocol
Functionality of the SW application	Standard user interface for reading/writing of data memories, etc.

SIMATIC RF310M mobile handheld terminal

Selection and Ordering data

		Order No.
SIMATIC RF310M mobile handheld terminal Basic unit (PSION Workabout PRO) with integrated read/write unit for RF300, batter, standard software pre-installed, without loading/docking station	A	**6GT2 803-0AA00**
Accessories		
Loading/docking station For a mobile handheld terminal as well as a spare battery, incl. wide-range plug-in power supply 100 ... 240 V AC and country-specific adapters as well as USB cable	A	**6GT2 898-0BA00**
Spare battery For basic unit (PSION Workabout PRO), High Capacity 3000 mAh, Li-ion	A	**6GT2 898-0CA00**
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. MOBY documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H

Accessories

For optional components, please visit http://www.psionteklogix.com

For example:

- SD expansion cards
- CF WLAN adapter
- Handles, belt loops
- Vehicle holder with charging function

Overview

MOBY U from Siemens is an identification system with excellent properties for use in industry and logistics. On the one hand it combines the performance of innovative HF technologies and, on the other hand, it ensures continuity for the user thanks to extensive compatibility with the tried and tested MOBY I identification system. Rugged housings and power-saving circuit logic permit many years of maintenance-free operation even in the toughest production environments.

MOBY U eliminates familiar sources of interference during UHF transmissions, such as reflections, electromagnetic interference and overreach, by means of appropriate technical measures.

Correspondingly constructed antennas ensure a homogeneous transmission field to guarantee reliable recognition of the mobile data memories (MDS) even from unfavorable locations.

In addition, special coding procedures ensure that the data transmission functions without errors and the data integrity is guaranteed. To this end, methods and algorithms that have been tried and tested in mobile radio technology (GSM, UMTS) have been transferred to the identification technology.

The MOBY U UHF identification system boasts the following features:

- 2.4 MHz identification system with write/read distance of up to 3,000 mm
- Designed for the upper and medium performance range
- Innovative technology (GSM/UMTS technology) guarantees simple installation/migration and maintenance-free operation for many years:
  - Active suppression of overreach
  - Automatic frequency hopping
  - Homogeneous transmission field with circular polarization
  - Multitag-capability, max. 12 mobile data memories (MDS)
  - Automatic synchronization of up to 3 write/read devices
  - Service functions for fast error analysis
  - MOBY I call-compatible
- Extensive range of rugged data memories for a vast range of applications
- Special heat-resistant data storage unit for use in automotive industry (paintshops)
- Very high level of reliability even in the presence of contamination, temperature fluctuations and electromagnetic interference
- Simple Integration into SIMATIC/PROFIBUS DP-V1 and Industrial Ethernet
- Can be connected via serial interface to any system, e.g. PC with Windows 98/NT/2000/XP
- Mobile handheld terminal

Benefits

- MOBY U standard components ensure that application-specific identification systems can be built up quickly and reliably and guarantee fast replacement under servicing conditions even many years later.
- Worldwide support, configuration and service support.

Application

The MOBY U identification system has been specially designed for applications in automobile production, logistics etc., where considerable demands are made, for example, in terms of immunity to noise, large read/write distance in the case of a mobile data storage unit, fast and secure data transmission, simple installation and reliable functioning even in harsh environments. It used the universally approved ISM frequency band at 2.4 GHz and the radiated power is well below the limits recommended by major health authorities from around the world.

MOBY U covers a transmission range from a few centimeters to three meters and thus creates the requirement for an integrated identification solution, e.g. in automotive production.

Depending on the requirement, various data memories (max. 32 KB RAM) and write/read devices are available for connection to SIMATIC, PROFIBUS, Industrial Ethernet and PCs/PLCs.

The main applications for MOBY U are:

- Main assembly lines in the automotive industry (body in white, surface and assembly)
- Vehicle identification/access control in transport companies, vehicle depots, etc.
- Container/ carrier identification in transport logistics and distribution
- Traffic control systems
- Assembly lines

Function

Mobile data storage units ensure that important data (e.g. production/quality data) accompanies the product from the very beginning.

Mobile data storage units are first attached to the product or its transport or packing unit (e.g. container, pallet, chassis) then inscribed, modified and read using non-contact methods. All the information that is important, e.g. for manufacturing and material flow control, is thus available on the product. A rugged enclosure supports use under harsh industrial conditions and makes the MDS resistant to many chemical substances.

Using stationary as well as mobile write/read devices (SLGs), the necessary information (production data, transport routes, etc.) can be read without contact from a mobile data storage unit and even be supplemented or modified without the need for a direct line-of-sight link.

Introduction

Technical specifications

Type	Contact-free UHF identification system for the medium to upper performance range
Transmission frequency	2.4 - 2.4835 GHz in the ISM band
Transmit power	< 10 mW EIRP
Memory capacity (MDS)	
• Fixed code memory	32-bit serial number
• Read-only memory	128 bits, to be written once by user
• Memory size	Up to 32 KB RAM
Read/write cycles (MDS)	Unlimited/ 10^9 at +25 °C
Data management (MDS)	Byte or file-oriented access
Bulk capability, multitag capability	Yes, up to 12 MDS
Multi-SLG	Yes, up to 3 SLGs side by side (can be synchronized by cable)
Data transmission rate MDS - SLG (write/read)	Approx. 8 / 4.8 KB/s without bulk (net)
Read/write distance	150 mm to 3000 mm
Operating temperature (MDS)	-25 °C to +85 °C/+220 °C cyclic
Degree of protection (MDS)	Up to IP68
Can be connected to	SIMATIC S7, PROFIBUS DP V1, Industrial Ethernet, PC, non-Siemens PLC, computer
Approvals[2]	RF: EN 300 440-2 SAR: EN 50 371 Safety: EN 60 950-1 EMC: • EN 301 489-01 • EN 301 489-03 • ENV 50 204 FCC Part 15C[1] UL/CSA No effect on heart pacemakers
Special features	Innovative technology ensures simple installation/migration and maintenance-free operation: • Active suppression of overreach • Automatic frequency hopping • MOBY I call-compatible

1) See SLG U92- ordering data (Page 4/81).
2) Also refer to the "Configuration, Assembly and Service Manual"

Overview

MOBY U records the data of objects quickly and reliably. MOBY U thereby ensures efficient and cost-effective automation.

Type	Features
MDS U315	Mobile data storage (2 KB RAM) for universal applications, preferably in transport and logistics applications, enclosure dimensions 111 mm x 67 mm x 23.5 mm Degree of protection IP65, operating temperature -25 °C to +70 °C with replaceable battery
MDS U524	Rugged and mobile data storage (32 KB RAM) for universal use, enclosure dimensions 111 mm x 67 mm x 23.5 mm, degree of protection IP68, operating temperature -25 °C to +85 °C
MDS U525	Same as MDS U524, but with degree of protection IP65 and replaceable battery
MDS U589	• Heat-resistant and rugged data memory for use in paint shops (automotive industry, priming/finishing coats) or applications with similarly high temperature requirements. • Memory capacity 32 KB RAM, temperature range -25 °C to +85 °C, up to +220 °C cyclically, degree of protection IP68, enclosure dimensions (mm) Ø 114 x 83 • Silicone-free Options: • Universal installation kit • Support for attachment to skid • Cover for support • Additional supports available on request
MDS U Service	The MDS U Service is an MDS for use in the start-up phase and during servicing in the automotive industry and other industrial production plants with similar requirements. Memory capacity 32 KB RAM, two LED displays for communication, replaceable battery. With On/Off switch. Enclosure dimensions 111 mm x 67 mm x 23.5 mm, degree of protection IP40, operating temperature -25 °C to +70°C

Technical specifications

Field data (all dimensions in mm)

	MDS U315, MDS U524, MDS U525 MDS U589, MDS U Service
Operating/limit distance SLG U92	150 to 2100/3000, adjustable in 500 mm steps

Note:

The listed field data are typical values and are valid for a room temperature of +25 °C (77 °F) and a supply voltage of 24 V DC.

MDS U315/MDS U524/MDS U525

Overview

MDS U315

Mobile data storage unit (2 KB RAM) for universal applications, preferably in transport and logistics applications, enclosure dimensions 111 mm x 67 mm x 23.5 mm, degree of protection IP65, operating temperature -25 °C to +70 °C, with replaceable battery

MDS U524

Rugged and mobile data storage unit (32 KB RAM) for universal use, enclosure dimensions 111 mm x 67 mm x 23.5 mm, degree of protection IP68, operating temperature -25 °C to +85 °C

MDS U525

Same as MDS U524, but with degree of protection IP65 and replaceable battery

Technical specifications

Mobile data storage unit	MDS U315	MDS U524	MDS U525
Memory size			
• Fixed code memory	32-bit serial number		
• Read-only memory	128 bit, to be written once by user		
• Application memory	2 KB RAM	32 KB RAM	
MTBF (at +40 °C)	2 400 000 h (without taking battery into account)		
Write/read cycles	unlimited / 10^9 at +25 °C		
Write/read distance	150 mm to 3,000 mm		
Bulk and multitag capability	yes		
Power supply	Replaceable battery	Battery	Replaceable battery
Battery lifetime	≥5 years [1]	≥ 8 years [1]	
Shock/vibration-resistant to DIN EN 60721-3-7, Class 7M3	50 *g*/10 *g*		
Free fall height to DIN EN 60068-2-32	1 m		
Torsion and bending load	Not permissible		
Suggested attachment	4 x M4 screws		
Recommended distance to metal	Can be directly mounted on metal		
Degree of protection to EN 60529	IP65	IP68	IP65
Resistance to chemicals	See configuration manual		
Enclosure			
• Dimensions (L x W x H)	111 mm x 67 mm x 23.5 mm		
• Color/material	Anthracite / plastic PA 12 GF 25		
Ambient temperature			
• During operation	-25 °C to +70 °C	-25 °C ... +85 °C	
• During transportation and storage	-40 °C to +85 °C		
Weight, approx.	100 g		
Special features	Universal mobile data memory for the preferred deployment in transport and logistics	Rugged and mobile data memory for universal use	

[1] The service life depends on the temperature, the time in which the MDS is located within the antenna field of the SLG (Zone 1 and 2) and the volume of data that is read/written.

Field data (all dimensions in mm)

MDS U315/MDS U524/MDS U525 to SLG U92

Ranges (S_g) of the SLG can be limited in 500 mm steps up to 3500 mm

	Minimum	Standard	Maximum
Limit distance (S_g), approx.:	500	2000	3000
Operating distance (S_a)	350	1400	2100
Transmission window at S_a length / width	700 700 (with FCC approval)	2400 2000 (with FCC approval)	3000 2100 (with FCC approval)

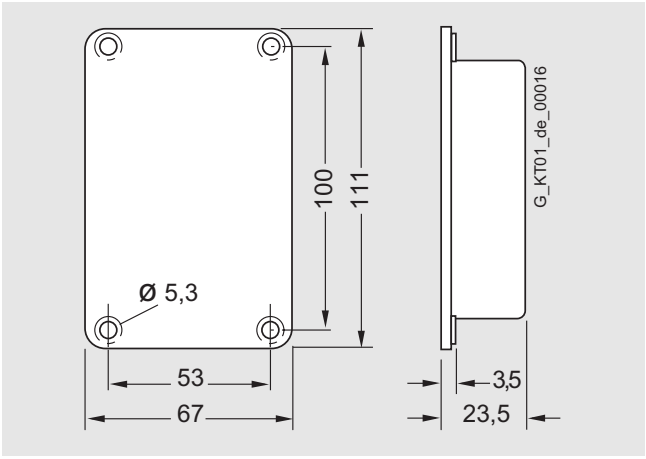
The field data apply to write and read operations of the MDS.

Selection and Ordering data

		Order No.
Mobile data memory MDS U315 2 KB RAM	A	**6GT2 500-3BF10**
Mobile data memory MDS U524 32 KB RAM	A	**6GT2 500-5CE10**
Mobile data memory MDS U525 32 KB RAM	A	**6GT2 500-5CF10**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



MDS U589

Overview

Heat-proof, rugged data storage unit for use in paintshops (automotive industry, primer/top coat) or applications with similar temperature requirements, memory capacity 32 KB RAM, temperature range -25 °C to + 85 °C, up to +220 °C cyclically, IP68 degree of protection, enclosure dimensions (mm) Ø 114 x 83

Technical specifications

Mobile data storage unit MDS U589 (heat-resistant)	
Memory size	
• Fixed code memory	32-bit serial number
• Read-only memory	128 bits, to be written once by user
• Application memory	32 KB RAM
MTBF (at +40 °C)	2,400,000 h (not taking the battery into account)
Read/write cycles	Unlimited/ 10^9 at +25 °C
Read/write distance	150 mm to 3000 mm
Multitag capability	Yes
Power supply	Battery
Battery life	≥5 years [1]
Shock/vibration-resistant to DIN EN 60721-3-7, Class 7 M3	50 g / 5 g [2]
Free fall height to DIN EN 60068-2-32	1000 mm
Torsion and bending load	not permissible
Suggested attachment	See universal installation kit or skid support
Recommended distance from metal	Can be directly mounted onto metal
Degree of protection per EN 60529	IP68
Chemical stability	See Configuration Manual
Casing	
• Dimensions (ø x H)	114 mm x 83 mm
• Color/material	Brown/PPS
Ambient temperature	
• During operation	-25 °C to +85 °C, up to +220 °C cyclic
• During transportation and storage	-40 °C to +85 °C
Weight, approx.	600 g
Special features	Designed for integrated use in body-in-white and paintshops (KTL, top coat, ...)

1) The service life depends on the temperature, the length of time the MDS is located within the antenna field of the write/read device (Zones 1 and 2) and the volume of data that is read/written.
2) Applies only in connection with original bracket.

Field data (all dimensions in mm)

MDS U589 to SLG U92

Ranges (S_g) of the write/read device can be limited in 500 mm steps up to 3000 mm

	Minimum	Standard	Maximum
Limit distance (S_g), approx.:	500	2000	3000
Operating distance (S_a)	350	1400	2100
Transmission window at S_a length / width	700 700 (with FCC approval)	2400 2000 (with FCC approval)	3000 2100 (with FCC approval)

Cyclic operation of the MDS at temperatures > 85 °C

At temperatures up to +85 °C, cyclic operation is not necessary, i.e. up to this temperature, the MDS can be in constant operation

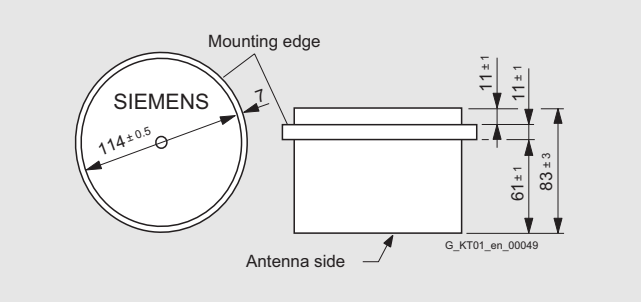
Heating up		Cooling down	
Temperature	**Time**	**Temperature**	**Time**
220 °C	Momentary	25 °C	> 30 min
200 °C	1 h	25 °C	> 4 h
200 °C	0,5 h	25 °C	> 1 h
180 °C	1 h	25 °C	> 3 h

Selection and Ordering data

		Order No.
Mobile data memory MDS U589		**6GT2 500-5JK10**
32 KB RAM, up to 220 °C cyclic		
Accessories		
Skid-support for MDS U589		
Short version	A	**6GT2 090-0QA00**
Covering hood	A	**6GT2 090-0QB00**
For skip support		
Universal support		**6GT2 590-0QA00**
For MDS U589, e.g. for attachment to the body with a customer-specific adapter		

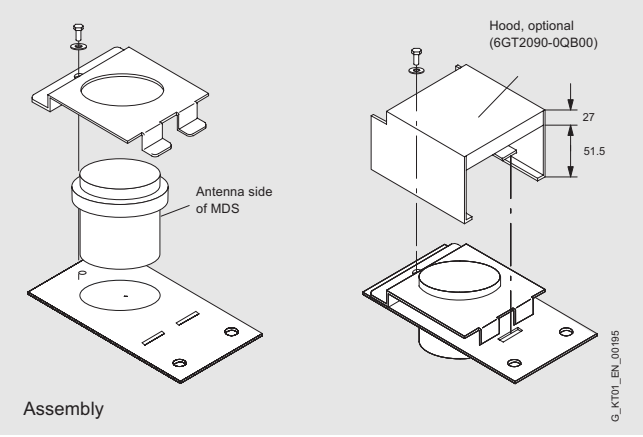
A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions

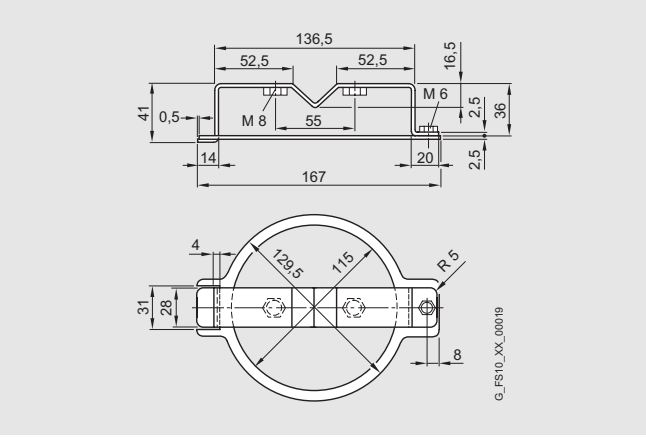


Data carrier MDS U 589

Universal holder with heat-proof data carrier MDS U589



Skid support



Universal support

MDS U Service

Overview

MDS U Service

The MDS U Service is an MDS for use in the start-up phase and during servicing in the automotive industry and other industrial production plants with similar requirements.

Memory capacity 32 KB RAM, two LED displays for communication, replaceable battery. With On/Off switch. Enclosure dimensions 111 mm x 67 mm x 23.5 mm, degree of protection IP40, operating temperature -25 °C to +70 °C

Technical specifications

Mobile data storage unit	MDS U Service
Memory size	
• Fixed code memory	32-bit serial number
• Read-only memory	128 bit, to be written once by user[1)]
• Application memory	32 KB RAM
Read/write cycles	Unlimited/ 10^9 at +25 °C
Read/write distance	150 mm to 3000 mm
Bulk and multitag capability	Yes
Power supply	Replaceable battery
Battery life	
• MDS switched on, no communication and MDS outside antenna range	approx. 1 year[2)]
• MDS switched on, with communication	< 1 year[3)]
• MDS switched off	≥ 10 years
On/Off switch	Voltage on/off
Indicators	2 LEDs
• Orange flashing	Voltage On
• Green	Communication
Torsion and bending load	Not permissible
Suggested attachment	4 x M4 screws
Recommended distance from metal	Can be directly mounted onto metal
Degree of protection as per EN 60529	IP40
Resistance to chemicals	See Configuration Manual
Housing	
• Dimensions (L x W x H)	111 mm x 67 mm x 23.5 mm
• Color/material	Anthracite / plastic PA 12 GF 25
Ambient temperature	
• During operation	-25 °C to +70 °C
• During transportation and storage	-40 °C to +85 °C
Weight, approx.	120 g
Special features	MDS service for assignments during the start-up phase and for servicing. For implementation in the automotive industry and other industrial production plants with similar requirements.

1) After "voltage off" the information in the read-only memory is lost and must/can be written again.

2) The service life depends on the temperature.
The MDS must not be located within the antenna range of the SLG (Zones 1 and 2).

3) The service life depends on the temperature, the length of time the MDS is located within the antenna field of the write/read device (Zones 1 and 2) and the volume of data that is read/written.

Field data (all dimensions in mm)

MDS U service for SLG U92

Ranges (S_g) of the write/read device can be limited in 500 mm steps up to 3500 mm

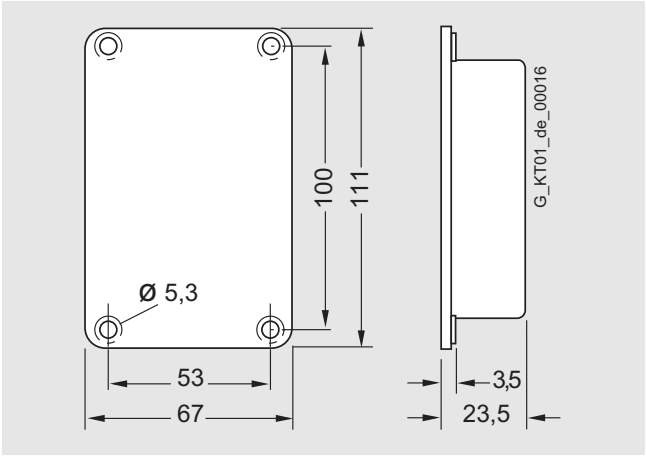
	Minimum	Standard	Maximum
Limit distance (S_g), approx.:	500	2000	3000
Operating distance (S_a)	350	1400	2100
Transmission window at S_a length / width	700 700 (with FCC approval)	2400 2000(with FCC approval)	3000 2100 (with FCC approval)

The field data apply to write and read operations of the MDS.

Selection and Ordering data

	Order No.
Mobile data storage MDS U Service 32 KB RAM	**6GT2 500-5BF20**

Dimensions



4

SLG U92

Overview

The compact and low-cost SLG U92 is a universal write/read device (SLG) with an integral antenna for applications where write/read distances of up to 3000 mm are required. Thanks to the automatic SLG synchronization via cable, it is possible to install up to three SLGs in a very small space.

Two different interfaces are available for the connection to a wide variety of systems:

- RS 232; serial interface for connection to any system (PC/PLC)
- RS422; serial interface to the PC/PLC or to the MOBY interface modules (SIMATIC RF170C, SIMATIC RF180C, ASM 475, ASM 456) for integration into SIMATIC S7, PROFIBUS, or Industrial Ethernet

Software tools such as the SIMATIC S7 functions (FB/FC45 / FC46 / FC55 / FC56) and the C library MOBY API for applications under Windows 98/NT/2000/XP allow for easy implementation in the respective application.

The integrated file management system (compatible with the familiar MOBY I file handler and supplemented with multitag-handling commands) ensures simple and user-friendly management of data on the mobile data memory.

Type	Features
SLG U92	Compact and low-cost write/read device with integral antenna for universal applications, write/read distances of up to 3000 mm (adjustable by software in 500 mm steps to 3500 mm) incl. file handler, degree of protection IP65, enclosure dimensions (mm) 290 x 135 x 42
SLG U92 with RS232	As above, but with RS232 interface for connection to PC/PLC
SLG U92 with RS422	As above, but with RS422 interface for connection to ASM (e.g. ASM 456, SIMATIC RF170C, ASM 475) or PC/PLC

For use in the USA and Canada, a version with radio approval FCC Part 15C is available.

Function

The SLG U92 operates with a transmission frequency in the ISM band between 2.4 and 2.4835 GHz. This supports transmission ranges from a few centimeters up to three meters for an extremely low transmit power of < 10 mW EIRP and high net transmission rates up to 8 KB/s. Thanks to the selected transmission frequency, rugged modulation technique and appropriate check mechanisms, sources of electromagnetic interference can be disregarded and fault-free data transmission and data integrity are assured. MOBY U technology blocks the types of fault sources familiar in UHF transmissions such as reflections, interference and overrange. Matching antennas provide a homogeneous transmission field and ensure a detection rate of 100% for mobile data memories (MDS). There is no need for time-consuming shielding measures and antenna alignment.

The antenna field of the SLG can be activated and deactivated with a function call or triggered automatically by a sensor (BERO) for the duration of communication with an MDS.

For management of the data on the mobile data storage unit, there are two possibilities, as follows:

- Byte-oriented addressing via absolute addresses (start address, length)
- Conveniently in a file management system (compatible with the MOBY I file handler)

In file handler mode, the MOBY U write/read device always fetches the necessary file management information directly from the MDS and it can be operated in three steps:

1. For existing system solutions with MOBY I, MOBY U can be operated with the default settings and unmodified file handler functions without the MOVE and LOAD commands that are no longer required.

2. The default settings and requests for diagnostic data can be easily changed with just a few additional commands.

3. Utilization of all features including multitag processing.
In this step, the commands and/or useful data can be uniquely assigned as well as the relevant MDS number.

Two LEDs indicate the current status (e.g. MDS in the field) and make start-up easier.

For easy start-up and diagnostics during normal operation, a separate service and diagnostics interface (RS232) is available. This interface can also be used by the service function "Load software in the SLG" to integrate future function expansions into existing applications without the need to replace the SLG.

The system interface (RS232 or RS422) can be used for serial connection to any other system (PC/PLC).

Technical specifications

Write/read device SLG U92	
Air interface to the MDS	Integrated antenna
Transmission frequency	2.4 to 2.4835 GHz in the ISM band
Bandwidth	2 x 1 MHz within 83 MHz
Check mechanisms	Forward-correction by means of systematic block code (CRC), ARQ procedure
Error rate	< 1 reading error per 10^6 transactions
Data rate (write/read) (net)	approx. 8 / 4.8 KB/s without bulk approx. 4 / 2.4 KB/s for bulk size 2
Range (write/read)	150 mm to 3000 mm, see MDS field data
Local resolution	Range can be limited in steps of between 500 mm and 3500 mm
Radiant power / intensity	
• for SLG U92 version without FCC approval	< 10 mW EIRP / <0.5 µW/cm^2 (at a distance of 1 m)
• for SLG U92 version with FCC approval	< 50 mV/m at a distance of 3 m
Beam angle	approx. 70° horizontal/vertical
Polarization	Circular
Multi-identification capability	up to 12 MDS
MDS recording time	> 2 s for 12 MDS
Object speed (MDS)	< 2 m/s if S_a = 1.5 m and reading/writing ≤ 2.5 KB data
SLG-SLG synchronization	by means of semaphore control via second interface; max. 3 SLGs with one another
Minimum distance between two SLGs	> 6 m; if synchronized directly side by side
Serial interface to ASM or PC	RS232 or RS422 (SLG U92 variant), 6-pin SLG connector according to EN 175201-804
Data transmission rate	Automatic baud rate recognition 19.2 to 115.2 kbit/s (depending on cable length)
Transmission protocol	3964 R
Cable length, SLG - ASM/PC	max. 1000 m (RS 422, shielded)
Cable length, SLG - PC	max. 30 m / 300 m (RS 422, shielded)
Software functions	
Commands	MOBY file handler: Format data memory, create/delete file, write data to file, define access rights, etc. Direct reading/writing: read / write data, etc.
Programming	FC45/FC46/FC55/FC56, see ASM C library for PC with Windows 98/NT/2000/XP

Service interface	RS 232, 11-pin connector to DIN EN 175201-804
Data transmission rate	19.2 kbit/s
Cable length SLG – PC (shielded)	max. 20 m
Transmission protocol	Terminal, ASCII characters
2 DI for BERO	Triggering antenna field on/off
Cable length SLG – BERO (shielded)	max. 50 m
Interface for SLG-SLG synchronization (shielded)	max. cable length 30 m
Display elements	2 LEDs (data memory in field, errors, etc.)
MTBF (at +40 °C)	0.4 x 10^6 hours
Power supply	24 V DC (rated value), 20 V DC to 30 V DC
Power consumption (transmitting)	< 300 mA
Enclosure	
• Dimensions (Lx W x H) in mm	290 x 135 x 42 (without connector)
• Color/material	anthracite / plastic PA 12
• Mounting	4 x M6 screws
Shock/vibration-resistant to DIN EN 60721-3-7, Class 7 M3	30 g / 1.5 g
Degree of protection to EN 60529	IP65
Ambient temperature	
• Operation	-25 °C to +70 °C
• Transport and storage	-40 °C to +85 °C
Weight, approx.	900 g
Special features	• Active suppression of overreach • Automatic frequency hopping • Service functions for fast error analysis • MOBY I - call-compatible (FC)

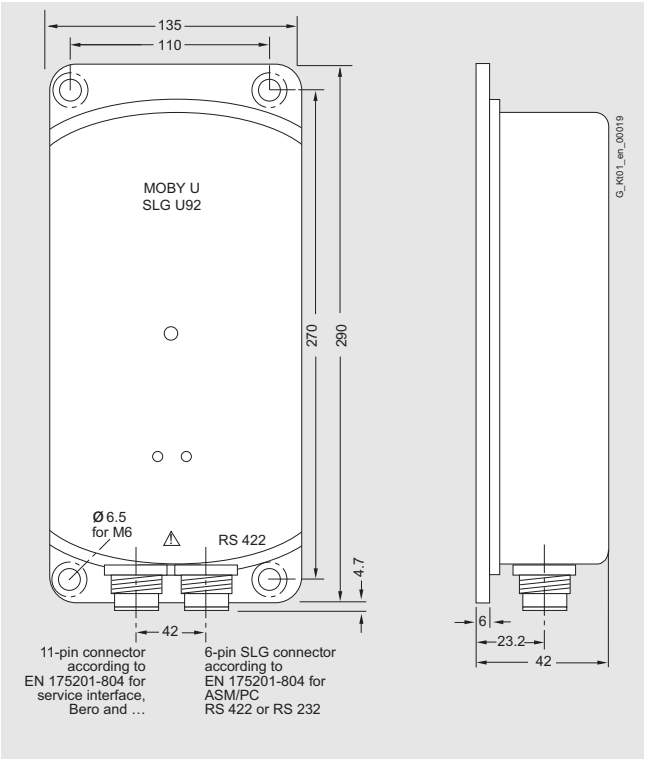
Selection and Ordering data

	Order No.
SLG U92 with RS 422	
Integral antenna	**6GT2 501-0CA00**
Integral antenna, FCC approval	**6GT2 501-0BA00**
SLG U92 with RS 232	
Integral antenna	**6GT2 501-1CA00**
Integral antenna, FCC approval	**6GT2 501-1BA00**
Accessories	
CD "RFID Systems Software & Documentation"	**6GT2 080-2AA10**
FB/FC for SIMATIC, 3964R driver for DOS/WINDOWS 95/NT/2000/XP, C-libraries, PC presentation program RFID documentation	

4

SLG U92

Dimensions



Overview

The STG U is a powerful mobile handheld terminal with integral write/read antenna for applications in the field of production, logistics and service. In addition, it is an indispensable tool for commissioning and testing.

Design

The STG U mobile handheld terminal comprises a basic unit (based on the PSION Workabout^{mx}) and an antenna of the MOBY U type. It has a splash-proof housing (IP54), LCD display with 240 × 100 pixels, alphanumeric keypad and various interfaces (for EEPROM card, charging the battery, RS232/TTL for the MOBY U antenna, battery charger interface incl. RS232 for connecting to the PC, etc.).

Function

The supplied MOBY software (memory card) provides service and test functions for reading, writing, etc. of the MOBY U data memory:

- Reading data from the data memory
- Writing data to the data memory
- Reading and displaying the ID number of the data memory
- Reading MDS status
- Reading data from OTP memory
- Writing data to OTP memory
- Displaying and editing the data in hexadecimal, ASCII, decimal and binary formats
- Activating/deactivating password protection

On the basis of the optional C library, custom applications including a customized mask interface for the reading/writing of data memories can be very easily programmed. Various optional development tools for the PC and a wide selection of accessories are available directly from PSION. This solution opens up new applications in the field of logistics and distribution. The handheld terminal for example allows for the offline recording and processing of commissioning data, which can then be forwarded to a PC/computer with a defined time delay.

Selection and Ordering data

		Order No.
STG U mobile handheld terminal MOBY U handheld terminal STG U, complete (PSION Workabout^{mx}), antenna STG U, battery, EEPROM card. With MOBY software, operating instructions, without power pack for STG U	D	**6GT2 503-0AA00**
Accessories		
STG U antenna For basic unit (PSION Workabout ^{mx})		**6GT2 503-1AA00**
STG U power supply unit Wide-range power supply unit 90 … 264 V AC, with cable switch, for the antenna STG U and the mobile handheld terminal STG U, with charging adapter		**6GT2 503-1DA00**
STG software For MOBY D, E, F, I and U, incl. operating instructions, 1 MB EEPROM card	A	**6GT2 303-1CA00**
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. MOBY documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H
D: Subject to export regulations AL = N and ECCN = 4A994

Accessories

For optional components visit http://www.psionteklogix.com

- "3link" connecting cable to the PC for easy exchange of data between the PC and PSION Workabout^{mx}
- PSION Workabout^{mx} basic unit with large-area function keys and number pad
- Additional memory card with up to 8 MB memory
- Docking station including rapid charger and software for convenient exchange of data between the PSION Workabout^{mx} and the PC.

Technical specifications: See next page.

STG U mobile handheld terminal

Technical specifications

RAM/ROM	2 MB/2 MB
User program	1 MB (with MOBY service and test program)
Screen	Graphic LCD screen with 240 x 100 pixels; gray scale; selectable backlighting
Keyboard	Alphanumeric with 57 keys
Sound	Piezo signal transmitter
Power supply	NiCd battery pack with 2 type AA cells (850 mAh); fast-charging; automatic shutdown Operating time: approx. 20 hours (antenna inactive, display unlit)
Dimensions	282 mm x 235 mm x 93 mm (incl. MOBY U antenna)
Weight	Approx. 1450 g (incl. MOBY U antenna)
Operating/storage temperature	–20 °C … +60 °C/–25 °C … +70 °C (without battery)
Relative humidity	0 … 90 %, no condensation
Degree of protection	IP54 (splash proof); for STG U only as complete unit
Impact resistance	Max. drop onto concrete: 0.5 m
EMC	EN 55022
Electrostatic; RF; EFT	IEC 801-2; IEC 801-3; IEC 801-4

MOBY U antenna	**Air interface to the MDS**
Transmission frequency	2.4 to 2.4835 GHz in the ISM band
Bandwidth	2 x 1 MHz within 83 MHz
Gross bit rate of the radio channel	384 Kbit/s
Data rate (write/read) (net)	Approx. 8 / 4.8 KB/s without bulk
Antenna	
• Direction of radiation	Perpendicular to the rear panel of the MOBY U antenna
• Aperture angle	Approx. 70 ° (conical antenna field)
• Polarization	Circular
• Radiant power	< 50 mV/m at a distance of 3 m
• Radiation density	< 0.5 µW/cm^2 at a distance of 1 m
Range (write/read)	150 … 3,000 mm
Local resolution	Adjustable in steps of 0.5 m by means of range limitation
MDS recording time	Approx. 3 s for 1 MDS (after actuation of the communication key)
Power supply	Lithium-ion battery pack 2SIP CGR18650 HG 7.2 V 1.8 Ah Fast charging, automatic cutout, Service life approx. 500 charging cycles
Power consumption (antenna on)	< 800 mA
Operating time	> 2 months (antenna inactive)
The operating time corresponds to the ON time of the antenna; this means for every MDS function the time between pressing the communication key and closing or terminating the selected MDS function.	2 hours (antenna active) The antenna is switched on by means of the communication key only for communication and automatically switched off after the function has been performed.

MOBY U antenna	**Air interface to the MDS**
Operating modes	
• off	Antenna switched off
• Search	Ready to receive and evaluate search information sent by the MDS
• Communication	Communication with the MDS: Write, read or initialize
Minimum distance to an SLG U92 or another STG U	> (set range + 0.5 m)
Serial interface (to basic unit)	RS 232/115.2 Kbaud/3964R
Interface for battery charging	4-pin socket for connecting the STG U power supply unit
• Voltage / current	12 V DC / 1.225 A
• Charging period	> 1.5 h (Lion battery pack 2SIP CGR18650 HG)
Control element	Communication key (for triggering the communication)
Display elements	LEDs
• LED for loading the batteries	
- Lights up	Power supply unit connected • Red: device is defective • Yellow: batteries are being charged • Green: batteries are fully charged
- Does not light up	Power supply unit is not connected
• LEDs for communication	
- Lights up	Communication key pressed and communication not complete • Red: battery capacity insufficient for communication • Yellow: antenna is switched to active
- Does not light up	Communication terminated or not yet started
Enclosure	
• Color	Black
• Material	VALOX® 357X
Approvals	RF: EN 300 440-2 SAR: EN 50 371 Safety: EN 60 950-1 EMC: • EN 301 489-01 • EN 301 489-03 • ENV 50 204 FCC Part 15C UL/CSA Not critical with regard to heart pacemakers
Programming	Standard user interface for reading/writing of data memories, etc.

Overview

Note

Detailed information (clearance from metal, SLG-to-SLG clearance etc.) can be found in the "MOBY U Manual for Configuration, Assembly and Service".

Field characteristics (battery-saving mode)

In contrast to the inductive RFID systems, UHF systems exhibit transmission behavior like electromagnetic waves. The wave length is approx. 13 cm. Metal surfaces reflect the waves and cannot be penetrated.

Despite a low radiation output, UHF systems have a relatively long range. The emission field has a directional characteristic which depends, however, on the antenna design. In order to keep the energy requirement low for the MDS and to make the determination of the location comprehensible, MOBY U has various function areas that are dependent on direction and distance. The three different zones of the transmission field are identified by different states and reactions of the components affected.

Cyclic operation of the MDS U589 at temperatures > 85 °C

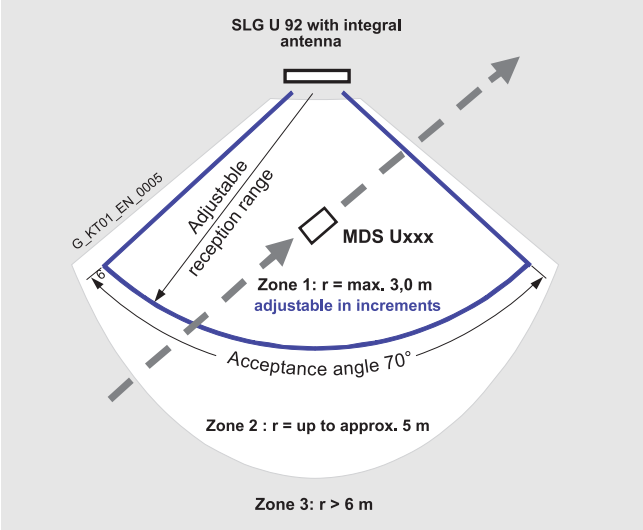
At temperatures up to +85 °C, cyclic operation is not necessary, i.e. up to this temperature, the MDS can be in constant operation

Put simply, Zone 3 is an SLG-field-free area. The MDS "sleeps" and only listens momentarily every 0.5 s for a sign of life from an SLG. This means that the power consumption is very low. If other UHF users in the vicinity are occupying the same frequency band, it has no effect on the MDS, as the latter requires a special code to wake it up. If the MDS in the vicinity of an active SLG then receives this special code, it enters Zone 2 (see Fig.). It immediately accepts the SLG and responds briefly with its own identification. The SLG however ignores every MDS unless it is in Zone 1, whose radius parameter can be set in stages in the SLG. The power consumption in Zone 2 is not significantly higher than in Zone 3.

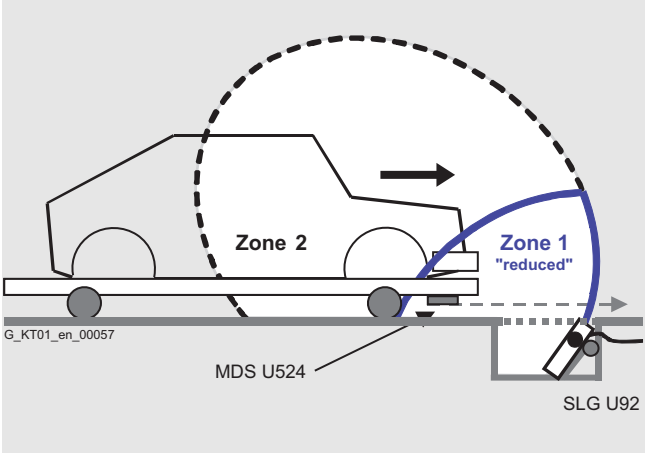
If the MDS enters Zone 1, it is duly registered by the SLG and the data exchange can begin. Now all read and write functions can be performed. However, as the transmission rate at the air interface is very high (80 Kbit/s), the overall communication time is very short. For example, all bytes of the 32 KB memory are read in about 8 seconds. This means that the data exchange imposes hardly any load on the battery.

Configuring instructions

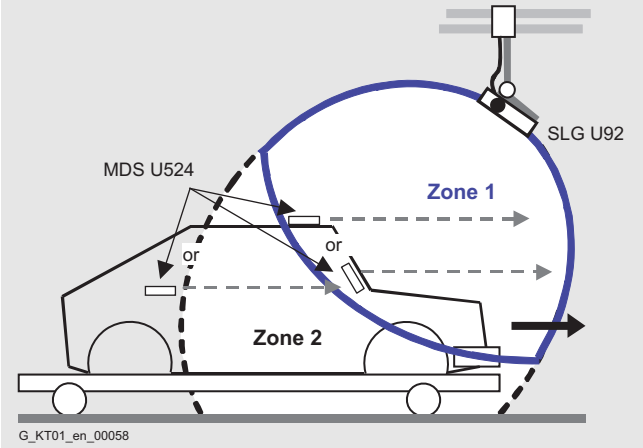
SLG U92 with integral antenna



Example: car body identification



Example: skid identification



RFID systems for logistics – Identifying potential for optimization

RFID systems have been setting new standards in control and management tasks in distribution and logistics for a number of years, especially in terms of reliability with applications ranging from the identification of containers and recognition of textiles in dispatch centers and even in frozen storage. The rewritable, low-cost data memories as well as SmartLabels can be reliably identified and read, even through dirt.

Systems are based on the ISO 15693 standard as well as EPCglobal and ISO/IEC 18000-6, so SmartLabels from different manufacturers can be used. With the "electronic delivery note", you always have all the information at hand. Simple as well as complex tasks are performed quickly and reliably. Whatever the requirements, the optimal system is available. Additional equipment such as a mobile handheld terminal provide additional flexibility in operation.

Application

- Dispatch warehouse including order picking ("brown goods", foodstuffs, tires, etc.).
- Cold-storage depots (including order picking)
- Container or vessel identification
- Identification of load carriers, pallets, cases or mini-load containers
- Distribution and loading control with electronic delivery note
- Parts identification for textiles (e.g. professional rental clothing, operating room textiles) in laundries
- Identification of window parts, items of furniture etc. in the logistics chain
- Parts identification in the clothing industry (e.g. shirts, suits, medical stockings)
- Production and shipping
- Goods distribution in open distribution chains, e.g. in parcel and postal services, mail order companies or freight forwarders
- Luggage transport and tracking
- Machine and plant construction
- Industrial production
- Laboratory and test equipment

Highlights

- Manage your procedures with rewritable electronic data storage units/SmartLabels
- Wide range of data storage units
- Mobile and flexible with handheld terminals
- Customized SmartLabel/Antenna for high-volume applications

	Logistics	
	MOBY D	**SIMATIC RF600**
Write/read distance	Up to 0.9 m	Up to 5.0 m (two antennas side by side) Up to 10.0 m (antennas in gate arrangement)
Frequency	13.56 MHz	865 - 868 MHz (Europe) 902 - 928 MHz (North America)
Standards	ISO 15693 ISO 18000-3	EPCglobal ISO 18000-6B, ISO 18000-6C

Technical specifications

	MOBY D	SIMATIC RF600
		
Write/read distance	Up to 680 mm (900 mm with customer-specific antenna)	Up to 5 m (up to 10 m for gate arrangement)
Data transmission rate	≥ 3.5 ms/byte reading, ≥ 9.5 ms/byte writing	Up to 320 KB/s reading, up to 128 KB/s writing
Memory	EEPROM	
Standards	ISO 15693	EPC Gen 1, EPC Gen 2, ISO 18000-6B, ISO 18000-6C
Approvals	EN 300330 (Europe), FCC, IC	ETSI EN 302208, FCC
Bulk capability	• (PC version with RS 232)	•
Multitag capability	• (PC version with RS 232)	•
Frequency	13.56 MHz	adjustable: 865 - 868 MHz (Europe), 902 - 928 MHz (USA)

Mobile data memories (tags/labels)	**Name**	**Memory size**	**Operating temperature**	**Degree of protection**	**Designation** [1]	**Memory size**	**Operating temperature**	**Degree of protection**
	MDS D160	112 bytes	-25 ... +175 °C	IP68	RF620L	EPC 96 bit	-20 ... +70 °C	According to version, none or IP65
	MDS D100	112 bytes	-25 ... +80 °C	IP68	RF630L	EPC 96 bit	-40 ... +85 °C (+80 °C cycl.)	
	MDS D124	112 bytes	-25 ... +125 °C	IP67				
	MDS D139	44 bytes	-25 ... +200 °C	IP68				
	MDS D324	992 bytes	-25 ... +125 °C	IP67				
	Smart Label (customer-specific version for high quantities)	112/256 bytes	-25 ... +85 °C	IP68	RF640T	216 bytes	-25 ... +85 °C	IP68

Write/read devices	**Name**	**Operating temperature**	**Degree of protection**	**Name**	**Operating temperature**	**Degree of protection**
Stationary, with detached antenna	SLG D10	-20 ... +55°C	IP65	RF660R	-25 ... +55 °C	IP65
	SLG D10S	-20 ... +55°C	IP65			
	SLG D11 ANT D5	-25 ... +70°C	IP65			
	SLG D11S ANT D5	-25 ... +70°C	IP65			
Stationary, with integrated antenna	SLG D12	-25 ... +70°C	IP65			
	SLG D12S	-25 ... +70°C	IP65			
Mobile handheld terminal with integrated antenna	STG D	-20 ... +50 °C	IP54			

Antennas	**Name**	**Operating temperature**	**Degree of protection**	**Name**	**Operating temperature**	**Degree of protection**
	ANT D5	-20 ... +55 °C	IP65	RF660A	-25 ... +75 °C	IP67
	ANT D6	-20 ... +55 °C	IP65			
	ANT D10	-20 ... +55 °C	IP65			

Connection to the automation system	**directly**	**via communication module (ASM)**	**directly**	**via communications module (ASM)** [2]
SIMATIC S7-300, S7-400		•		•
PROFIBUS DP		•		•
PROFINET		•		
Ethernet (TCP/IP)			•	
Serial interface to other controllers, PCs, any other systems	•		•	
Page	**4/89**		**4/114**	

[1] Further tags and SmartLabels will be available soon

[2] This feature will be available in the future

Overview

MOBY D is a new RF identification system based on the Standard 15693 in the 13.56 MHz range. For the first time, the standard creates a common basis for SmartLabels from different manufacturers (e.g. I-Code, Tag-it).

Due to the reasonable prices of the SmartLabels in large volume applications and the simple system integration, MOBY D is the ideal identification system for the above applications.

Depending on the write/read distance, various write/read devices are available with integral or separate antennas.

The MOBY D identification system boasts the following features:

- 13.56 MHz identification system for SmartLabels/data storage based on I-Code 1 or ISO/IEC 15693 (I-Code SLI, Tag-it HFI) with a write/read clearance of up to 900 mm (MDS-/SLG-dependent)
- Special heat-resistant data storage (44-byte EEPROM) for paintshops up to +200 °C
- Very high level of reliability even in the presence of contamination, temperature fluctuations and electromagnetic interference
- Can be connected via serial interface to any system, e.g. PC with Windows 9x/NT
- Simple integration into SIMATIC and the PROFIBUS DP

Benefits

Worldwide support, configuration and service support.

Application

Main applications of MOBY D:

Applications extend from simple identification, such as electronic barcode substitution, supplementation, or delivery note in harsh environments, storage and distribution logistics, right up to product identification.

The design of the transponder permits a variety of flexible designs, guaranteeing optimum dimensioning for the widest variety of applications.

Low-cost SmartLabels for large volume applications:

- Container and box identification in open systems
- Distribution logistics and goods identification
- Parcel and mail services, mail order businesses and freight carriers
- Baggage check-in and baggage tracking
- Protection against plagiarism and theft

Advantages of SmartLabels over conventional barcode labels

- Rugged and reliably recognizable, even when contaminated (moisture, dust, etc.)
- Maintenance-free and resistant to aging
- Identification even of packages made of non-metallic materials
- Rewritable (unlimited read cycles, write cycles typically 1 000 000)

As many as 20 SmartLabels per second can be detected simultaneously (serial numbers in the case of bulk recognition). The data can be processed selectively in multitag mode.

Hardened data stores (closed systems)

- Container and box identification in logistics and distribution
- Production logistics and in assembly lines with higher temperature requirements (e.g. paintshops, temperature range up to +200 °C)
- Parts identification (e.g. data storage is attached directly to product/pallet).

Function

MOBY identification systems ensure that important data accompanies a product from the very start.
Due to their extremely attractive price, SmartLabels can be universally implemented as "an electronic barcode substitute" or as a "delivery note".

Using stationary as well as mobile write/read devices (SLGs), the necessary information (production data, transport routes, etc.) can be read without contact (inductively), and even be supplemented or modified without the need for a direct line-of-sight link.

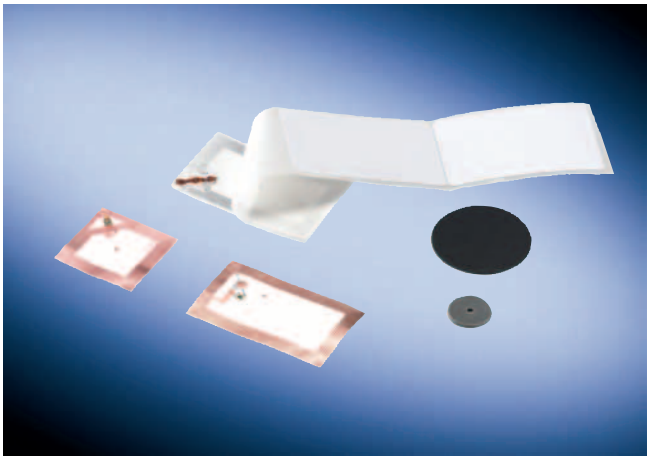
Introduction

Technical specifications

Type	Contactless RF identification system
Transmission frequency data/energy	13.56 MHz
Memory capacity	Dependent on chip used: • I-Code 1: 44-byte user memory • I-Code SLI: 112-byte user memory (ISO 15693) 8 byte fixed code as serial number
Memory type	EEPROM
Write/read cycles	> 1 000 000/unlimited
Data management	4 byte, block by block
Data transmission rate MDS - SLG	Approx. 3.5 ms/byte (reading); approx. 9.5 ms/byte (writing)
Write/read distance	Up to 680 mm (900 mm with customer-specific antenna[1)])
Operating temperature (MDS)	-25 to +80 °C, +125 °C, +175 °C, +200 °C
Degree of protection	Up to IP68
Can be connected to	PC with Windows 98/NT, PLC SIMATIC S7, PROFIBUS DP
Special features	• For SmartLabels/data storage based on I-Code 1 or ISO/IEC 15693, e.g. I-Code SLI, Tag-it HFI • CRC checksums for secure data transmission • Bulk recognition and multitag function
Approvals	CE, EN 300330, FCC, IC

[1)] On request

Overview



Type	Features
MDS D...	Customer-specific SmartLabel (e.g. 112-byte EEPROM), e.g. in credit card format: • Degree of protection up to IP68 • Temperature range up to +80 °C • Typ. dimensions in mm: 55 x 55, 86 x 54 • Max. read/write distance up to 900 mm (large customer-specific antenna/SmartLabel)
MDS D100	Universal data memory (112-byte EEPROM) in credit card format: • Degree of protection IP68 • Temperature range up to +80 °C • Max. read/write distance: 650 mm
MDS D124	Rugged data memory for deployment in harsh industrial environments and under extreme environmental conditions: • Degree of protection IP67 • Temperature range up to +125 °C • Max. read/write distance: 180 mm
MDS D139	Re-usable data memory for use in paintshops of applications with high temperatures (44-byte EEPROM, (Ø 85 mm x 15 mm)): • Degree of protection IP68 • Temperature range up to +200 °C • Max. read/write distance: 550 mm
MDS D160	The EEPROM data memory (Ø 16 mm x 3 mm) has been specially designed for harsh environments in the laundry and cleaning industry. • Main applications include: - Rented work clothing - Rented laundry - OP textiles, hospital clothing - Hotel laundry - Dirt collection mats • 112 byte EEPROM • Degree of protection IP68 • Temperature range up to +175 °C • Max. read/write distance 160 mm
MDS D324	Rugged data memory for deployment in harsh industrial environments and under extreme environmental conditions: • Degree of protection IP67 • Temperature range up to +125 °C • Max. read/write distance: 180 mm

Customer-specific data memory

Customer-specific data memory (packaging, temperature range, geometry etc.) on request.

Design

The MOBY D data storage/SmartLabel mainly comprises logic with an integrated EEPROM memory and an antenna.

Function

If an MDS moves into the transmission field of the SLG, the necessary power for all circuit components is generated and monitored by means of the energy supply unit. The pulse-coded information is prepared in such a way that it can be processed further as pure digital signals. The handling of data, including check routines, is performed by the control unit (SLG) which also manages the user memory.

Introduction

Technical specifications

Field data (operating/limit distance) of MDS and SLG (all dimensions in mm)

The field data (unaffected by metal) for all MOBY D components of the MDS and SLG are shown in the table below. Thus it becomes particularly easy to select the right MDS and SLG. The listed technical data are typical values and are valid for a room temperature of +25 °C and a supply voltage of 24 V DC.

Type	MDS D... customer-specific, e.g. with SmartLabel 86 x 54	MDS D100	MDS D124	MDS D139	MDS D160	MDS D324
SLG D12/D12S	0 ... 150	0 ... 120 / 160	0 ... 50 / 70	0 ... 120 / 150	0 ... 45 / 65	0 ... 60 / 80
SLG D11/D11S ANT D5	0 ... 300	0 ... 300 / 380	0 ... 70 / 110	0 ... 240 / 300	0 ... 65 / 90	0 ... 100 / 150
SLG D10/D10S ANT D5	0 ... 500	0 ... 400 / 480	0 ... 130 / 180	0 ... 380 / 450	0 ... 120 / 160	0 ... 160 / 220
SLG D10/D10S ANT D6	0 ... 650	0 ... 550 / 650	0 ... 130 /180	0 ... 480 / 550	0 ... 120 / 160	0 ... 160 / 220
SLG D10/D10S ANT D10	0 ... 500	0 ... 400 / 480	0 ... 130 /180	0 ... 380 / 450	0 ... 120 / 160	0 ... 160 / 220

Overview

This mobile data storage unit is a passive, maintenance-free transponder based on ISO 15693 with I-Code SLI technology.

Application

Applications extend from simple identification, such as electronic bar code substitution or supplementation, over storage and distribution logistics, to product identification.

This mobile data storage unit can also be used without any difficulty under harsh environmental conditions (e.g. at a temperature up to +80 °C).

Technical specifications

Mobile data storage unit MDS D100	
Memory size	112 byte EEPROM available 8-byte serial number (read-only code)
Protocol	to ISO 15693
MTBF at +40 °C	2000000 h
Read cycles	Unlimited
Write cycles, min.	100000
Write cycles, typical	1000000
Data retention time	10 years (at < +40 °C)
Read/write distance, max.	650 mm (see field data)
Memory organization	4 byte, block by block
Multitag capability	Yes, depending on SLG
Energy source	Inductive power transmission (without battery)
Vibration	ISO 10 373/ISO 7810
Torsion and bending load	ISO 10 373/ISO 7816-1
Mounting	Fixing lug/adhesive
Recommended spacing from metal	25 mm (approx. 30 % reduction of the field data)
Degree of protection to EN 60529	IP68
Enclosure	Laminated plastic card, printable on both sides
• Dimensions (L x W x H) in mm	85.6 x 54 x 0.9
• Color/material	White/petrol / PC
Ambient temperature	
• Operation	-25 °C to +80 °C
• Transport and storage	-25 °C to +80 °C
Weight, approx.	5 g

Field data in mm - without metallic influence

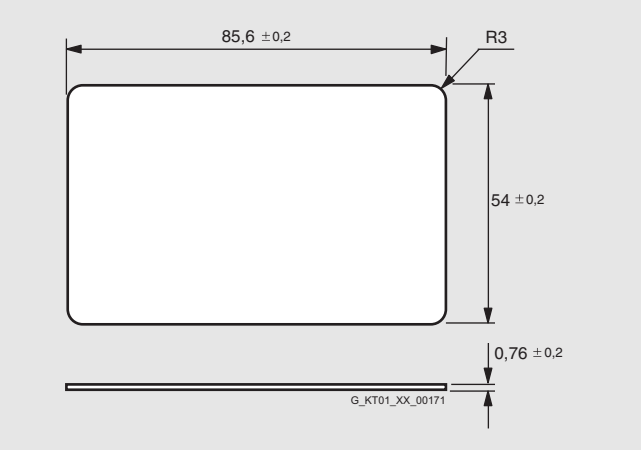
MDS D100 to:	**SLG D12/D12S**	**SLG D11/D11S ANT D5**	**SLG D10/D10S ANT D5**	**SLG D10/D10S ANT D6**	**SLG D10/D10S ANT D10**
Operating distance (S_a)	0 ... 120	0 ... 300	0 ... 400	0 ... 550	0 ... 400
Limit distance (S_g)	160	380	480	650	480
Transmission window (L)	120	Ø 300	Ø 320	520	1050
Minimum distance from MDS to MDS	≥ 500	≥ 1000	≥ 1000	≥ 1500	≥ 200

Selection and Ordering data

		Order No.
Mobile data storage unit MDS D100 112 byte EEPROM, IP68, max. + 80 °C	A	**6GT2 600-0AD10**
Accessories		
Fixing lug for MDS D100		**6GT2 190 0AB00**
Spacer For fixing lug, thickness 20 mm The purpose of the spacer is to maintain the recommended distance to the metal when installing the tag.		**6GT2 190-0AA00**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



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MOBY D mobile storage unit

MDS D124

Overview

The MDS D124 is a passive, maintenance-free transponder based on ISO 15693 with I-Code SLI technology.

Application

This mobile data storage can also be used without any difficulty under harsh environmental conditions (e.g. at a temperature up to +125 °C).

Technical specifications

Mobile data storage unit MDS D124	
Memory size	112 byte EEPROM available 8-byte serial number
Protocol	to ISO 15693
MTBF	1500000 hours
Read cycles	Unlimited
Write cycles, at +70 °C min.	100000
at ≤ 40 °C, typical	1000000
Data retention time	> 10 years (at < +40 °C)
Read/write distance, max.	180 mm (see field data)
Memory organization	Block by block access
Multitag capability	Yes, depending on SLG
Energy source	Inductive power transmission (without battery)
Shock/vibration-resistant to EN 60721-3-7, Class 7 M3	See configuration manual
Torsion and bending load	Not permissible continuously
Mounting	Adhesive, screws
Recommended spacing from metal	> 25 mm
Degree of protection to EN 60529	IP67
Resistance to chemicals	See configuration manual
Enclosure	
• Dimensions	Ø 27 mm x 4 mm
• Color/material	Black/epoxy resin
Ambient temperature	
• Operation	-25 °C to +125 °C
• Transport and storage	-40 °C to + 150 °C
Weight, approx.	5 g

4

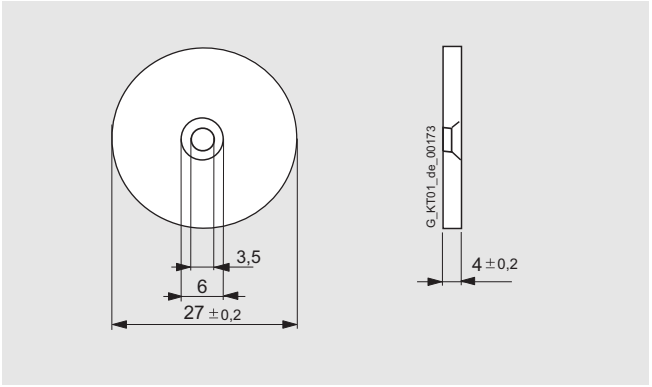
Field data in mm - without metallic influence

MDS D124 to:	**SLG D12/D12S**	**SLG D11/D11S ANT D5**	**SLG D10/D10S ANT D5**	**SLG D10/D10S ANT D6**	**SLG D10/D10S ANT D10**
Operating distance (S_a)	0 ... 50	0 ... 70	0 ... 130	0 ... 130	0 ... 130
Limit distance (S_g)	70	110	180	180	180
Transmission window (L)	120	Ø 300	Ø 320	440	980
Minimum distance from MDS to MDS	≥ 300	≥ 800	≥ 800	≥ 1200	≥ 1800

Selection and Ordering data

	Order No.
Mobile data storage unit MDS D124 112 byte EEPROM, IP67, max. + 150 °C	**6GT2 600-0AC00**

Dimensions



Overview

The MDS D139 is a passive, maintenance-free transponder based on the I-Code 1 technology.

Application

Low-cost, heat-resistant transponder for use in production logistics and assembly lines with high temperatures (max. +200 °C, e.g. in paintshops).

Technical specifications

Mobile data storage unit MDS D139	
Memory size	44 byte EEPROM available 8-byte serial number
Protocol	I-Code 1
MTBF	2000000 h
Read cycles	Unlimited
Write cycles	
• at +70 °C min.	10000
• at ≤ 40 °C, typical	500000
Data retention time	> 10 years (at < +40 °C)
Read/write distance, max.	550 mm (see field data)
Memory organization	Block by block access
Multitag capability	Yes, depending on SLG
Energy source	Inductive power transmission (without battery)
Shock/vibration-resistant to EN 60721-3-7,Class 7 M3	50 *g*/20 *g*
Torsion and bending load	Not permissible
Mounting	M5 screw
Recommended spacing from metal	> 30 mm
Degree of protection to EN 60529	IP68
Ex approval	ATEX Zone 2G
Resistance to chemicals	See configuration manual
Enclosure	
• Dimensions	Ø 85 mm x 15 mm
• Color/material	Black/plastic PPS
Ambient temperature	
• Operation	- °C to +140 °C [1]
- tested up to 4000 h continuous temperature, 1500 temperature cycles	+ 200 °C max.
- temporarily	+ 220 °C
• Transport and storage	-40 ... +100 °C
Weight, approx.	50 g
Special features	No silicone

Field data in mm – without metallic influence

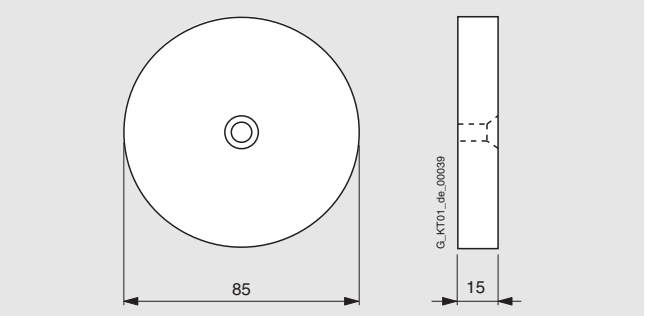
MDS D139 to:	**SLG D12/D12S**	**SLG D11/D11S ANT D5**	**SLG D10/D10S ANT D5**	**SLG D10/D10S ANT D6**	**SLG D10/D10S ANT D10**
Operating distance (S_a)[1]	0 ... 120	0 ... 240	0 ... 380	0 ... 480	0 ... 380
Limit distance (S_g)[1]	150	300	450	550	450
Transmission window (L)	120	Ø 300	Ø 320	520	1050
Minimum distance from MDS to MDS	≥ 500	≥ 1000	≥ 1000	≥ 1500	≥ 2000

[1] Reduction of the operating/limit distance by about 20 % above 100 °C. At 200 °C processing is not possible.

Selection and Ordering data

	Order No.
Mobile data storage unit MDS D139 44 byte EEPROM, IP68, max. + 200 °C	**6GT2 600-0AA00**
Accessories	
Spacer	**6GT2 690-0AA00**

Dimensions



MOBY D mobile storage unit

MDS D160

Overview

Application

Typical applications include:

- Rented work clothing
- Hotel laundry
- Surgical textiles
- Hospital clothing
- Dirt collection mats
- Clothing for nursing homes/hostels

Technical specifications

Mobile data storage unit MDS D160	
Memory size	112 byte EEPROM available 8-byte serial number
Protocol	to ISO 15693
MTBF	2,500,000 h
Read cycles	Unlimited
Write cycles, at +70°C min.	10000
at ≤ 40 °C, typical	1000000
Data retention time	> 10 years (at < +40 °C)
Read/write distance, max.	160 mm (see field data)
Memory organization	Block by block access
Multitag capability	Yes, depending on SLG
Energy source	Inductive power transmission (without battery)
Shock/vibration-resistant to EN 60721-3-7, Class 7 M3	See configuration manual
Torsion and bending load	Not permissible continuously
Mounting	Patch, sew, glue
Recommended spacing from metal	> 25 mm
Degree of protection to EN 60529	IP68 (2 m, 24 hours)
Resistance to chemicals	All chemicals normally used in the washing process
Enclosure	
• Dimensions	Ø 16 mm x 3 mm ± 0.1 mm
• Color/material	Black/epoxy resin
Ambient temperature	
• Operation	-25 to +85 °C Up to +120 °C [1] for 1000 h Up to +160 °C [1] for 35 h Up to +175 °C for 10 minutes
• Transport and storage	-40 °C to + 85 °C
Weight, approx.	1.2 g
Special features	at least 100 wash cycles 24 hour regeneration time required between wash cycles

Field data in mm – without metallic influence

MDS D160 to:	**SLG D12/D12S**	**SLG D11/D11S ANT D5**	**SLG D10/D10S ANT D5**	**SLG D10/D10S ANT D6**	**SLG D10/D10S ANT D10**
Operating distance (S_a) [1]	0 ... 45	0 ... 65	0 ... 120	0 ... 120	0 ... 100
Limit distance (S_g) [1]	65	90	160	160	160
Transmission window (L)	120	280	Ø 300	480	980
Minimum distance from MDS to MDS	≥ 300	≥ 800	≥ 800	≥ 1200	≥ 1800

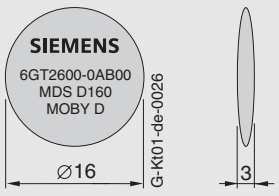
[1] Reduction of the operating/limit distance by about 20 % above 100 °C. At 140 °C processing is not possible.

Selection and Ordering data

		Order No.
Mobile data storage unit MDS D160 112 byte EEPROM, IP68, max. +175 °C, momentary	A	**6GT2 600-0AB10**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



Overview

The MDS D324 is a passive, maintenance-free transponder based on the ISO standard 15693 with my-d technology. It was developed for the application areas in production and distribution logistics as well as product identification.

For the user, the usable application memory amounts to 992 byte.

This mobile data memory can also be easily used in harsh environments under extreme environmental conditions (e.g. with higher temperature load).

Technical specifications

Mobile data storage unit MDS D324	
Memory size	992 byte EEPROM available 8 byte serial number
Protocol	According to ISO 15693
MTBF	1500000 h
Read cycles	unlimited
Write cycles, at +70 °C, min.	10000
at ≤ 40 °C, typical	1000000
Data retention time	> 10 years (at < +40 °C)
Read/write distance, max.	220 mm (see field data)
Memory organization	Block-by-block access
Multitag capability	Yes, depending on SLG
Energy source	Inductive energy transfer (without battery)
Shock/vibration to EN 60721-3-7, Class 7 M3	See configuration manual
Torsion and bending load	No continuous load permissible
Mounting	glue, screw
Recommended distance to metal	> 25 mm
Degree of protection to EN 60529	IP67
Resistance to chemicals	See configuration manual
Enclosure	
• Dimensions	Ø 27 mm x 4 mm
• Color/material	Black/epoxy resin
Ambient temperature	
• During operation	-25 ... +125 °C
• During transportation and storage	-40 ... + 150 °C
Weight, approx.	5 g

Field data in mm (excluding metal influence)

MDS D324 to:	**SLG D12/D12S**	**SLG D11/D11S ANT D5**	**SLG D10/D10S ANT D5**	**SLG D10/D10S ANT D6**	**SLG D10/D10S ANT D10**
Operating distance (S_a)	0 ... 60	0 ... 100	0 ... 160	0 ... 160	0 ... 160
Limit distance (S_g)	80	150	220	220	220
Length of transfer window (L or L_x/L_y)	120/60	Ø 300	Ø 320	500/400	1000/280
Width of transfer window (B or B_x/B_y)	48/24	120	128	200/160	400/112
Minimum distance from MDS to MDS	≥ 300	≥ 800	≥ 800	≥ 1200	≥ 1800

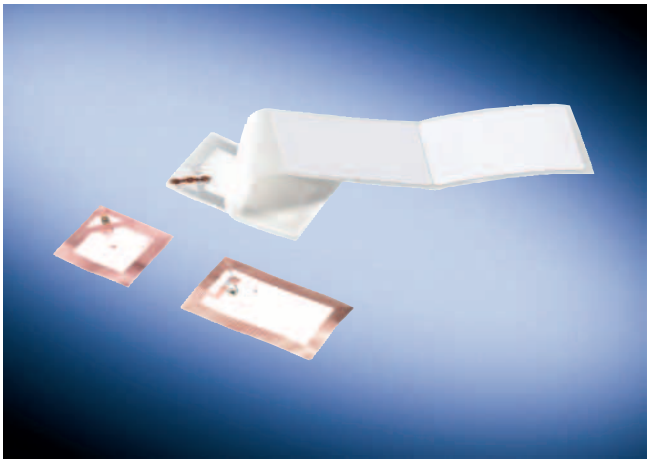
Selection and Ordering data

		Order No.
Mobile data memory MDS D324	A	**6GT2 600-3AC00**
Button, 992 byte EEPROM user memory, max. +125 ° C		

4

SmartLabel

Overview



Application

Thanks to their very reasonable price, the SmartLabels can be used universally as electronic "barcode substitutes" or "delivery notes".

Design

The design of the customer-specific SmartLabels permits a variety of flexible designs, ensuring optimum dimensioning for the widest variety of applications.

Technical specifications

Mobile data storage unit MDS D... (customized design)	
Memory size (for I-code), e.g.	112 or 256 byte EEPROM available 8-byte serial number
Protocol	to ISO 15693
Read cycles	Unlimited
Write cycles at ≤ 40 °C, typical	> 1000000
Data retention time	> 10 years (at < +40 °C)
Read/write distance, max.	900 mm (see field data)
Memory organization	Block by block access
Multitag capability	Yes, depending on SLG
Energy source	Inductive power transmission
Mounting	E.g. single-sided adhesive attachment
Recommended spacing from metal	> 10 mm
Degree of protection to EN 60529	Up to IP68
Resistance to chemicals	On request
Enclosure	
• Dimensions in mm	e.g. 86 x 54 or 55 x 55
• Color/material	E.g. upper side plastic Lower side double-sided transfer adhesive on silicon Paper
Ambient temperature	
• Operation	E.g. -25 °C to +85 °C
• Storage temperature	+20 to +30 °C
Weight, approx.	E.g. 3 g
Special features	• Temperature range, size, degree of protection, mounting, operating distance etc. all depend on the customer-specific design of the SmartLabels • High-volume applications • On request

Selection and Ordering data

	Order No.
SmartLabel 112 to 256 byte EEPROM, custom-specific version for high-volume applications	**On request**

Overview

The write/read device (SLG) ensures inductive communication and power supply to the MDS and for the serial connection (RS232 or RS422) to various systems (PC, PLC).

Write/read devices in the upper, medium and lower performance ranges are available to users for integration into SIMATIC S7 and PROFIBUS DP V1. The MOBY communication modules are used for connecting the write/read devices to SIMATIC and PROFIBUS DP V1.

Various different SLGs are available for small, medium and large distances to the MDS to satisfy customer requirements.

A rugged housing or antenna enclosure and a high degree of protection allow the use under tough environmental conditions and guarantees a high resistance to many chemical substances. New applications are opened up by the support of SmartLabels on the basis of the ISO/IEC 15693 standard, multitag capability, etc.

Type	Features
SLG D10 ANT D5	Universal write/read device with detached antenna (340 mm x 325 mm x 38 mm) • Max. read/write distance: 480 mm • Degree of protection IP65 • Temperature range up to +55 °C • With RS 232 interface for connection to PC/PLC
SLG D10S ANT D5	Like SLG D10 ANT D5, but with RS422 interface for connection to SIMATIC S7/ PROFIBUS via ASM 452, ASM 456, ASM 473 or ASM 475
SLG D11 ANT D5	Universal write/read device with detached antenna (340 mm x 325 mm x 38 mm) • Max. read/write distance: 380 mm • Degree of protection IP65 • Temperature range up to +55 °C • With RS 232 interface for connection to PC/PLC
SLG D11S ANT D5	Like SLG D11 ANT D5, but with RS422 interface for connection to SIMATIC S7/ PROFIBUS via ASM 452, ASM 456, ASM 473 or ASM 475
SLG D12	Universal write/read device with integral antenna (160 mm x 80 mm x 40 mm) • Max. read/write distance: 160 mm • Degree of protection IP65 • Temperature range up to +55 °C • With RS 232 interface for connection to PC/PLC
SLG D12S	Like SLG D12, but with RS422 interface for connection to SIMATIC S7/ PROFIBUS via ASM 452, ASM 456, ASM 473 or ASM 475
SLG D10 basic unit	Write/read device with plug for connection of an external antenna (ANT D5 / ANT D6 / ANT D10) • Degree of protection IP65 • Temperature range up to +55 °C • RS 232 interface for connection to PC/PLC
SLG D10S basic unit	Write/read device with plug for connection of an external antenna (ANT D5 / ANT D6 / ANT D10) • Degree of protection IP65 • Temperature range up to 55 °C • RS422 interface for connection to SIMATIC S7/ PROFIBUS via ASM 452, ASM 456, ASM 473 or ASM 475
ANT D5	Universal antenna (340 mm x 325 mm x 38 mm), connectable to basic units SLG D10/SLG D10S • Degree of protection IP65 • Temperature range up to 55 °C • Cable length 3.6 m (permanently connected on antenna side)
ANT D6	Universal antenna (580 mm x 480 mm x 110 mm), connectable to basic units SLG D10/SLG D10S • Degree of protection IP65 • Temperature range up to 55 °C • Cable length 3.3 m (connectable at both ends, included in scope of delivery)
ANT D10	Antenna (1150 mm x 365 mm x 115 mm) for storage, logistics and distribution. Ideally suited to the clothing industry/ laundries. For connection to SLG D10 and D10S. Advantageous geometry for small tags and a long transmission field. Main areas of application: Container identification, goods identification, package and postal services, dispatch, haulage, clothing industry, laundries • Degree of protection IP65 • Temperature range up to 55 °C • Cable length 3.3 m (connectable at both ends, included in scope of delivery) • Cover included in scope of supply

Introduction

Design

The following serial interfaces including software tools (on the CD "RFID Systems Software & Documentation") are available for quick and easy integration into the application:

- RS232 with binary protocol
  - For serial interfacing to any system (PC/PLC)
  - C++ library MDWAPI (for Windows 9x/2000/NT) with extended range of functions including password protection, access authorization and multitag operation
- RS422 with 3964R protocol
  - For serial interface to the MOBY communication modules (ASM 450, ASM 452, AM 473, ASM 475) or any system, e.g. gateways
  - FC45 (without multitag, etc.) for SIMATIC S7-300/400, S7 PROFIBUS Master

Function

The SLG converts the commands (read MDS etc.) received by the PC or interface module (ASM) and generates by means of the antenna a magnetic alternating field for the contactless communication and power transmission to the MDS.

Failsafe protocols and access mechanisms achieve a high degree of data security and guarantee fast, secure and noise-resistant communication. The transmittable volume of data between SLG/antenna and MDS depends on:

- the speed at which the MDS moves through the transmission window of the antenna
- the length of the transmission window

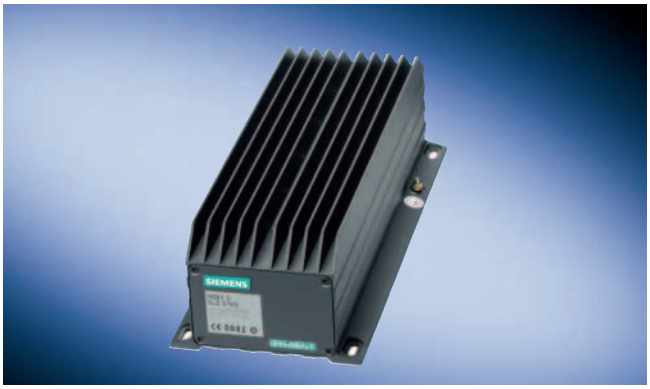
Technical specifications

Field data in mm

Minimum distance from SLG to SLG		
SLG D12/SLG D12S	SLG D12/SLG D12S	> 600 mm
SLG D11 ANT D5/SLG D11S ANT D5	SLG D11 ANT D5/SLG D11S ANT D5	> 1200 mm
SLG D10 ANT D5/SLG D10S ANT D5	SLG D10 ANT D5/ SLG D10S ANT D5	> 2000 mm
SLG D10 ANT D6/SLG D10S ANT D6	SLG D10 ANT D6/ SLG D10S ANT D6	> 2000 mm
SLG D10 ANT D10/SLG D10S ANT D10	SLG D10 ANT D10/SLG D10S ANT D10	> 2000 mm

SLG D10/SLG D10S basic unit with ANT D5 and ANT D6 and ANT D10 antenna

Overview



The SLG D10 / SLG D10S basic units are write/read devices in the upper performance range and can be operated with the ANT D5, ANT D6 and ANT D10 antennas.

The write/read devices are equipped with an RS232 serial interface for connection to PCs/PLCs or RS422 interface which permits communication via the communications modules ASM 456, RF170C, RF180C, ASM 475 to SIMATIC S7 or PROFIBUS/PROFINET.

Connectable switch and antennas:

Antenna switch

The antenna switch enables several individual antennas or portal solutions to be operated with only one write/read device (SLG D10 / SLG D10S).

ANT D5

An antenna for universal applications designed for warehouse, logistics and distribution applications. The high degree of protection (IP65) enables the antenna to be used under harsh industrial conditions.

ANT D6

An antenna in the upper performance range, designed for warehouse, logistics and distribution applications. It can be used wherever high speeds are required together with a large write/read distance.

ANT D10

The ANT D10 is suitable for use in warehouses, logistics and distribution. An antenna with this geometry is required in the clothing industry and laundries in particular.

Technical specifications

Basic units	**SLG D10**	**SLG D10S**
Inductive interface to the MDS	Remote antenna	
Transmission frequency (energy/data)	13.56 MHz; ISO/IEC 15693	
Data memories / transponders supported	For SmartLabels based on standard ISO/IEC 15693 e.g.: I Code SLI, Tag-it HFI, plus I-Code 1	
Multitag capability	Yes, approx. 20 data memories/s	No
Read/write distance, max.	see MDS field data	
Transmit power	Up to 10 W	
Serial interface	RS232 to PC/SPS	RS422 to ASM 475
Max. cable length at 24 V DC	30 m	300 m
Connector	9-pin subminiature connector (pin)	
Data transmission rate	1200 baud to 115.2 Kbaud (adjustable)	Up to 115.2 Kbaud (depending on ASM)
Procedure	Binary with CRC 16-security	3964R protocol
Software functions		
• Programming	C library for PCs with Windows 9x/2000 and NT	FB/FC45 for S7
• Commands	Read data from MDS, write data to MDS, access rights, multitag, etc.	Read data from MDS, write data to MDS
Rated supply voltage value/permissible range	via 4-pin connector M12 (IP65) 24 V DC/20 V – 30 V DC	
Power consumption (at room temperature)		
• Inrush current, momentary	Up to 2.8 A/50 ms	
• Operation	Typ. 0.9 A	
Dimensions (in mm) for electronics without connector	320 x 145 x 100	
Color/Material	Anthracite/aluminum	
Degree of protection to EN 60529	IP65	
Shock-resistant acc. to EN 60721-3-7, Class 7M2	30 *g*	
Vibration-resistant acc. to EN 60721-3-7, Class 7M2	1 *g* (9 Hz to 200 Hz); 1,5 *g* (200 Hz to 500 Hz)	
Attachment of enclosure	4 x M6 screws	
Ambient temperature		
• During operation	- 20 to + 55 °C	
• During transportation and storage	- 25 to + 70 °C	
MTBF	75000 h	
Weight	3.5 kg	

SLG D10/SLG D10S basic unit with ANT D5 and ANT D6 and ANT D10 antenna

Antenna	ANT D5	ANT D6	ANT D10
			
Inductive interface to the MDS	13.56 MHz		
Read/write distance, max.	See field data		
Interface to SLG D10 / SLG D10S			
• Plug connection	TNC		
• Antenna cable length (included in scope of delivery)	3.6 m (plugs into SLG)	3.3 m (connectable on both sides)	
Antenna dimensions in mm	340 x 325 x 38 (without range adjustment kit)	580 x 480 x 110 (without cover)	1150 x 365 x 115 (with cover)
Antenna color	Black	Black/gray	Pastel turquoise
Antenna material	Plastic ASA	Aluminum/plastic	
Degree of protection to EN 60529	IP65		
Shock-resistant acc. to EN 60721-3-7, Class 7M2	30 *g*		
Vibration-resistant acc. to EN 60721-3-7, Class 7M2	1 *g* (9 Hz to 200 Hz); 1.5 *g* (200 Hz to 500 Hz)		
Attachment of the antenna	4 x M5 screws	4 x M6 screws	
Ambient temperature			
• During operation	-20 to +55 °C		
• During transportation and storage	-25 to +70 °C		
MTBF	300000 h		
Weight	1.0 kg	3.3 kg	10 kg

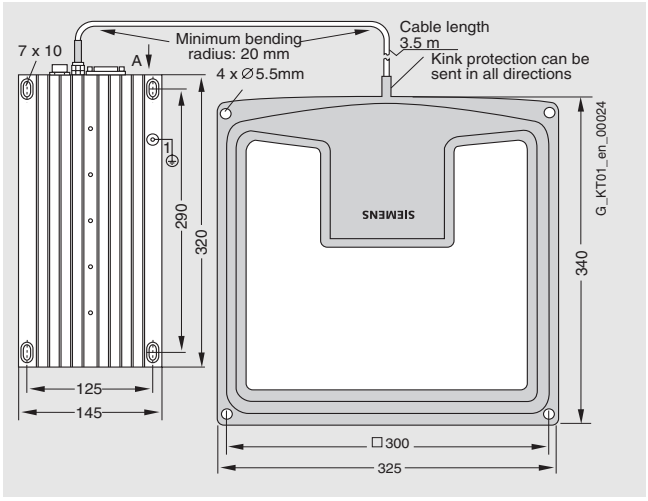
Antenna duplexer	
	
Max. input power	10 W
Transmission frequency	13.56 MHz
Power supply	Not required
Connector (inputs and outputs)	TNC
Dimensions (L x W x H) in mm	160 x 80 x 40 without connector
• Color	Anthracite
• Material	Plastic PA 12
• Mounting	2 x M5 screws
Vibration-resistant to EN 60721-3-7, Class 7 M2	1 *g* (9 to 200 Hz) 1.5 *g* (200 to 500 Hz)
Shock-resistant to EN 60721-3-7, Class 7 M2	30 *g*
Degree of protection to EN 60529	IP65
Resistance to chemicals	On request
Ambient temperature	
• During operation	-25 to +65 °C
• During transportation and storage	-25 to +75 °C
MTBF	300000 h
Weight, approx.	400 g
Approval	CE

Selection and Ordering data

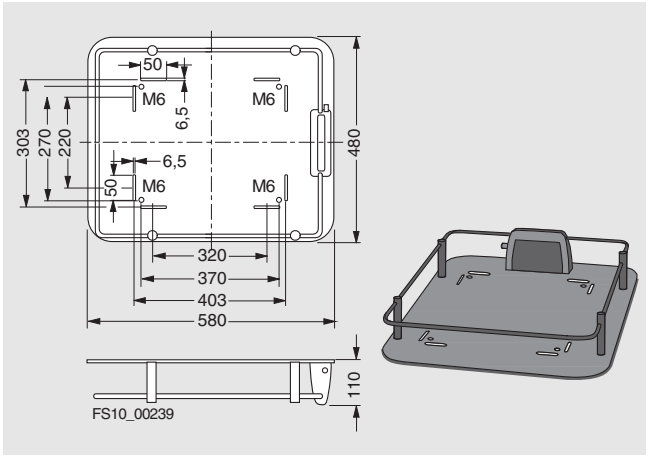
		Order No.
Write/read device SLG D10 Basic unit (without antenna) with RS 232 serial interface for connection to PC/PLC	A	**6GT2 698-1AA00**
Write/read device SLG D10S Basic unit (without antenna) with RS 422 serial interface for connection to SIMATIC S7/PROFIBUS via ASM 456 or ASM 475	A	**6GT2 698-2AA00**
Accessories		
Antenna ANT D5 For SLG D10 / SLG D10S basic units	A	**6GT2 698-5AA00**
Range adjustment kit for ANT D5	A	**6GT2 698-5AB00**
Antenna ANT D6 For SLG D10 / SLG D10S basic units		**6GT2 698-5AF00**
Covering hood for ANT D6 Serves as protection against contact		**6GT2 690-0AB00**
Antenna ANT D10 For SLG D10 / SLG D10S basic units, cover and antenna cable included in scope of supply		**6GT2 690-0AD00**
Antenna switch For connecting several antennas (ANT D5 or ANT D6) to one SLG D10 / SLG D10S, IP65, -25 °C to +65 °C	A	**6GT2 690-0AC00**
MOBY D cables		
• Cable between ANT D6 and SLG D10/SLG D10S, antenna switch; length 3.3 m	A	**6GT2 691-0CH33**
• Cable extension between ANT D6 and SLG D10/ SLG D10S, antenna switch; length 7.2 m	A	**6GT2 691-0DH72**
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. RFID documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H

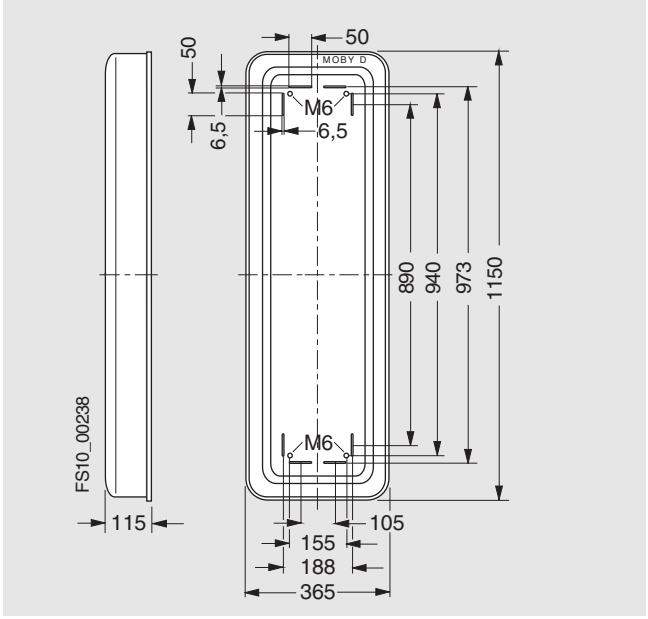
Dimensions



Basic unit (left), antenna ANT D5 (right)



Antenna ANT D6



Antenna ANT D10

SLG D10 ANT D5/SLG D10S ANT D5

Overview

Technical specifications

Type	SLG D10 ANT D5	SLG D10S ANT D5
Inductive interface to the MDS	Remote antenna	
Transmission frequency (energy/data)	13.56 MHz; ISO/IEC 15693	
Data memories / transponders supported	For SmartLabels based on standard ISO/IEC 15693 e.g.: I Code SLI, Tag-it HFI	
Multitag capability	Yes, approx. 20 data memories/s	Available soon
Read/write distance, max. [1]	480 mm, see MDS field data	
Antenna cable length (included in scope of delivery)	3.6 m	
Transmit power	Up to 4 W	
Serial interface	RS232 to PC/SPS	RS422 to ASM 456, ASM 475, RF170C, RF180C
Max. cable length at 24 V DC	30 m	300 m
Connector	9-pin subminiature connector (pin)	
Data transmission rate	1200 baud to 115.2 Kbaud (adjustable)	Up to 115.2 Kbaud (depending on ASM)
Procedure	Binary with CRC 16-security	3964R protocol
Software functions		
• Programming	C library for PCs with Windows 9x/2000 and NT	FB/FC45 for S7
• Commands	Read data from MDS, write data to MDS, access rights, multitag, etc.	Read data from MDS, write data to MDS
Rated supply voltage value/permissible range	Via 4-pin device connector M12 (IP65) 24 V DC/20 V – 30 V DC	
Power consumption (at room temperature)		
• Inrush current, momentary	Up to 2.8 A/50 ms	
• Operation	Typ. 0.9 A	
Enclosure		
• Dimensions in mm		
- For antenna	340 x 325 x 38	
- For electronics without connector	320 x 145 x 100	
• Color of antenna/SLG enclosure	Black/anthracite	
• Material antenna/SLG enclosure	Plastic ASA/aluminum	
Degree of protection to EN 60529, enclosure/antenna (front)	IP65/IP65	
Antenna connector (connectable to SLG)	TNC connector	
Shock resistant to EN 60721-3-7	30 *g*, Class 7M2	
Vibration resistant to EN 60721-3-7	1 *g* (9 Hz to 200 Hz) 1.5 *g* (200 Hz to 500 Hz), Class 7M2	
Attachment of enclosure	4 x M6 screws	
Attachment of the antenna	4 x M5 screws	

Type	SLG D10 ANT D5	SLG D10S ANT D5
Ambient temperature		
• During operation	-20 to +55 °C	
• Transport/storage	-25 to +70 °C	
MTBF		
• Readers	75000 h	
• Antenna	300000 h	
Weight		
• Basic unit	3.5 kg	
• Antenna	1 kg	

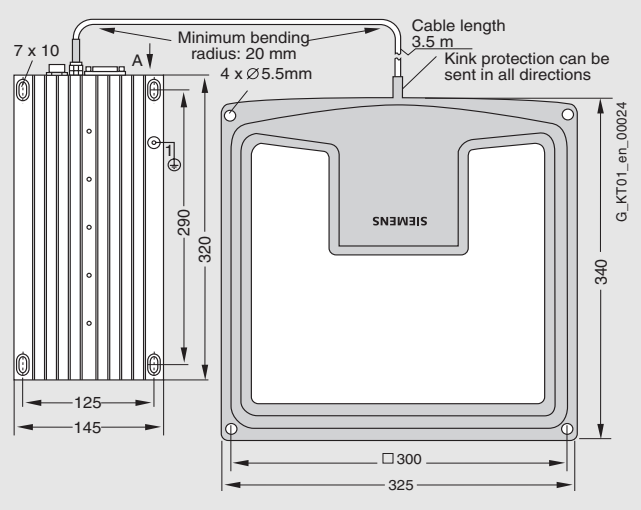
1) In order to guarantee optimum field data in metallic environments, the antenna is calibrated at the factory at a distance of 100 mm from metal (see clearance kit 6GT2 690-0AB00).

Selection and Ordering data

		Order No.
Write/read device SLG D10 ANT D5 With RS 232 serial interface	A	**6GT2 601-0AA00**
Write/read device SLG D10S ANT D5 With RS 422 serial interface	A	**6GT2 602-0AA00**
Accessories		
Range adjustment kit for ANT D5		**6GT2 690-0AB00**
Antenna duplexer For connecting several antennas (ANT D5 or ANT D6) to one SLG D10 / SLG D10S, IP65, -25 °C to +65 °C	A	**6GT2 690-0AC00**
CD "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C-libraries, PC presentation program, RFID documentation		**6GT2 080-2AA10**

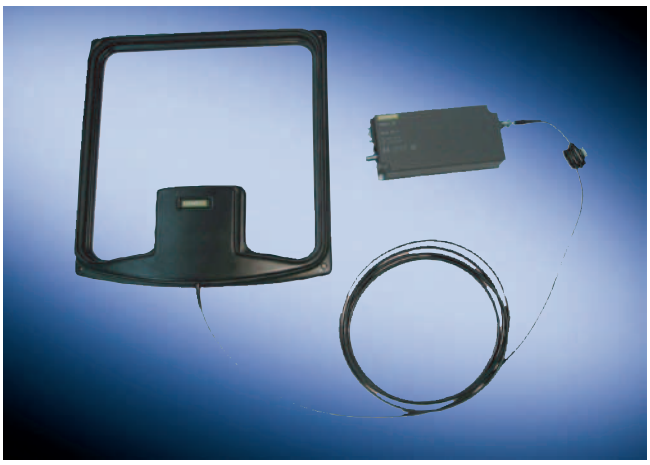
A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



SLG D11 ANT D5/SLG D11S ANT D5

Overview



Technical specifications

Type	SLG D11 ANT D5	SLG D11S ANT D5
Inductive interface to the MDS	Remote antenna	
Transmission frequency (energy/data)	13.56 MHz; ISO/IEC 15693	
Data memories / transponders supported	For SmartLabels based on standard ISO/IEC 15693 e.g.: I Code SLI, Tag-it HFI, plus I-Code 1	
Multitag capability	Yes, approx. 20 data memories/s	no
Read/write distance, max. [1]	380 mm, see MDS field data	
Antenna cable length	3.6 m	
Transmit power	1 W	
Serial interface	RS232 to PC/SPS	RS422 to ASM 456, ASM 475, RF170C, RF180C
Max. cable length at 24 V DC	30 m	300 m
Connector	9-pin subminiature connector (pin)	
Data transmission rate	1200 baud to 38.4 Kbaud (adjustable)	Up to 38.4 Kbaud
Procedure/data backup	Binary with CRC 16-security	3964R protocol
Software functions		
• Programming	C library for PCs with Windows 9x/2000 and NT	FB/FC45 for S7
• Commands	Read data from MDS, write data to MDS, access rights, multitag, etc.	Read data from MDS, write data to MDS
Rated supply voltage value/ permissible range	Via 4-pin device connector M12 (IP65) 24 V DC/20 V – 30 V DC	
Power consumption (at room temperature)		
• Inrush current, momentary	Up to 600 mA/50 ms	
• Operation	Typ. 150 mA	
Enclosure		
• Dimensions in mm		
- For antenna	340 x 325 x 38	
- For the electronics	160 x 80 x 40 without connector	
• Color of antenna/SLG enclosure	Black/anthracite	
• Material antenna/SLG enclosure	Plastic ASA/plastic PA 12	
Antenna connector (connectable to SLG)	TNC connector	
Degree of protection to EN 60529, enclosure/antenna (front)	IP65	
Shock resistant to EN 60721-3-7, Class 7M2 Total shock response spectrum, Type II	30 *g*	
Vibration-resistant acc. to EN 60721-3-7, Class 7M2	1 *g* (9 to 200 Hz); 1.5 *g* (9 to 500 Hz)	

Type	SLG D11 ANT D5	SLG D11S ANT D5
Attachment of enclosure	2 x M5 screws	
Attachment of the antenna	4 x M5 screws	
Ambient temperature		
• During operation	-25 to +55 °C	
• During transportation and storage	-25 to +70 °C	
MTBF		
• Readers	200000 h	
• Antenna	300000 h	
Weight		
• Basic unit	Approx. 0.6 kg	
• Antenna	Approx. 1 kg	

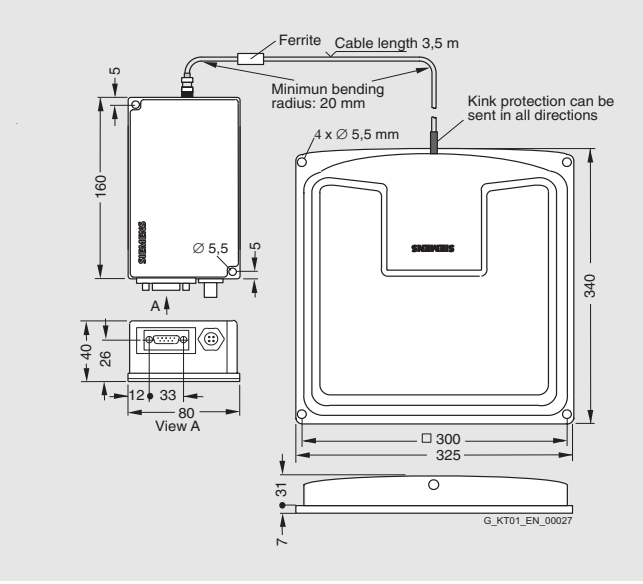
1) In order to guarantee optimum field data in metallic environments, the antenna is calibrated at the factory at a distance of 100 mm from metal (see clearance kit 6GT2 690-0AB00).

Selection and Ordering data

		Order No.
Write/read device SLG D11 With separate antenna ANT D5 With RS 232 serial interface	A	**6GT2 601-0AC00**
Write/read device SLG D11S With separate antenna ANT D5 With RS 422 serial interface	A	**6GT2 602-0AC00**
Accessories		
Range adjustment kit for ANT D5		**6GT2 690-0AB00**
CD "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program MOBY documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



4

SLG D12/SLG D12S

Overview

Technical specifications

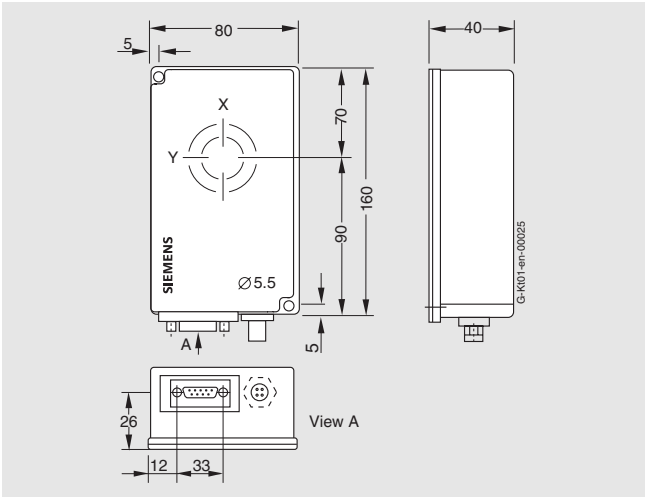
Type	SLG D12	SLG D12S
Inductive interface to the MDS	Integrated antenna	
Transmission frequency (energy/data)	13.56 MHz; ISO/IEC 15693	
Data memories / transponders supported	For SmartLabels based on the ISO/IEC 15693 standard e.g. I-Code SLI, Tag-it HFI, additional I-Code 1	
Multitag capability	Yes, approx. 20 data memories/s Max. 160 mm, see MDS field data	Yes, available soon
Serial interface	RS232 to PC/SPS	RS422 to ASM 456, ASM 475, RF170C, RF180C
Max. cable length at 24 V DC	30 m	300 m
Connector	9-pin subminiature connector (pin)	
Data transmission rate	1200 baud to 38.4 Kbaud (adjustable)	Up to 38.4 Kbaud
Procedure	Binary with CRC 16-security	3964R protocol
Software functions		
• Programming	C library for PCs with Windows 9x/2000 and NT	FB/FC45 for S7
• Commands	Read data from MDS, write data to MDS, access rights, multitag, etc.	Read data from MDS, write data to MDS
Rated supply voltage value/permissible range	Via 4-pin device connector M12 (IP65) 24 V DC/20 V – 30 V DC	
Power consumption (at room temperature)		
• Inrush current, momentary	Max. 600 mA	
• Operation	Typ. 150 mA	
Enclosure		
• Dimensions in mm	160 x 80 x 40	
• Color	Anthracite	
• Material	Plastic PA 12	
• Attachment of enclosure	2 x M5 screws	
Degree of protection to EN 60529	IP65	
Shock-resistant acc. to EN 60721-3-7, Class 7M2	30 *g*	
Vibration-resistant to EN 60721-3-7, Class 7M2	1.0 *g* (9 to 200 Hz); 1.5 *g* (200 to 500 Hz)	
Ambient temperature		
• During operation	-25 to +55 °C	
• During transportation and storage	-25 to +70 °C	
MTBF	200000 h	
Weight, approx.	0.5 kg	

Selection and Ordering data

		Order No.
Write/read device SLG D12 With RS 232 serial interface and integrated antenna	A	**6GT2 601-0AB00**
Write/read device SLG D12S With RS 422 serial interface and integrated antenna	A	**6GT2 602-0AB00**
Accessories		
CD "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. RFID documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



4

STG D mobile handheld terminal

Overview

The STG D is a powerful mobile handheld terminal with integral write/read antenna for applications in the field of production logistics, distribution and service. In addition, it is an indispensable tool for commissioning and testing.

Design

The STG D mobile handheld terminal consists of one basic unit (Basis PSION Workabout PRO) and a removable compact read/write head. It has a splash water-proof enclosure (IP54), LCD color monitor 1/4 VGA, 320 x 240 pixels, TFT portrait format, alphanumeric keyboard and various interfaces (for SD memory card, charging batteries, USB, Bluetooth, etc.).

Function

The pre-installed MOBY software provides service and test functions for reading, writing, etc. of the MOBY data memory:

- Reading data from the data memory
- Writing data to the data memory
- Reading and displaying the ID number of the data memory (to the extent available)
- Displaying and editing the data in hexadecimal, ASCII, decimal and binary formats
- Activate/deactivate password

User applications that were developed for the predecessor model Workabout MX can be transferred to this terminal with little effort. For this purpose, various optional development tools for the PC are available directly from PSION. This is opening up new applications in the field of logistics and distribution, for example, the handheld terminal enables commissioning data to be recorded or processed offline and forwarded to the PC/computer with a time delay.

Technical specifications

STG D mobile handheld terminal	
Processor	400 MHz Intel Xscale PXA255
Operating system	Microsoft Windows CE .NET 4.20
RAM/Flash EEPROM memory	128 MB/32 MB
User program	MOBY standard application
Screen	TFT color touch display, ¼ VGA 320 x 240 (portrait format); adjustable backlighting
Keyboard	alphanumeric
Sound	Piezo signal transmitter
Power supply	• Lithium-ion battery (3.7 V; 3000 mAh) • Quick charging possible (automatic shut-off) or 3 x 1.5 V type AA • Backup battery: 3 V ML 2032 lithium cell
Interfaces	• LIF interface (low insertion force interface) for battery charging and communication with the PC using a docking and loading station (USB) • CF interface for expansion cards (e.g. WLAN)
Dimensions	305 x 90 x 44 [mm]
Weight (incl. battery)	Approx. 0.5 kg
Ambient temperature	
• During operation	-10 °C ...+50 °C
• Storage (without batteries)	-25 °C ...+60 °C
Relative humidity, non-condensing	5 ... 90 %
Degree of protection	IP54 (splash water proof)
EMC	EN 55022, EN 55024

Integral read/write head, inductive interface to MDS	
Read/write distance to MDS	up to 80 mm, depending on MDS
Energy/data transmission frequency	13.56 MHz
Serial interface (to basic unit)	TTL, 3964R protocol
Functionality of the SW application	Standard user interface for reading/writing of data memories, etc.

Selection and Ordering data

		Order No.
STG D mobile handheld terminal with MOBY D read/write head Basic unit (PSION Workabout PRO) with MOBY D read/write, battery, standard software pre-installed, without loading/docking station	A	**6GT2 603-0AA10**
Accessories		
Loading/docking station For a mobile handheld terminal as well as a spare battery, incl. wide-range plug-in power supply 100 ... 240 V AC and country-specific adapters as well as USB cable	A	**6GT2 898-0BA00**
MOBY D read/write head For basic unit (PSION Workabout mx and PSION Workabout PRO)	A	**6GT2 603-1AA10**
Basic unit Basic unit (PSION Workabout PRO) with adapter for MOBY RFID read/write heads	D	**6GT2 003-0AA10**
Spare battery For basic unit (PSION Workabout PRO), High Capacity 3000 mAh, Li-ion	A	**6GT2 898-0CA00**
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C libraries, PC presentation program. MOBY documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H
D: Subject to export regulations AL = N and ECCN = 4A994

Accessories

For optional components, please visit
http://www.psionteklogix.com

For example:

- SD expansion cards
- Handles, belt loops
- Vehicle holder with charging function n

Configuring instructions

Overview

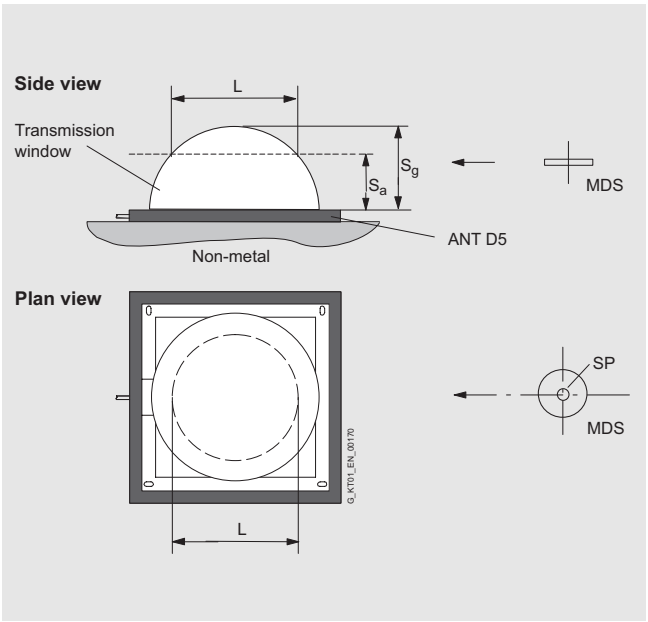
Note

Detailed configuration and commissioning data is contained in the “Manual for Configuration, Assembly and Service”.

Transmission window

The write/read device generates an inductive alternating field. The field is at its strongest near the antenna and declines considerably as the distance from the antenna increases. The distribution of the field depends on the structure and geometry of the antennas in the write/read device and MDS.

A prerequisite for the function of the MDS is a minimum field strength at the MDS that is achieved at a distance S_g from the write/read device. The picture below shows the transmission window between MDS and SLG:



S_a: Operating distance between MDS and SLG

S_g: Limit distance (maximum clear distance between upper surface of antenna and MDS, at which the transmission can still function under normal conditions)

L: Length of a transmission window

SP: Intersection of the axes of symmetry of the MDS

The transmittable quantity of information between SLG and MDS depends on:

- the speed at which the MDS passes the antenna ("passing speed")
- Length of the inductive alternating field of the SLG, through which the MDS moves ("transmission window").

Communication between SLG and MDS

The communication between SLG and MDS is asynchronous.

Data transmission rate SLG - MDS	
Read	≥ 3.5 ms/byte
Write	≥ 9.5 ms/byte
Transmission time of ID number	
• SLG D10 ANT 5, ANT D6, ANT D10	30 ms (8 byte at 115.2 kbit/s)
• SLG D10S ANT 5	
• SLG D12S ANT 5, ANT D6, ANT D10	90 ms (8 byte at 19.2 kbit/s)
• SLG D11S ANT 5	
• SLG D12 ANT D5, ANT D6, ANT D10	60 ms (8 byte at 38.4 kbit/s)
• SLG D11 ANT D5	

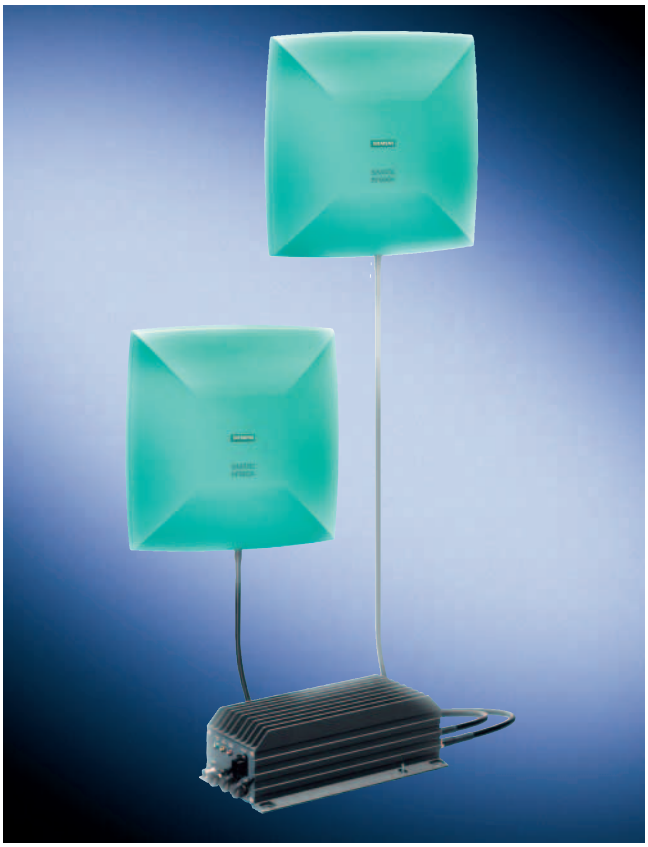
Speed at which SLG passes over (for a transponder in the field)

Type	SLG D10 ANT D10	SLG D10 ANT D6	SLG D10 ANT D5	SLG D11 ANT D5	SLG D12
UID number (8 byte)	≤ 15 m/s	≤ 8.0 m/s	≤ 5.0 m/s	≤ 3.5 m/s	≤ 2.5 m/s
I-Code 1, e.g. MDS D139					
Read (with 4 byte of user data)	≤ 10 m/s	≤ 6.5 m/s	≤ 3.5 m/s	≤ 3.0 m/s	≤ 2.0 m/s
Write (with 4 byte of user data)	≥ 7,5 m/s	≤ 5.0 m/s	≤ 2.8 m/s	≤ 2.5 m/s	≤ 1.5 m/s
Read (with 44 byte of complete user data)	≤ 6 m/s	≤ 3.8 m/s	≤ 2.0 m/s	≤ 1.8 m/s	≤ 1.0 m/s
Write (with 44 byte of complete user data)	≤ 2.5 m/s	≤ 1.4 m/s	≤ 0.8 m/s	≤ 0.6 m/s	≤ 0.3 m/s
I-Code SLI, e.g. MDS D100					
Read (with 4 byte of user data)	≤ 10 m/s	≤ 6.0 m/s	≤ 3.5 m/s	≤ 1.6 m/s	≤ 1.4 m/s
Write (with 4 byte of user data)	≤ 9 m/s	≤ 5.5 m/s	≤ 3.0 m/s	≤ 1.2 m/s	≤ 1.2 m/s
Read (with 112 byte of complete user data)	≤ 7.5 m/s	≤ 4.0 m/s	≤ 2.4 m/s	≤ 1.4 m/s	≤ 1.0 m/s
Write (with 112 byte of complete user data)	≤ 2 m/s	≤ 1.0 m/s	≤ 0.6 m/s	≤ 0.4 m/s	≤ 0.2 m/s

Type	SLG D10S ANT D10	SLG D10S ANT D6	SLG D10S ANT D5	SLG D11S ANT D5	SLG D12S
UID number (8 byte)	≤ 6.0 m/s	≤ 3.8 m/s	≤ 2.0 m/s	≤ 1.0 m/s	≤ 0.8 m/s
I-Code 1, e.g. MDS D139					
Read (with 4 byte of user data)	≤ 5.5 m/s	≤ 3.5 m/s	≤ 1.8 m/s	≤ 1.0 m/s	≤ 0.8 m/s
Write (with 4 byte of user data)	≤ 4.5 m/s	≤ 2.5 m/s	≤ 1.4 m/s	≤ 0.8 m/s	≤ 0.6 m/s
Read (with 44 byte of complete user data)	≤ 4.5 m/s	≤ 2.8 m/s	≤ 1.5 m/s	≤ 0.7 m/s	≤ 0.6 m/s
Write (with 44 byte of complete user data)	≤ 2.2 m/s	≤ 1.2 m/s	≤ 0.7 m/s	≤ 0.5 m/s	≤ 0.3 m/s
I-Code SLI, e.g. MDS D100					
Read (with 4 byte of user data)	≤ 6.5 m/s	≤ 4.0 m/s	≤ 2.2 m/s	≤ 3.0 m/s	≤ 1.2 m/s
Write (with 4 byte of user data)	≤ 5.5 m/s	≤ 3.4 m/s	≤ 1.8 m/s	≤ 2.8 m/s	≤ 1.0 m/s
Read (with 112 byte of complete user data)	≤ 5.0 m/s	≤ 3.0 m/s	≤ 1.6 m/s	≤ 2.2 m/s	≤ 0.8 m/s
Write (with 112 byte of complete user data)	≤ 2.0 m/s	≤ 1.0 m/s	≤ 0.6 m/s	≤ 0.5 m/s	≤ 0.2 m/s

Introduction

Overview



SIMATIC RF600 is a contact-free RFID system (RFID: Radio Frequency IDentification), that has been specially designed for applications in logistics and supply chain management.

SIMATIC RF600 operates in the UHF frequency band and is designed for identifying tags based on the EPCglobal standard. It is, therefore, the ideal system for storing and reading out information in EPC format (EPC: Electronic Product Code) on low-cost SmartLabels (single-use data carriers) and to transfer it to higher-level software systems for further processing.

Benefits

Due to the omission of manual counting, recording and subsequent procedures, cost savings are achieved and recording errors are minimized.

By using low-cost, passive SmartLabels, goods can be automatically identified throughout the entire logistics chain. Wrong information at the goods transfer points is avoided and the consistency of data and information is secured.

The throughput of the supply chain can be increased by identifying several articles simultaneously which increases productivity.

SIMATIC RF600 opens up opportunities for integration in downstream software systems. The flow of goods and information can then be linked in "realtime". As soon as the data that is associated with an item is read, e.g. when the item has passed through a loading gate, the information in the supply management chain can be automatically updated and then, for example, reordering can be triggered.

By tracking and tracing goods, transparency is increased throughout the system: The route of an item can be traced at any time.

Application

SIMATIC RF600 is primarily used for non-contact identification of containers or palettes and for detection of goods in bulk. These applications are usually open circulating routes in which passive SmartLabels are applied to goods, products, bundles or transport units. The system proves its worth in these applications with high read rates, high-speed data transmission and the ability to cope with long read distances.

The system is also suitable for reading and writing reusable data carriers (Industrial Tags), conventionally used in closed circulating routes.

The main application areas therefore range from recognition of goods in loading and unloading bays, through goods flow control on conveyor systems as far as implementation in warehouses or distribution centers and for fill level checks in high-bay stores. Industrial applications in factories, e.g. in paint shop conveyors or assembly lines in the automotive industry, are just as common.

Design

Optional: Flexible installation of antenna with articulated bracket thanks to the Antenna Mounting Kit. The package includes a 75 mm x 75 mm Vesa adapter.

Function

SIMATIC RF identification systems ensure that important data accompanies the product from the very beginning.

Different tags are used to store product-specific data and information: Depending on the field of application, SmartLabels or Industrial Tags.

In the case of tags to the EPCglobal standard, information regarding the manufacturer of the goods, the article class and the respective serial number is coded in 96 bit (EPC Gen1). Tags of the second generation of the EPCglobal standard (EPC Gen2) allow customer or product information to be stored additionally.

In the case of tags based on the ISO 18000-6B standard (reusable data carriers), data volumes up to 216 byte can be stored which can be freely defined by the user.

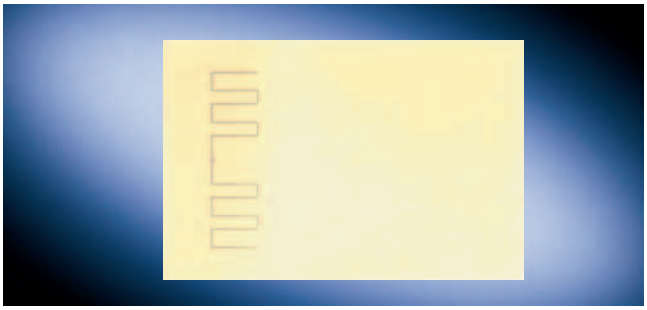
Technical specifications

Type	SIMATIC RF600
Conformity	ETSI EN 302208, FCC
Area of application	Europe, USA
Frequency range (adjustable)	• 865 … 868 MHz (Europe) • 902 … 928 MHz (USA)
Transmit power (adjustable)	• 0.1 … 2 W ERP (Europe) • 0.4 … 4 W EIRP (USA)
Tag read range	Up to 5 m Up to 10 m (with portal arrangement)
Standards supported	EPC Gen 1, EPC Gen 2, ISO 18000-6B
Interfaces	RS232, RS422 [1], ETHERNET, DI/DO
Certification	CE, UL, FCC

[1] This interface will only be available in the future

SIMATIC RF620L

Overview



The SIMATIC RF620L Smartlabel is passive and maintenance-free based on UCODE technology (EPC V1.19).

Application

Due to their structure, the Smartlabels are suitable for different applications. The application areas range from simple identification such as electronic barcode replacement/supplementation, through warehouse and distribution logistics, right up to product identification.

Function

The purpose of the Smartlabel is to save the "Electronic Product Code" (EPC).

Technical specifications

Type	SmartLabel SIMATIC RF620L
IC type	UCODE EPC V1.19
Frequency	
• Europe	865 ... 668 MHz
• USA	902 ... 928 MHz
EPC code	96 bits
Protocol	as per ISO18000-6B
Multitag	Yes
Data retention	10 years
Power supply	Electromagnetic emission, power transmission without battery
Typical read/write distance	0 ... 4 m
Created for fixing on	paper, box Not suitable for fixing on metal or liquid containers
Type of installation	Adhesive on one side (self-adhesive labels)
Antenna size	20 x 88 mm
Antenna material	Copper
Dimensions	101x152 mm (4" x 6")
Material	Paper
Color	White
Printability	with thermotransfer procedure
Delivery format	Minimum order amount 1500 items (500 on one roll)
Operating temperature	-20 °C … +70 °C
Storage temperature	+15 °C … +25 °C
Storage life	< 2 years, determined by the shelf life of the label
Degree of protection	None, Smartlabel should be protected from humidity

Selection and Ordering data

	Order No.
SmartLabel SIMATIC RF620L for paper and cardboard Minimum order quantity 1500 units (500 units on a roll)	**6GT2810-1AB00**

Overview

6GT2810-2AB00

6GT2810-2AB01

6GT2810-2AB02

The Smartlabel SIMATIC RF630L is designed to be passive and maintenance-free based on the UHF Class 1 Gen2 technology.

Application

The application areas range from simple identification, such as an electronic substitute for a barcode or supplement to a bar-code through storage and distribution logistics as far as product identification.

Function

The Smartlabel is used to save the "Electronic Product Code" (EPC).

Technical specifications

IC type /technology	**EPC Class 1 Gen2**	**EPC Class 1 Gen2**	**EPC Class 1 Gen2**
Order No.	**6GT2810-2AB00**	**6GT2810-2AB01**	**6GT2810-2AB02**
Frequency for Europe (865-868 MHz)	✓		
Frequency for USA (902-928 MHz)	✓		
Protocol acc. to ISO 18000-6C	✓		
EPC code	96 bit		
Additional user memory	No		
Multitag	Yes		
Write cycles	100000		
Data retention at +25 °C	10 years		
Power supply	Electromagnetic emission, power transfer without battery		
Typical read/write distance			
• Paper/cardboard	0.2 to 8 m		
• Plastic sheet	0.2 to 8 m		
• Plastic (boxes, surface resistance >10 MOhm	0.2 to 4 m		
• Wood (dry, < 30% residual dampness)	0.2 to 4 m		
• Glass	0.2 to 4 m		
Designed for mounting on	Paper/cardboard (not suitable for fixing directly onto metal)		
Type of mounting	Single-sided adhesive (self-adhesive label)		Single-sided adhesive (self-adhesive inlay)
Type of antenna	Shortened dipole		
Antenna material	Aluminium		

SIMATIC RF630L

IC type /technology	EPC Class 1 Gen2	EPC Class 1 Gen2	EPC Class 1 Gen2
Order No.	**6GT2810-2AB00**	**6GT2810-2AB01**	**6GT2810-2AB02**
Dimensions	101 mm x 152 mm (4“ x 6“)	101 mm x 50 mm (4“ x 2“)	97 mm x 27 mm
Material surface	Paper		Plastic PET
Color	White		Clear
For printing	Yes, heat transfer method		Yes, heat transfer method (currently only using Toshiba B-SX4T)
Type of delivery	Min. order quantity 1600 units (800 units on a roll)	Min. order quantity 1000 units (1000 units on a roll)	Min. order quantity 2000 units (2000 units on a roll)
Operating temperature	-40 °C to +65 °C to +80 °C (200 cycles)		
Storage temperature, recommended	+15 °C ... +25 °C		
Storage humidity, recommended	40% ... 60%		
Storage capability	2 years, determined by durability of the adhesive		
Degree of protection	The label must be protected from damp		IP65

Selection and Ordering data

		Order No.
SIMATIC RF630L SmartLabel For storing the "Electronic Product Code" (EPC). Prices apply to one SmartLabel.		
• Paper, glued on one side, 101 mm x 152 mm (4“ x 6“); Minimum order quantity 1600 units (800 units on a roll).	A	**6GT2810-2AB00**
• Paper, glued on one side, 101 mm x 50 mm (4“ x 2“); Minimum order quantity 1000 units (1000 units on a roll)	A	**6GT2810-2AB01**
• Plastic PET, glued on one side, 97 mm x 27 mm (3.8" x 1.1“); Minimum order quantity 2000 units (2000 units on a roll).	A	**6GT2810-2AB02**

A: Subject to export regulations AL = N and ECCN = EAR99H

Overview

The target applications for SIMATIC RF640T are industrial asset management, RF identification of tools, containers and metallic equipment.

This tool tag is available in two frequency variants: 868 MHz (Europe) and 915 MHz (USA).

Benefits

- Small, intelligent and rugged for industrial applications
- Ideal for attaching directly to metal surfaces, without spacer (e.g. containers, boxes, tools and tool holders)
- High degree of protection and resistant to mineral oils, lubricants and cleaning solvents

Application

- For direct mounting onto metal surfaces with a typical detection range of 1.8 m. Up to 216 byte of user data can be stored in addition to 8-byte ID numbers.
- Machine and plant construction
- Industrial production
- Laboratory and test equipment

Technical specifications

Type	RF640T
IC type	UCODE HSL
Frequency	
• Version for Europe	865 - 868 MHz
• Version for USA	902 - 928 MHz
Serial number UID	8 bytes
User memory	216 bytes
Lock information (write protection)	28 bytes
Protocol	in accordance with ISO 18000-6B
Data retention	10 years
Read cycles	unlimited
Write cycles	
• minimum	100000
• typical	500000
Read distance (with reader RF660R and antenna RF660A)	
• minimum	0.2 to 1.5 m
• typical	0.2 to 2.0 m
write distance (with reader RF660R and antenna RF660A)	
• minimum	0.2 to 1.2 m
• typical	0.2 to 1.5 m
Designed for attaching to	Metal
Mounting	2 x M4 screws
Dimensions (H x D)	50 x 8
Material	Plastic PA12
Color	anthracite
Ambient temperature	
• Operation	-25 °C to + 85 °C
• Storage	-40 °C to +125 °C
Mechanical stress (to EN 60721-3-7, class 7 M3)	
• Shock	100 *g*
• Vibration	20 *g*
• Torsion	not permissible
Degree of protection to DIN EN 60529 (45 min immersion in water; water depth 1 m from top edge of housing at +20 °C)	IP68
Resistance to chemicals	as for PA 12
Ex approval	ATEX Zone II 2GD; Ex ib IIC T6 to T3
Approvals	CE/FCC

Selection and Ordering data

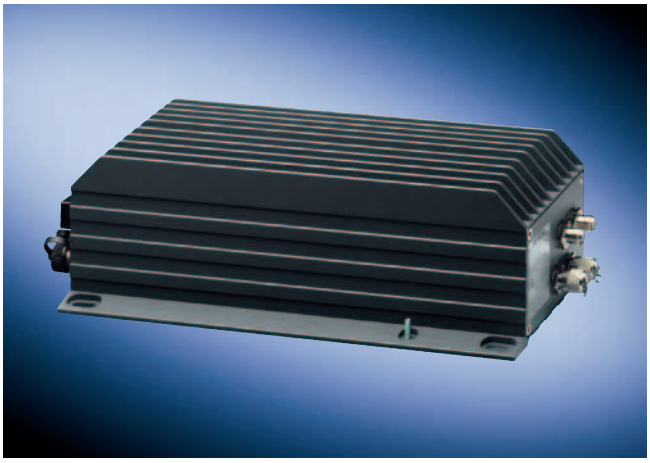
		Order No.
SIMATIC RF640T		
For attaching to metal surfaces		
• for Europe (868 MHz frequency)	A	**6GT2 810-0DC00**
• for the U.S.A. (915 MHz frequency)	A	**6GT2 810-0DC10**

A: Subject to export regulations AL = N and ECCN = EAR99H

SIMATIC RF600 write/read device and antenna

SIMATIC RF660R
SIMATIC RF660A

Overview



The UHF portal reader SIMATIC RF660R uses the two, three or four SIMATIC RF660A antennas connected to read the tag data and supplies it to downstream systems through the system interfaces (Ethernet or RS422 [1]). Alternatively, XML command sequences can be used to instruct the reader to pass the data on to a client application. For further details on configuration and the runtime response of the SIMATIC RF660R, please refer to the associated documentation.

At least two, but up to four, SIMATIC RF660A antennas must be connected for correct operation of the SIMATIC RF660R. Different antennas must be used depending on the installation location (U.S.A. or Europe):

- Europe:
  SIMATIC RF660A (EU) Order No. 6GT2812-0AA00
- U.S.A.:
  SIMATIC RF660A (U.S.A.) Order No. 6GT2812-0AA01

The frequency bands approved for the respective region must be set on the reader by means of software configuration.

The reader can be easily configured using the SIMATIC RF660R configuration software. This is available on the CD "RFID Systems Software & Documentation" that can be ordered separately (Order No. 6GT2080-2AA10).

For proper functioning of the SIMATIC RF660R, the corresponding SIMATIC RF660A antennas and the appropriate Siemens antennas and interface cables must be used (see ordering data).

Benefits

Technical characteristics of the SIMATIC RF660 system:

- UHF frequencies support new applications in logistics and throughout the complete delivery chain.
- The standards implemented in the system in accordance with EPCglobal and ISO 18000-6B allow different protocols to be used between the reader and tag. Tags based on different standards can, at the same time, also be detected and processed by the system.
- Implementation of the EPCglobal standards of Generation 2 (EPC Gen2) provides investment security and high performance.
- Large read distances, high tag detection rates despite high traversing speeds of the goods to be identified in the field secures SIMATIC RF660 a place in the high-end range of today's RFID systems.
- Thanks to problem-free bulk detection of tagged goods, SIMATIC RF660 is suitable for identification tasks in non-homogeneous goods flows.
- The two serial interfaces and Ethernet ensure that it can be integrated into different system landscapes (IT and automation).
- Three digital inputs and outputs support the direct connection of process-related devices such as optical and acoustic signal encoders, proximity switches, light barriers, etc.
- The ruggedness of the overall system guarantees problem-free, flexible operation under a wide range of different ambient conditions.
- For companies globally active in manufacturing, logistics and trade, the ability to operate the system in both the European and US UHF frequency bands means easier implementation and less complexity in the system landscape.

Application

The stationary UHF portal reader SIMATIC RF660R complete with up to four antennas of the SIMATIC RF660A type is suitable for applications in logistics and supply chain management.

The system operates in the European and US UHF frequency band and is designed for identifying tags based on the EPCglobal standard.

Function

SIMATIC RF660 allows rewritable data carriers to be read and written which, in accordance with the UCODE specification, can also store large volumes of data. The system is therefore also suitable for use in so-called closed applications that are found typically in the industrial environment. The high degree of protection of the complete system ensures problem-free operation even under harsh industrial conditions.

Thanks to the two system interfaces (Ethernet and RS422[1]) and the RS232 interface that is intended for configuration and diagnostic purposes, SIMATIC RF660 is a universally implementable system. Easy connection to LAN networks with the TCP/IP protocol is just as possible as integration in an existing Siemens automation landscape.

SIMATIC RF Communication Modules are used to connect to SIMATIC controllers and they can be directly connected to the system through the RS422 interface[2].

1) This interface will be available in the future

2) This feature will be available in the future

Technical specifications

UHF stationary portal reader	SIMATIC RF660R
Frequency range (adjustable)	
• Europe	865 … 868 MHz
• USA	902 … 928 MHz
Transmit power (adjustable in steps of 100 mW)	
• Europe	0.1 W to 2 W ERP
• USA	0.4 W to 4 W ERP
Tag read range	
• With 2 x 2 antennas, mounted opposite each other	10 m max.
• With 2 antennas, antennas mounted side by side	5 m max.
Number of antennas	2 to 4 (configurable)
Impedance (nominal)	50 Ω
Standards	• EPC Gen 1 • EPC Gen 2 • ISO 18000-6B / ISO 18000-6C • Mixed mode operation
Number of tags read per second	
• EPC Gen 2	100 read actions/s
• ISO 18000-6B	> 50 read actions/s
Simultaneous reading of several tags (bulk reading capacity), number of tags	
• EPC Gen 2	max. 110 tags
• ISO 18000-6B	max. 75 tags
Data transmission rate for reading	
• EPC Gen 2	• 320 KB/s at 3 m • 80 KB/s at 5 m
• ISO 18000-6B	• 160 KB/s at 3 m • 40 KB/s at 5 m
Data transmission rate for writing	
• EPC Gen 2	• 128 KB/s at 3 m • 53.3 KB/s at 5 m
• ISO 18000-6B	40 KB/s at 5 m
Tag reading rate (%)	
• EPC Gen 2	> 99,9 %
• ISO 18000-6B	> 99,9 %
Additional functions	• Read triggered through digital input • Data buffer • Configuration by means of software • Firmware update
Interfaces	
• Antenna	2 … 4
• RS232	1
• RS422	1
• Ethernet RJ 45	1
• Digital in/out	3 x 24 V DC, 0.5 A each
Certification	• CE • UL
Conformity	ETSI EN 302208, FCC
Area of application	Europe, USA
Antenna connection	4 antennas, reverse polarity TNC
Ambient temperature	
• During operation	-25 to +55 °C
• During transportation and storage	-40 to +85 °C
Degree of protection	IP65
Dimensions L x B x H (in mm)	320 x 145 x 102

Antenna for use in Europe	SIMATIC RF660A - UHF antenna
Impedance (nominal)	50 Ohm
Polarization	Circular
Frequency band	865 – 868 MHz
Conformity	ETSI ES 302208
Mounting	Optional: Flexible mounting with jointed arm by means of antenna mounting kit Various mounting possibilities with supplied mounting adapter plate Vesa 75 x 75 mm
Weight	1.6 kg
Color	Pastel turquoise
Ambient temperature	
• During operation	-25 to +75 °C
• During transportation and storage	-40 to +85 °C
Degree of protection	IP67
Dimensions L x H x B (in mm)	313 x 313 x 80

Antenna for use in USA	SIMATIC RF660A - UHF antenna
Impedance (nominal)	50 Ohm
Polarization	Circular
Frequency band	902 … 928 MHz
Wiring	Reverse polarity TNC
Conformity	FCC Title 47, Part 15.247
Mounting	Optional: Flexible mounting with jointed arm by means of antenna mounting kit Various mounting possibilities with supplied mounting adapter plate Vesa 75 x 75 mm
Weight	1.5 kg
Color	Pastel turquoise
Ambient temperature	
• During operation	-25 to +75 °C
• During transportation and storage	-40 to +85 °C
Degree of protection	IP67
Dimensions L x B x H (in mm)	313 x 313 x 80

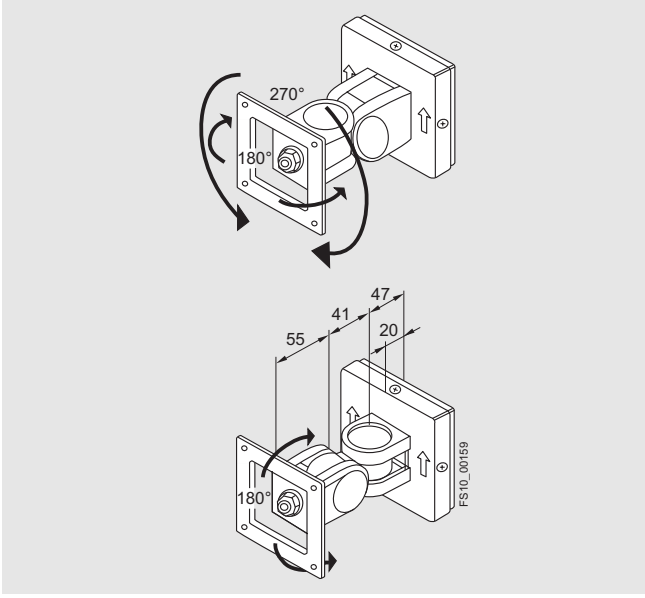
SIMATIC RF660R
SIMATIC RF660A

Selection and Ordering data

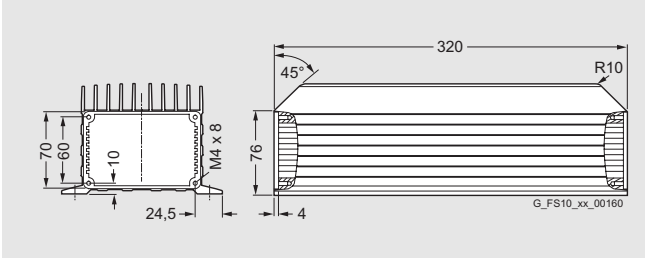
		Order No.
SIMATIC RF660R reader UHF stationary portal reader for UHF frequencies 865 – 868 MHz and 902 – 928 MHz	A	**6GT2 811-0AA00**
SIMATIC RF660A antenna for Europe Circular polarized antenna for UHF frequency 865 – 868 MHz	A	**6GT2 812-0AA00**
SIMATIC RF660A antenna for USA Circular polarized antenna for UHF frequency 902 – 829 MHz	A	**6GT2 812-0AA01**
Accessories		
Note: For proper functioning of the SIMATIC RF660R reader and the SIMATIC RF660A antenna, the appropriate antenna and interface cables must be used as well as the corresponding power supply.		
Antenna cable PE material, UV-resistant, halogen-free, 50 Ω impedance, reverse polarity TNC, internal contact as socket		
• Length 10 m, Ø 5 mm, UL certified	A	**6GT2 815-0BN10**
• Length 20 m, Ø 7,6 mm	A	**6GT2 815-0AN20**
• Length 20 m, Ø 7.6 mm, UL certified, exclusively for USA	A	**6GT2 815-0BN20**
Interface cable RS232, RS422 Material PUR, UV-resistant, halogen-free, PVC-free, with UL approval, M12 socket, 8-pole to Sub-D socket, 9-pole		
• RS232, length 5 m, Ø 5.3 mm	A	**6GT2 891-0GH50**
• RS232, length 10 m, Ø 5.3 mm	A	**6GT2 891-0GN10**
• RS422, length 2 m, Ø 5.3 mm	A	**6GT2 891-0FH20**
• RS422, length 5 m, Ø 5.3 mm	A	**6GT2 891-0FH50**
• RS422, length 10 m, Ø 5.3 mm	A	**6GT2 891-0FN10**
• RS422, length 20 m, Ø 5.3 mm	A	**6GT2 891-0FN20**
• RS422, length 50m, Ø 5.3 mm	A	**6GT2 891-0FN50**
Interface cable Ethernet Material PVC, UV-resistant, halogen-free, impedance 100 Ω ± 15 Ω, symmetrical (1 … 100 MHz), RJ45 to RJ45, IP67, CAT5e		
• Ethernet length 10 m, Ø 6.5 mm	A	**6GT2 891-0HN10**
• Ethernet, length 20 m, Ø 6.5 mm	A	**6GT2 891-0HN20**
DI/DO cable, PUR material black, shielded, M12, 8 x 0.25 mm², length 5 m		**3RX8000-0CD81-1GF0**
Antenna mounting kit For flexible mounting with jointed arm, VESA adapter 75 x 75 mm is supplied	A	**6GT2 890-0AA00**
Wide-range input power supply Primary side: 100 – 240 V AC, 120 – 353 V DC, secondary side: 24 V DC, 3 A, stable at no load, with continuous short-circuit protection		
• EU plug version	A	**6GT2 898-0AA00**
• UK plug version	A	**6GT2 898-0AA10**
Cable for wide-range input power supply 24 V DC, length 5 m		**6GT2 491-1HH50**
CD "RFID Systems Software & Documentation" SIMATIC RF660R configuration software, RFID documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



Antenna Mounting Kit



Reader SIMATIC RF660R

4

RFID systems for localization, reaction and optimization in real-time

From vehicle localization in the automotive industry to the tracking and separation of materials in the chemicals industry through to complex materials management and dispatch systems in logistics: With the RFID system MOBY R, you have a good overview in every sector. This real-time locating and localization system in the identification systems sector opens up completely new possibilities for you in the cost-effective structuring of your process sequences.

Application

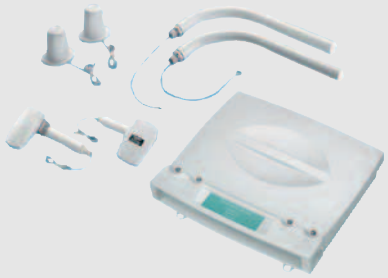
- Transparent localization in real-time
- Wireless material call system
- Stacker/vehicle localization and control
- Localization of maintenance personnel
- Localization of boxes of materials and containers
- Tracking of supplier vehicles, e.g. haulage vehicles
- Safety functions such as access control
- Vehicle or personnel tracking

Highlights

- Fast, up-to-date and precise:
  Localization in realtime mode
- Limitless overview: Visualization online
- More efficient process procedures for greater efficiency
- For large areas indoors and outdoors

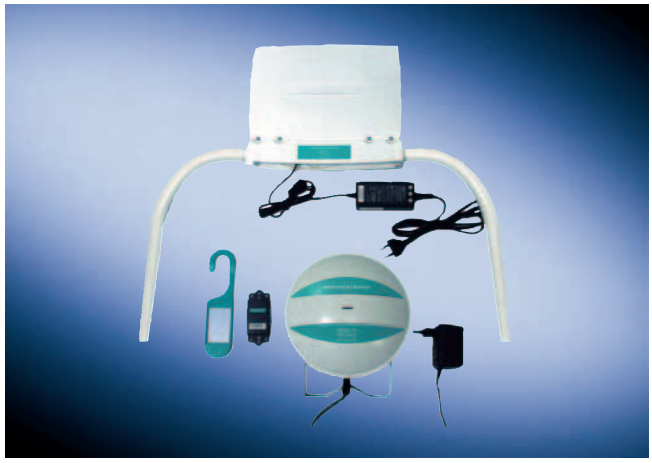
	Location
	MOBY R
Read/write distance	Up to 300 m
Frequency	2.4 GHz
Standards	FCC Part 15 Class B EN 55022, EN 55024 TÜV GS acc. to EN 60950 EMC Guideline 89/336/EEC

Technical specifications

	MOBY R			
				
Locating distance	100 m indoors, 300 m outdoors			
Max. locating accuracy	3 m			
Reading distance	200 m indoors, 1000 m outdoors			
Read cycles	unlimited			
Memory	32 bits			
Approvals	FCC Part 15 Class B, EN 55022, EN 55024, TÜV GS to EN 60950, EMC Guideline 89/336/EEC			
Frequency	2.4 to 2.483 GHz			
Mobile data storage (tags)	**Name**	**Memory size**	**Operating temperature**	**Degree of protection**
Standard data storage Pushbutton data storage Reference/wireless time data storage	MDS R202 MDS R207 MDS R200	32-bit fixed code 32-bit fixed code –	-25...+65 °C -25...+50 °C -25...+65 °C	IP67 IP54 IP67
Write/read devices	**Name**	**WLAN integrated**	**Operating temperature**	**Degree of protection**
	SLG R21 SLG R23	– ●	-40...+50 °C	IP55 NEMA 3 and NEMA 12
Mobile handheld terminal with integrated antenna	STG R		-10...+50 °C	Splash proof
Traverse sensor	TRIG R201		-30...+60 °C	IP65
Write distance	Selectable in 8 steps from 1.1 to 7.5 m			
Approvals	FCC Part 15 Class B; EN 55022 Class B; EN 55024; TÜV GS to EN 60950; EMC guideline 89/336/EEC; ETS 300683; EN 300330			
Software	Visibility server software			
Required basic software	Microsoft Server operating system and Microsoft SQL database			
Antennas	**Outdoors**	**Indoors**		**Transmission angle**
Circular beam antenna set outdoors	●	●		360°
Circular beam antenna set, indoors	–	●		360°
Flat beam antenna set	●	●		180°
Connection to the automation system	**directly**			
SIMATIC S7-300, S7-400				
PROFIBUS DP				
Ethernet (TCP/IP)		●		
WLAN		●		

4

Overview



MOBY R is a real-time locating system with a range of up to 300 m in the open and 100 m in buildings, with an accuracy of up to 3 m for identifying and locating objects.

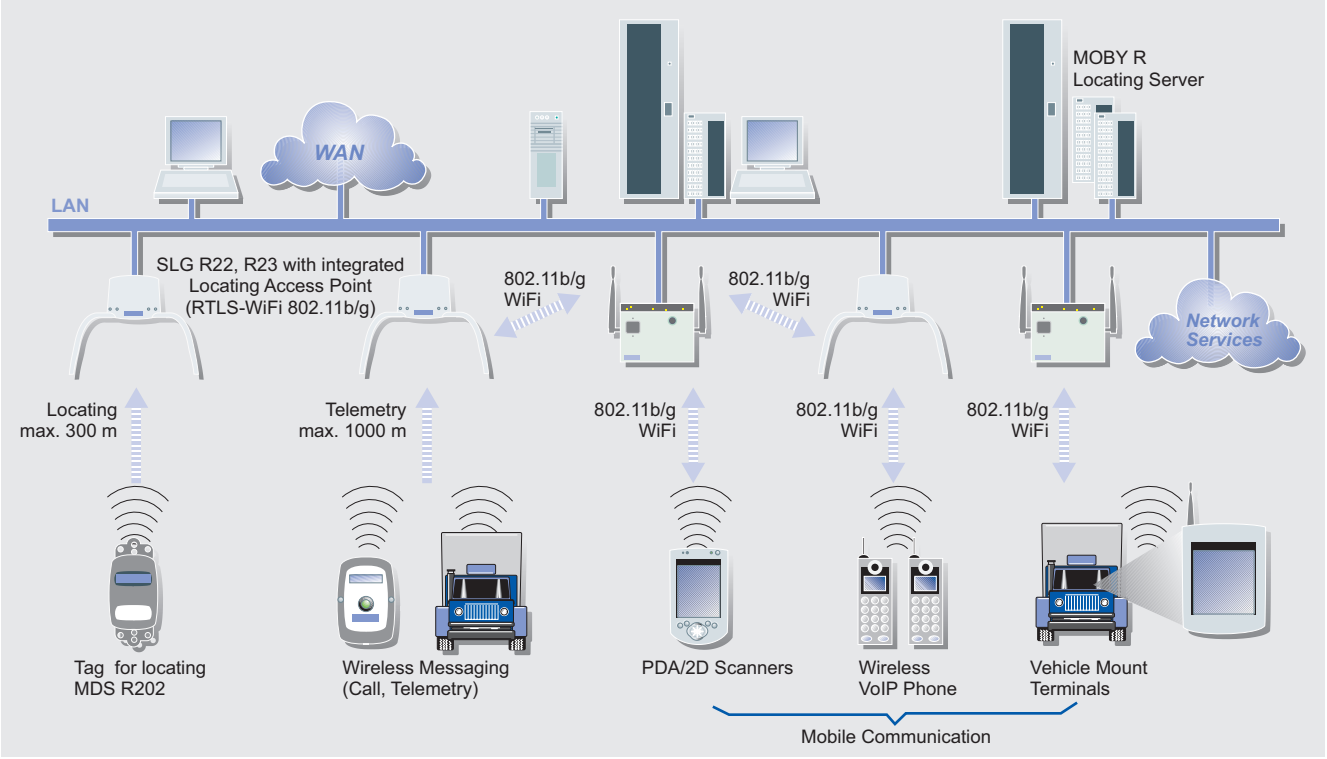
Application

The MOBY R system is suitable not only for real-time locating of the widest variety of objects of almost any quantity and the widest range of different formats (e.g. material boxes, containers, etc.), but also for large areas (e.g. airports, rental car operators, car manufacturers, etc.).

Main applications of MOBY R:

- Vehicles -> locating, tracking
- Containers -> locating, tracking, protection against theft
- Access and vehicle access control
- Loading monitoring
- Trucks, semitrailers -> locating
- Vehicle control
- Material tracking/requirements -> hospitals, production lines

Integration



The road to a functioning real-time locating system with MOBY R

A real-time-locating application requires a certain degree of technical knowledge for successful implementation and start-up throughout all phases of the project. Reading the technical documentation with product introduction is not sufficient for acquiring the necessary technical knowledge. For this reason, a MOBY R project sequence is broken down into three steps:

1. Creation of a proposal for the system design

This is a qualified assessment of the customer requirements and their fulfillment with MOBY R. Several discussions with the customer are necessary for this purpose. A CAD drawing of the area to be covered is necessary. If environmental conditions are ambiguous, an on-site visit is necessary. Charging for the travel costs for an on-site visit has to be clarified in advance with A&D SC SM (Regions Manager) After this work, an approx. estimate of the project costs (budget plan) can be passed on to the customer. A proposal for the system design is also prepared. The system design (2nd step) has to be ordered by the customer.

Introduction

2. System design

For the system design, the areas where the hardware has to be mounted have to be defined right down to the exact centimeter in a plan and per photo. Locating accuracy, cabling, and connection of the software to the company network are also clarified. All relevant information is compiled into one document and serves as a basis for system implementation (3rd step). For larger systems, under certain circumstances, a period of several weeks is necessary for the system design. Once the system design is completed, a precise proposal of the total costs can be prepared for the customer. The system design is also the basis of a project contract with the customer. That is particularly important because later structural changes can lead to delicate cost changes.

3. System implementation (assembly and commissioning)

During installation, it is particularly important to implement the system design correctly. On the software side, verification is provided to the customer that localization in the defined areas functions with guaranteed reliability and precision.

Order and project execution

To ensure that MOBY R projects are successfully completed, we place the highest value on MOBY R specialists being informed of the real-time-locating projects. They also initiate the internal order process and the delivery of MOBY R components and provide support with technical clarifications.

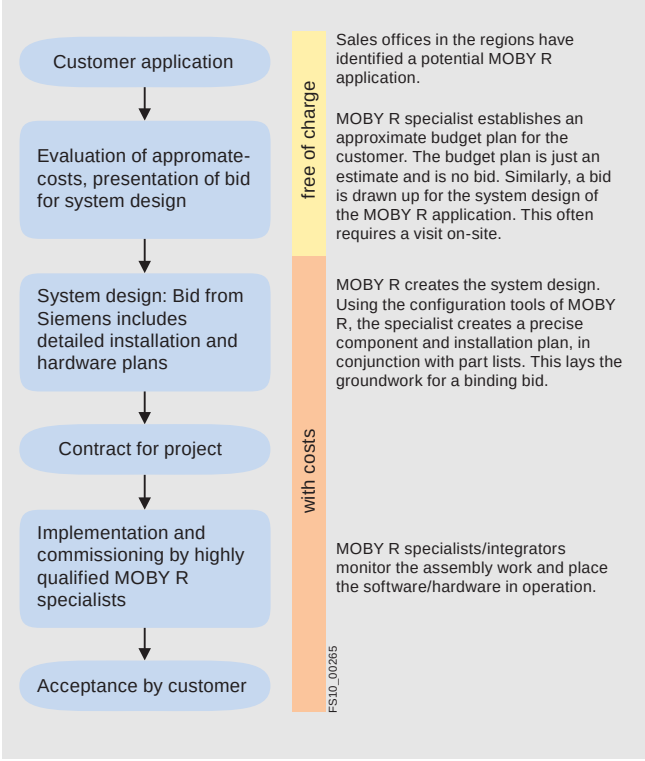
Specialists for MOBY R

Below you will find 2 addresses for MOBY R specialists.
All project questions for discrete production have to be released via A&D AS AP IS. Projects outside discreet production can be implemented via I&S IS E&C as service provider.

It is essential that the MOBY R projects are communicated and released through one of these addresses, otherwise the components will not be delivered:

- I&S IS E&C PS 2
  Andreas Traumer
  Phone: +49 (0) 911 895-4759
  coc.sensors.industry@siemens.com
- A&D AS AP IS
  Hans-Jürgen Buchard
  Phone: +49 (0) 911 895-2068
  hans-juergen.buchard@siemens.com

Roadmap for a MOBY R application



Technical specifications

Data transmission frequency	2.4 to 2.483 GHz
Memory capacity	32 bit
Read cycles	unlimited
Locating distance	100 m indoors – 300 m outdoors
Max. locating accuracy	3 m
Reading distance	200 m indoors – 1000 m outdoors
Operating temperature range	-25 to +65 °C
Degree of protection	IP67
Can be connected to	10BT / 100 BTx / Wireless LAN
Special features	User-configurable flashing rate Flashing activation can be changed by means of MDS trigger 128 barcode with fixed code no.
Approvals	FCC Part 15 Class B EN 55022, EN 55024 TÜV GS to EN 60950 EMC Guideline 89/336/EEC

Overview

The MOBY R mobile data storage units can be attached to equipment or objects such as pallets, containers, vehicles etc.

Type	Features
MDS R200	A reference data memory comprises two MDS R202 and an aluminum bracket
MDS R202	Compact data storage unit with an adjustable flashing rate Enclosure dimensions 105 x 44 x 21 (mm)
MDS R207	Data storage unit with manual call button enclosure dimensions 120 x 75 x 40 (mm)
Accessories	
Mirror bracket	Stirrup for the secure attachment of the MDS R202 on a vehicle's rear mirror

MDS R200

Overview

The reference data storage unit MDS R200 comprises two MDS R202 and an aluminum bracket.

Function

The reference data storage MDS R200 is used during configuration in order to create reference points for locating purposes. The MDS R200 is attached at fixed points in the plant using the bracket supplied.

The reference data storage MDS R200 can be used for two different functions. Both MDS R202 data storages are programmed with the aid of STG R handheld terminals for the different functions:

- MDS R200 as reference data storage in order to create reference points for the localization.
- MDS R200 as time synchronization data storage of the antennas SLG R21 / R22 / R23; in order to time-synchronize antennas via the air interface, in case there is no direct line of sight contact. This function is only required in "Wireless Timing" mode.

These different functions must be taken into account in the configuration of the plant software.

For further details, see MDS R202.

Selection and Ordering data

		Order No.
Mobile data storage unit MDS R200	F	**6GT2 700-0FE10**

F: Subject to export regulations AL = N and ECCN = 5A991

Overview

The MDS R202 data storage unit can be attached to equipment or objects such as pallets, containers, vehicles etc.

Its rugged enclosure makes the MDS R202 extremely durable for use both inside buildings and outdoors.

Function

The antennas of the MOBY R system receive the signals of the MDS and locate it very precisely with the aid of a coordinate system.

Fed by a battery with long service life, the radio signal of the MDS R 202 can be set to a flash rate of between 5 seconds and 9 hours. This enables fast moving components to be located in cycles of seconds. For slow or rarely moving objects, a flash rate of several minutes is fully adequate. During transport or when only the locating function is being performed, the flash cycle can also be switched off. At a typical flashing rate of six minutes, the battery service life is approximately seven years.

Each MDS has a unique 32-bit identification number that is transmitted with each flash. The ID number is also printed on the data medium as a 128 bar code. The bar coding permits seamless integration into existing systems, thereby facilitating a cost-effective solution.

A momentary location of the MDS is often required at portals and control points. The TRIG R201 trigger can be used here for immediate activation of the MDS and for locating. The handheld STG R is required for configuring the MDS.

Technical specifications

Mobile data storage unit MDS R202	
Typical locating distance in buildings	100 m
Typical locating distance outdoors	300 m
Typical reading distance in buildings	200 m
Typical reading distance outdoors	1000 m
User-configurable flashing rate	5 s to 9 h
Read cycles	Unlimited
Memory size	32-bit fixed code
Bar code	128 bar codes with fixed code no.
TRIG R 201 – activation	Max. 6 m
Directional recognition	Yes, with TRIG R 201
Frequency range	2.4 to 2.483 GHz
Power source	Lithium-thionyl-chloride batteries, size "AA"
Replacement battery	no
Typical battery service life	7 years (depending on flashing rate)
Operating temperature range	- 25 °C to +65 °C
Storage temperature range	- 40 °C to +70 °C
Degree of protection	IP67
Housing:	
• Color	Anthracite
• Material	ABS
• Dimensions (Lx W x H) in mm	105 x 44 x 21
Weight	53 g
MTBF (at 20 °C)	300,000 h
Shock (MIL-STD-810 D)	5 g_{rms}
Vibration (MIL-STD-810 D)	40 g
Free fall (MIL-STD-810 D)	1.2 m
Attachment / support options	• Attachment eyes for screws / rivets • 2 integral attachment eyes, cable ties etc. • Vehicle rear-view mirror bracket
Approvals	• FCC Part 15 Class B • EN 55022 Class B • EN55024 • TÜV GS acc. to EN 60950 • EMC Guideline 89/ 336/ EEC

Selection and Ordering data

		Order No.
Mobile data storage unit MDS R202	F	**6GT2 700-0FE00**
Accessories		
MOBY R mirror clamp	A	**6GT2 790-0AD00**
For the secure attachment of the MDS R202		

A: Subject to export regulations AL = N and ECCN = EAR99H
F: Subject to export regulations AL = N and ECCN = 5A991

MDS R207

Overview

The MDS R207 is a manual data memory with display. It is the main component for MOBY R as a spare part request system that offers a flexible, cordless solution. This means that a cabled network structure is no longer required and Kanban systems (based on paper) can be dispensed with.

Function

The MDS R207 is a compact unit with a durable call pushbutton and an LCD, on which the elapsed time since the last activation is displayed.

Each container of replacement parts is equipped with a wireless MDS R207, which transmits its ID number as soon as the operator presses the call pushbutton. This signal is received by a network via MOBY R antennas. A spare part administration software program processes this signal and forwards this information to a third system. From here the message can be forwarded to terminals or paging systems. Possible transmission media include Intranet, phone, e-mail, fax, WLAN, etc.

Technical specifications

Mobile data storage unit MDS R207	
Typical reading distance in buildings	100 m
Typical reading distance outdoors	300 m
User-configurable flashing rate	5 s to 1 h
Read cycles	unlimited
Memory size	32-bit fixed code
Barcode	128 bar codes with fixed code No.
Frequency range	2.4 to 2.483 GHz
Power source	2 lithium-thionyl batteries, size "AA"
Typical battery service life	5 years (depending on actions)
Operating temperature range	0 to + 50 °C
Storage temperature range	- 40 to + 60 °C
Relative humidity	0 % to 100 % (with condensation)
Degree of protection	IP54
Housing	
• Color	yellow
• Dimensions (L x W x H) in mm	120 x 75 x 40
Weight	170 g
MTBF (at 20 °C)	300 000 h
Free fall (MIL-STD-810D)	1.2 m
Approvals	• FCC Part 15 Class B • EN 55022 Class B • EN55024 • TÜV GS acc. to EN 60950 • EMC Guideline 89/ 336/ EEC

Selection and Ordering data

		Order No.
Mobile data storage unit MDS R207	F	**6GT2 700-0FH43**
Mobile data storage unit with call key and time display of the time since the last activation		

F: Subject to export regulations AL = N and ECCN = 5A991

Overview

Type	Feature
SLG R21	Standard antenna electronics for 802.3 LAN cabling
SLG R23	Standard antenna electronics for 802.3 LAN cabling, plus 802.11b/g wireless LAN communication via Cisco 1231 access point
Trig R201	Triggers an MDS located in the vicinity of the Trig R201 to start flashing immediately
Antenna selection for SLG R21/R23	
Universal omni-directional antenna set	Universal omni-directional antenna set for mounting outdoors, for all SLGs
Omni-directional antenna set for the office environment	Omni-directional antenna set for mounting indoors, for all SLGs
Flat beam antenna set	Antenna set with a directional field of 180° aperture angle for all SLGs

Application

An SLG is an antenna for real-time locating of mobile data carriers (MDS). The MDS is attached to objects that are to be tracked and located (e.g. cars, containers, trucks)

A trigger is attached to portals and gates that are to be monitored. If an object with an MDS moves through this portal, the object is immediately located.

Design

An SLG consists of the antenna electronics and an external 220 V power supply unit. The power supply unit is included in the scope of delivery. In order to operate an SLG, another antenna set is required, which needs to be ordered separately.

A trigger transmits an electromagnetic field to its immediate environment. To increase the size of the field, several triggers can be set up adjacent to one another. To determine the direction of objects, two triggers can be set up in sequence. The power supply unit for the trigger is not included in the scope of delivery.

Function

Several SLGs are connected to a server over LAN or WLAN. The server calculates by means of triangulation the precise coordinates of an MDS and stores this data in a database. The "visibility server software" (VSS) is required for operating the server. The license for this software is included in the scope of delivery of an SLG. The software CD, however, must be ordered separately.

A trigger causes an MDS that is moved in the proximity of a trigger to send its ID number (to flash). The data is received by the SLG. As the position of the trigger is known to the server, the MDS can be pinpointed. The IDs of the MDS and trigger are stored in the database.

Using the VSS software, the position data of the MDS can be scanned and displayed on the screen. If this function is not sufficient, customized evaluation programs can be generated. To do this, you require the SDK development software. The SDK provides the tools for reading the data from the database.

Some applications require the data of a passing object very quickly. (e.g. to open a barrier or gate). The "XML Publisher" software is available for this purpose. The XML Publisher makes TCP/IP-based messages available to other programs.

SLG R21/R23

Overview

The open MOBY R infrastructure allows very simple expansion of the plant with antennas, data carriers and WLAN devices. MOBY R enables the complete plant infrastructure to be reduced, resulting in enormous savings in cable laying and also increasing plant availability.

The SLG R21/R23 permits real-time locating (RTL) in connection with a low-cost WLAN 802.11b infrastructure. If the SLG R21 is configured as a MOBY R antenna, this permits the real-time locating of MDS flash signals. The configuration of the SLG R23 as a cordless access point enables real-time locating plus an integrated cordless access point in order, for example, to transmit critical information to mobile terminals.

The different antennas provide the customer with very flexible application options.

Function

The antennas receive the data carrier flashing signals with the aid of an advanced digital signal processor. The SLG R21/R23 are capable of locating a large number of MDS over a wide area. The antennas transmit the information to the MOBY R configuring software, where it is graphically displayed and signal lists are generated or messages are issued (Internet, printer, telephone, etc.). The antennas communicate with one another and with the MOBY R configuring software by means of a Standard Ethernet cable (SLG R21/R23) or via 802.11b wireless LAN (SLG R23).

Technical specifications

	SLG R21	SLG R23
Power supply	18 ... 36 V DC	
Power consumption	20 W	25 W
Power supply module	Input 90 … 250 V AC, output 36 V DC / 3 A	
LAN	10 BaseT / 100 BaseTX Ethernet	
Wireless LAN	no	802.11b/g compatible
Access Point (type)	no	Cisco 1242
Diagnostics / configuration interface	RS 232 Sub-D 9-pin, via TCP/IP	
Timing interface	3 connectors for 4-wire CAT 5 cable (each twisted to two wires) or without cable in outdoor applications (depending on the configuration)	
Ambient conditions / physical properties		
Operating temperature range	- 40 ... + 50 °C	
Storage temperature range	- 40 ... + 70 °C	
Degree of protection	IP55 NEMA 3 and NEMA 12	
Enclosure		
• Color	white	
• Dimensions (Lx W x H) in mm	267 x 292 x 76	267 x 292 x 100
Weight	3.6 kg	3.9 kg
Approvals	• FCC Part 15 Class B • EN 55022 Class B • EN 55024 • TÜV GS acc. to EN 60950 • EMC Guideline 89/ 336/ EEC	
Accessories		
Antennas	• Antenna for outdoor or indoor use, omni-directional antenna • Antenna for indoor use, omni-directional antenna • Antenna for outdoor or indoor use, flat antenna, directional field	

Selection and Ordering data

		Order No.
Write/read devices SLG R21 incl. license	F	**6GT2 701-1AA10**
Write/read devices SLG R23 incl. license	F	**6GT2 701-1AF10**
Accessories		
Universal omni-directional antenna set for SLG R21/R23, for indoor and outdoor use	F	**6GT2 701-0AC00**
Omni-directional antenna set for SLG R21/R23, for indoor use only	F	**6GT2 701-0AD00**
Flat panel directional antenna set for SLG R21/R23, for indoor and outdoor use	F	**6GT2 701-0AE00**
Antenna support for SLG R21/R23 on masts	F	**6GT2 790-0AE00**
Extension cable (15 m) for SLG R21/R23 power supply	F	**6GT2 791-0AN15**
CD MOBY R Visibility Server Software		**6GT2 781-1AE00**
CD MOBY R development software (SDK)	G	**6GT2 781-0BE00**
CD MOBY R Trigger XML Publisher	G	**6GT2 781-0CE00**

A: Subject to export regulations AL = N and ECCN = EAR99H
F: Subject to export regulations AL = N and ECCN = 5A991
G: Subject to export regulations AL = N and ECCN = 5D991

TRIG R201

Overview

The field of the TRIG R201 is almost spherical and can be adjusted in steps up to a range of 6 meters. For longer distances, such as very long doors or wider areas, there is the option of connecting as many as three TRIG R201 to achieve full coverage over a wide area.

The MDS trigger TRIG R201 is used for instantaneous triggering the predefined flashing of an MDS R202.

Design

The TRIG R201 is protected against dust and water. Each TRIG R201 comes with an installation kit for flexible adjustment of the position. It can be operated with 24 V AC or 36 V DC.

Function

When an MDS R202 enters the field of a TRIG R201, the MDS activates preprogrammed, typically fast, flashing. More localization points are registered when the object tracking requires it. Such as direction-dependent passing of passages and gates or the transition from one zone into another. When the MDS transmits the flashing sequence activated by the TRIG R201, this contains the MDS ID plus a configurable ID number for the TRIG R201. Up to 32768 different numbers can be set on the TRIG R201.

Technical specifications

Active field	Average up to maximal
• Level 8 (large)	3.7 to 7.6 m
• Level 7	3.0 to 5.8 m
• Level 6	2.4 to 4.3 m
• Level 5	1.8 to 3.4 m
• Level 4	1.2 to 2.4 m
• Level 3	0.9 to 1.8 m
• Level 2	0.6 to 1.2 m
• Level 1 (small)	0.3 to 0.8 m
Power supply	24 V AC or 36 V DC
Power loss, max.	4.2 W
Max. operating current	250 mA
Interface	RS232C
Protocol	8 data bits, 1 stop bit, no parity, 19,2 kbd
Connector	12 pin circular connector
Limit values, field intensity	125 A/m on housing (ANSI/IEEE C 95.1) 51.5 dB µA/m at 10 m (ETSI)
Propagation limit	18.9 µV/m at 300 m (FCC)
Operating temperature	-30 to +60 °C
Storage temperature	-40 to +70 °C
Humidity	0 – 100% (no condensation)
Diameter	22.9 cm
Depth	12.7 cm
Weight	1 kg
Degree of protection	IP65
Enclosure material	Food-standard polyester laminate
Attachment / support options	
Fixing bracket (included)	for ceiling or wall mounting
Official approvals	• FCC Part 15 Class B • EN 55022 Class B • EN55024 • TÜV GS acc. to EN 60950 • EMC Guideline 89/336/EEC

Selection and Ordering data

		Order No.
Write/read device Trig R201	F	**6GT2 704-1AA10**
Accessories		
Power supply unit for 1 to 3 Trig R201s	A	**6GT2 790-0AA00**

A: Subject to export regulations AL = N and ECCN = EAR99H
F: Subject to export regulations AL = N and ECCN = 5A991

STG R mobile handheld terminal

Overview

The STG R handheld terminal is used in order to configure all MDS R200, R202, MDS R207 and TRIG R201 devices. Likewise, it can be used for installing SLG R21, SLG R22 or SLG R23 devices. A simple user interface enables the user to read data or set parameters.

Design

Every STG R handheld terminal comprises an antenna, a PC card, an RJ45 interface, a charging station, an interface cable and software.

Function

An integral bar code scanner allows the fast input of data carrier IDs. The handheld terminal STG R uses a standard computer platform. A MOBY R-specific PC card and antenna are integrated. The distance between the MDS R202 and the STG R is about 30 cm to ensure that only the intended data carriers are programmed. TRIG R201 can be parameterized using the 3 m interface cable supplied. The range to antennas is more than 60 m.

Technical specifications

Screen	Super-twist graphics LCD with backlighting; 128 x 160 pixels
Keyboard	Alphanumeric with 57 keys; 5 function keys; 2 scanner trigger keys
Bar code scanner	Laser diode 650 nm; scan module rotates 180°; scan rate 36 scans/s; Laser Class II
Operating system	ROM-DOS 6.22
Processor	Am486 PC compatible Low Power; 32-bit; 33 MHz
Memory	Flash 2 MB; RAM 8 MB
Interfaces	10-pin RJ45 connector; serial interface COM1; RS232 Radio interface 2.4 GHz for communication with the MOBY R SLG; max. range 300 m
Power supply	Rechargeable NiMH battery pack; rechargeable lithium backup battery
Power consumption	Standby/switched off ~ 2 mA; switched on /no action ~ 50 mA; operating > 80 mA
Operating temperature	-10 to +50 °C
Storage temperature	-20 to +70 °C
Humidity	5 - 95 % (no condensation)
Length	24.8 cm
Width at top (incl. antenna)	11.4 cm
Handle width	7.0 cm
Height	3.7 cm
Weight	584 g
Housing	Polycarbonate/ABS mixed plastic; chemical-resistant
Max. drop onto concrete	1.2 m
Degree of protection	Splash proof
Approvals	• FCC Part 15 Class B • EN 55022 Class B • EN 55024 • TÜV GS acc. to EN 60950 • EMC Guideline 89/ 336/ EEC • CDRH Class II • IEC 60825 Class II

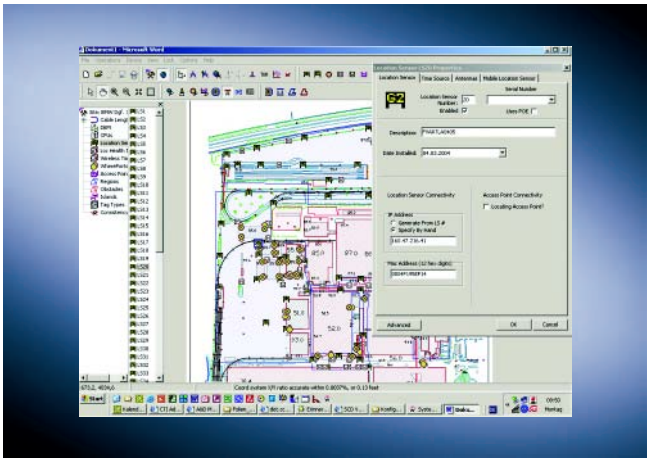
Selection and Ordering data

		Order No.
STG R mobile handheld terminal	F	**6GT2 703-0AA00**

F: Subject to export regulations AL = N and ECCN = 5A991

Configuring instructions

Overview

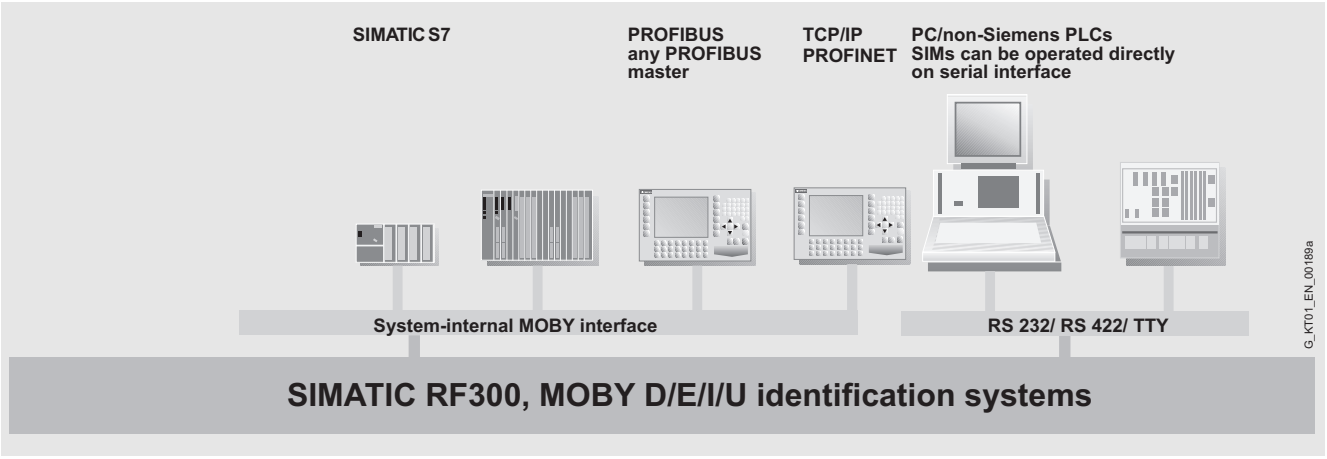


- In general, all MOBY R systems are to be configured by A&D PT or by other specialist personnel authorized by Siemens.
- In the first stage, a technical project consultation is required. This generates a rough configuration for the project budgeting.
- The overall concept of the system design agreed upon with the customer includes the MOBY R components recognizable at this point, as well as their points of installation that are determined with the aid of the configuration tool.
- The quantities determined are used as the basis of the contract.
- The application software required for the convenient use of MOBY R is not included in the scope of delivery.

Type	Feature
Demo	Test setting for demonstration purposes and for verifying the function of MOBY R in the actual functional environment.
System design	Service for generating the system design by MOBY specialist personnel. The result is the basis of the contract for the offer.
System implementation	Service for the commissioning of the MOBY R hardware and software. Involvement in the integration of MOBY R into the customer's IT infrastructure
Training	Training courses for system integrators, system partners and system support engineers comprising both theoretical and practical parts.

Selection and Ordering data

	Order No.
Service	
• MOBY R DEMO Test setting	**6GT2 794-0AC00**
• MOBY R SD System design	**6GT2 794-0AB00**
• MOBY R SI System implementation	**6GT2 794-0AB01**
MOBY R training	**6GT2 794-0AD00**



There are various powerful communication modules (ASM) for integrating MOBY identification systems in SIMATIC, SINUMERIK, SIMOTION, PROFIBUS and PROFINET.

Selection aid for communication modules and software

System	ASM without file handler	RFID system	Available software
SIMATIC S7-300 (direct), S7-300/400, PC with SIMATIC WinAC via ET 200M, SINUMERIK 840D/810D	ASM 475	RF300, E, I, U, D	FC/FB45; FC55 (multitag)
	ASM 470	E, I	FC47
Serial link [1], to PCs, PLCs, any other systems	Direct via SLG Dx,	D	MOBY D MDWAPI, MOBY API, C library incl. drivers for Windows 98/NT/2000/XP
	Direct via SIM x	I	
	Direct via SIM 7x	E	
	Direct via SLG U92	U	
	Direct via RF3xxR (RS422)	RF300	
	ASM 424	I, E	MOBY API, C library incl. drivers for Windows 98/NT/2000/XP
	ASM 724	E (SLA7x only)	
PROFIBUS DP [1] (SIMATIC S7; PC, any other systems)	ASM 450	E, I	FC44 for S7-300/400, PC with SIMATIC WinAC
SIMATIC S7-300/-400, PC with SIMATIC WinAC, via ET 200pro	RF170C	RF300, I, E, U, D	FC/FB45; FC55 (multitag)
PROFIBUS DP-V1 [1] (SIMATIC S7; PC, any systems)	ASM 456	RF300, I, E, U, D	FC/FB45 for S7-300/400, PC with SIMATIC WinAC, FC55 (multitag, ASM 456), FB101/116/132 (ASM 456 only)
	ASM 754	E (SLA7x only)	
PROFINET IO	RF180C	RF300, I, E, U, D	FB45

System	ASM with file handler	MOBY system	Available software
SIMATIC S7; PC, any system, SIMOTION SCOUT	ASM 456	I, U	FC56/FB101/116/132
SIMATIC S7-300 (direct), SIMATIC S7-300/400, via ET 200M	ASM 475	I, U	FC56
SIMATIC S7-300/400, PC with SIMATIC WinAC, via ET 200pro	RF170C	I, U	FC56

[1] The programming interface is described for connecting to any system.

Introduction

Function

Corresponding software blocks (FB, FC, libraries) ensure simple and quick integration into the application.

As many as four write/read devices can be connected in series to one ASM communication module (depending on the type of ASM), with a maximum connecting cable length of 1000 m (depending on the ASM, SLG, etc.). Corresponding procedures guarantee a very high reliability of data transmission.

The following options exist for the serial connection of MOBY to any system (PC, PLC, etc.):

- Via a communication module to which the write/read devices (SLG) or write/read antenna (SLA) are connected.
- Direct via a write/read device with a serial interface (SIM or SLG Ux, SLG Dx)

Notes on software and licensing:

When purchasing a communication module or SIM x/SLG x, no software or documentation is supplied. The CD "RFID systems Software & Documentation" contains all the available FBs/FCs for SIMATIC, C libraries for Windows 95/98/NT/2000/XP, demo programs, etc. and is to be ordered separately.
In addition, the CD contains the complete RFID documentation (German and English) in PDF format.

The purchase of a communication module or SIM/SLG includes a payment for the use of the software, including documentation, on the CD "RFID Systems Software & Documentation" and the purchaser acquires the right to make copies (copy license) insofar as they are required as part of the project for the plant.

The contract pertaining to the use of software products against a one-off payment shall apply.

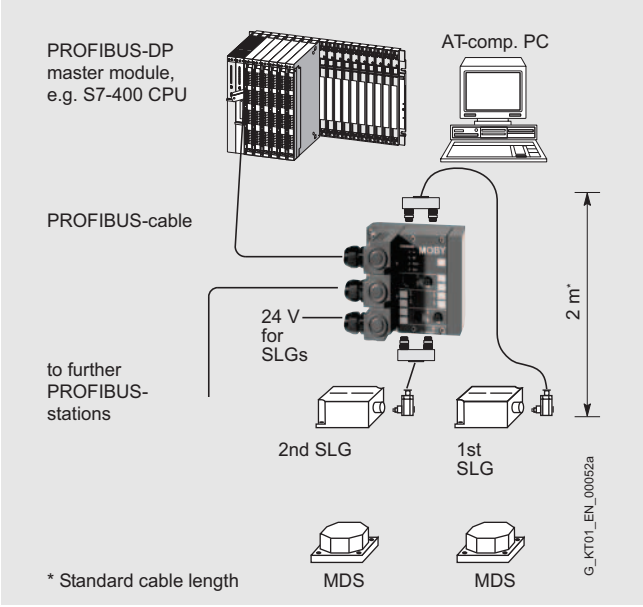
Overview

The low-cost communications module ASM 450 is an autonomous PROFIBUS DP slave for the operation of MOBY components via the PROFIBUS DP:

- SIMATIC S7 (including FB/FC software)
- SINUMERIK
- SICOMP IMC, PC, PLC

Thanks to their high degree of protection and ruggedness, they are particularly suitable for machine-level use.

Design



Configuration

The ASM communications modules are mounted on the ET 200X standard module. The relevant configuration and mounting instructions should be referred to in the ET 200X manual. Expansion modules from the ET 200X spectrum cannot be used.

Function

The PROFIBUS DP procedure according to EN 50170 Vol. 2 PROFIBUS for the communication between ASM and SIMATIC S5/S7 (or any PROFIBUS master) and the MOBY-specific procedures for communication between ASM and SLG are implemented on the ASMs.

The data in the MDS is accessed as follows:

- Direct addressing via absolute addresses

On the PROFIBUS DP, the ASM occupies a node address on the bus that is set on the basic module. The ASM is integrated into the hardware configuration by means of a device master (GSD) file. Then the ASM can be configured by means of the software tool HW_Config of the SIMATIC Manager or another PROFIBUS tool.

Error messages and operating states (MDS in the field, transmission, etc.) are indicated additionally by means of LEDs and simplify commissioning and service.

For the connection to any PROFIBUS DP master, the software interface is disclosed in the documentation.

The **IP67 connectors (Order No. 6ES7194-1AA01-0XA0)** are to be ordered separately!

ASM 450 (for MOBY E/I)

The ASM 450 has two SLG interfaces. When using two SLG interfaces, the module operates in multiplex mode so that the MDS can only be read reliably when it is not moving. The data in the MDS is accessed direct by means of absolute addresses.

Using the software functions FC44 for the SIMATIC S7, the ASM operates in cyclic mode, i.e. the data throughput depends among other things on the size of the address window (max. 208 bytes), number of slaves, etc.

ASM 450

Technical specifications

Communication modules	ASM 450
Serial interface to user	PROFIBUS DP
Procedure conforms to:	EN 50170 Vol. 2 PROFIBUS
Connection to PROFIBUS	PG 11 gland (3 x 6ES7194-1AA01-0XA0, not included in scope of delivery)
Data transmission rate	9.6 Kbaud to 12 Mbaud (automatic detection)
Max. block length	208 byte
Serial interface to SLG	Connector
Max. cable length	500 m, SLG-dependent, (standard length 2 m)
Connectable SLGs	SLG 7x or SLG 4x in multiplex mode
Data transmission rate	19.2 Kbaud to 57.6 Kbaud (depending on the MOBY family)
Software function	
Programming	Depending on the PROFIBUS DP Master
Function blocks	
SIMATIC S7	FC44
MDS addressing	Direct via addresses
Commands	Initialize MDS, read data, write data, etc.
Digital inputs/outputs	2/2
Galvanic isolation	Yes
Power supply	
Permissible range	20 … 30 V DC (rated value 24 V DC)
Current consumption	Max. 180 mA; typ. 130 mA (without SLG)
Ambient temperature	
During operation	0 °C … +55 °C
During transportation and storage	-40 °C … +70 °C
Degree of protection	IP67
Dimensions (W x H x D) in mm	134 x 110 x 55 (without bus connector)
Weight, approx.	0.5 kg

Selection and Ordering data

		Order No.
ASM 450 communication module Max. 2 SLGs can be connected in multiplex mode, without connectors		**6GT2 002-0EB00**
Accessories		
Connector For ASM 450 for the PROFIBUS DP interface and 24 V supply, 3 units per ASM 450 are necessary		**6ES7194-1AA01-0XA0**
Integrated plug connector for ASM 450; T functionality; spare part		**6ES7 194-1FC00-0XA0**
MOBY M12 dual-pin connector for ASM 450 For mounting individual ASM SLG, without cable		**6GT2 090-0BC00**
MOBY E, I, U connecting cable Preassembled, between ASM 450 and SLG, angled connector, in the following lengths:		
• 2 m (preferred length)		**6GT2 091-1CH20**
• 5 m	A	**6GT2 091-1CH50**
• 10 m	A	**6GT2 091-1CN10**
• 20 m	A	**6GT2 091-1CN20**
• 50 m		**6GT2 091-1CN50**
Preassembled, between ASM 450 and SLG, angled connector 2 m long	A	**6GT2 091-2CH20**
CD "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C-libraries, PC presentation program, RFID documentation		**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H

Overview

The cost-effective ASM 456 communication module is a stand-alone PROFIBUS DP slave used to operate the RFID systems MOBY D/E/I/U and SIMATIC RF300 over PROFIBUS DP/DP-V1:

- SIMATIC S7 (including FB/FC software)
- SINUMERIK
- SICOMP IMC, PC, PLC
- SIMOTION (with integrated software library)

Thanks to their high degree of protection and ruggedness, they are particularly suitable for machine-level use. The modular structure with different PROFIBUS connection systems allows them to be used in all applications. The system-wide, plug-in connection technique ensures rapid start-up.

Benefits

- Two parallel MOBY channels ensure real-time mode at dynamic read points.
- Modular design with different bus interfacing possibilities ensures universal implementation.
- SLG connection using an 8-pin M12 connector for quick mounting of all components.
- Easy changeover from ASM 452 to ASM 456 thanks to 100% software compatibility.
- High-performance hardware ensures fast data exchange with the SLG (reader). Consequently the data are available for the application even faster.
- Easy downloading of firmware via SIMATIC Manager for function expansions and error rectification ensure high-availability of the RFID system.
- The parameterizable MOBY-specific PROFIBUS diagnostics facilitate start-up and troubleshooting.
- A wide selection of pre-assembled PROFIBUS connecting cables can be ordered for ASM 456. This saves time and money during installation and assures better quality.

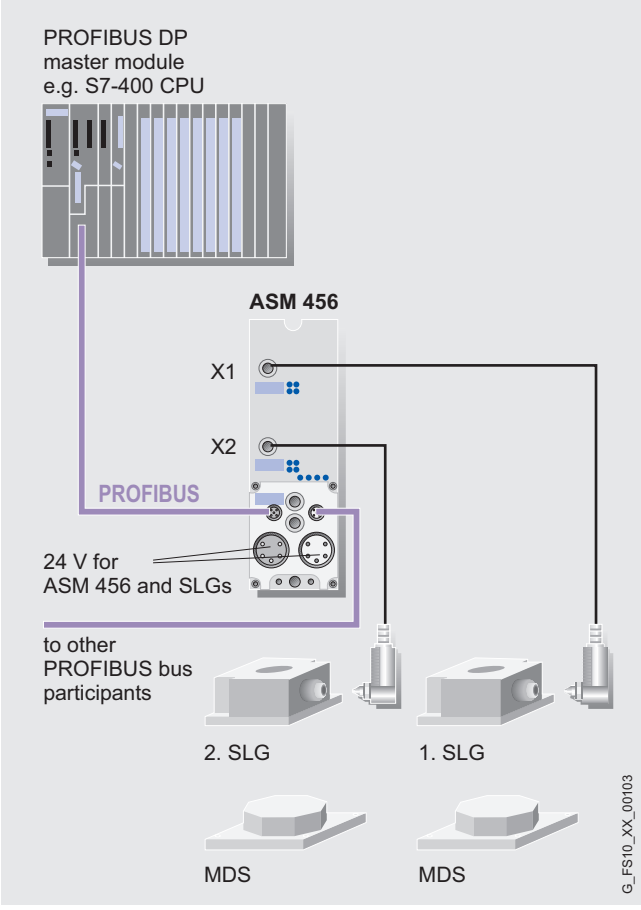
Application

The ASM 456 communication module has been specially designed for a wide range of applications in industrial automation and logistics. Thanks to the high degree of protection of IP67, the ASM 456 can be installed in the process without a control cabinet.

Used primarily for the ASM 456:

- Mechanical engineering, automation systems, conveyor systems
- Ancillary assembly lines in the automobile industry/suppliers
- Small assembly lines
- Production, packaging, textile, plastics and printing machines SIMOTION

Design



ASM 456

Function

The ASM 456 comprises a basic module and a connection block that must be ordered separately. When connecting PROFIBUS, the customer can choose between ECOFAST connections and M12, 7/8" connections.

One or two read/write devices are connected to the ASM with a read/write device cable pre-assembled and ready to use. The standard length of the cable is 2 m. If other cable lengths to the SLG are required, an extension cable measuring between 2 m and 50 m can be used. The cable can also be assembled by the customer as required.

The PROFIBUS DP procedure according to EN 50170 Vol. 2 PROFIBUS for the communication between ASM and SIMATIC S5/S7 (or any PROFIBUS master) and the MOBY-specific procedures for communication between ASM and SLG are implemented on the ASMs.

In principle, access to the data in the MDS can take place as follows:

- Direct addressing via absolute addresses
- Conveniently via the MOBY file handler (MOBY I/U only) using file names

On the PROFIBUS DP/DP-V1, the ASM occupies a node address on the bus that is set on the connection block. The ASM is integrated into the hardware configuration by means of a device master (GSD) file. Then the ASM can be configured by means of the software tool HW_Config of the SIMATIC Manager or another PROFIBUS tool.

Error messages and operating states (MDS in the field, transmission, etc.) are indicated additionally by means of LEDs and simplify commissioning and service.

The ASM 456 has two SLG interfaces. The data in the MDS can be directly accessed by means of absolute addresses (FB/FC45, FC55) or more conveniently using the MOBY file handler (FC 56) by means of the file names. The ASM is operated in non-cyclic mode over PROFIBUS DP V1. Consequently, a very large amount of data can be transferred to/from the ASM without overloading the PROFIBUS cycle. This has advantages when transferring large volumes of data. In addition, the ASM can process concatenated MDS commands very quickly in this mode.

Function blocks FB101/116/132 in the SIMATIC S7 are available for the "RFID standard profile" mode. The data in the MDS can be addressed either via absolute addresses or via the file handler. This mode additionally integrates the communication module in SIMOTION.

Technical specifications

Communication module	ASM 456
Ambient temperature	
• During operation	• 0 to 55 °C temperature change 10 K/h, all mounting positions • Or -25 to 60 °C
• Storage	-40 to +70 °C 20 K/h
Relative humidity	
• During operation	15 up to max. 95%, no condensation
• Storage	5 up to max. 95%, no condensation
Atmospheric pressure	
• During operation	1080 to 795 hPa (corresponds to altitude of -1000 to 2000 m)
• Storage	1080 to 660 hPa (corresponds to altitude of -1000 to 3500 m)
Contaminant concentration	SO_2: < 0.5 ppm (rel. humidity < 60%, no condensation) H_2S: < 0.1 ppm (rel. humidity < 60%, no condensation)
Power supply	Rated value: 24 V DC Permissible range: 20 V to 30 V DC
Current consumption	• Max. 200 mA without write/read device • Typ. 80 mA without write/read device • Max. 800 mA with two write/read devices
Degree of protection	IP67
Housing color	IP Basic 714
Dimensions (W x H x D) in mm	
• ASM 456 only	60 x 210 x 30
• ASM 456 with ECOFAST connection block	60 x 210 x 60
Weight (without connection block)	Approx. 210 g
Fixing	2 screws M5 x 20 mm
PROFIBUS	EN 50170
• Transmission rate	9.6 kbit/s … 12 Mbit/s
• Protocol	DP-V1
Serial SLG interface (gross transmission rate)	• MOBY I/E: 19200 bit/s • MOBY U/D: 19200, 38400, 57600, 115200 bit/s • SIMATIC RF300: 19200, 57600, 115200 bit/s
Cable length to write/read device	
• Standard length	2 m
• Optional preassembled cable	5 m, 10 m, 20 m, 50 m
• Cable for self-assembly	Depending on write/read device, up to 1000 m
Supply voltage to write/read device	24 V / up to 0.3 A per write/read device

Selection and Ordering data

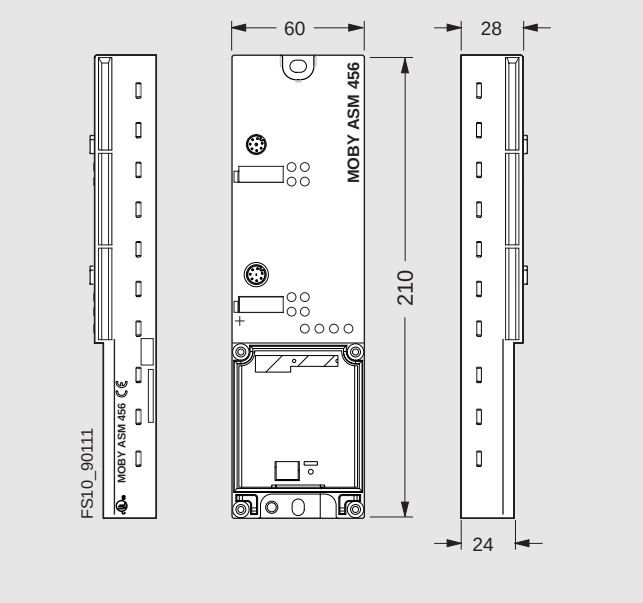
		Order No.
ASM 456 communications module	A	**6GT2002-0ED00**
For connection of 2 write/read devices		
Accessories for ECOFAST connection		
ECOFAST connection block	A	**6ES7194-3AA00-0AA0**
PROFIBUS ECOFAST HYBRID plug 180		
• With male insert (5 per pack)		**6GK1 905-0CA00**
• With socket insert (5 per pack)		**6GK1 905-0CB00**
PROFIBUS ECOFAST termination plug with terminating resistors		**6GK1 905-0DA10**
ECOFAST hybrid cable (pre-assembled)		**6XV1 830-7Bxxx**[1]
ECOFAST hybrid cable (non-assembled)		**6XV1 830-7AH10**
Accessories M12, 7/8" connection		
M12, 7/8" connection block	A	**6ES7194-3AA00-0BA0**
M12 terminating resistor for PROFIBUS (5 per pack)		**6GK1 905-0EC00**
PROFIBUS cable with pre-assembled M12 connectors		**6XV1 830-3Dxxx**[1]
Cable for supply voltage with pre-assembled 7/8" connectors		**6XV1 822-5Bxxx**[1]
PROFIBUS FC standard cable non-assembled		**6XV1 830-0EH10**
PROFIBUS M12 connecting plug (5 per pack)		
• With pin insert		**6GK1 905-0EA00**
• With socket insert		**6GK1 905-0EB00**
Connecting plug 7/8" for voltage (5 per pack)		
• With pin insert		**6GK1 905-0FA00**
• With socket insert		**6GK1 905-0FB00**
Sealing caps 7/8“ for unused 24 V outlets (1 pack = 10 items)		**6ES7 194-3JA00-0AA0**

		Order No.
Accessories MOBY		
SLG cable for MOBY I/E/U; 2 m	A	**6GT2091-0FH20**
SLG cable for MOBY I/E/U; 5 m	A	**6GT2091-0FH50**
SLG cable for MOBY D; 2 m	A	**6GT2691-0FH20**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 2 m	A	**6GT2891-0FH20**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 5 m	A	**6GT2891-0FH50**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 10 m	A	**6GT2891-0FN10**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 20 m	A	**6GT2891-0FN20**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 50 m	A	**6GT2891-0FN50**
M12 sealing caps, for unused reader connections (10 items)		**3RX9 802-0AA00**

[1] This cable is available in different lengths (see length codes in appendix, page 6/3).

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



SIMATIC RF180C

Overview

The SIMATIC RF180C is a communication module for direct connection of Siemens RFID systems to PROFINET IO. The readers (SLGs) of the RFID systems MOBY D, U and RF300 can be operated on SIMATIC RF180C.

Due to the high degree of protection and its ruggedness, SIMATIC RF180C is ideally suited to use at machine level. The uniform plug-in connection system ensures rapid commissioning.

Benefits

- Two parallel MOBY channels ensure real-time operation of the dynamic read points
- Reader connection with an 8-pole M12 connector for rapid assembly of all components
- Easy changeover from PROFIBUS applications to PROFINET with SIMATIC RF180C thanks to software compatibility
- The integrated switch allows several PROFINET modules to be installed in star or bus topology. Each application can then be built up quickly and inexpensively
- Powerful hardware ensures rapid data communication with the reader (SLG). So that the data are available to the application more quickly
- Simple firmware downloading in the case of function expansions and error rectification ensures high availability of the RFID system
- Adjustable and parameterizable RFID-specific diagnostics facilitate commissioning and troubleshooting
- A broad selection of pre-assembled connecting cables can be ordered for connecting PROFINET and readers to SIMATIC RF180C. This saves time and money during installation and increases the quality
- The hardware configuration with a base unit and connection block ensures that SIMATIC RF180C is prepared for other connection techniques, such as fiber-optic cables

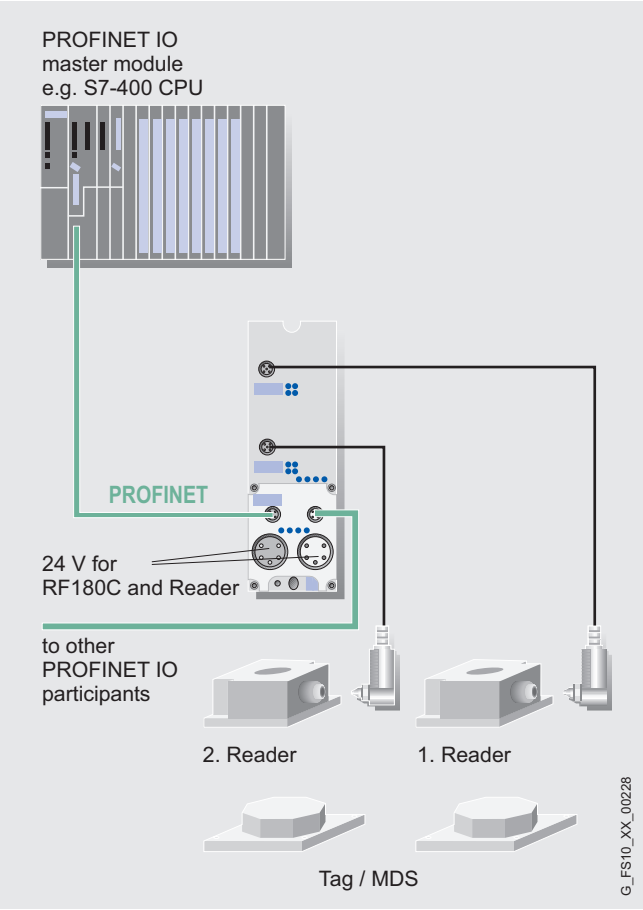
Application

The PROFINET communication module SIMATIC RF180C has been specially designed for a wide range of applications in industrial automation and logistics. Due to the high degree of protection IP67, SIMATIC RF180C can be installed in the process outside the control cabinet.

Main applications for SIMATIC RF180C:

- Machine manufacturing, automation systems, conveyor systems
- Ancillary assembly lines in the automotive industry / suppliers
- Small assembly lines

Design



Function

The SIMATIC RF180C comprises a basic module and a connection block that must be ordered separately.

The connection block is available in the version M12, 7/8". PROFINET is connected through an M12 plug, whereas the supply voltage is connected through a 7/8" plug. There are 2 connections for PROFINET as well as for the power supply. This ensures that SIMATIC RF180C can be connected to additional bus stations without the need for external distribution devices. The removable connection block allows a base module to be replaced without interrupting the supply voltage to other bus stations.

SIMATIC RF180C is integrated in SIMATIC STEP 7 via the GSDML file. SIMATIC RF180C can then be configured via the SW tool HW_Config of SIMATIC Manager or another PROFINET tool.

A pre-assembled reader cable is used to connect one or two readers to the communication module. The standard cable length is 2 m. If other reader cable lengths are required, an extension cable from 2 to 50 m in length can be used. The cable can also be assembled by the customer as required.

The data in the transponder can be accessed in the following manner: Direct addressing via absolute addresses

Error messages and operating states (tag in field, transfer, etc.) are also displayed on LEDs and support commissioning and service.

SIMATIC RF180C has two reader interfaces from which the readers are also supplied with voltage. There is a solid-state fuse in SIMATIC RF180C for the reader power supply. The maximum current permitted for the readers per SIMATIC RF180C is 1 A. It is not important here whether the current is drawn by 1 or 2 readers.

The application accesses the tag via FB45. FB45 accesses the tag via absolute addresses. For large volumes of data and complex tag operations, the FB45 can process chained commands.

Data is exchanged between SIMATIC RF180C and the application by means of acyclic data records. This ensures that a large quantity of data can be transferred from/to SIMATIC RF180C without loading the bus cycle. This is advantageous when large volumes of data are being transferred. SIMATIC RF180C can also process chained tag commands in this mode extremely quickly.

Technical specifications

Type	SIMATIC RF180C
Supply voltage	
• Rated value	24 V DC
• Permissible range	20 … 30 V DC
Current consumption	
• Without reader, typ.	100 mA
• With two readers, max.	1000 mA
Serial reader interface (gross transmission rate)	
• MOBY I/E	19200 bit/s
• MOBY U/D, RF300	19200, 57600, 115200 bit/s
Cable connector	2 x connector plug M12, 8-pin
Cable lengths to the reader	
• Standard lengths	2 m
• Optional pre-assembled cable	5 m, 10 m, 20 m, 50 m
Self-assembled cable	Reader/SLG-dependent. Up to 1000 m
Supply voltage to the reader	24 V
Max. current per reader	
• 2 readers connected	0.5 A
• 1 reader connected	1.0 A
Ambient temperature	
• During operation	-0 ... 60 °C
• During storage	-40 ... +70 °C, 20 K/h
Shock load during operation acc. to IEC 61131-2	30 *g*
Vibratory load during operation acc. to IEC 61131-2	0.75 mm (10 Hz to 58 Hz) 10 *g* (58 Hz to 150 Hz)
Housing	
• Material	Thermoplastic (fiberglass reinforced)
• Color	IP Basic 714
• Degree of protection	IP67
Dimensions (W x H x D) in mm	
• SIMATIC RF180C without connection block	60 x 210 x 30
• SIMATIC RF180C with connection block	60 x 210 x 54
Weight	
• Base module only	210 g
• Connection block only	230 g

SIMATIC RF180C

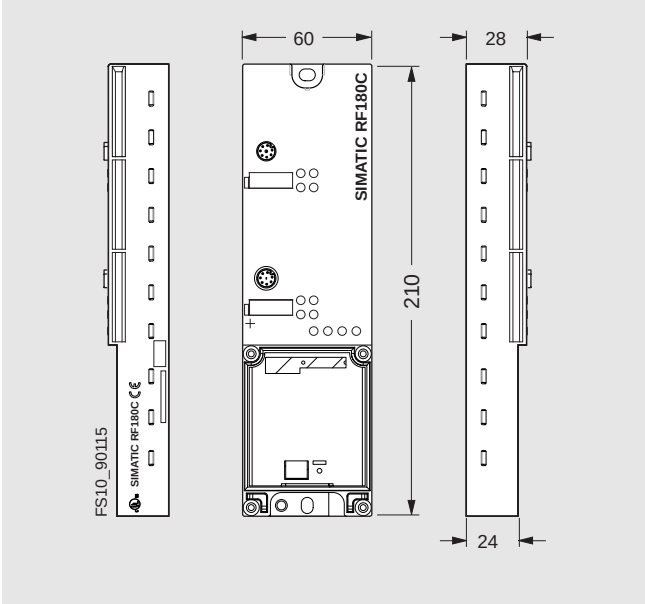
Selection and Ordering data

		Order No.
SIMATIC RF180C communication module	A	**6GT2 002-0JD00**
For PROFINET, for connecting 2 readers; without a connection block		
Accessories for MOBY		
Connection block for SIMATIC RF180C for connecting 2 readers over an M12 cable connector	A	**6GT2 002-1JD00**
SLG cable for MOBY I/E/U; 2 m	A	**6GT2 091-0FH20**
SLG cable for MOBY I/E/U; 5 m	A	**6GT2 091-0FH50**
SLG cable for MOBY D; 2 m	A	**6GT2 691-0FH20**
SLG cable for RF300 Extension cable for MOBY I/E/U/D/RF300; 2 m	A	**6GT2 891-0FH20**
SLG cable for RF300 Extension cable for MOBY I/E/U/D/RF300; 5 m	A	**6GT2 891-0FH50**
SLG cable for RF300 Extension cable for MOBY I/E/U/D/RF300; 10 m	A	**6GT2 891-0FN10**
SLG cable for RF300 Extension cable for MOBY I/E/U/D/RF300; 20 m	A	**6GT2 891-0FN20**
SLG cable for RF300 Extension cable for MOBY I/E/U/D/RF300; 50 m	A	**6GT2 891-0FN50**
M12 sealing caps for unused reader connections (10 units)		**3RX9 802-0AA00**
Accessories for connection to the network		
PROFINET cable with M12 plugs, pre-assembled; for trailing		**6XV1 870-8Axxx**[1]
Cable for supply voltage pre-assembled with 7/8" plugs		**6XV1 822-5Bxxx**[1]
PROFINET standard cable 2x2, Type A, not pre-assembled; minimum order quantity 20 m		**6XV1840-2AH10**
PROFINET M12 plug connector; rugged metal housing; fast connect system; D-coded (pack of 1)		**6GK1901-0DB10-6AA0**
7/8" cable connector for voltage (pack of 5)		
• With male insert		**6GK1 905-0FA00**
• With female insert		**6GK1 905-0FB00**
IE M12 cabinet bushing for conversion from M12 (D-coded) to RJ45; (pack of 5)	A	**6GK1901-0DM20-2AA5**
IE FC RJ45 PLUG 180 RJ45 plug connector with rugged metal housing and FC connection system; straight cable outlet (pack of 1)		**6GK1901-1BB10-2AA0**

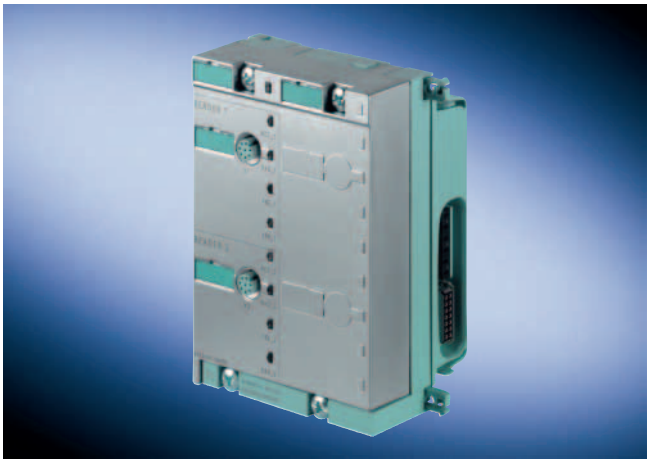
[1] This cable is available in different lengths (see length codes in appendix, page 6/3).

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



Overview



The SIMATIC RF170C is a communication module for connecting the Siemens RFID systems to the ET 200pro distributed I/O system. The readers (SLGs) of all RFID systems can be operated on the SIMATIC RF170C.

Thanks to its high degree of protection and ruggedness, ET 200pro is particularly suitable for machine-level use. The modular structure with PROFIBUS and PROFINET connection systems allows them to be used in all applications. The system-wide, plug-in connection technique ensures rapid start-up.

Benefits

- Two parallel MOBY channels ensure real-time mode at dynamic read points.
- By selecting the relevant header module, the RFID systems can be connected via PROFIBUS or PROFINET.
- The modular design with interface modules for PROFIBUS and PROFINET supports universal implementation.
- Reader connection using an 8-pin M12 connector for fast installation of all components.
- Easy changeover from ET 200X with ASM 473 to ET 200pro with SIMATIC RF170C thanks to 100% software compatibility.
- High-performance hardware ensures fast data exchange with the SLG (reader). Consequently the data are available for the application even faster.
- Easy downloading of firmware via SIMATIC Manager for function expansions and error rectification ensure high-availability of the RFID system.
- The parameterizable RFID-specific diagnostics support start-up and troubleshooting
- A wide selection of pre-assembled connecting cables can be ordered for ET 200pro and SIMATIC RF170C. This saves time and money during installation and assures better quality.

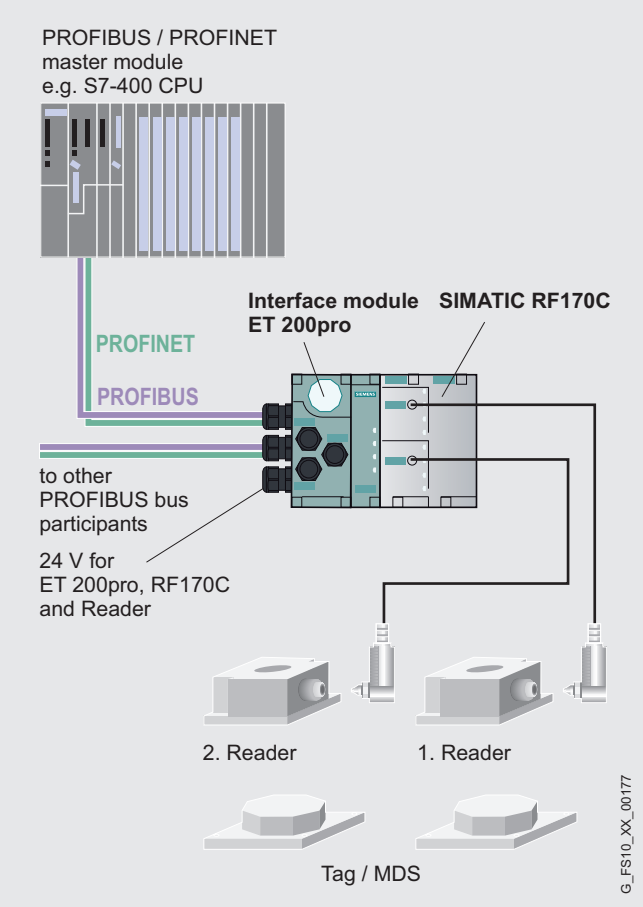
Application

The ET 200pro distributed I/O system with the SIMATIC RF170C communication module has been specially designed for a wide range of applications in industrial automation and logistics. Thanks to the high degree of protection of IP67, the SIMATIC RF170C can be installed without a control cabinet.

Used primarily for the SIMATIC RF170C:

- Mechanical engineering, automation systems, conveyor systems
- Ancillary assembly lines in the automobile industry/suppliers
- Small assembly lines

Design



Function

The SIMATIC RF170C comprises an electronics module and a connection block that must be ordered separately. The interface module is available in the PROFIBUS or PROFINET variants. For the PROFIBUS connection, you can choose from the connection systems of ECOFAST, M12, 7/8", or screwed cable gland. For the PROFINET interface module, M12, 7/8" connection is available.

Integration of SIMATIC RF170C into SIMATIC STEP 7 is achieved by means of an object manager (OM). The GSD file of the ET 200pro system is available for integration into non-Siemens systems. Then the SIMATIC RF170C can be configured by means of the software tool HW_Config of the SIMATIC Manager or another PROFIBUS/PROFINET tool.

One or two readers are connected to the interface module using an off-the-shelf reader cable. The standard length of the cable is 2 m. If other cable lengths to the reader are required, an extension cable measuring between 2 m and 50 m can be used. The cable can also be assembled by the customer as required.

In principle, access to the data in the transponder can take place as follows.

- Direct addressing via absolute addresses
- Conveniently via the MOBY file handler (MOBY I/U only) using file names

Error messages and operating states (tag in the field, transmission, etc.) are indicated additionally by means of LEDs and simplify commissioning and service.

SIMATIC RF170C

The SIMATIC RF170C has two reader interfaces from which the readers are also supplied with power. In the SIMATIC RF170C, the power supply for the readers has an electronic fuse.
The maximum permissible current per SIMATIC RF170C for the readers is 0.8 A. It is of no importance here whether the current is drawn by one or two readers.

The data in the MDS can be directly accessed by means of absolute addresses (FB/FC45, FC55) or more conveniently using the MOBY file handler (FB, FC 56) by means of the file names. When the ET 200pro is operated with a PROFINET interface, use of the FB (FB45, FB56) is mandatory.

Communication between the SIMATIC RF170C and the controller is acyclic. Consequently, a very large amount of data can be transferred to/from the SIMATIC RF170C without overloading the bus cycle. This has advantages when transferring large volumes of data. In addition, the SIMATIC RF170C can process concatenated tag commands very quickly in this mode.

Technical specifications

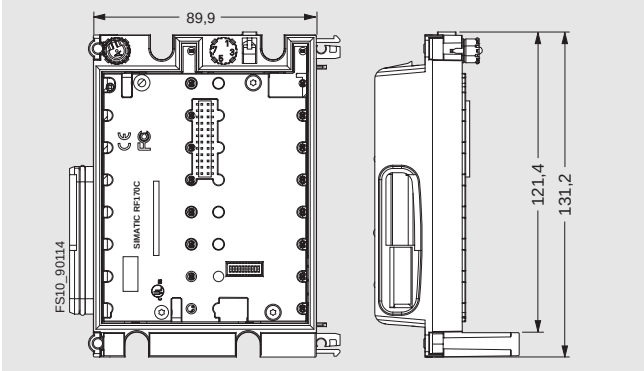
Communication module	SIMATIC RF170C
Ambient temperature	
• During operation	-25 … +55 °C
• During storage	-40 … +70 °C 20 K/h
Relative humidity	5 to max. 100%
Atmospheric pressure	795 … 1080 hPa
Resistance to shock	as for ET 200pro
Vibration	as for ET 200pro
Power supply	
• Nominal value	24 V DC
• Permitted range	20.4 V … 28.8 V DC
Current consumption	
• Without reader	typ. 130 mA
• With 2 readers	Max. 1000 mA
Enclosure	
• Degree of protection	IP67
• Enclosure material	Thermoplastic (reinforced with glass fiber)
• Housing color	IP Basic 714
Dimensions (W x H x D) in mm	
• SIMATIC RF170C without connection block	90 x 130 x 35
• SIMATIC RF170C with connection block	90 x 130 x 60
Weight	
• Without connection block	approx. 270 g
• With connection block	approx. 770 g
Serial reader interface (gross transmission rate)	MOBY I/E: 19200 baud MOBY U/D, RF300: 19200, 57600, 115200 baud
Connectors	2 x M12 coupler plug, 8-pole
Cable length to reader	
• Standard length	2 m
• Optional preassembled cables	5 m, 10 m, 20 m, 50 m
• Cable for self-assembly	According to write/read device. Up to 1000 m
Supply voltage to reader	24 V
Max. current; 2 readers connected	0.4 A per reader
Max. current; 1 readers connected	0.8 A per reader

Selection and Ordering data

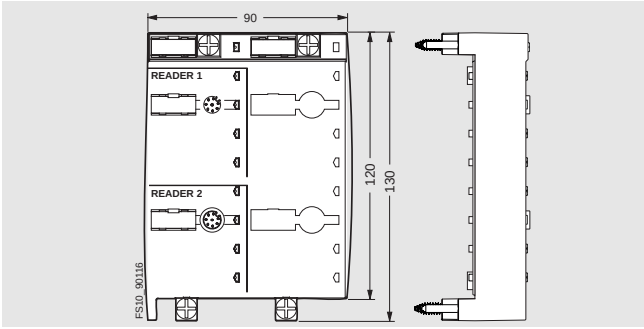
		Order No.
SIMATIC RF170C communications module For connecting to the distributed I/O system ET 200pro	A	**6GT2 002-0HD00**
Accessories		
Connection block for SIMATIC RF170C, for connection of 2 readers using M12 connectors	A	**6GT2 002-1HD00**
SLG cable for MOBY I/E/U; 2 m	A	**6GT2 091-0FH20**
SLG cable for MOBY I/E/U; 5 m	A	**6GT2 091-0FH50**
SLG cable for MOBY D; 2 m	A	**6GT2 691-0FH20**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 2 m	A	**6GT2891-0FH20**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 5 m	A	**6GT2891-0FH50**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 10 m	A	**6GT2891-0FN10**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 20 m	A	**6GT2891-0FN20**
SLG cable RF300 extension cable MOBY I/E/U/D and SIMATIC RF300; 50 m	A	**6GT2891-0FN50**
M12 sealing caps, for unused reader connections (10 units)		**3RX9 802-0AA00**

A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions



SIMATIC RF170C communication module



Connector block for SIMATIC RF170C

Overview

The ASM 470 and 475 are low-cost modules for connecting the MOBY D, E, I, U and RF300 identification systems to the S7-300 and ET 200M.

Application

The ASM 470 and ASM 475 communications modules integrate the MOBY identification systems into the following systems:

- SIMATIC S7-300
- S7-400, PC (CP5412 (A2)) via ET 200M
- SINUMERIK 840D/810D

A maximum of two SLGs can be connected and operated in parallel mode (ASM 470 only in multiplex mode).

Function

As many as eight ASM communication modules can be plugged into one SIMATIC S7-300 rack and operated. In a configuration with several racks (max. 4), the ASMs can be plugged into and operated on any rack. This means that as many as 32 ASMs can be operated in the maximum configuration of a SIMATIC S7-300. The electrical isolation between SLG and SIMATIC S7-300 bus ensures a noise-resistant setup.

Error messages and operating states (MDS in field, command active etc.) are indicated using LEDs.

Communication between the ASM 475 and S7-CPU takes place by means of acyclic message frames of the P-bus, so that the useful data (max. 238 byte) is transmitted very quickly and effectively. The ASM 475 is fully integrated into the diagnostics of the SIMATIC Manager by means of an Object Manager (OM). Depending on the PROFIBUS master, as many as 126 ET 200M modules can be operated on one PROFIBUS line.

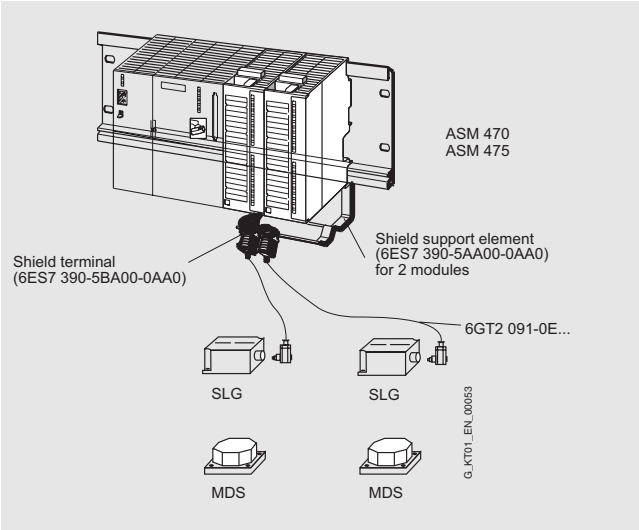
ASM 470 (for MOBY I/E)

The data in the MDS is accessed direct by means of physical addresses using the ASM 470. Communication with the ASM takes place in the process image in blocks of 12 byte and is slower than with the ASM 475. Via ET 200M, it can be operated on any non-Siemens PROFIBUS master.

ASM 475 (for MOBY I/E/U/D/RF300)

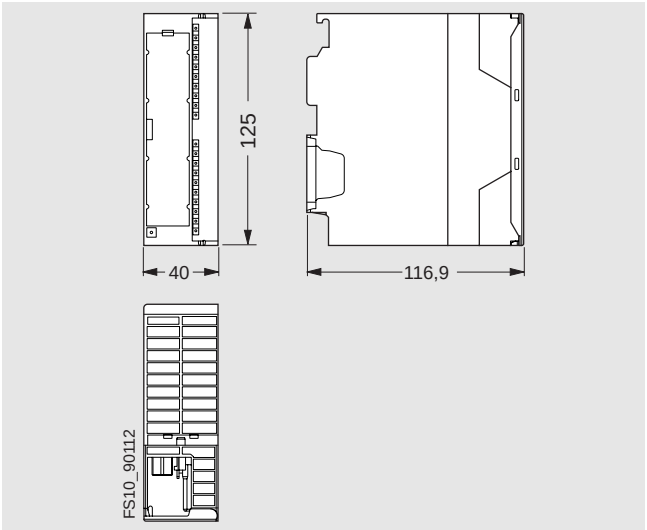
The data in the MDS is accessed direct by means of physical addresses using the ASM 475. The data is transferred between FC/FB45, FC55 and ASM at great speed and without placing a great load on the CPU. In the MOBY I/U mode, the ASM can also be operated with the FC56 (file handler).

Design



Configuration

Dimensions



Communication module ASM 475

Technical specifications and Selection and Ordering data: See next page.

ASM 470/475

Technical specifications

Communication modules	ASM 470	ASM 475	ASM 475 (with MOBY I/U file handler)
Serial interface to SLG	RS422		
SLG connection point	Max. 2 pieces via screw terminals in front connector		
Interface/cable length, max. connectable length	RS422/1000 m, depending on SLG and cable type		
Connectable SLGs	MOBY I/E (multiplex mode)	MOBY I/E/U/D/RF300	MOBY I/U
Interface for 24 V DC	Via screw terminals in front connector		
Function blocks			
SIMATIC S7	FC47	FC/FB45, FC55 (multitag)	FC56
MDS addressing	Direct access via addresses		Access via DOS-like file system
Commands	Initialize MDS, read data from MDS, write data to MDS, etc.		Format MDS, read file, write file, etc.
Dialog function	yes (MOBY I)	no	
Power supply			
• Nominal value	24 V DC		
• Permitted range	20 to 30 V DC		
Electrical isolation between S7-300 and MOBY	Yes		
Current consumption from S7 bus terminal, max.	100 mA		
Power loss, typically	1 W		
Ambient temperature			
Operation			
• Horizontal configuration of SIMATIC	0 ... +60 °C		
• Vertical configuration of SIMATIC	0 ... +40 °C		
Transport and storage	-40 ... +70 °C		
Dimensions (W x H x D) in mm	40 x 125 x 120		
Weight, approx.	0.2 kg		

4

Selection and Ordering data

		Order No.
MOBY communication module ASM 470		**6GT2 002-0FA10**
For SIMATIC S7-300 and ET 200M		
MOBY communication module ASM 475		**6GT2 002-0GA10**
For SIMATIC S7-300 and ET 200M, parameterizable		
Accessories		
Front connector (1 x per ASM)		**6ES7 392-1AJ00-0AA0**
MOBY E, I, U connecting cable		
Preassembled, between ASM 470/475 and write/read device, angled connector, in the following lengths:		
2 m		**6GT2 091-0EH20**
5 m	A	**6GT2 091-0EH50**
10 m	A	**6GT2 091-0EN10**
20 m	A	**6GT2 091-0EN20**
50 m	A	**6GT2 091-0EN50**
Preassembled, between ASM 470/475 and write/read device, straight connector, in the following lengths:		
2 m	A	**6GT2 091-2EH20**
5 m	A	**6GT2 091-2EH50**
10 m		**6GT2 091-2EN10**
50 m		**6GT2 091-2EN50**
MOBY D connecting cable		
Pre-assembled, between the ASM 475 and SLG D1xS, 9-pin Sub-D connector in the following lengths:		
5 m	A	**6GT2 491-0EH50**
20 m	A	**6GT2 491-0EN20**
50 m		**6GT2 491-0EN50**
SIMATIC RF300 connecting cable		
preassembled, between ASM 475 and RF3xxR, IP65, straight connector, in the following lengths [1]:		
2 m	A	**6GT2 891-0EH20**
5 m	A	**6GT2 891-0EH50**
CD: "RFID Systems Software & Documentation"		**6GT2 080-2AA10**
FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C-libraries, PC presentation program, RFID documentation		

A: Subject to export regulations AL = N and ECCN = EAR99H

[1] The connecting cables can be extended using the RF300 connecting cable for the ASM 456. These connecting cables are supplied in the lengths 2 m, 5 m, 10 m, 20 m and 50 m (6GT2 891-0Fxxx)

Overview

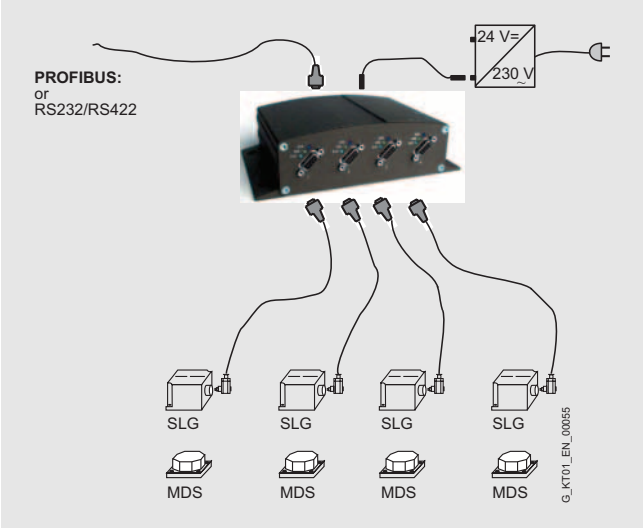
Up to 4 write/read devices or antennas can be connected **in parallel** to the low-cost connection modules. The user can select between two interfaces:

- PROFIBUS DP-V1 (ASM 754)
- RS232/RS422; serial interface to PC/PLC (ASM 424, ASM 724)

Design

Mounting

For easy mounting on a standard rail, an optional adapter is available.



Configuration

Function

Up to four write/read devices or antennas from the corresponding MOBY system can be connected to the rugged housing. Data in the MDS is accessed directly over the physical addresses. The extended MOBY E functions (multitag, access rights, password, etc.) are not supported.

Error messages and operating states (MDS in the field, transmission, etc.) are indicated additionally by means of LEDs and simplify commissioning and service.

PROFIBUS DP-V1 interface (ASM 754)

Communication to the application uses the acyclic protocol service of PROFIBUS DP-V1. The station address on PROFIBUS is set directly on the ASM by means of a DIP switch.

The functions FC45 or FC55 (multitag) are available to SIMATIC S7 users for easy integration in the application. The ASM is integrated into the hardware configuration via a GSD file. The ASM can then be configured via the SW tool HW_Config of SIMATIC Manager or another PROFIBUS tool.

For connection to any PROFIBUS DP-V1 master, the programming interface is described in the FC45 documentation.

RS232/RS422 interface (ASM 424, ASM 724)

A WINDOWS 98/NT/2000 C library (**MOBY API**, DLL functions) incl. 3964R driver with basic functions (open/close channel, read data from data memory, etc.) is available to the PC user for his application.

MOBY E

Up to four **SLA 7x** can be connected in parallel to the **ASM 754/724** which, however, operate internally in multiplex mode. If more than one SLA 7x is connected, the **MOBY E** data memory can only be reliably read or written in the stationary state.

MOBY I/E

Up to four **SLG 4x** or **SLG 7x** can be connected in parallel to the **ASM 424**. MOBY data memories can be read or written simultaneously on all 4 SLGs.

ASM 424, ASM 754/724

Technical specifications

Communication module	ASM 754	ASM 424, ASM 724
Serial interface to user	PROFIBUS DP-V1, 9-pin Sub-D connector (Order No. 6ES7 972-0BA 12-0AX0)	RS232/RS422 9-pin Sub-D connector
Cable length, max	See PROFIBUS	30 m for RS232, 500 m for RS422
Procedure/protocol	EN 50170 Vol. 2 PROFIBUS	3964 R
Data transmission rate	9600 Kbit/s up to 12 Kbit/s (automatic detection)	38.4 bit/s
Block length, max	4 words cyclic/ 238 byte acyclic	238 byte
Serial interface to SLA/SLG	4 x 9-pin Sub-D socket	
Cable length, max	55 m to SLA; 1000 m to SLG	
Connectable SLG/SLA	MOBY I/E: max. 4 x SLG 4x or SLG 7x (parallel mode) MOBY E: max. 4 x SLA 7x (multiplex mode) Note: Mixed mode is not possible	
Software function		
Programming	Depending on the PROFIBUS DP-V1 master	Depending on the PC/PLC
Available software (CD "RFID Systems Software & Documentation")	FC45 for SIMATIC S7-300/400	C library MOBY API for PC with Windows 89/NT
• MDS addressing	Access directly via addresses	
• Commands	Initialize MDS, read data from MDS, write to MDS, etc.	
Power supply		
• Rated value	24 V DC (separate connector)	
• Permissible range	20 … 30 V DC	
Current consumption	250 mA	
Starting current, max.	1.1 A (without SLA)	
Mounting	4 x M5 screws	
Degree of protection	IP40 (higher degree of protection on request)	
MTBF (at 40 °C)	100,000 hours	
Housing		
• Dimensions (W x H x D) in mm	205 x 130 x 60 (without connector)	
• Material	Aluminum	
• Color	Anthracite	
Ambient temperature		
• Operation	-25 … +55 °C (condensation not permitted)	
• For transport and storage	-40 … +85 °C (condensation not permitted)	
Weight, approx.	1.3 kg	

Selection and Ordering data

		Order No.
ASM 424 communication module With serial interface RS232/RS422, max. 4 SLG 4x or 4 SLG 7x can be connected		**6GT2 002-2CE00**
ASM 724 communication module With serial interface RS 232/RS422, max. 4SLA 7x can be connected	A	**6GT2 302-2CE00**
754 communication module With PROFIBUS DP-V1 interface, max. 4 SLG 7x can be connected		**6GT2 302-2EE00**

	Order No.
Accessories	
CD: "RFID Systems Software & Documentation" FB/FC for SIMATIC, 3964R driver for DOS/Windows 95/NT/2000/XP, C-libraries, PC presentation program, RFID documentation	**6GT2 080-2AA10**

A: Subject to export regulations AL = N and ECCN = EAR99H

Overview

SIMATIC RF-MANAGER

SIMATIC RF-MANAGER is software that is used for quick and easy creation and commissioning of RFID applications both for preprocessing and routing the delivered tag data to a higher-level enterprise system (data & device management).

In the current version, RF-MANAGER 2007, readers (write/read devices) of the RF660R type are supported exclusively. Depending on the scope of the RFID application, different software packages are available that differ in accordance with the number of supported readers (up to 50).

Benefits

- Management and operation of readers (write/read devices)
- Collection, visualization and preprocessing of tag data
- Routing of tag data to higher-level enterprise systems

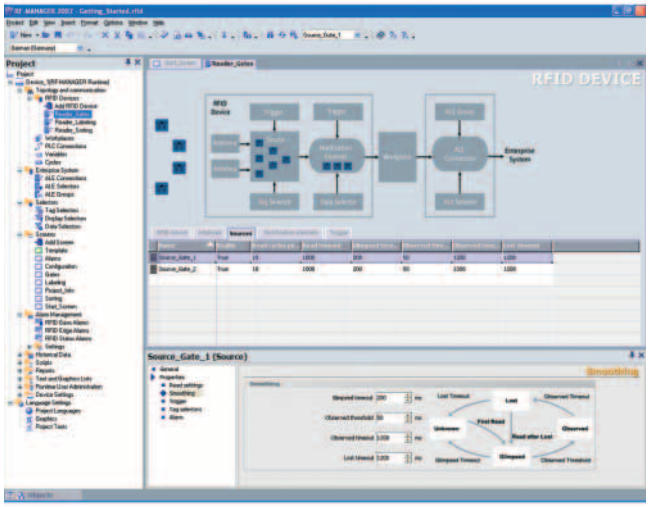
Application

Both RF-MANAGER and the RF600 Data Manager support readers (write/read devices) of the RF660R type and can be used for applications with this reader.

The main applications of the RF660R range from the recognition of goods in loading bays, at goods receipt and goods dispatch through goods flow control on conveyor belts as far as implementation in warehouses or distribution centers and in fill level control of high-bay warehouses. Industrial use in factories, e.g. in paintshops or on assembly lines in the automotive industry, is also possible.

SIMATIC RF-MANAGER

Overview



SIMATIC RF-MANAGER is data & device management software for RFID applications:

- For fast, easy creation and commissioning of RFID applications
- For smooth operation of the connected readers (write/read devices)
- For pre-processing tag data and routing it to a higher-level enterprise system

In the current version, RF-MANAGER 2007, readers of the RF660R type are supported exclusively.

RF-MANAGER comprises the components of the Engineering System and Runtime. The Engineering System is used to perform all the necessary configuration tasks and to parameterize the components involved. The RFID project created in this manner is subsequently executed in the Runtime system. Runtime can execute on the same PC as the Engineering System or on a different PC or a Microbox 420.

Depending on the scope of the RFID application, different software packages are available. Each product type contains both an Engineering System and Runtime. The packages only differ with regard to the number of readers supported by Runtime. Several Runtime licenses can also be added.

The following RF-MANAGER packages are available:

- SIMATIC RF- MANAGER 2007 – 1 Reader
- SIMATIC RF- MANAGER 2007 – 5 Readers
- SIMATIC RF- MANAGER 2007 – 20 Readers
- SIMATIC RF- MANAGER 2007 – 50 Readers

Benefits

- Configuring instead of programming and therefore easy and convenient creation of RFID applications.
- Fast commissioning and diagnosis of complex RFID systems with ready-made solution assistance.
- Pre-processing / filtering of the tag data makes special conditioning of the tag data in the enterprise system superfluous.
- Independent of the enterprise system used thanks to an open interface (ALE[2)]).
- Future-oriented thanks to EPCglobal[1)] compatible software architecture.
- Hardware and software from a single source and therefore perfectly interacting components.

Application

With RF-MANAGER, various scenarios can be implemented in combination with RF660R readers (write/read devices). For example, identification of products, automatic acquisition of goods flow or RFID-supported asset management

The emphasis here is:

- throughout all sectors to:
  - Asset management
  - Incoming and outgoing goods
  - Warehouse management
- Especially in the automotive, food & beverage, chemical & pharmaceutical sectors on:
  - Tracking & tracing
  - Material handling control

Depending on the application, commissioning, monitoring and diagnosis of the readers is considerably simplified by using RF-MANAGER.

Function

Engineering system for configuring RFID applications:

- Efficient mass data editors
- Clearly comprehensible graphical editors
- Multi-language user interface
- Project assistant with different scenarios

Management of RFID readers (write/read devices):

- Support for up to 50 RF660R readers in parallel
- Special online dialogs for fine tuning and monitoring of the RFID application
- Display of status information and error messages
- Support for maintenance scenarios (e.g. expansion of the plant without downtime)

Pre-processing of tag data:

- Multi-level filtering
- Reading and writing
- Displaying and routing on

EPCglobal[1)] compatible:

- Implementation of the EPCglobal reader protocol layer for communication with the readers
- Open ALE[2)] interface for communication with higher-level enterprise systems

1) Non-for-profit organization that defines commercial and technical standards for EPC networks.
2) Application Level Events

Technical specifications

SIMATIC RF-MANAGER	
General data	
Current version	2007
Supported devices	SIMATIC RF660R
Target systems	• Standard PC • SIMATIC Microbox PC 420
Functions	• Commissioning, management and diagnosis of RFID devices • Collection, filtering, displaying and writing of RFID data • Conditioning and transfer of RFID data to higher-level applications
Type of delivery	
• Product CD	• RF-MANAGER configuring software • RF-MANAGER Runtime • Automation License Manager • Documentation as PDF • Getting Started project and ALE demo client • RF660R Configuration Software
• License disk (for Automation License Manager)	• Floating license for configuring software • Floating license for Runtime (as countable licenses)
Packages	• RF-MANAGER 2007 – 1 Reader (1 reader is supported) • RF-MANAGER 2007 – 5 Readers (5 readers are supported) • RF-MANAGER 2007 – 20 Readers (20 readers are supported) • RF-MANAGER 2007 – 50 Readers (50 readers are supported)
Languages	
• Documentation	English, German
• Configuring software	English, German
• Runtime software	English, German
Hardware requirements	
Configuring software	
• Processor	Pentium IV with 1.6 GHz processor or higher
• Graphics	• Resolution: 1024 x 768 or higher/ 1280 x 1024 recommended • Colors: At least 256
• Main memory	At least 1.0 GB / 2.0 GB recommended
• Memory space required on the hard disk	At least 1.5 GB
• Additional hardware	• CD-ROM drive (for installing the software) • 3.5"/1.44 MB floppy drive or mobile USB data carrier (for transferring licenses)

SIMATIC RF-MANAGER	
Runtime software	
• Processor	• Standard PC: Pentium III with 933 MHz processor or higher • SIMATIC Microbox PC 420: Pentium III with 933 MHz processor
• Graphics	• Resolution: 640 x 480 or higher • Colors: At least 256
• Main memory	• Standard-PC: 512 MB minimum / 1024 MB recommended • SIMATIC Microbox PC 420: 512 MB
• Memory space required on the hard disk	• Standard-PC: at least 256 MB, without the archives • SIMATIC Microbox PC 420: Compact Flash card with at least 512 MB
• Additional hardware	• CD-ROM drive (for installing the software) • 3.5"/1.44 MB floppy drive or mobile USB data carrier (for transferring licenses)
Software requirements	
Operating system	• Standard-PC: Windows XP Professional + SP2 • SIMATIC Microbox PC 420: Windows XP Embedded + SP2
Additional software	• Microsoft Internet Explorer V6.0 SP1 / SP2 • Adobe Acrobat Reader 5.02

Selection and Ordering data

		Order No.
SIMATIC RF-MANAGER		
Data & Device Management Software for RFID applications, Version 2007		
• License for one reader	C	**6GT2080-3CA00-7AA5**
• License for 5 readers	C	**6GT2080-3CC00-7AA5**
• License for 20 readers	C	**6GT2080-3CE00-7AA5**
• License for 50 readers	C	**6GT2080-3CG00-7AA5**

C: Subject to export regulations AL = N and ECCN = EAR99S

Selection and Ordering data

		Order No.
Connecting cables		
SLG connecting cable, pre-assembled for MOBY E/I/U		
• Between ASM 424 and SLG		
- SLG connector, angled		
5 m	A	**6GT2 091-0AH50**
10 m	A	**6GT2 091-0AN10**
20 m	A	**6GT2 091-0AN20**
50 m		**6GT2 091-0AN50**
- SLG connector, straight		
10 m		**6GT2 091-2AN10**
50 m	A	**6GT2 091-2AN50**
• Between ASM 470/475 and SLG		
- SLG connector, angled		
2 m		**6GT2 091-0EH20**
5 m	A	**6GT2 091-0EH50**
10 m	A	**6GT2 091-0EN10**
20 m	A	**6GT2 091-0EN20**
50 m	A	**6GT2 091-0EN50**
- SLG connector, straight		
2 m	A	**6GT2 091-2EH20**
5 m	A	**6GT2 091-2EH50**
10 m		**6GT2 091-2EN10**
50 m		**6GT2 091-2EN50**
• Between ASM 450 and SLG		
- SLG connector, angled		
2 m		**6GT2 091-1CH20**
5 m	A	**6GT2 091-1CH50**
10 m	A	**6GT2 091-1CN10**
20 m	A	**6GT2 091-1CN20**
50 m		**6GT2 091-1CN50**
- SLG connector, straight		
2 m	A	**6GT2 091-2CH20**
SLG connecting cable		
• Between ASM 470/475 and SLG D1xS		
- 5 m	A	**6GT2 491-0EH50**
- 20 m	A	**6GT2 491-0EN20**
- 50 m		**6GT2 491-0EN50**
• Between ASM 450 and SLG D1xS		
- 2 m	A	**6GT2 491-1CH20**
- 5 m		**6GT2 491-1CH50**
- 20 m	A	**6GT2 491-1CN20**
SLG cable		
Without plug between ASM and SLG; type 6 x 0.25 mm^2		
• 50 m	A	**6GT2 090-0AN50**
• 120 m	A	**6GT2 090-0AT12**
• 800 m	A	**6GT2 090-0AT80**

		Order No.
SLA connecting cable		
Between SLA 71 and ASM 724/754		
5 m		**6GT2 391-1AH50**
Extension connecting cable		
for 6GT2 391-1AH50		
10 m		**6GT2 391-1BN10**
25 m		**6GT2 391-1BN25**
Cable for SLG U92		On request
Service interface, without plug		
Connecting cable for SLG synchronization		On request
Between two SLG U92, pre-assembled, with angled 11-pole SLG connector at both ends		
RS232 connecting cable	A	**6GT2 391-1DH50**
Between PC and SIM 7x, with connecting cable for DI/DO and 24 V plug, 5 m length (6GT2 090-0HB00 power supply unit must be ordered separately),		
RS232 connecting cable	A	**6GT2 491-1DH50**
Between PC and SIM 80, with connecting cable for DI/DO, length 5 m		
RS232 connecting cable		
Between PC and SLG D 1x		
• 5 m		**6GT2 691-0BH50**
• 20 m		**6GT2 691-0BN20**
RS232 connecting cable		
Between PC and ASM 424/724		
• 5 m		**6GT2 391-0BH50**
• 20 m		**6GT2 391-0BN20**
RS232 connecting cable		
Between PC and SLG U92, with connecting cable for 24 V plug (M12 socket), angled plug		
• 5 m		**6GT2 591-1CH50**
• 20 m		**6GT2 591-1CN20**
Cable for SM 456		See page 4/143
Cable for RF180C		See page 4/146
Cable for RF170C		See page 4/148

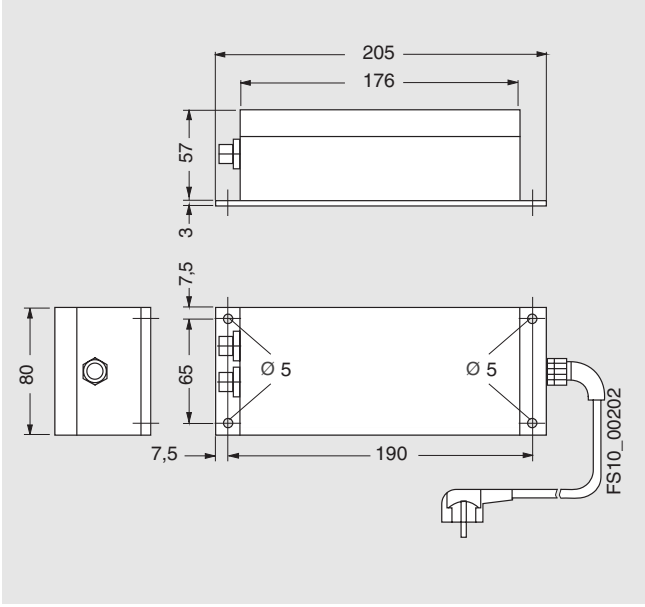
		Order No.
Connector		
Plug, at the ASM end:		
9-pole Sub-D connector (pins) with screw locking for connecting cable between an ASM 424/724/754 and SLG		
• 1 unit		**6GT2 090-0BB00**
• 1 packing unit (10 units)		**6GT2 090-0BB10**
Connector on SLG side (MOBY I, E, U)		
6-pole DIN 43651 connector with socket contacts for crimping		
• With angled output		
- 1 unit	A	**6GT2 090-0BA00**
- 1 packing unit (10 units)	A	**6GT2 090-0BA10**
• With straight output		
- 1 unit	A	**6GT2 090-0UA00**
Connector for SLG U92 service interface		**6GT2 590-0BA00**
11-pole, with angled output		
Connector for SIM 7x		**6GT2 390-1AA00**
Degree of protection IP65, 15-pole Sub-D connector		
Connector for SLG and SIM of MOBY D		**6GT2 490-1AA00**
Degree of protection IP65, 9-pole Sub-D connector		
Double M12 connector		**6GT2 090-0BC00**
For ASM 450, without SLG cable		
PROFIBUS connectors		**6ES7 972-0BA12-0XA0**
for ASM 450, 9-pole Sub-D connector for 2 PROFIBUS cables (for other connectors, see Catalog IK PI)		

		Order No.
Miscellaneous accessories		
Wide-range power supply for communication module	A	**6GT2 494-0AA00**
ASM 424/456/724/754, SLG Ux, SLG D1x; 100 … 230 V AC / 24 V; 2.2 A, 2 x 24 V outputs, incl. 2 x 24 V plug (M12 pin)		
24 V DC connecting cable		**6GT2 491-1HH50**
For wide-range power supply 6GT2 494-0AA00, length 5 m		
24 V plug (M12 socket)	A	**6GT2 390-1AB00**
For ASM 424/724/754/ SLG Ux (over PC connecting cable), SLG D1x		
Adapter baseplate		**6GT2 390-0BA00**
For mounting onto standard rails, can be used with ASM 424/724/754/		

A: Subject to export regulations AL = N and ECCN = EAR99H

Note:
The CD "RFID Systems Software & Documentation" contains the complete RFID documentation in PDF format.

Dimensions



Wide-range power supply 6GT2494-0AA0

Selection and Ordering data

	Order No.
CD "RFID Systems Software & Documentation" The CD contains: • FB/FC for SIMATIC, 3964R • Driver for DOS/ Windows 95/NT/2000/XP • C libraries • PC demonstration program • RFID documentation in PDF format, especially RFID system manuals, programming instructions and operating instructions	**6GT2 080-2AA10**