SIEMENS

SIMATIC NET

Manual for Triaxial Networks

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Release 04

Safety Guidelines

This manual contains notices which you should observe to ensure your own personal safety, as well as to protect the product and connected equipment. These notices are highlighted in the manual by a warning triangle and are marked as follows according to the level of danger:

Danger

indicates that death, severe personal injury or substantial property damage **will** result if proper precautions are not taken.

Warning

indicates that death, severe personal injury or substantial property damage **can** result if proper precautions are not taken.

Caution

indicates that minor personal injury or property damage can result if proper precautions are not taken.

Note

draws your attention to particularly important information on the product, handling the product, or to a particular part of the documentation.

Qualified Personnel

The device/system may only be set up and operated in conjunction with this manual.

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Technical data subject to change.

SINEC H1

Manual for Triaxial Network

Description C79000-B8976-C055/04

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Correct and safe operation of this equipment requires proper transport, storage and assembly as well as careful operator control and maintenance.

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- Training in or authorization for the maintenance and use of suitable saftey equipment in accordance with current standards in safety technology;
- First Aid qualification.

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Le bon fonctinnement de cet appareil suppose un transport adéquat, un stockage et unmontage appropriés, ainsi qu'une utilisation et une maintenance correctes.

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- une formation, une instruction ou une habilitation qui les autorisent à brancher/débrancher, mettre à la terre ou repérer des circuits électriques, des appareils ou des systèmes conformes aux normes actulles des technique de sécurité;
- une formation ou une instruction conforme aux normes actuelles des techniques de sécurité en matière de d'entretien et d'utilisation des équipements de sécurité;

une information en premiers soins.

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1 General Information

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1 General Information

1.1 Notes for the User

The SINEC H1 network manual contains the information for planning, configuring, installing and operating SINEC H1 networks. SINEC H1 networks are based on the SINEC H1 triaxial bus cable. They have the topological structure of a bus.

Chapter 1 contains general user information, abbreviations and further reading.

Chapter 2 contains the description of the SINEC H1 network. Starting with the application of local area networks in manufacturing and process automation, this first provides an overview of the SINEC H1 network followed by detailed descriptions of the SINEC H1 network components.

The SINEC H1 networks (bus structure) can be operated along with optical SINEC H1FO networks (star structure). The connection of SINEC H1 networks with SINEC H1FO networks based on star couplers is described. The chapter also contains information about configuring networks.

Chapter 3 contain instructions for assembling elements for connection to SINEC H1 bus cables. These installation instructions are an excerpt from the guidelines AR 463-220.

Chapter 4 contains the installation instructions for SINEC H1 transceivers with one or two interfaces and the operating instructions for the SINEC H1FO optical transceivers OTDE-S (BFOC) and MINI OTDE (BFOC).

Chapter 5 contains the installation instructions for the SINEC H1 fan-out unit of types SSV102 and SSV104.

Chapter 6 contains a description of the SINEC H1 repeater.

Chapter 7 contains scale drawings of various SINEC components.

1.2 Abbreviations

AR	Working Guidelines
AUI	Attachment Unit Interface, from IEEE 802.3 standard
BFOC	Bayonet Fiber Optic Connector, ST® (ST® : registered trademark of AT&T)
CP	Communications Processor
CSMA/CD	Carrier Sense Multiple Access with Collision Detection, bus access technique from IEEE 802.3
DIN	German Standards Organization (Deutsches Institut für Normung)
DTE	Data Terminal Equipment
FDDI	Fiber Distributed Data Interface
FOIRL	Fiber Optic Inter Repeater Link
H1	SINEC H1
H1FO	SINEC H1 with fiber optic components, star-shaped network

IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
ISO	International Standardization Organization
LED	Light Emitting Diode
LLC	Logical Link Control
LWL	Fiber optic cable
L2	SINEC L2
L2FO	SINEC L2 with optical network components
MMS	Manufacturing Message Specification
MAC	Media Access Control
OSI	Open System Interconnection
SINEC	Siemens Network Architecture for Automation
SINEC H1	SINEC communication network based on the IEEE 802.3 standard (Ethernet)
SINEC H3	SINEC communication network based on ISO 9314 standard (FDDI)
SINEC L2	SINEC communication network based on DIN 19245 standard (PROFIBUS)
SINEC S1	SINEC communication network for networking actuators and sensors with programmable logic controllers (Actuator-Sensor-Interface for automation)
SSV	Fan-out unit
TF	Technological Functions

1.3 Further Reading

/1/ International Standard ISO/IEC 8802-3
Standard IEEE 802.3

/2/ SINEC L2/L2FO Network Manual

/3/ Working Guidelines AR 463-220
Installing the SINEC H1 Bus System

/4/ SINEC H1FO Ethernet Manual

/5/ SINEC Industrial Communications Networks
Catalog IK 10

2 SINEC H1 Triaxial Network

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2 SINEC H1 Triaxial Network

2.1 Local Area Networks in Manufacturing and Process Automation

The performance of control systems is no longer determined solely by the programmable controllers but to a large extent by the environment. Apart from plant visualization and operation and monitoring, one fundamental element is a high-performance communications system.

Distributed automation systems are being used more and more in manufacturing and production automation. This means that complex control tasks are divided into smaller, clearer sub-tasks with distributed control systems. There is a need for communication between the distributed systems. These distributed structures allow the following:

- ➢ Independent and simultaneous start-up of individual parts of a system.
- ➢ Smaller, clearer programs.
- ➢ Parallel processing with distributed automation systems, resulting in:
  - a reduction in reaction times.
  - lower load on individual processing units.
- ➢ Increased system availability.

A distributed system structure requires a high-performance and comprehensive communication system.

The basis of the communications system is provided by local area networks that can be implemented

- ➢ purely electrically
- ➢ purely optically
- ➢ as combined electrical/optical systems

depending on the local requirements.

With the range of SINEC products, Siemens provides heterogeneous communications systems for different levels of process automation in an industrial environment. The communications system is based on national and international standards according to the ISO/OSI reference model (International Standardization Organization/Open System Interconnection).

SINEC includes the following:

- ➢ The communications network consisting of transmission media, connection and transmission components and the required transmission procedures.
- ➢ Protocols and services for data transmission between the devices mentioned above.
- ➢ Modules for the programmable logic controller or computer that allow the connection to the communications network (communications processor "CP").

Depending on the situation, SINEC encompasses a variety of communications networks to provide solutions for different tasks in automation engineering.

The topology of rooms, buildings, factory departments and complete company complexes and the environmental conditions encountered there make different demands on a network. Moreover, the automation components to be networked require services of different complexity from the communications system.

To meet this wide range of requirements, SINEC provides the following communications networks complying with national and international standards:

- SINEC S1,
  the actuator-sensor automation interface for connecting binary actuators and sensors via the ASI bus cable to programmable logic controllers. SINEC S1 supplements the other SINEC networks in the small range area.

- SINEC L2 and SINEC L2FO,
  a communications network for the cell and field area complying with PROFIBUS (Process Field Bus/DIN 19245) with the hybrid medium access techniques token bus and master-slave and with networking on a twisted pair (L2) and via fiber optic cable (L2FO) /2/.

- SINEC H1 and SINEC H1FO,
  a communications network for the cell area using the baseband transmission technique complying with IEEE 802.3 using the CSMA/CD access technique and networking on a triaxial bus cable (H1) and point-to-point using fiber optic cables and star couplers (H1FO).

- SINEC H3,
  a high-speed communications network complying with ISO 9314 (FDDI, Fiber Distributed Data Interface) based on a redundant fiber optic cable ring. SINEC H3 is used as a powerful backbone network.

The various communications networks can be used independently or combined with each other.

2.2 Overview of SINEC H1

The SINEC H1 communications system allows open communication of distributed data terminal equipment in automation engineering in the mid to upper range of performance.

The SINEC H1 communications system consists of the SINEC H1 communications processors in various data terminal equipment and the SINEC H1 network components (Fig. 2.1).

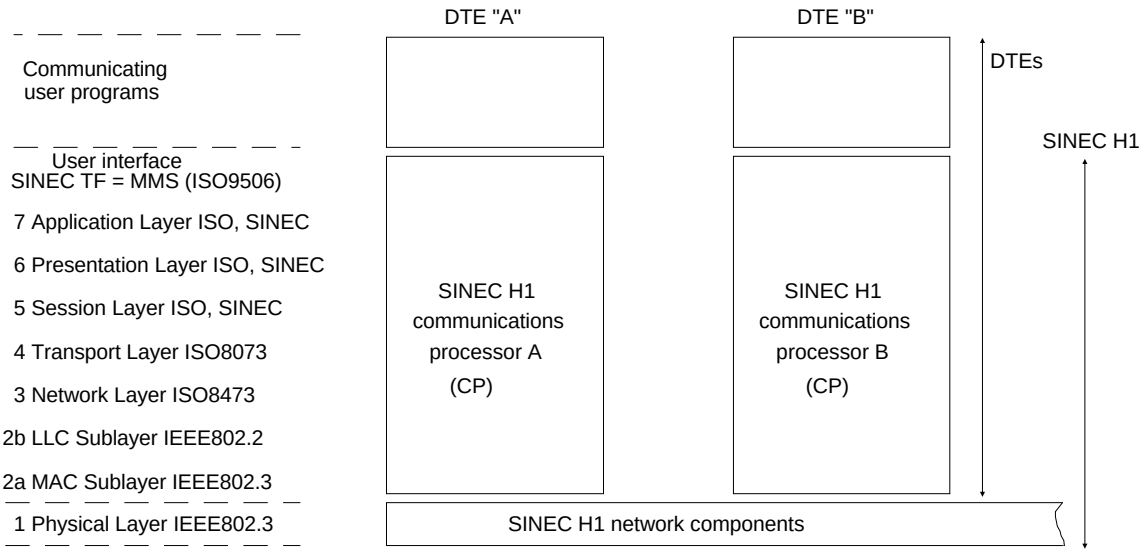


Fig. 2.1: SINEC H1 Communications System

The SINEC H1 network components implement the physical network between the various DTEs with a topology dictated by the application.

The SINEC H1 communications processors implement open communication between DTEs. The types of device represented by the DTEs can be very different or identical. The communications protocol of the SINEC H1 communications processors covers layers 2 to 7 of the ISO/OSI reference model.

Protocol layers 1 and 2a of the SINEC H1 communications system are implemented complying with the IEEE 802.3 standard or ISO/IEC 8802-3.

- **The CSMA/CD medium access technique**

The IEEE 802.3 standard specifies the physical and electrical type of transmission and "contention" access by the various DTEs to the physical network. The medium access control technique is known as the CSMA/CD technique. CSMA/CD is the abbreviation for Carrier Sense Multiple Access with Collision Detection.

How this technique functions is outlined in the following paragraphs (see Fig. 2.2).

- ➢ Devices wishing to send frames listen to the medium to find out whether there is data traffic (carrier sense) and wait until the transmission medium is free.
- ➢ If the transmission medium is free, the device can send frames, each device having the same rights to access the bus (multiple access). Each frame contains a destination address. The devices connected to the network compare the destination address with their own station address; if these match, the data field is evaluated otherwise it is discarded.
- ➢ If two or more devices attempt to transmit (when the medium is free), this leads to a collision that is recognized by the devices according to IEEE 802.3 (collision detection).

  If a device that is currently transmitting detects a collision, it stops its attempt and starts it again after a random waiting time. If a further collision occurs, the interval with which the waiting time was calculated using a random generator is then doubled. This reduces the probability that a further collision will result due to the same waiting time.
  The collision detection technique CSMA/CD limits the maximum distance between two DTEs.

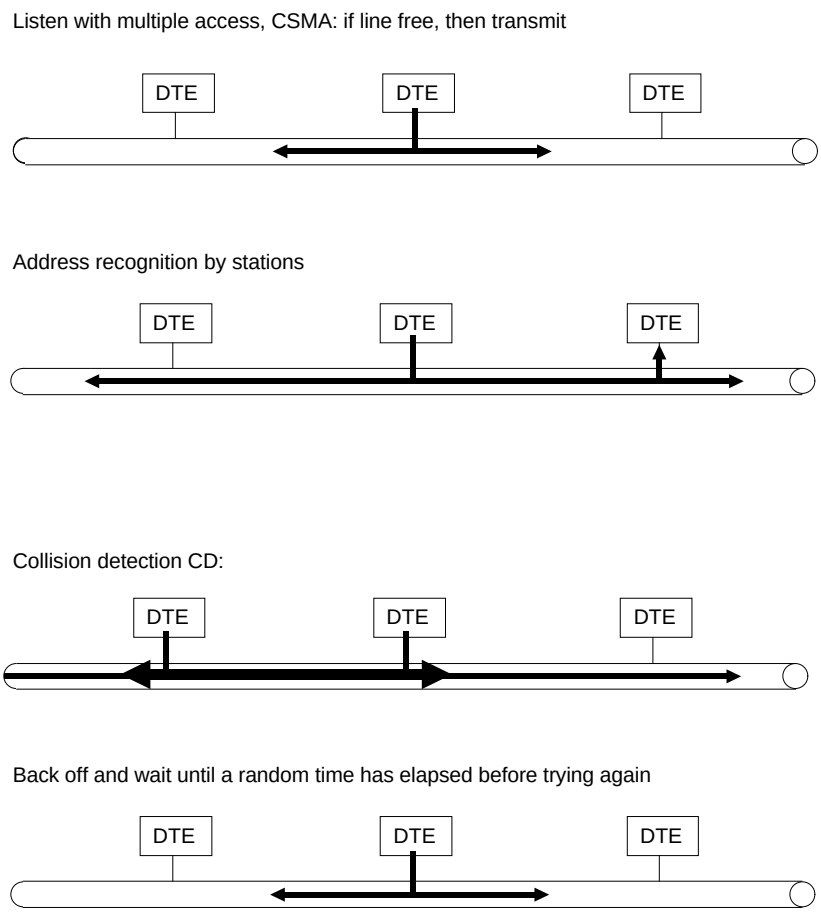


Fig. 2.2: How the CSMA/CD Access Technique Functions

- **SINEC H1 Network Components**

SINEC H1 network components include cables, transceivers, fan-out units and repeaters (see Fig. 2.3).

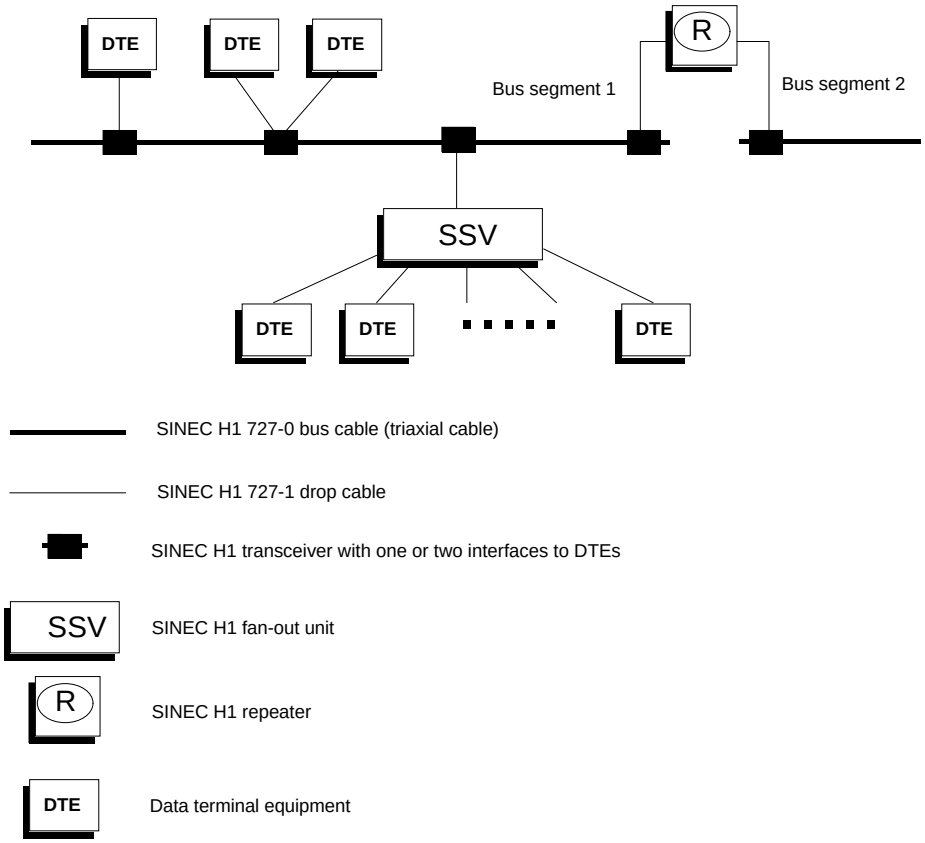


Fig. 2.3: SINEC H1 Network Components

Using these components, networking is possible in an industrial environment with the necessary reliability and freedom from interference /1/.

The most important characteristics of SINEC H1:

Topology:	Bus
Medium:	Triaxial cable, characteristic impedance 50 ohms, specially for use in an industrial environment, the coaxial cable specified in IEEE 802.3 (10Base5) has an additional screen in SINEC H1
Transmission rate:	10 Mbps
Transmission technique:	Baseband, Manchester coding
Access technique:	CSMA/CD (Carrier Sense Multiple Access/Collision Detection)
Cable lengths:	Maximum 500 m per segment maximum distance between two DTEs using repeaters up to 3000 m
Connections:	Maximum 100 transceivers per segment

2.3 SINEC H1 Network Components

2.3.1 The 727-0 Bus Cable

The 727-0 bus cable is a triaxial cable. This cable differs from the usual Ethernet coaxial bus cable for an office environment (yellow cable) with a three-conductor arrangement (see Fig. 2.4).

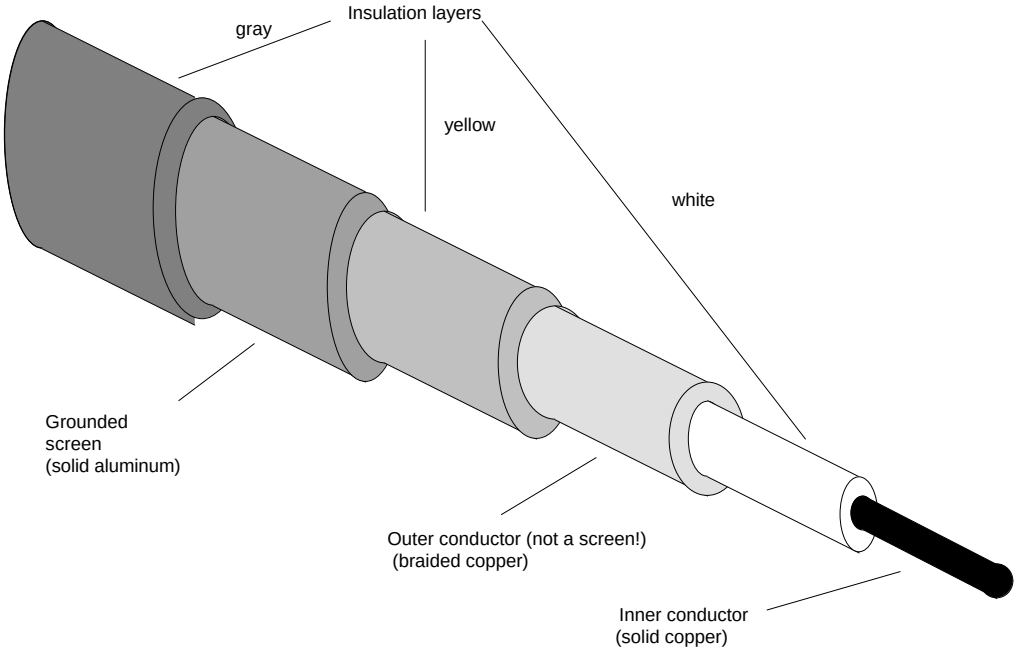


Fig. 2.4: Structure of the 727-0 Bus Cable

Apart from the inner conductor of solid copper and a multi-layer outer conductor of solder-coated copper braid, there is also an aluminum shield. The outer conductor is generally not grounded. If grounding is required in particular cases, this is only at one point.

The triaxial design of the bus cable allows potential equalization currents on the grounded screen cable. This reduces the influence of interference to the bus signal on the inner and outer conductors of the bus cable. This makes the 727-0 bus cable suitable for installation in industrial environments subject to electromagnetic interference.

The jacket of the bus cable serves as a vapor barrier, making the 727-0 bus cable suitable for underground and fresh water installations.

The technical data of the bus cable comply with or exceed the requirements of IEEE 802.3.

- **Electrical data at 20 °C:**

Impedance	50 Ω ± 2 Ω
Relative propagation speed	0.78
Attenuation at 10 MHz	≤16 dB/km
at 5 MHz	≤12 dB/km
Transfer impedance at 10 MHz	≤0.01 mΩ/m
at 5 MHz	≤0,1 mΩ/m
Loop resistance of 500 m segment (inner and outer conductor)	≤ 4 Ω
Permitted permanent current on screen conductor (Al)	≤35 A (DC)

- **Mechanical data**

Diameter of inner conductor (Cu)	2.17 mm ± 0.013 mm
Diameter of outer conductor	8.2 mm
Outer diameter of bus cable	max. 15 mm
Bending radius for one bend	≥ 125 mm
for multiple bends	≥ 250 mm
Weight	approx. 337 kg/km
Tensile strength	≤ 700 N
Temperature range for installation	-5 °C to 50 °C
for operation and storage	-40 °C to 65 °C

Labeling of the inner (yellow) jacket: SIEMENS ETHERNET CSMA/CD BASISBAND
Continuous marking of the outer jacket for transceiver installation at intervals of 2500 mm ± 50 mm

- **Segment Lengths of the Bus Cable**

The 727-0 bus cable is supplied in lengths cut to meters as required.

When constructing a complete cable segment from one manufacturing lot any segment length between 2.5 m and 500 m is allowed.

If lengths of cable from different manufacturing lots are necessary within a cable segment, (when making extensions), each individual section should be an odd multiple of 23.4m:

23.4 m; 70.2 m; 117.0 m; 163.8 m; 210.6 m; 257.4 m; 304.2 m; 351.0 m; 397.8 m; 444.6 m or 491.4 m

The length 23.4m corresponds to half the wave length of the basic frequency of the frequency spectrum used for data transmission on the bus cable. Using this length, reduces reflections caused by imperfect matching at the transition from one cable section to the next.

- **Guidelines for Laying Cable**

When laying cables, particularly when pulling them through protective tubes, remember that the bus cable is not particularly elastic due to the solid shield. The cable connections should, whenever possible, be measured on site and only the required length taken from the cable drum (e.g. the exact length between two adjacent transceivers).

Make sure that the cable is not kinked during transportation or when laying the cable and that bends never have less than the permitted bending radius. The cable must also not be twisted.

Before laying the cable or pulling the cable into protective tubes, make sure that both ends are closed to keep out dirt or dampness. When pulling or pushing the cable, force should only be applied to the outer jacket.

Bus cables must have a minimum clearance of 50 cm to parallel low or high voltage cables and to contactors. If this clearance cannot be maintained, for example where cable routes cross power cables, the bus cable must be protected by a heavy-gauge steel conduit in the area where it is at risk. The heavy-gauge steel conduit should be grounded as often as possible but at least at both ends.

The bus cable can be laid on cable racks, in cable conduits and cable channels wherever the minimum clearance can be maintained.

In areas where it crosses gangways etc. and in cable racks above the ground, the bus cable must be protected in protective tube Pg 21 (heavy-gauge aluminum conduit, hot-galvanized heavy-gauge steel conduit or metal protective tube).

If electromagnetic protection is required, a hot-galvanized heavy-gauge steel conduit or metal protective tube is recommended. At building expansion joints, an interruption in the protective tube of up to 50 cm is permitted.

- **Overvoltage Protection**

When laying the 727-0 bus cable between different buildings, the active bus components should be protected from overvoltages using surge suppressers of the type GKF/N-L. To ensure that the surge suppressers have an optimum effect, they must be installed on the first transceiver after the bus cable enters the building.

The surge suppresser is screwed directly between the bus connector of the SINEC H1 transceiver and the 727-0 bus cable with its integral N coaxial connector. The ground cable of the surge suppresser is connected to the grounded mounting plate of the transceiver over as short a distance as possible.

A maximum of two surge suppressers can be used per bus segment.

Note: Networks between buildings can also be implemented as optical links using inter-repeater-link connections. These, of course, make surge suppressers unnecessary.

- **Bus Cable Connection Elements**

The sections of the 727-0 bus cable have an N coaxial connector and one shielding connection clamp at each end.

The N coaxial connectors make contact to the inner conductor and outer conductor of the 727-0 bus cable. The shielding connection clamps contact the shield of the 727-0 bus cable

The instructions for installing the connection elements to the bus cable can be found in the instructions AS 463-220/3/ (see Chapter 3: "Connectors for the Bus Cable").

- **Grounding the Bus Cable**

The screen of the bus cable is grounded at the ends of the sections using shielding connection clamps. The grounding cable (cross-section 6 mm^2 copper) is screwed to the shielding connection clamps and connected to the nearest ground. Generally this is the grounded mounting plate of a transceiver. The grounding cables are included in the delivery of a SINEC H1 transceiver.

The IEEE 802.3 standard requires that the outer conductor of the bus cable (see Fig. 2.4) should only be grounded once (if at all). To keep to this standard and to avoid accidental grounding of the outer conductor, in SINEC H1 all the parts that make galvanic contact with the bus conductor have additional insulation.

This includes, for example, the following parts:
N-coaxial connector on the sections of the bus cable, bus connection cables of the transceivers and the terminating resistors of the bus cable.

In SINEC H1, it is recommended that the outer conductor of the bus cable is not grounded. To avoid the outer conductor becoming charged compared with ground, the SINEC H1 transceivers have high-resistance resistors.

Additional information about grounding the bus cable can be found in Chapter 3 in the section "Grounding and Shielding".

Note: In this section "Grounding and Shielding", the phrase "Shield of the inner yellow coaxial cable" is used. This means the outer conductor of the 727-0 bus cable in Fig. 2.4.

2.3.2 SINEC H1 Transceiver

The following versions of the SINEC H1 transceiver are available (see Fig. 2.3):

➢ SINEC H1 transceiver with one interface to the DTE,

➢ SINEC H1 transceiver with two interfaces to the DTEs.

The SINEC H1 transceivers are intended to connect data terminal equipment to the SINEC H1 bus cable. The DTEs are connected to the interfaces of the transceivers using 727-1 drop cables.

- **Transceiver Function**

In compliance with IEEE 802.3, a transceiver implements the following functions:

➢ Electrical isolation between the bus cable and interface to the DTE

This prevents overvoltages on the bus cable (e.g. caused by lightning) reaching the DTE

➢ Splitting the bus signal into signals for the interface to the DTE (AUI interface) with transmit signal, receive signal and collision signal (see Fig. 2.5).

For this purpose, the 727-1 drop cable has three twisted, shielded pairs. The drop cable also has an additional pair to allow the DTE to supply power to the transceiver.

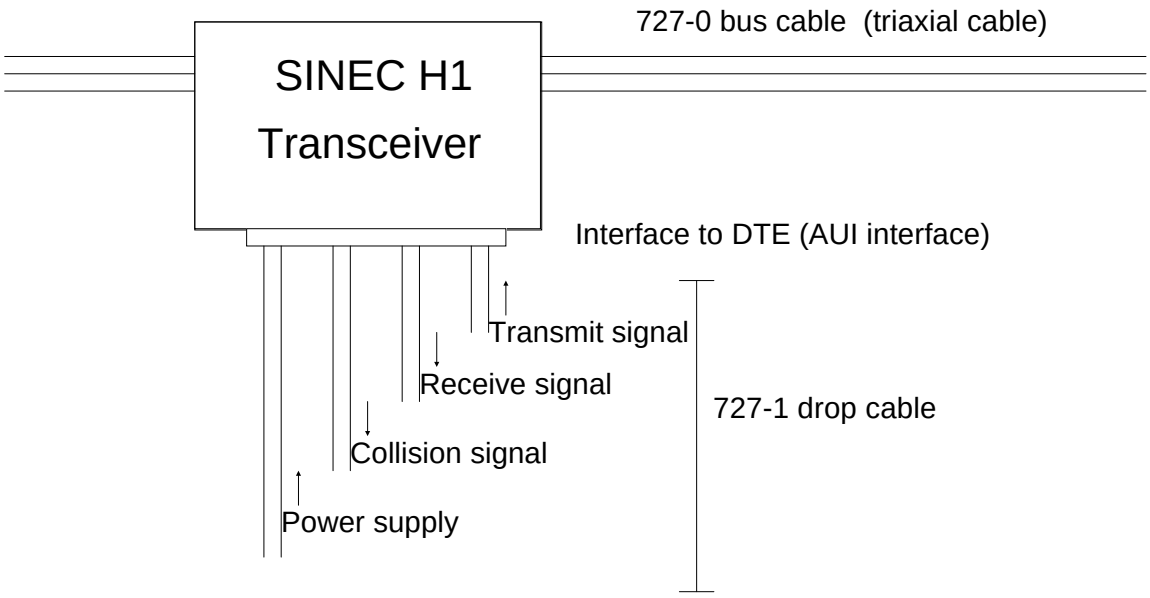


Fig. 2.5: The Functions of the SINEC H1 Transceiver

➢ Collision Detection

A higher transmit level on the bus cable is interpreted by the transceivers as a collision which means that several DTEs are attempting to send at the same time. Each transceiver then activates the collision control line to the connected DTE to prevent an attempted transmission, or if the DTE itself was involved in the collision, to instruct the DTE to abandon the attempted transmission.

➢ Jabber Function

This function prevents a defective DTE blocking the bus cable with long data packets (jabber). At the beginning of each transmission, a timer is started that monitors the length of the transmitted data. If the transmission time exceeds approximately 20 ms, the transmission is stopped and the collision signal to the DTE is activated. As a comparison: According to the standard, the length of a frame must not exceed 1518 bytes which occupies the bus for approximately 1.5 ms

➢ SQE Test (Signal Quality Error or "Heartbeat")

With this function, that can be activated on the transceiver with jumpers, the DTE recognizes whether or not collision detection is functioning. When the SQE test is switched on, the collision line is activated following each transmitted block of data, however for such a short time (0.5 to 1.5 µsec), so that the DTE can distinguish between the SQE signal and a genuine collision. The SQE test is optional; cards from other manufacturers and older Ethernet cards often require it. SINEC H1 communications processors do not evaluate the SQE signal and for this reason, the signal is switched off as the default setting on SINEC H1 transceivers.

- **Power Supply**

The DTEs supply the transceivers with power (see Fig. 2.5). This allows the transceivers to be connected in inaccessible places such as in closed cable conduits.

The IEEE 802.3 standard specifies the following values for the power supply of a transceiver:

Data of the DTE:	
Output voltage	12 V - 6% to 15 V +5%
Output current	≥ 500 mA
Connecting cable:	
Loop resistance of wire pair for power supply	max. 3.5 Ω at max. length of 50m
Transceiver:	
Current input	≤ 500 mA.

The current input of the SINEC H1 transceiver with one interface is: max. 300 mA.
The current input of the SINEC H1 transceiver with two interfaces is: max. 500 mA.

The input voltage of a transceiver depends on its current input and the length of the drop cable between the DTE and transceiver.

☞ **The output voltage of the DTE must meet the requirements of "safe electrical isolation" from the network (see DIN VDE 0160 and DIN IEC 435/VDE9805).**

- **Installation**

The SINEC H1 transceivers are screwed to the bus cable using the N connectors of the bus connection section. This technique provides a stable and long-lasting connection for use in a manufacturing environment.

To connect new transceivers, the bus cable is cut. The ends of the cable are fitted with N connectors and with shielding connection clamps (see Chapter 3). The passive bus connection (tap) is screwed to the N connectors of the completed ends of the 727-0 bus cable. Grounding cables are screwed to the shielding connection clamps of the bus cable and connected to the mounting plate of the transceiver (see installation instructions SINEC H1 transceivers in Chapter 4). The grounding cable and the mounting plate are supplied along with the transceiver. The scale drawings for components can be found in Chapter 7.

The mounting plate must be connected to ground by wire, if it is not already grounded by screwing it to its support. The cross-section of the grounding cable must be at least 6 mm^2 copper or the equivalent.

When the system is first being installed, unused reserve taps can be included so that transceivers can be added at a later date without disturbing the operation on the bus.

The minimum clearance between two transceivers is 2.5m. The distance between the transceivers must be a whole multiple of 2.5m. For this purpose, there is a marker on the outer jacket of the 727-0 bus cable every 2.5m.

The technical data and the instructions for installing SINEC H1 transceivers can be found in the installation instructions in Chapter 4.

- **Connecting Transceivers with Two Interfaces**

The SINEC H1 transceivers with two interfaces allow the connection of one or two DTEs to the 727-0 bus cable.

It is also possible to connect two DTEs together without a connection to the bus cable. In this configuration, both DTEs are connected to the transceiver via a 727-1 drop cable.

The tap does not need to be installed. Instead the supplied resistor of 25 Ω is plugged on to the connection points for the tap and the casing of the transceiver is closed with the supplied cover (see installation instructions for the SINEC H1 transceivers in Chapter 4).

2.3.3 N-Coaxial Connectors, Coaxial Double Coupling and Terminating Resistors

The N coaxial connector is the counterpart of the N connector on the transceiver and is required for the following:

- ➢ To connect the transceiver to the bus cable,
- ➢ To connect a terminating resistor to the end of the bus cable using a coaxial double coupling (see Fig. 2.6).

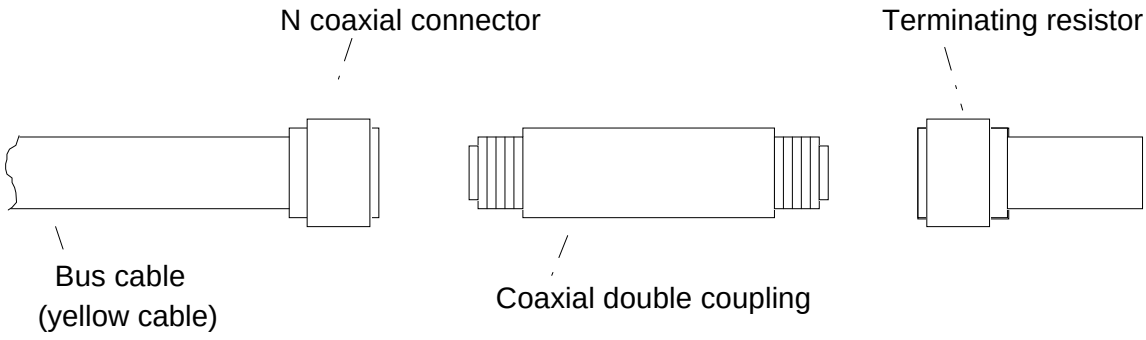


Fig. 2.6: N Coaxial Connector, Coaxial Double Coupling and Terminating Resistor

- **N Coaxial Connector**

An N coaxial connector consists of the following parts: The connector pin, connector casing and crimping sleeve. The connector pin is crimped onto the inner conductor of the bus cable. The connector casing is crimped onto the outer conductor using the crimping sleeve.

To install a transceiver on the bus cable, two N coaxial connectors (supplied in pairs) are required. The shielding connection clamps are included with the N coaxial cables. These are used to contact the shield of the bus cable for connecting to grounding cables.

See also Chapter 3: Section "Fitting plug connectors to the bus cable".

- **Terminating Resistors**

According to IEEE 802.3, each bus segment must be terminated at both ends with a 50 Ω terminating resistor. Termination using resistors corresponding to the characteristic impedance of the bus cable is a technique to avoid reflections at the end of the cable.

If the terminating resistor is missing or has the wrong resistance, reflections occur that overlay the useful signal and lead to higher signal levels on the bus cable than are allowed. Such levels would be interpreted by the transceivers as collisions.

If there is a continual collision status on a bus segment, this usually means that the terminating resistor of the bus segment is not connected.

If the bus cable is terminated at both ends by a transceiver, the terminating resistors are screwed on to the transceivers otherwise they are connected using the coaxial double coupling as shown in Fig. 2.6.

- **Insulation**

The outer conductor of a bus segment (middle conductor of the triaxial bus cable) must only be connected to ground once, if at all. For this reason, bare outer conductor elements such as N coaxial connectors, taps, coaxial double couplings and terminating resistors must be insulated, e.g. with a shrink-on sleeve to prevent accidental grounding.

2.3.4 727-1 Drop Cable

The 727-1 drop cable connects the following:

- ➢ DTEs with transceivers,
- ➢ DTEs with fan-out units,
- ➢ Fan-out units with transceivers,
- ➢ Repeaters with transceivers.

The length of the drop cable must not exceed 50m. This allows a flexible topology since the bus cable does not need to run directly from DTE to DTE but must only pass close by.

The 727-1 drop cable consists of four twisted and shielded pairs all covered by an overall shield. The drop cable is completed at the ends with connectors. The design of the connectors and sockets and the pin assignment is specified by IEEE 802.3 (see Figs. 2.7 and 2.8).

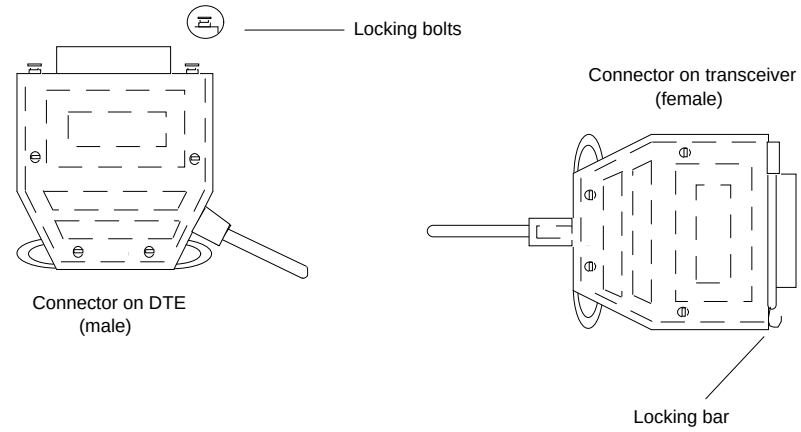


Fig. 2.7: The Connectors of the 727-1 Cable

Transceiver (TR): 15-pin female DTE: 15-pin male		
Stift-Nr.	Signal	Direction Tr DTE
2	Collision (+)	------->
3	Transmit data (+)	<------
5	Receive data (+)	------->
6	Power supply (-)	<------
9	Collision (-)	------->
10	Transmit data (-)	<------
12	Receive data (-)	------->
13	Power supply (+)	<------
1, 4, 8,11,14	Screens wire pairs	
Connector casing	Screen	

Fig. 2.8: Pin Assignment of the 727-1 Cable

The locking mechanism ensures reliable contact on the one side between the drop cable and on the other between the DTE, transceiver, fan-out unit or repeater.

The 727-1 drop cable is pre-assembled and available in the following lengths:

3.2m, 10m, 15m, 20m, 32m, 50m.

On the other hand, any other length up to a maximum length of 50m is permitted.

Note: When using fan-out units, there may be additional restrictions in terms of the maximum length of the drop cables (refer to the description of the individual network components).

- **Rules for Laying the Cable**

The 727-1 drop cable can be laid on existing cable racks. A minimum clearance of 20 cm must be maintained between the drop cable and cables with voltages greater than 60 V.

In exceptional cases, mechanical or electromagnetic protection of the drop cable may be necessary in which case the inner diameter of the protective tube must be greater than 44 mm to allow the cable connector to be pulled through.

2.3.5 SINEC H1 Repeaters

Repeaters allow an extension of SINEC H1 networks by adding additional bus segments. With each repeater, an additional segment of up to 500m in length can be connected to the SINEC H1 network (see Fig. 2.9).

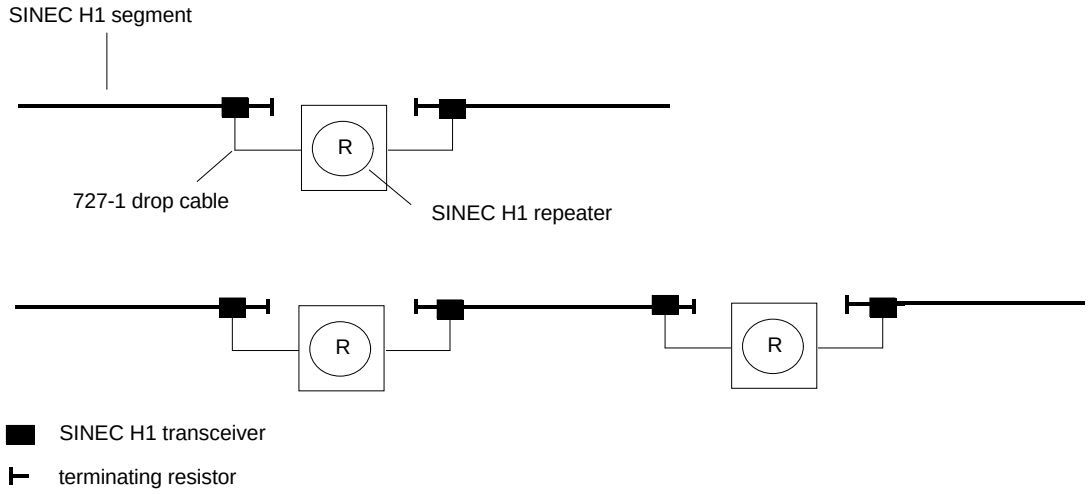


Fig. 2.9 Connecting SINEC H1 Segments using Repeaters

- **Function**

A repeater performs the following functions according to IEEE 802.3:

➢ Regeneration of the bus signal

The job of a repeater is to regenerate the signal attenuated by running through a bus segment and to eliminate distortion.

➢ Passing on collisions beyond segment boundaries

The repeater must inform the stations of both connected segments about the occurrence of collisions in the other segment. To do this, a 32-bit long "jam" signal is used; the transmission level on the bus causes the stations wishing to transmit to back off.

➢ Isolate disturbed segments

If disturbances occur, the repeater logically isolates the segment affected so that the other segment is not impaired and data traffic remains possible.

➢ Fragment extension

If the repeater receives blocks of data that are smaller than the minimum length of 96 bits, it must extend them up to this minimum length when it passes them on. This ensures reliable collision detection on the other segment.

Repeaters are connected to transceivers in the same way as DTEs using 727-1 drop cables. From the point of view of the transceiver, a repeater is effectively a DTE. The two drop cables also mean that 100m greater length can be achieved.

- **Remote repeater configuration**

The repeaters in Fig. 2.9 are known as local repeaters, because the distance between the connected bus segments is a maximum of 100m (see also the description "local repeaters" in Chapter 6).

A remote repeater consists of two local repeaters connected by a link segment of up to 1000m in length (see Fig. 2.10).

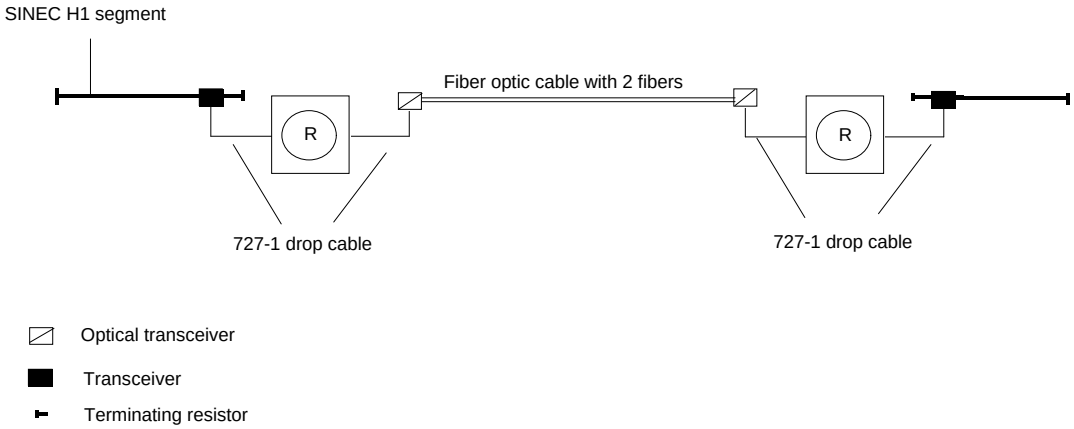


Fig. 2.10: Remote Repeater Configuration

Generally, the link segment is implemented using a fiber optic cable between optical transceivers (fiber optic inter repeater link, FOIRL). The fiber optic cable contains two fibers for transmitting optical signals in both directions. The optical transceivers send and receive optical signals and convert them to the electrical signals on the interface to the DTE. Also see the description and instructions SINEC H1FO optical transceivers in Chapter 4 of this manual).

Note: If the link segment is implemented as a triaxial cable, then no further interface modules apart from the two transceivers for the repeaters can be connected.

- **Standard Network Structure**

For larger SINEC H1 networks, the following standard network structure has proved to be practical (see Fig. 2.11).

Individual segments are connected to a backbone segment using local or remote repeaters. Groups of DTEs are connected to the individual segments. Considering that DTEs can also be connected to the backbone segment, this standard network structure allows all permitted network configurations (see also Section 2.5 Network Configuration).

There is no restriction to the number of repeaters in a network with the standard network structure. According to IEEE 802.3, only the number of repeaters between any two DTEs is restricted. The rule is as follows: the network must be structured so that signals do not run through more than two repeaters between any two DTEs. The two repeaters of a link segment are counted as one repeater unit.

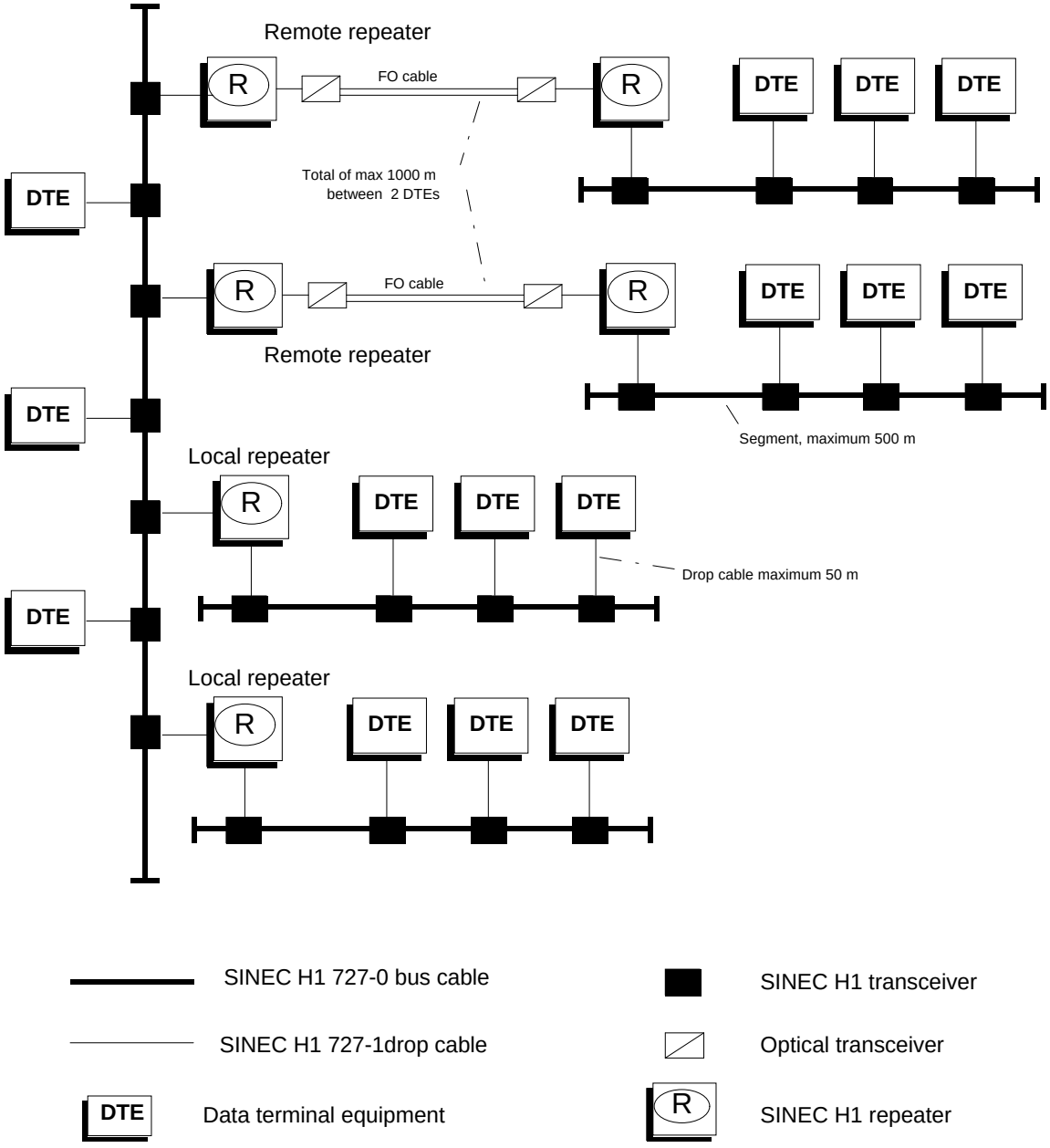


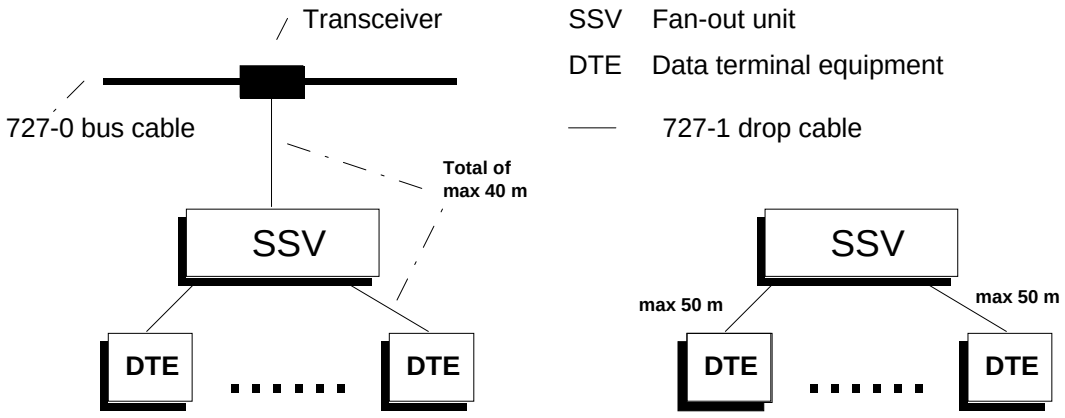
Fig. 2.11: Standard Network Structure

When connecting repeaters to transceivers and to optical transceivers, make sure that the SQE test function is switched off on the transceivers.

2.3.6 SINEC H1 Fan-Out Units

A fan-out unit allows the connection of several DTEs to the SINEC H1 transceiver interface. Fig. 2.12a illustrates the connection of a fan-out unit to a SINEC H1 transceiver. Fig. 2.15 illustrates the connection to a SINEC H1FO transceiver (optical transceiver).

A further advantage of the fan-out unit is that it can be operated as a stand-alone device without an connection to a transceiver. This allows DTEs to be networked within a range of up to 100m (see Fig. 2.12b).



a) Operation on SINEC H1network b) Stand-alone

Fig. 2.12: Modes of the SINEC H1 Fan-Out Unit

The maximum permitted lengths of the 727-1 drop cables can be seen in Fig. 2.12.

The following types of fan-out units are available in SINEC H1:

➢ SSV 102 with 5 DTE interfaces, where no additional external power supply is required.

➢ SSV 104 with 8 DTE interfaces, an external power supply of 120/240 V a.c. is required.

Note: a fan-out unit (Fig. 2.12,a) and the DTE connected to it do not represent a separate segment. If there is a fault between the fan-out unit and the rest of the network, communication is no longer possible between the DTEs connected to the fan-out unit.

- **SINEC H1 Fan-Out Unit SSV 102**

With a SINEC H1 fan-out unit SSV 102, up to 5 interfaces to DTEs can be connected to one transceiver interface (see also installation instructions SSV 102 in Chapter 5). The SSV 102 is supplied with power via the 727-1 drop cable to the DTEs.

The SSV 102 has the following interfaces:

1 "transceiver" interface for connection to a transceiver,

5 "DTE" interfaces for connection of 2 to 5 DTEs.

According to IEEE 802.3, each DTE provides a voltage via the drop cable in the range of 12 V to 15 V, with a maximum load of 500 mA. If only one DTE is connected, the SSV 102 switches off all the circuits not required to make sure that there is adequate current supplied to the transceiver. When two or more DTEs are connected, the de-activated circuits are activated again.

For normal operation of the fan-out unit SSV 102, two active DTEs should always be connected.

The SSV 102 is connected via its transceiver interface and a 727-1 drop cable to a transceiver. This mode is recognized by the SSV 102 by the flow of supply current to the transceiver interface. As a result of this, the signals on the transceiver interface are activated and evaluated by the SSV 102 (see Fig. 2.12a).

If there is no current on the transceiver interface of the SSV 102, the SSV 102 switches to the "stand-alone" mode. The transceiver interface is switched off and the signals on this interface are not evaluated (see Fig. 2.12b).

- **Special situations when using the SSV 102**

When using the SSV 102, there are certain situations which require special measures to be taken:

➢ Connecting two SSV 102s to a transceiver with two interfaces:

In this configuration, the transceiver receives its power supply only on the interface with the higher power supply voltage. The other interface provides no power. Without any measures being taken, one SSV 102 would switch over to the "stand-alone" mode and communication with the connected DTEs would be interrupted.

To avoid this happening, one of the two SSV 102s (see Fig. 2.13) is connected to the transceiver using an adapter between the transceiver connector and the 727-1 drop cable. The adapter interrupts the power supply lines to the transceiver and simulates the current input of the transceiver by means of a resistor.

Note: if the connecting cable as shown in Fig. 2.13 from the SSV 102 to the transceiver without the adapter is disconnected, the transceiver is then without any power supply and cannot function. This means that DTEs connected to the SSV 102 with adapters have no connection to the bus and cannot communicate with each other.

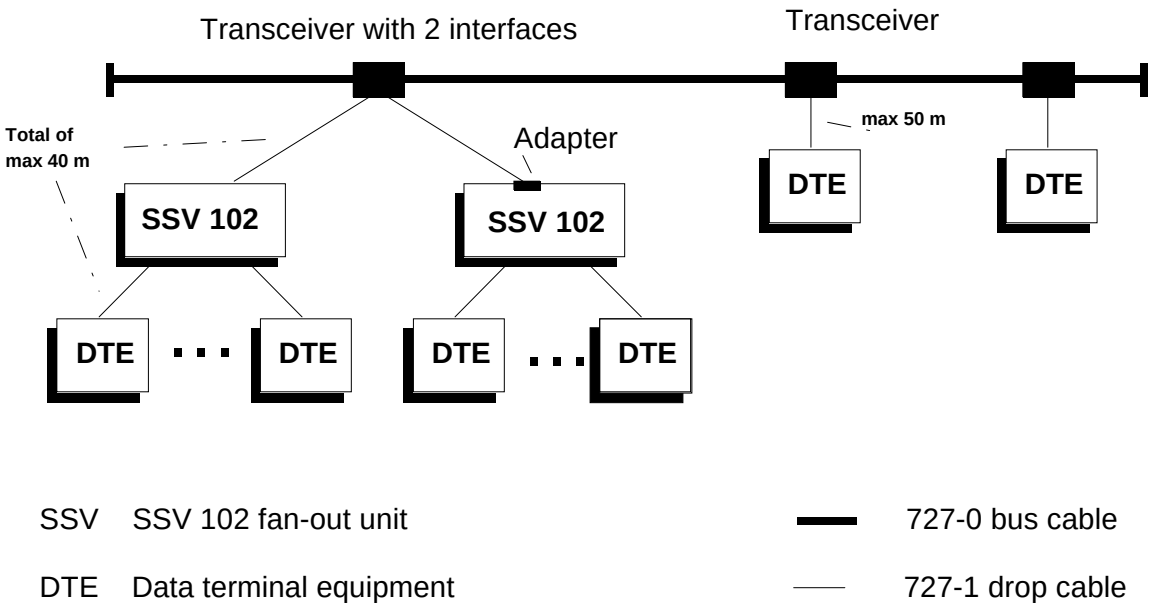


Fig. 2.13: Connecting Two SSV 102 Units to a Transceiver

➢ Connecting an SSV 102 to a network component with its own power supply.

With this configuration, the SSV 102 would also switch to the "stand-alone" mode without the adapter for the transceiver interface of the SSV 102 because no power supply current was flowing. The adapter prevents this. This permits the connection of an SSV 102 to a star coupler.

Note: If the cable between the SSV 102 and the network component with its own power supply is unplugged, the DTEs connected via the SSV 102 can no longer communicate with each other.

- **SINEC H1 Fan-Out Unit SSV 104**

With a SINEC H1 fan-out unit SSV 104, up to 8 interfaces to DTEs can be connected to a transceiver interface (see also the installation instructions SSV 104 in Chapter 5). The SSV 104 is supplied with power via a 120/240V a.c. power supply connection. The modes "REMOTE" (operation on the SINEC H1/H1FO network) or "LOCAL" (Stand-alone) are set with a switch on the SSV 104.

The SSV 104 has the following interfaces:

1 interface for connection of the power supply,

8 "DTE" interfaces for connecting from 1 to 8 DTEs,

1 "TRANSCEIVER" interface for connection to a transceiver.

- **Modes of the SSV 104**

The SSV 104 can be operated in three ways:

➢ Operation with connection to the SINEC H1/H1FO network (see Fig. 2.12a):

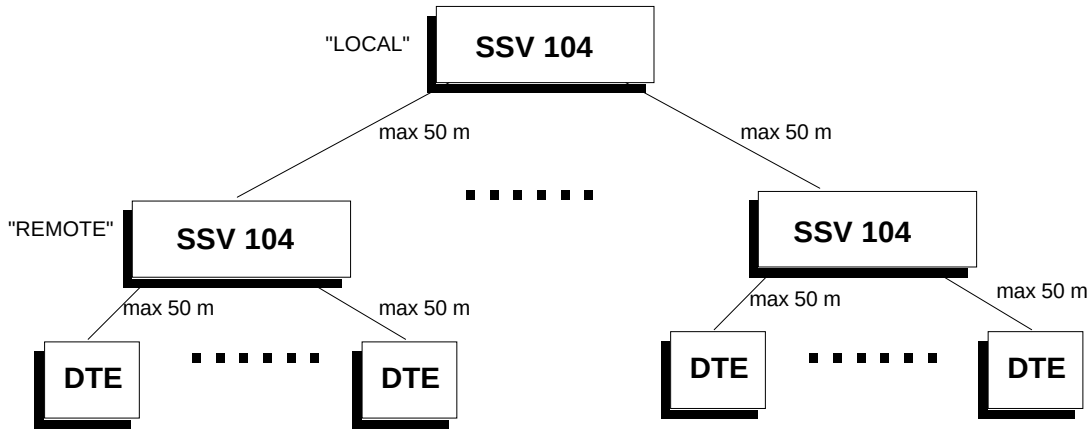
In this mode, the SSV 104 is connected via the "TRANSCEIVER" interface and a 727-1 drop cable to a transceiver and the switch on the SSV 104 is set to "REMOTE". The DTEs are connected to the "DTE" interfaces of the SSV 104 using drop cables. The drop cables between the transceiver, SSV 104 and each DTE can be up to a maximum of 40m long.

➢ Stand-alone mode without connection to the SINEC H1/H1FO network (see Fig. 2.12b):

In this mode, the switch on the SSV 104 is set to "LOCAL" and the DTEs are connected to the "DTE" interfaces using drop cables. The drop cables between the SSV 104 and a DTE can be a maximum of 50m long.
Depending on the requirements, the SQE test signal can be activated or deactivated in this mode using the sliding switch "SQE-Test".

➢ Stand-alone mode cascading SSV 104s in two levels (see Fig. 2.14):

In this mode, a local network can be operated within a range of 200m and with up to 64 DTEs.
The SSV 104 of the first level has its switch set to "LOCAL". Up to 8 SSV 104s belonging to the second level are connected to the DTE interfaces using drop cables. The SSV 104s of the second level have their switches set to "REMOTE". The DTEs are connected to the second level SSV 104s using drop cables. Each drop cable can be up to 50m long in this mode.



SSV SSV 104 fan-out unit

DTE Data terminal equipment

—— 727-1 drop cable

Fig. 2.14: Cascading SSV 104 Fan-Out Units

2.4 Connecting SINEC H1 to SINEC H1FO Star Couplers

With SINEC H1, a SINEC network can have a bus structure, with SINEC H1FO a star structure and with SINEC H1/H1FO a mixed bus/star structure.

Networking the SINEC H1 makes use of the SINEC H1 bus cable and the connected SINEC H1 network components. Networking with SINEC H1FO uses the SINEC H1FO star coupler (see SINEC H1FO manual Ethernet, /4/). Based on the star coupler, optical networks and twisted pair networks can be implemented.

2.4.1 SINEC H1/H1FO Networks

Mixed SINEC H1/H1FO networks allow a flexible topology in an industrial communications network using optical and electrical network segments (see Fig. 2.15). The bus topology for networking automation components via the SINEC H1 bus cable is a proven and extremely cost effective system. The star topology network using SINEC H1FO star couplers allows networking from building to building using fiber optic cables with a range of several kilometers.

The great advantages of optical transmission is its immunity to electromagnetic interference, the large transmission distance, and electrical isolation it allows.

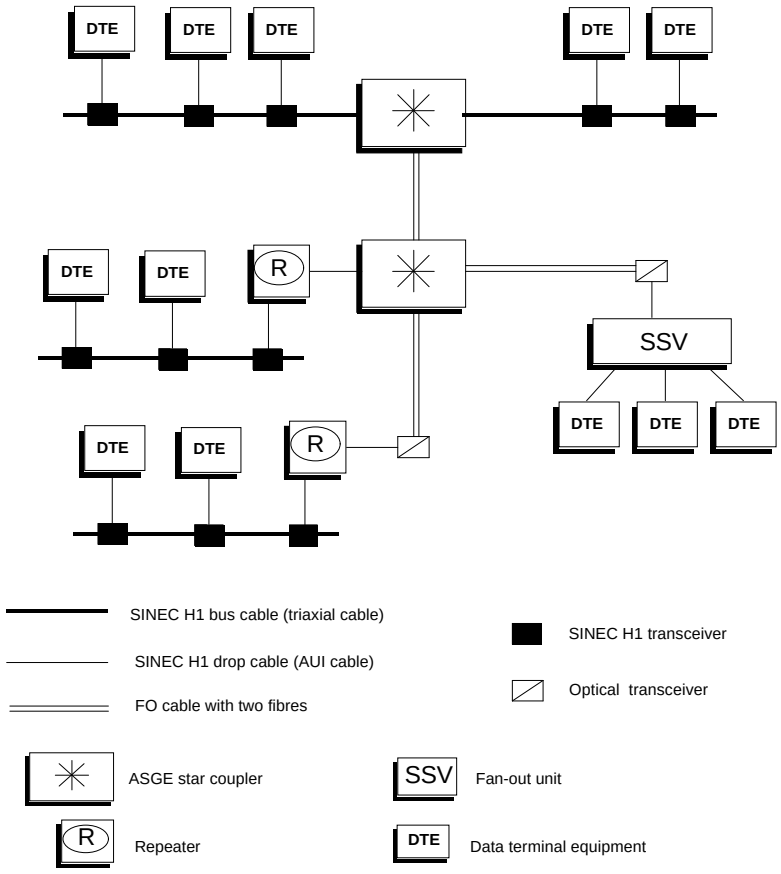


Fig. 2.15: Example of a Mixed Network

2.4.2 Connections Between SINEC H1 Bus Segments and SINEC H1FO

SINEC H1 bus segments and SINEC H1FO star couplers can be connected as follows:

- The SINEC H1 727-0 bus cable can be connected directly to the star coupler interface card KYDE-S using an N connector (see Fig. 2.15 and 2.16). With this connection, only the inner conductor and outer conductor of the bus cable are connected to the star coupler. The screen of the bus cable is connected to the protective ground of the star coupler rack using the shielding connection clamp and a ground cable. If the star coupler is installed in a cabinet, the outer screen must be connected to the cabinet ground. The 727-0 bus cable has a permitted bending radius of 125 mm. For this reason, when connecting the bus cable to a star coupler in a cabinet, an angled connecting piece should be used (see Fig. 2.17).

- SINEC H1 bus segments can be connected to the star coupler interface card ECAUI using repeaters and the 727-1 drop cable.

- SINEC H1 bus segments can be connected to an optical transceiver using repeaters and the 727-1 drop cable (see Fig. 2.15). The optical transceiver is connected to the star coupler interface card OYDE-S (BFOC) via an optical network segment (fiber optic cable with two optical fibers).

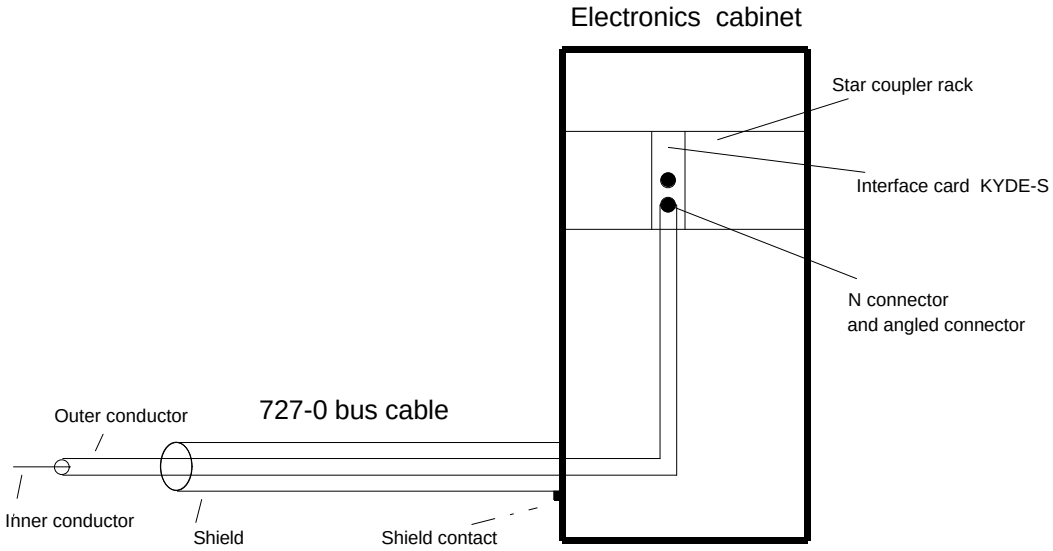


Fig. 2.16: Connection of the Bus Cable to the Interface Card KYDE-S

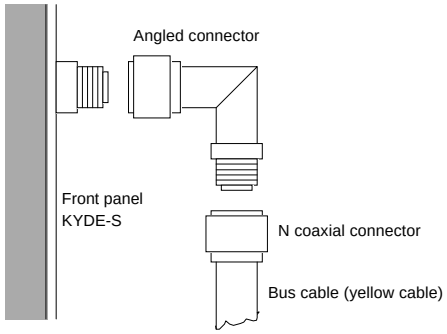


Fig. 2.17: Angled Connector

2.5 Network Configuration

Homogeneous networks with SINEC H1 network components do not require calculations of the transit times in the network cables and the active components. In such networks, only the rules for segment structure and segment connection must be adhered to (see Fig. 2.18 Standard Network Structure).

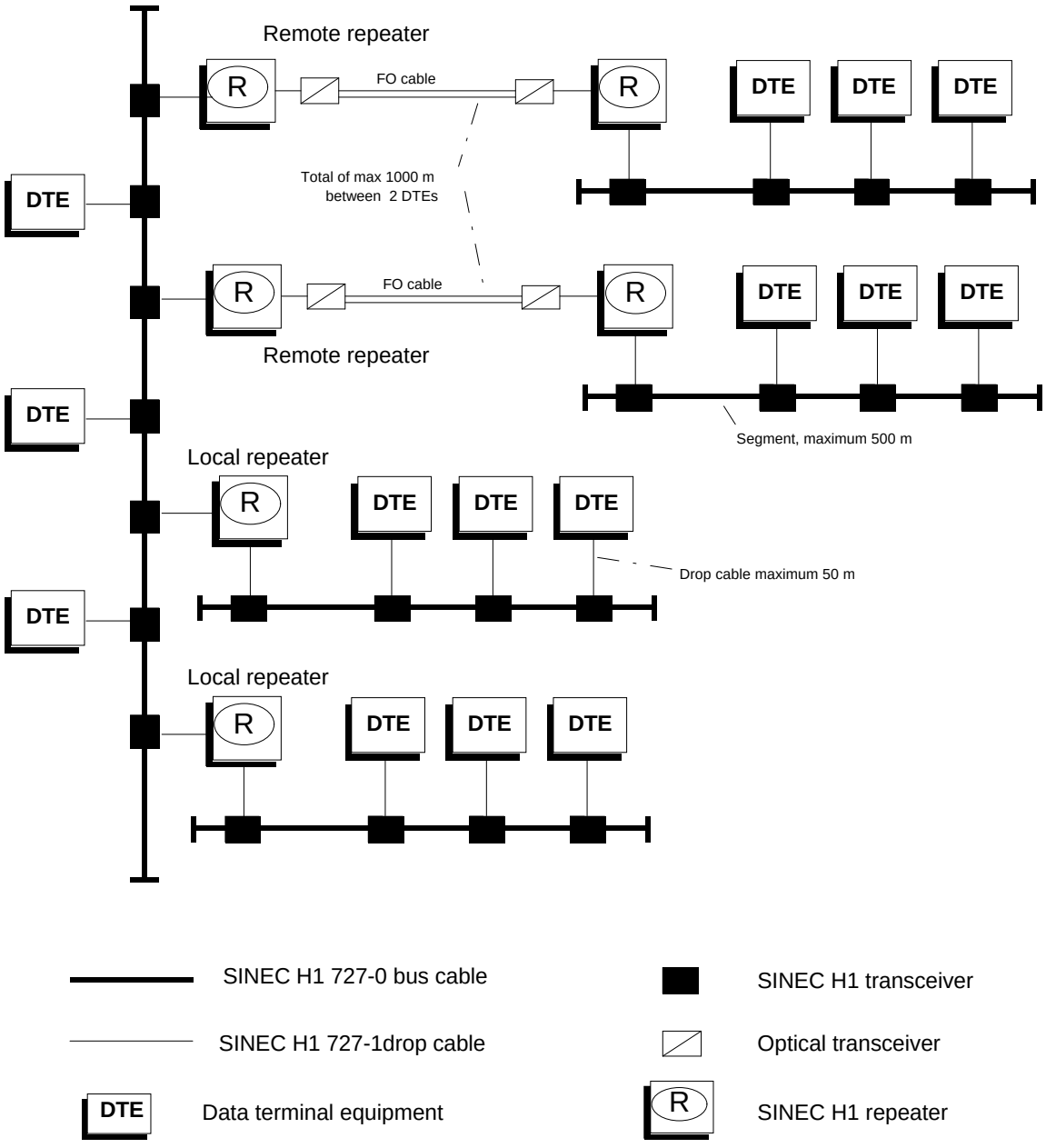


Fig. 2.18: Standard Network Structure

- **Segment Structure**

➢ A segment is a maximum of 500m long and includes a maximum of 100 transceivers.

➢ Each segment is terminated at both ends with a 50 Ω terminating resistor.

➢ The minimum length of the bus cable between two transceivers is 2.5m. The transceivers must be connected to the bus cable at intervals representing multiples of 2.5m (markings on the cable).

➢ The maximum length of a 727-1 drop cable is 50m. Constructing a drop cable from two separate cables is permitted but not advisable.

➢ The maximum length of the two drop cables between the transceiver, fan-out unit and connected DTE is 40m.

- **Segment Connection**

➢ Segments are connected using local repeaters or remote repeaters. A remote repeater configuration as shown in figure 2.10 counts as one repeater unit.

➢ A maximum of two repeaters can be located in the signal route between two DTEs.

➢ The fiber optic cable of the remote repeaters between two DTEs can be a maximum of 1000 m long.

➢ The repeaters are connected to the segments using two drop cables and two transceivers.

➢ Any number of local repeaters and remote repeaters can be used in a SINEC H1 network providing the conditions for segment connection are adhered to.

- **Combined SINEC H1/H1FO Networks**

The maximum transit time in combined networks with SINEC H1 bus segments and SINEC H1FO network segments with star couplers must be checked. This is necessary because the geometrical limits specified by the IEEE 802.3 standard are exceeded and the limits for run times required for the CSMA/CD access technique must be adhered to.

To ensure that collisions are reliably detected, the CSMS/CD access technique demands that the maximum transit time of 25.6 µs between two DTEs is not exceeded. This transit time limit ensures that if the two DTEs furthest apart in the network attempt to transmit simultaneously using the minimum packet length of 512 bits, the collision that occurs will be detected in both DTEs involved before their transmission is complete.

To simplify the check, all the delay times caused by active components are converted to equivalent cable lengths. The maximum distance between the two DTEs furthest apart in the network must not exceed a total cable length of 4800 m.

The delay of SINEC H1 network components can be converted as follows:

➢ With the SINEC H1 727-0 bus cable and 727-1 drop cable, the sum of the cable lengths between the stations is calculated.

➢ The delay time caused by a SINEC H1 transceiver results in an equivalent cable length of 10 m.

➢ The delay time caused by a SINEC H1 repeater results in an equivalent cable length of 160 m.

➢ The delay time caused by a SINEC H1 fan-out unit results in an equivalent cable length of 10m.

The delay times of the network components for SINEC H1FO converted to cable lengths can be found in the SINEC H1FO manual Ethernet /4/.

- **How to Check a Planned SINEC H1/H1FO Network**

Follow the procedure outlined below:

✔ First identify the DTEs furthest apart in the SINEC H1/H1FO network.

✔ Add all the cable lengths between the two DTEs together.

✔ Add together all the equivalent cable lengths of the network components between the two DTEs.

✔ Check that the total length does not exceed a value of 4800 m.

If this check is successful, the configuration of the planned network is permitted.

Note: If it is not clear which two DTEs are furthest apart, the check above should be made for several different pairs of DTEs.

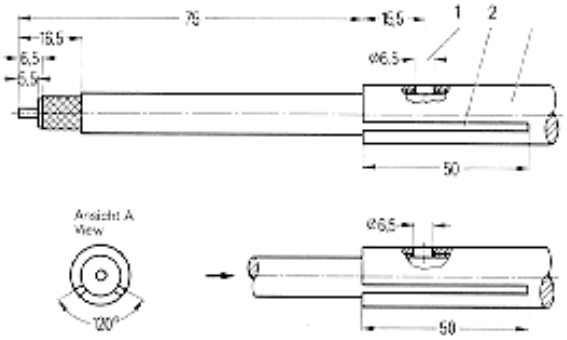
3 Connectors for the Bus Cable

An abstract from the AR436-220 instructions

Contents **Page**

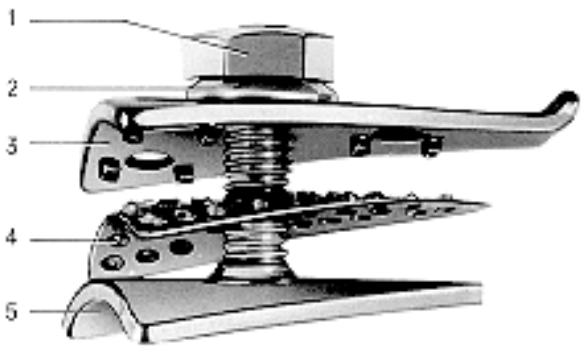
Fitting plug connectors to the cable

Before beginning termination work, prepare a clean workplace with sufficient lighting. In the case of transceivers which are not accessible from a fixed platform, proper safety measures should be taken. Fig. 35 shows the necessary installation material and tools.
Prepare the cable as shown in Fig. 26.
Measure exactly the length of the cable from the end of the protective conduit or from the last cable clamp to the transceiver/repeater.
Pull a shrink sleeve (Fig.28, Pos.1) over the end of the cable. Cut the outer grey cable sheath and the outer shield for a lenght of 75 mm. When adjusting the cable sheath cutter take care that it does not cut the next layer of insulation. Cut the outer aluminium tape shield flush using a pair of scissors. Now slit the outer cable sheath on both sides for a length of 50 mm and punch a 6,5 mm diameter hole using a hole punch. Fig. 26 shows the position and dimensions of the slot and the hole. Remove the insulation of coaxial cable as shown in Fig. 26.



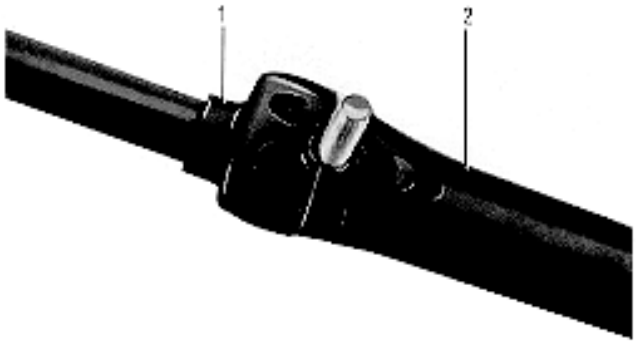
1 Hole only through sheath and outer shield
2 Slit on both sides
3 Cable KA 1 x 2,17 2 Y(ST)C(ST)CY(T)2Y

Fig. 26
Preparing the cable for connection



1 Hexagonal nut
2 Washer
3 Top part (yellow)
4 Toothed contact sheet
5 Bottom part with slot

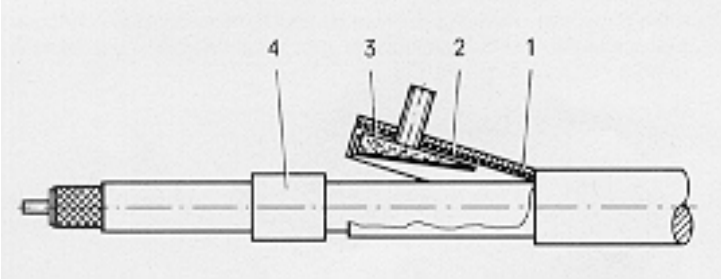
Fig. 27
Shielding connection clamp



1 and 2 Shrink sleeves included in connector set

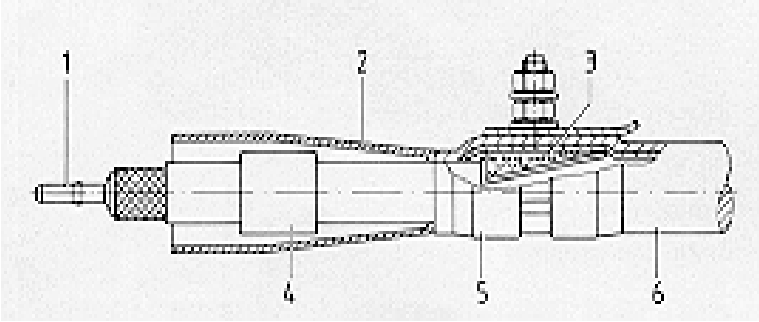
Fig. 28
Shielding clamp fitted and sleeves shrunk (1)(2)

Position the bottom part of the shield connection clamp and the contact sheet below the cable shield. Slip the shrink sleeve (Fig. 28 1 and 2) up to the stud and shrink them using a hot air blower.
Crimping the connector pin, Fig. 30.
Position the yellow top part of the shield clamp and screw it into position.
Slip the insulating sleeve and the crimping sleeve over the conductor. Crimp the connector pin into position using crimping pliers. Slip the connector casing over the cable until it locks into position. Push the crimping sleeve right up to the connector casing and crimp it into position. The same crimping pliers are used here as were used for crimping the connector pin. Push the insulating sleeve over the connector.



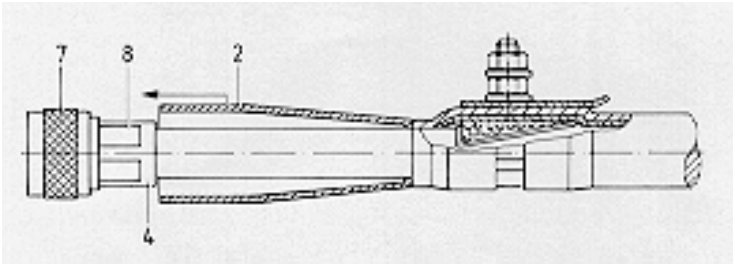
1 Cable sheath
2 Shield
3 Contact sheet
4 Crimp sleeve

Fig. 29
Fitting the shield clamp



1 Connector pin crimped in position
2 Rubber cap
3 Shielding connection clamp
4 Crimp sleeve
5 Shrink sleeve (Fig. 28, Pos. 1)
6 Shrink sleeve (Fig. 28, Pos. 2)
7 Push the connector pin (1) in until it locks into position in the casing. The shield must project over the neck of the terminal
8 Crimp the crimp sleeve (4) as close to casing as possible

1



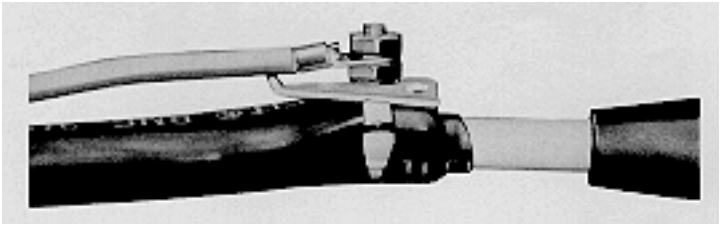


Fig. 30
Cable with connector and shielding connection clamp

Grounding and shielding

The shield of the inner yellow coaxial cable is generally not grounded (if necessary ground at one point only). For this reason, the casing of the coaxial connector and the termination connector, which are connected to shield at the transceiver (Fig. 27/28), are provided with rubber caps. The outer shield of the bus cable (max. permissible equalizing current 35 A) must be grounded and the grounding lead to the mounting plate (Fig. 31).
The mounting plate should be isolated if noise occurs over the grounding connection at the mounting plate.
If necessary, use a shrink sleeve to protect uninsulated parts of the outer aluminium shield of the bus cable, connector or terminating resistance from contact with ground potential.
In addition, the protective conduitsshhoul also be visibly grounded using grounding clamps (Fig. 32-33).
If the protective conduit is interrupted and if metalic flexible conduits are used, the external continuous ground conductor must be laid along the complete length.

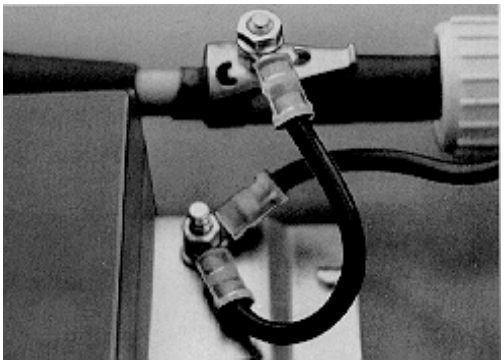


Fig. 31
Grounding the bus cable using shield clamps

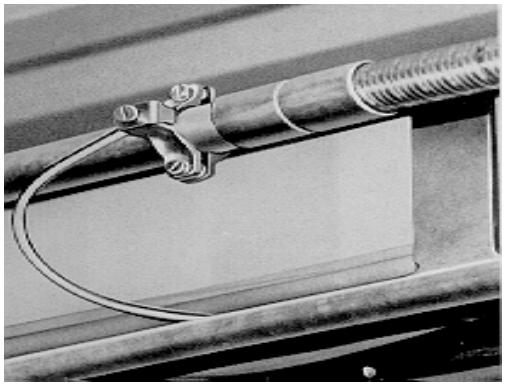


Fig. 32
Grounding clamp

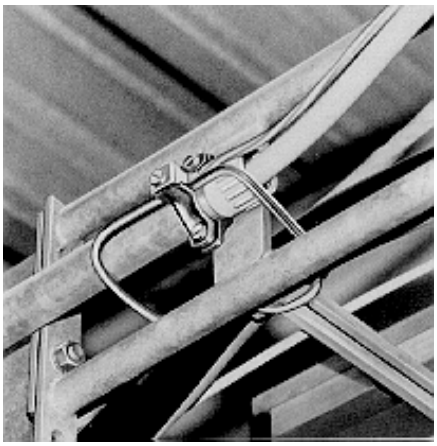


Fig. 33
Ground connection when the using metallic flexible conduits

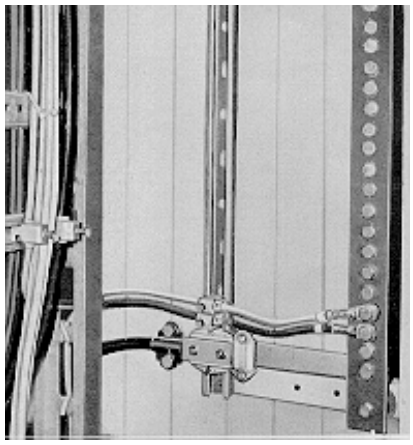


Fig. 34
Connection of the grounding conductor to the internal grounding system of the building, example.

Installation material and tools

Designation	Supplier	HSMA-Nr.	Order- No.
Connector, set of parts complete with: 1 fixing angle. 2 connectors, 2 rubber cabs, 2 shielding connectors, 2 shrink sleeves	LZN		6ES5 755-4AA11
Terminatiton connector complete with: 2 terminating resistors, 2 rubber caps, 1 fixing angle	LZN		6ES5 755-3AA11
Barrel Connector	Suhner Elektronik GmbH D-82019 Taufkirchen		31 N - 50 - 0 - 2
Cable sheath clamp with insulated top part and insulated base plate	Fa. RXS D-58093 Hagen		545057-21-A302
Tool set for assembling coaxial connector set 6ES5 755 consisting of: Suhner hand crimping tool 75Z-0-0-1 Crimping insert 76Z-0-0-1 violet Hole punch C45-407-A62-A4 Cable sheath cutter Hexagonal pin key 2 mm Hexagonal pin key 3 mm	ANL A442-WZ	1K14 18..	
Hot air blower, thermogun	ANL A442-WZ	1V200 951	

Fig.35
Installation material and tools

The following commonly used tools should also be available:
8/10/11 mm open-ended spanners, cable knife, cable lug crimmping tool (for 6mm^2 grounding conductor), PUK metalsaw, scissors, side cutter, screwdriver, vernier calipers, waterproof felting, meter tape, cable sheath cleaner.

4 Transceiver

SIEMENS

SINEC

H1 Buskoppler
H1 Transceiver
H1 Transceiver
H1 Transceiver

Montageanleitung
Installation Instructions
Instructions de montage
Istruzioni di montaggio

Bestell-Nr.: 6GK1972-1AB00-0AA0 Ausgabe 02
Order no.: 6GK1972-1AB00-0AA0 Release 02
N° de commande: 6GK1972-1AB00-0AA0 Edition 02
N. di ordinazione: 6GK1972-1AB00-0AA0 Edizione 02

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Allgemeines

WARNUNG !

!

- Dieses Gerät wird mit Elektrizität betrieben. Beim Betrieb elektrischer Geräte stehen zwangsläufig bestimmte Teile dieser Geräte unter gefährlicher Spannung.
- Bei Nichtbeachtung der Warnhinweise können deshalb schwere Körperverletzungen und/oder Sachschäden auftreten.
- Nur entsprechend qualifiziertes Personal sollte an diesem Gerät oder in dessen Nähe arbeiten. Dieses Personal muß gründlich mit allen Warnungen und Instandhaltungsmaßnahmen gemäß dieser Betriebsanleitung vertraut sein.
- Der einwandfreie und sichere Betrieb dieses Gerätes setzt sachgemäßen Transport, fachgerechte Lagerung und Montage sowie sorgfältige Bedienung und Instandhaltung voraus.

Anforderungen an die Qualifikation des Personals

Qualifiziertes Personal im Sinne dieser Betriebsanleitung bzw. der Warnhinweise sind Personen, die mit Aufstellung, Montage, Inbetriebsetzung und Betrieb dieses Produktes vertraut sind und über die ihrer Tätigkeit entsprechenden Qualifikation verfügen, wie z.B.:

– Ausbildung oder Unterweisung bzw. Berechtigung, Stromkreise und Geräte bzw. Systeme gemäß den aktuellen Standards der Sicherheitstechnik ein- und auszuschalten, zu erden und zu kennzeichnen;
– Ausbildung oder Unterweisung gemäß den aktuellen Standards der Sicherheitstechnik in Pflege und Gebrauch angemessener Sicherheitsausrüstungen;
– Schulung in Erster Hilfe.

Note

We would point out that the contents of this product documentation shall not become a part of or modify any prior or existing agreement, commitment or legal relationship. The Purchase Agreement contains the complete and exclusive obligations of Siemens. Any statements contained in this documentation do not create new warranties or restrict the existing warranty.We would further point out that, for reasons of clarity, these operating instructions cannot deal with every possible problem arising from the use of this device. Should you require further information or if any special problems arise which are not sufficiently dealt with in the operating instructions, please contact your local Siemens representative.

General

WARNING !

!

- This device is electrically operated. In operation, certain parts of this device carry a dangerously high voltage.
- Failure to heed warnings may result in serious physical injury and/or material damage.
- Only appropriately qualified personnel may operate this equipment or work in its vicinity. Personnel must be thoroughly familiar with all warnings and maintenance measures in accordance with these operating instructions.
- Correct and safe operation of this equipment requires proper transport, storage and assembly as well as careful operator control and maintenance.

Personnel qualification requirements

Qualified personnel as referred to in the operating instructions or in the warning notes are defined as persons who are familiar with the installation, assembly, startup and operation of this product and who posses the relevant qualifications for their work, e.g.:

– Training in or authorization for connecting up, grounding or labelling circuits and devices or systems in accordance with current standards in saftey technology;
– Training in or authorization for the maintenance and use of suitable saftey equipment in accordance with current standards in safety technology;
– First Aid qualification.

Information

Le contenu de ces instructions de service ne fait pas partie d'une convention, d'un accord ou d'un rapport juridique existant ou ayant existè. Il n'est pas non plus destiné à modifier de tels textes. L'ensemble des devoirs de Siemens résulte de chaque contrat de vente qui comprend la totalitè du seul règlement appplicable en matière de garantie. Le contenu des présentes instructions de service ne constitue ni une extension ni une restriction des dispositions contractuelles relatives à cette garantie.

Par souci de clarté, ces instructions de service ne traitent pas non plus tous le problèmes imaginables qui peuvent se poser en relation avec l'emploi de cet appareil. Si vous aves besoin d'informations complèmentaires ou si vous êtes confrontés à des problèmes particuliers qui ne sont pas traités en détail dans ce manuel, la filiale Siemens de votre région vous fournira les renseignements nécessaires.

Généralités

ATTENZION !

!

- Cet appareil fonctionne avec du courant électrique. Pendent l'exploitation d'appareils électriques, certaines pièces sont forcément sous tension dangereuse.
- Pour éviter de graves blessures corporelles et/ou de sérieux dégâts matériels, il est indispensable de respecteur les avertissements.
- Toute intervention sur cet apppareil ou tout travail exécuté à proximité de cet appareil sont réservés à un personnel qui possède une qualification correspondante. Ce personnel aura une parfaite connaissance de tous les avertissements et de toutes les mesures de maintenance conformes à ces instructions de service.
- Le bon fonctinnement de cet appareil suppose un transport adéquat, un stockage et unmontage appropriés, ainsi qu'une utilisation et une maintenance correctes.

Exigences relatives à la qualification du personnel

Au sens de ces instructions de service ou des avertissements, "personnel qualifié" désigne des personnes familiarisées avec l'installation, le montage et la mise en service de ce produit et spécialisées dan le domaine relatif à leurs activités. Elles auront par example:

– une formation, une instruction ou une habilitation qui les autorisent à brancher/débrancher, mettre à la terre ou repérer des circuits électriques, des appareils ou des systèmes conformes aux normes actulles des technique de sécurité;
– une formation ou une instruction conforme aux normes actuelles des techniques de sécurité en matière de d'entretien et d'utilisation des équipements de sécurité;
– une information en premiers soins ❑.

Avvertenza importante
Il contenuto di questa documentazione di prodotto non fa parte o modifica convenzioni, accordi o rapporti giuridici esistenti o preesistenti. Il contratto di acquisto contiene tutti gli obblighi di Siemens, comprese tutte le condizioni di garanzia. Il contenuto di questa documentazione di prodotto non amplia e non riduce le condizioni contrattuali di garanzia. Per motivi di chiarezza, questa documentazione di prodotto non può descrivere tutti i problemi che possono derivare dall'impiego di questa apparecchiatura. Se servono informazioni complementari relative a problemi particolari non descritti in questa documentazione, vi preghiamo di voler contattare la filiale Siemens competente per territorio, la quale vi fornirà le informazioni necessarie.

Generalità

ATTENZIONE !

!

- Questo apparecchio funziona con energia elettrica. Durante il funzionamento elle apparecchiature elettriche, alcune parti di esse possono assumere un potenziale pericoloso.
- In caso di inosservanza delle avvertenze di cautela, possono aversi ferite gravi alle persone e/o danni alle cose.
- Gi interventi su questo apparecchio o nelle sue vicinanze sono riservate a personale qualificato. Questo personale dovrà avere una perfetta conoscenza di tutte le avvertenze e delle misure per la riparazione in conformità a quanto descritto in questa documentazione di prodotto.
- Il funzionamento corretto e sicuro di questo apparecchio presuppone un trasporto adeguato, un magazzinaggio e montaggio corretti, così come un attento impiego e manutenzione.

Qualificazione del personale
Ai sensi di questa documentazione di prodotto e delle avvertenze di cautela, "personale qualificato" definisce persone aventi familiarità con l'installazione, il montaggio, la messa in servizio e l'esercizio di questo prodotto ed in possesso di una qualificazione corrispondente alla loro attività, come ad es.:

– una formazione, una istruzione o una abilitazione che le autorizzino a inserire, disinserire, mettere a terra e contrassegnare circuiti elettrici, apparecchi e impianti elettrici in conformità agli standard attuali di sicurezza;
– una formazione o una istruzione conformi agli standard attuali di sicurezza nella manutenzione e nell'impiego di apparecchiature di sicurezza.
– una preparazione di pronto soccorso.

Contents **Page**

1 The SINEC H1 Transceiver with Bus Connector

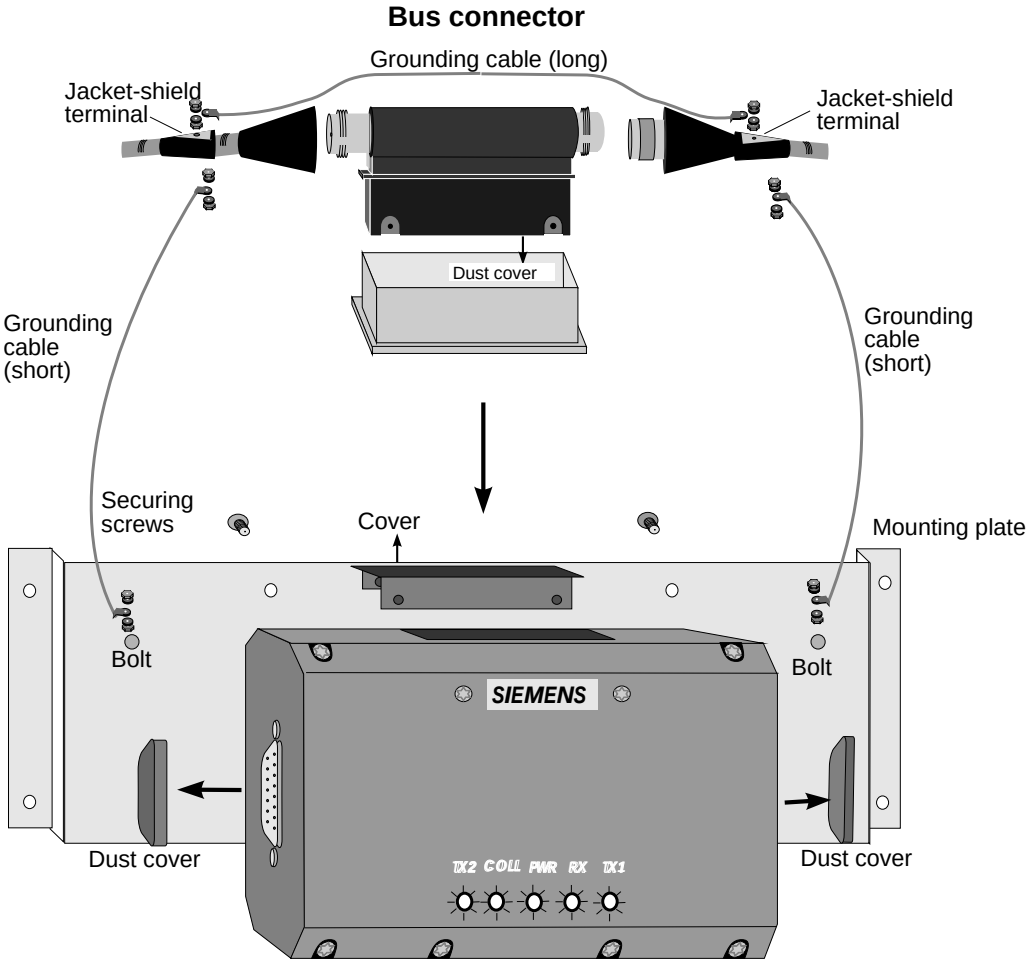


Fig. 1: Assembly of the transceiver and bus connector

2 The Versions Available

	Bus connector with N connector	SINEC H1 transceiver with one interface 6GK1901 - 0AA00 - 0AA0	SINEC H1 transceiver with two interfaces 6GK1901 - 0AA00 - 0AC0	Mounting plate	Fixed installation set	Dust cover	Fittings	Grounding cable	Resistor 25 Ω	Cover
SIBUKO package 1 6GK1100-0AA00	●				●		● 1 x long			
SIBUKO package 2 6GK1100-0AB00	●	●		●	●		●	● 2 x short		
SIBUKO package 6 6GK1100-0AJ00	●		●	●	●		●	● 2 x short	●	
SINEC H1 transceiver with **one** interface 6GK1901-0AA00-0AA0		●		●	●		●	● 2 x short		
SINEC H1 transceiver with **two** interfaces 6GK1901-0AA00-0AC0			●	●	●		●	● 2 x short	●	●

☞ **When the components are supplied, the connection points for the drop cables are protected by dust covers.**

The N-coaxial connector, jacket-shield terminals and rubber grommets required to connect the SINEC H1 bus cable are not supplied. These can be ordered under order no. 6ES5 755-4AA11 (set of 2).

3 What you should know

3.1 Technical description

A SINEC H1 transceiver with one or two interfaces is required to connect stations to the SINEC H1 network. The transceiver with two interfaces can also be used for direct connection of two DTEs without a bus connection. The transceiver with the bus connector (N connector) comply with the IEEE 802.3 standard (CSMA/CD). The transceivers are supplied with their operating voltage by the DTE. The transceiver has the following functions:

- ➢ Transferring transmitted data to the SINEC H1 cable
- ➢ Taking received data from the SINEC H1 cable
- ➢ Collision detection
- ➢ Jabber function (transmission time monitoring)
- ➢ Signal quality error (SQE) test (heartbeat)

3.2 Technical Data

	Transceiver with one interface 6GK1901-0AA00-0AA0	**Transceiver with two interfaces** 6GK1901-0AA00-0AC0
Power supply	10.3 V ...15.75 V The DTE must meet the requirements of "safe electrical isolation" from the power supply system (refer to DIN VDE 0160 and DIN IEC 435/VDE 0805)	9.5 V ...15.75 V
Power consumption	150 to 300 mA	300 to 500 mA
Insulation resistance	10 M Ω	
Insulation voltage	1,5 kV AC between bus cable and enclosure	
Interference suppression	The SINEC H1 transceiver meets the requirements of limit value class B according to DIN 57871/VDE and therefore qualifies for the general operating approval according to instruction 1046/84 of the German Post ministry. This approval only applies when the connected devices also have this general approval.	The SINEC H1 transceiver meets the requirements of limit value class A and has the FTZ test number A700345 C/HF.
Connection to the bus	Bus connector with "N connectors"	
Connection to DTEs	15-pin D subminiature connector	
Pin assignment Collision detection Send Receive Power supply Shield, internal Shield	 2 + and 9 - 3 + and 10 - 5 + and 12 - 13 + and 6 - 1, 4, 8, 11 and 14 Enclosure	
Environmental conditions Operating temperature Storage temperature Humidity Type of protection	 0 °C to 55 °C -40 °C to + 70 °C 95 % (no condensation) IP 40 (when screwed to the mounting plate)	

4 What you have to do

4.1 Unpacking

✔ Check that the package is complete (refer to Section 2 "Versions available").

✔ Remove all components completely from the packing material.

✔ Check the individual components for transport damage.

☞ **Only install undamaged components.**

4.2 Installation (refer to Fig. 1)

4.2.1 Assembling the SINEC bus connector

☞ **If you do not follow the installation instructions exactly and if you undertake any other work in the device, this may increase the interference emission and nullify the "general approval".**

Condition: Before installing the bus connector, the ends of the bus cable must be pre-assembled and fitted with N coaxial connectors and jacket-shield terminals according to the regulations.

✔ Secure the dust cover on the bus connector using the supplied cable straps (only when you do not intend to install the transceiver immediately -> SIBUKO Package 1).

✔ Screw the N coaxial connectors of the bus cable into the bus connector.

✔ Connect the two jacket-shield terminals to the supplied grounding cable.

4.2.2 Assembling the transceiver

✔ Drill the holes for securing the mounting plate. The mounting plate itself can be used as a template.

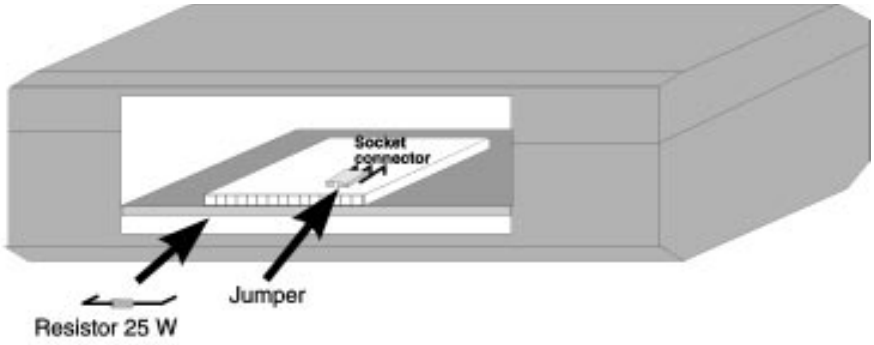
✔ Secure the SINEC transceiver to the mounting plate with the 4 screws.

✔ Remove the dust cover from the bus connector if you intend to assemble it immediately.

✔ Remove the cover from the transceiver. To do this, undo the two screws to the right and left of the SIEMENS emblems -> only on the transceiver with 2 interfaces.

✔ Select the setting for the SQE test on the SINEC transceiver (refer to Fig. 2). When supplied, the SQE test is inactive.

✔ Fit the SINEC transceiver onto the assembled bus connector and screw them together using the two screws from the cover.



1 Transceiver with **one** interface
Jumper
inserted **left** --> SQE test **off**
inserted **right** --> SQE test **on**

2 Transceiver with **two** interfaces
Jumper
inserted **left** --> SQE test **on**
inserted **right** --> SQE test **off**

Fig. 2: Setting the SQE test

✔ Secure the mounting plate.

✔ Ground the jacket-shield terminals of the ends of the bus cable to the mounting plate using the short grounding cables. In this case, the long grounding cable is not necessary (refer to 4.2.1).

✔ Ground the transceiver by connecting the mounting plate using the copper grounding strap (cross section 6 mm^2) to the nearest local ground via the shortest route possible. (This step can be omitted if the device is installed directly on a grounded, conductive base).

✔ Connect the drop cable 727-1 from the data terminal equipment (DTE) to the transceiver. Secure the connection using the slider.

4.2.3 Assembling the transceiver with 2 interfaces without bus connection

You can also use the transceiver with two interfaces to connect two DTEs directly without a connection to the bus. In this case, proceed as follows:

✔ Remove the bus connector and the cover of the transceiver. To remove the cover plate, undo the two screws to the right and left of the SIEMENS emblem.

✔ Select the setting for the SQE test on the SINEC transceiver (refer to Fig. 2). When supplied, the SQE test is inactive.

✔ Insert the terminating resistor on the left or right in the single-row socket connector in the transceiver and secure the cover again (screws to the right and left of the SIEMENS emblem).
The bus connector must not be assembled in this case.

✔ Connect the drop cable 727-1 from the data terminal units (DTE) to the transceiver. Secure the connection using the slider.

☞ **If the transceiver is later connected to the bus, the resistor must first be removed before making the connection.**

5 Using the Transceiver on the Network

5.1 Points to Note

- ➢ Only use data terminal equipment (DTE) that meets the requirements of "safe electrical isolation" from the power supply (refer to DIN/VDE 0160 and DIN/IEC 435/VDE 0805).
- ➢ The drop cable 727-1 must only be connected when the transceiver is already connected to the bus via the bus connector.
- ➢ By the same token, the DTE must first be disconnected before disconnecting the transceiver from the bus.

☞ **During operation (i.e. when the cable to the DTE is connected), the transceiver must not be disconnected from the bus -> irreparable damage can result.**

5.2 How to start up the Transceiver

The SINEC transceiver is supplied with power via the drop cable 727-1. The SINEC transceiver is ready for operation when the cable to both devices, the SINEC transceiver and the DTE is plugged in and the DTE is supplying the required power.

5.3 LEDs

Only the transceiver with two interfaces is equipped with LEDs.

LED			Meaning
PWR	Power	(green)	This LED is lit when power is supplied to the transceiver.
RX	Receive	(yellow)	This LED is lit when the transceiver is receiving data from the network or its own DTE interface.
COLL	Collision	(red)	a) This LED is lit briefly (simultaneously with LEDs TX1 or TX2) when the SQE test is active. b) This LED is lit when collisions are detected on the bus cable.
TX1, **TX2**		(green)	This LED is lit when the corresponding interface (1 or 2) is transmitting data on the network.

5.4 Taking the Transceiver out of Operation

To take the transceiver out of operation, it must be disassembled in the opposite order from which it was assembled. **Make sure that the drop cable is first disconnected from the transceiver.** General bus traffic is not interrupted if the bus connector remains connected to the bus cable. ❑

1 Der SINEC H1 Buskoppler mit Busanschlußstück

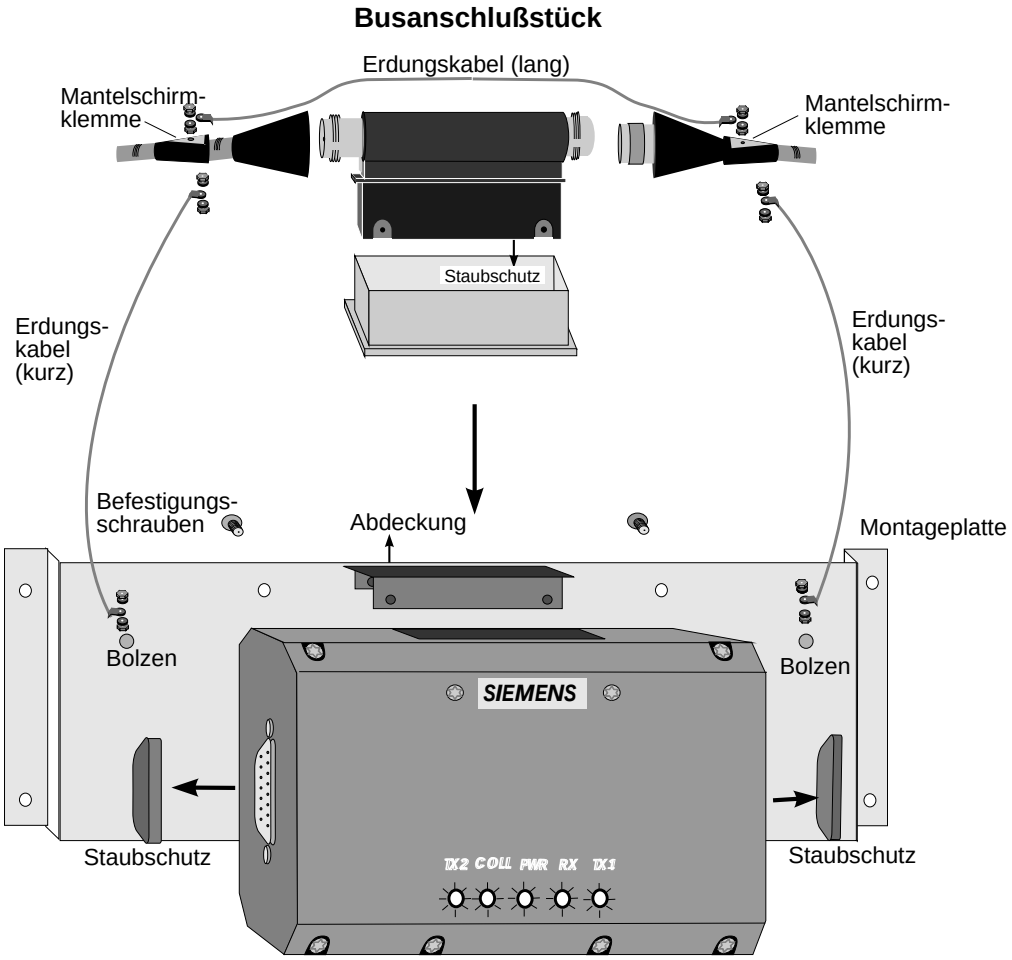


Bild 1: Montage des Buskopplers und des Busanschlußstückes

2 Welche Lieferformen es gibt !

	Busanschlußstück mit N-Connector	SINEC H1 Buskoppler mit einer Schnittstelle 6GK1901 - 0AA00 - 0AA0	SINEC H1 Buskoppler mit zwei Schnittstellen 6GK1901 - 0AA00 - 0AC0	Montageplatte	Festmontageset	Staubschutz	Befestigungsmaterial	Erdungskabel	Aufsteckwiderstand 25 Ω	Abdeckung
SIBUKO Paket 1 6GK1100-0AA00	●					●		● **1 x lang**		
SIBUKO Paket 2 6GK1100-0AB00	●	●		●	●		●	● **2 x kurz**		
SIBUKO Paket 6 6GK1100-0AJ00	●		●	●	●		●	● **2 x kurz**	●	
SINEC H1 Buskoppler mit **einer** Schnittstelle 6GK1901-0AA00-0AA0		●		●	●		●	● **2 x kurz**		
SINEC H1 Buskoppler mit **zwei** Schnittstellen 6GK1901-0AA00-0AC0			●	●	●		●	● **2 x kurz**	●	●

Bei den gelieferten Komponenten sind die Anschlußstellen für die Dropcable mit Staubschutzkappen geschützt.

Die zum Anschluß des SINEC H1-Buskabels erforderlichen N-Koaxialstecker, Mantelschirmklemmen und Gummitüllen, sind sind nicht im Lieferumfang enthalten. Sie sind unter der Bestell-Nr. 6ES5 755-4AA11 (1 Satz = 2 Stück) erhältlich.

3 Was Sie wissen sollten !

3.1 Technische Beschreibung

Ein SINEC H1-Buskoppler mit einer oder zwei Schnittstellen ist zur Ankopplung von Teilnehmern an das SINEC H1-Netz erforderlich. Der Buskoppler mit zwei Schnittstellen kann auch zur direkten Kopplung zweier Endgeräte ohne Busanschluß eingesetzt werden. Die Buskoppler mit dem Busanschlußstück (N-Connector) entsprechen der Norm IEEE 802.3 (CSMA/CD). Die Buskoppler werden grundsätzlich vom Endgerät mit der Betriebsspannung versorgt.
Der Buskoppler hat folgende Funktionen:

- ➢ Einkopplung von Sendedaten in das SINEC H1 Kabel
- ➢ Auskopplung von Empfangsdaten aus dem SINEC H1 Kabel
- ➢ Kollisionserkennung
- ➢ Jabber-Funktion (Sendezeitüberwachung)
- ➢ Signal Quality Error (SQE)-Test (Heartbeat)

3.2 Technische Daten

	Buskoppler mit einer Schnittstelle 6GK1901-0AA00-0AA0	**Buskoppler mit zwei Schnittstellen** 6GK1901-0AA00-0AC0
Spannungsversorgung	10,3 V ...15,75 V	9,5 V ...15,75 V
	Das Endgerät muß die Anforderungen der "Sicheren Elektrischen Trennung" vom Netz erfüllen (siehe DIN VDE 0160 und DIN IEC 435/VDE 0805)	
Stromaufnahme	150 bis 300 mA	300 bis 500 mA
Isolationswiderstand	10 M Ω	
Isolationsspannung	1,5 KV AC zwischen Buskabel und Gehäuse	
Funkentstörung	Der SINEC H1 Buskoppler erfüllt die Anforderungen der Grenzwertklasse B nach DIN 57871/VDE und besitzt damit die "Allgemeine Genehmigung zum Betrieb" entsprechend der Verfügung 1046/84 des Bundesministeriums für das Post-und Fernmeldewesen. Diese Genehmigung gilt nur, wenn die angeschlossenen Geräte ebenfalls die Allgemeine Genehmigung besitzen.	Der SINEC H1 Buskoppler erfüllt die Anforderungen der Grenzwertklasse A und hat die FTZ Serienprüfnummer A700345 C/HF.
Anschluß an den Bus	Busanschlußstück mit "N-Connectors"	
Anschluß für Endgeräte	15polige D-Subminiaturstecker	
Anschlußbelegung Kollisionserkennung Senden Empfang Spannungsversorgung Schirm, intern Schirm	 2 + und 9 - 3 + und 10 - 5 + und 12 - 13 + und 6 - 1, 4, 8, 11 und 14 Gehäuse	
Umgebungsbedingungen Betriebstemperatur Lagertemperatur Feuchtigkeit Schutzart	 0 °C bis 55 °C -40 °C bis + 70 °C 95 % (keine Betauung) IP 40 (bei Verschraubung mit Montageplatte)	

4 Was Sie tun müssen !

4.1 Auspacken

✔ Überprüfen Sie, ob das Paket komplett ausgeliefert wurde (siehe Kapitel 2 "Lieferformen").

✔ Befreien Sie alle Teile vollständig vom Verpackungsmaterial.

✔ Überprüfen Sie die Einzelteile auf Transportschäden.

☞ **Nehmen Sie nur unbeschädigte Teile in Betrieb.**

4.2 Montieren (siehe Bild 1)

4.2.1 Montieren des SINEC Busanschlußstücks

☞ **Nichtbeachtung der Montageanleitung und anderweitige Eingriffe in das Gerät können zur Erhöhung der Funkstöraussendung führen und das Erlöschen der "Allgemeinen Genehmigung" zur Folge haben.**

Vorbedingung: Die Anschlußenden des Buskabels müssen vor der Montage des Busanschlußstücks vorschriftsmäßig mit N-Koaxialsteckern und Mantelschirmklemmen konfektioniert sein.

✔ Befestigen Sie den Staubschutz mit Hilfe der mitgelieferten Kabelbinder am Busanschlußstück (nur, wenn Sie den Buskoppler nicht unmittelbar danach montieren -> SIBUKO Paket 1).

✔ Verschrauben Sie das Busanschlußstück mit den N-Koaxialsteckern des Buskabels.

✔ Verbinden Sie die beiden Mantelschirmklemmen mit dem beiliegenden Erdungskabel.

4.2.2 Montieren des Buskopplers

✔ Bohren Sie die Löcher zur Befestigung der Montageplatte. Hierbei kann die Montageplatte als Schablone verwendet werden.

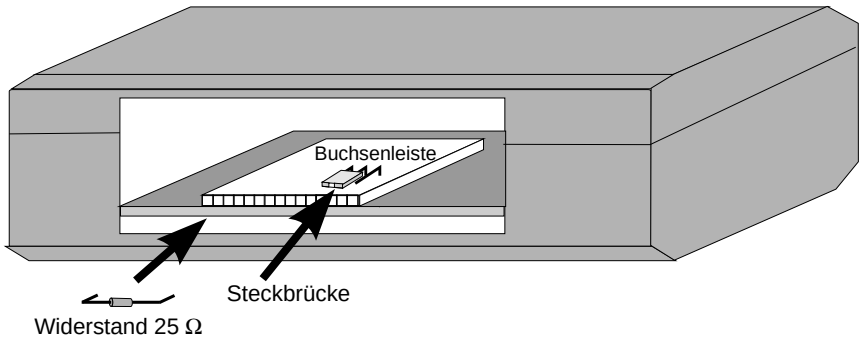
✔ Befestigen Sie den SINEC Buskoppler mit den 4 Befestigungsschrauben auf der Montageplatte.

✔ Entfernen Sie gegebenenfalls den Staubschutz vom Busanschlußstück.

✔ Entfernen Sie die Abdeckung des Buskopplers. Dazu lösen Sie die beiden Schrauben rechts und links des SIEMENS-Emblems. -> nur beim Buskoppler mit 2 Schnittstellen.

✔ Nehmen Sie die Voreinstellung des SINEC Buskopplers vor - SQE-Test ein oder aus - (siehe Bild 2). Im Auslieferungszustand ist der SQE-Test ausgeschaltet.

✔ Stecken Sie den SINEC Buskoppler auf das - montierte - Busanschlußstück und verschrauben Sie beides. Benutzen Sie dazu die beiden Schrauben der Abdeckung.



1 Buskoppler mit **einer** Schnittstelle
Steckbrücke
linksbündig gesteckt --> SQE-Test **aus**
rechtsbündig gesteckt --> SQE-Test **ein**

2 Buskoppler mit **zwei** Schnittstellen
Steckbrücke
linksbündig gesteckt --> SQE-Test **ein**
rechtsbündig gesteckt --> SQE-Test **aus**

Bild 2: Einstellung SQE-Test

✔ Befestigen Sie die Montageplatte.

✔ Erden Sie die Mantelschirmklemmen der Buskabelenden an der Montageplatte mit den kurzen Erdungskabeln. In diesem Fall entfällt das lange Erdungskabel (siehe 4.2.1).

✔ Erden Sie den Buskoppler, indem Sie die Montageplatte mit einem Cu-Masseband (Querschnitt 6 mm^2) auf möglichst kurzem Wege mit der nächstliegenden Ortserde verbinden.
(Dieser Schritt kann entfallen, wenn die Befestigung direkt auf leitfähigen geerdeten Konstruktionsteilen erfolgt.)

✔ Schließen Sie die Steckleitung 727-1 (Dropcable) vom Datenendgerät (DTE) an den Buskoppler an. Sichern Sie die Steckverbindung mit Hilfe der Schiebeverriegelung.

4.2.3 Montage des Buskopplers mit 2 Schnittstellen ohne Busanschluß

Sie können den Buskoppler mit zwei Schnittstellen auch zur direkten Kopplung zweier Endgeräte ohne Busanschluß einsetzen. In diesem Fall gehen Sie folgendermaßen vor:

✔ Entfernen Sie das Busanschlußstück bzw. die Abdeckung des Buskopplers. Zum entfernen der Abdeckplatte lösen Sie die beiden Schrauben rechts und links des SIEMENS-Emblems.

✔ Nehmen Sie die Voreinstellung des SINEC Buskopplers vor - SQE-Test ein oder aus - (siehe Bild 2). Im Auslieferungszustand ist der SQE-Test ausgeschaltet.

✔ Stecken Sie den Abschlußwiderstand links- oder rechtsbündig in die einreihige Buchsenleiste im Buskoppler und verschrauben Sie die Abdeckung wieder (rechts und links des SIEMENS-Emblems).
Das Busanschlußstück darf in diesem Fall nicht montiert werden.

✔ Schließen Sie die Steckleitung 727-1 (Dropcable) der beiden Datenendgeräte (DTE) an den Buskoppler an. Sichern Sie die Steckverbindung mit Hilfe der Schiebeverriegelung.

☞ **Bei einem späteren Busanschluß des Buskopplers muß der Widerstand unbedingt - vor der Verbindung mit dem Buskoppler - entfernt werden.**

5 Wenn der Buskoppler ans Netz geht !

5.1 Was Sie beachten müssen !

- ➢ Verwenden Sie nur Endgeräte (DTE) die die Anforderung der "Sicheren Elektrischen Trennung" vom Netz erfüllen (siehe DIN/VDE 0160 und DIN/IEC 435/VDE 0805).
- ➢ Die Steckleitung 727-1 darf erst dann gesteckt werden, wenn der Buskoppler über das Busanschlußstück am Bus angeschlossen ist.
- ➢ Umgekehrt ist bei Außerbetriebnahme erst die Verbindung zum DTE zu unterbrechen, bevor der Buskoppler vom Bus getrennt wird.

Der Buskoppler darf im Betrieb (d.h. bei angeschlossener Steckleitung zum DTE) nicht vom Bus getrennt werden. -> Zerstörungsgefahr

5.2 Wie Sie den Buskoppler in Betrieb nehmen !

Die Spannungsversorgung des SINEC Buskopplers erfolgt über die Steckleitung 727-1 (Dropcable). Der SINEC Buskoppler ist betriebsbereit, wenn die Steckleitung an beiden Geräten, dem SINEC Buskoppler und dem Endgerät (DTE), gesteckt ist und das Endgerät die Versorgungsspannung liefert.

5.3 Wenn die LEDs leuchten !

Nur der Buskoppler mit 2 Schnittstellen ist mit LEDs ausgestattet.

LED			**Bedeutung**
PWR	Power	(grün)	Diese LED leuchtet, wenn der Buskoppler mit Spannung versorgt ist.
RX	Receive	(gelb)	Diese LED leuchtet auf, wenn der Buskoppler Daten vom Netz oder einer eigenen DTE-Schnittstelle empfängt.
COLL	Collision	(rot)	a) Diese LED leuchtet kurz auf - gleichzeitig mit den LEDs TX1 oder TX2 - wenn der SQE-Test eingeschaltet ist. b) Diese LED leuchtet auf, wenn Kollisionen auf dem Buskabel erkannt wurden.
TX1, **TX2**		(grün)	Diese LED leuchtet auf, wenn die entsprechende Schnittstelle, 1 bzw. 2, Daten auf das Netz sendet.

5.4 Wie Sie den Buskoppler außer Betrieb nehmen !

Das Außerbetriebnehmen des Buskoppler erfolgt durch die Demontage. Bei der Demontage ist in umgekehrter Reihenfolge zur Montage zu verfahren. **Achten Sie jedoch darauf, daß Sie zuerst die Dropcable vom Buskoppler abziehen.** Der allgemeine Busverkehr wird nicht unterbrochen, wenn das Busanschlußstück im Buskabel verbleibt.

Hinweise zur CE-Kennzeichnung von SINEC-Produkten

Produktbezeichnung:

SINEC H1

Buskoppler mit 1 Schnittstelle	6GK1901-0AA00-0AA0
Buskopplerpaket mit 1 Schnittstelle	6GK1100-0AB00
Buskoppler mit 2 Schnittstellen	6GK1901-0AA00-0AC0
Buskopplerpaket mit 2 Schnittstellen	6GK1100-0AJ00

EU-Richtlinie EMV 89/336/EWG

Die obigen SINEC-Produkte erfüllen die Anforderungen der EU-Richtlinie 89/336/EWG "Elektromagnetische Verträglichkeit".

CE

Die EU-Konformitätserklärung wird gemäß der obengenannten EU-Richtlinie für die zuständigen Behörden zur Verfügung gehalten bei:

Siemens Aktiengesellschaft
Bereich Automatisierung
AUT 93
Postfach 4848
D-90327 Nürnberg

Einsatzbereich

Die Produkte erfüllen die folgende Anforderungen:

Buskoppler mit 1 Schnittstelle und Buskopplerpaket mit 1 Schnittstelle

Einsatzbereich	Anforderungen an	
	Störaussendung	Störfestigkeit
Industriebereich	EN 50081-2 : 1993	EN 50082-2 : 1995
Wohnbereich	EN 50081-1 : 1992	EN 50082-1 : 1992

Buskoppler mit 2 Schnittstellen und Buskopplerpaket mit 2 Schnittstellen

Einsatzbereich	Anforderungen an	
	Störaussendung	Störfestigkeit
Industriebereich	EN 50081-2 : 1993	EN 50082-2 : 1995
Wohnbereich	Einzelgenehmigung erforderlich	EN 50082-1 : 1992

Der Buskoppler mit 2 Schnittstellen und das Buskopplerpaket mit 2 Schnittstellen sind mit einer Einzelgenehmigung auch einsetzbar im Wohnbereich (Wohnbereich, Geschäfts- und Gewerbebereiche sowie Kleinbetriebe).
Die Einzelgenehmigung müssen Sie bei einer Behörde oder Prüfstelle einholen. In Deutschland erteilen die Einzelgenehmigung das Bundesamt für Post- und Telekommunikation und seine Nebenstellen.

Aufbaurichtlinen

Die Produkte erfüllen die Anforderungen, wenn Sie bei der Installation und Betrieb die Aufbaurichtlinen einhalten, die in folgenden Dokumentationen beschrieben sind:

1. SINEC H1, Handbuch für Triaxialnetze;
2. Anschlußanweisung im Handbuch des Endgerätes.

Arbeiten am Produkt

Zum Schutz der Produkte vor Entladung von statischer Elektrizität muß sich das Bedienpersonal vor dem Berühren der Buskoppler elektrostatisch entladen.

Hinweise

Die Produkte wurden mit Geräten getestet, die ebenfalls die oben genannten Normen einhalten. Beim Betrieb der Buskoppler an Geräten, die diese Normen nicht erfüllen, kann die Einhaltung der entsprechenden Werte nicht garantiert werden.
Diese Produkte sind keine Maschinen im Sinne der EG-Richtlinie Maschinen 89/392/EWG. Es gibt deshalb für diese Produkte keine diesbezügliche Konformitätserklärung.
Sind diese Produkte Teile der elektrischen Ausrüstung einer Maschine, so müssen sie vom Hersteller in das Verfahren zur Konformitätserklärung einbezogen werden. ❑

1 Le transceiver SINEC H1 avec connecteur de bus

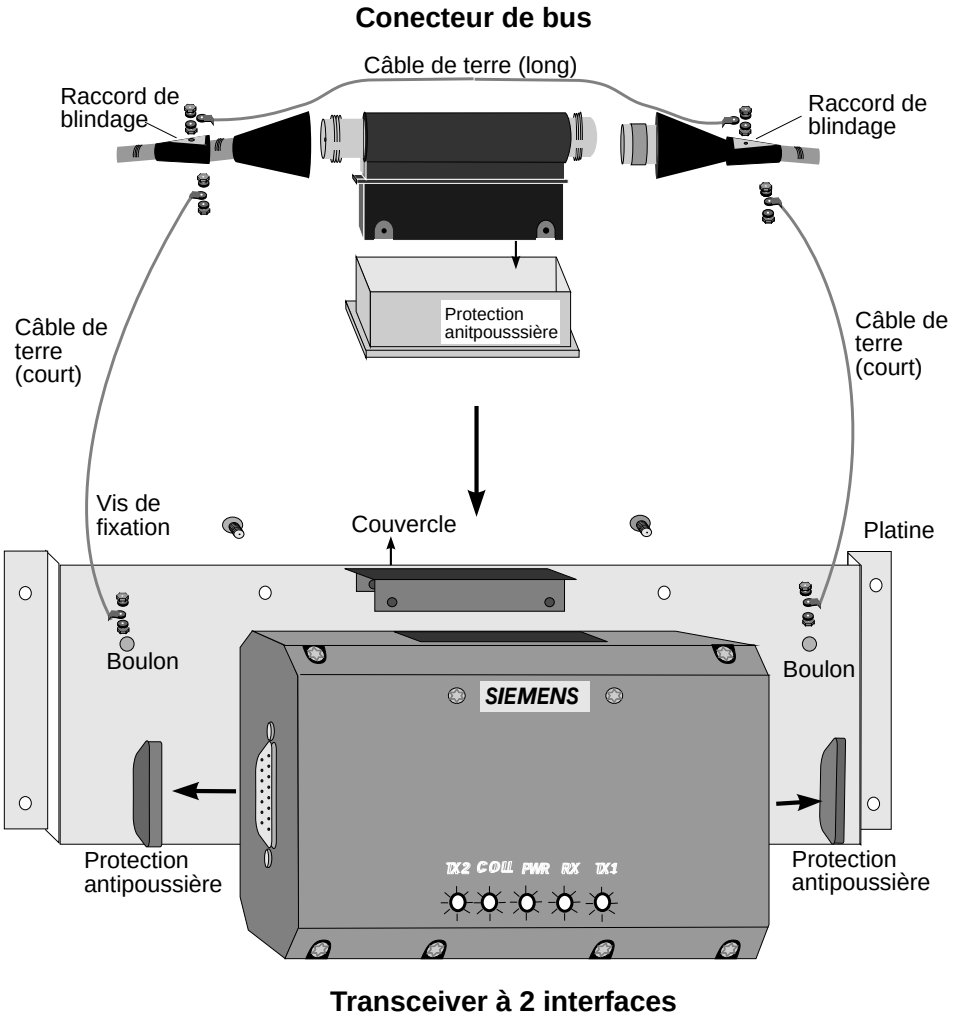


Figure 1: Montage du transceiver et du connecteur de bus

2 Quelles sont les formes de livraison existantes !

	Connecteur de bus avec connecteur N	Transceiver SINEC H1 à une interface 6GK1901 - 0AA00 - 0AA0	Transceiver SINEC H1 à deux interfaces 6GK1901 - 0AA00 - 0AC0	Platine	Jeu de montage stationnaire	Protection antipoussière	Matérial de fixation	Câble de terre	Résistance á fiches 25 Ω	Couvercle
Lot 1 SIBUKO 6GK1100-0AA00	●				●		● 1 x long			
Lot 2 SIBUKO 6GK1100-0AB00	●	●		●	●		●	● 2 x court		
Lot 6 SIBUKO 6GK1100-0AJ00	●		●	●	●		●	● 2 x court	●	
Transceiver SINEC H1 à une interface 6GK1901-0AA00-0AA0		●		●	●		●	● 2 x court		
Transceiver SINEC H1 à deux interfaces 6GK1901-0AA00-0AC0			●	●	●		●	● 2 x court	●	●

☞ **Les composants livrés sont munis de protecteurs aux points de raccordement pour les câbles de dérivation.**

Les fiches coaxiales N nécessaires au raccordement du câble bus SINEC H1, les raccords de blindage et les passe-câbles en caoutchouc ne sont pas compris dans l'étendue de la fourniture. Ils sont disponibles sous le n° de commande 6ES5 755-4AA11 (1 jeu = 2 unités).

3 Ce que vous devriez savoir !

3.1 Description technique

Il faut un transceiver SINEC H1 à une ou deux interfaces pour coupler des stations sur le réseau SINEC H1. Le transceiver à deux interfaces peut également être utilisé pour le couplage direct de deux terminaux sans connexion de bus. Les transceivers avec connecteurs de bus (connecteur N) sont conformes à la norme IEEE 802.3 (AMDP/DC). Les transceivers sont obligatoirement alimentés en tension de service par le terminal. Le transceiver a les fonctions suivantes :

- ➢ Couplage des données émission vers le câble SINEC H1
- ➢ Découplage des données réception venant du câble SINEC H1
- ➢ Détection de collisions
- ➢ Fonction jabotage (contrôle du temps d'émission)
- ➢ Test de Signal Quality Error (SQE) (Heartbeat)

3.2 Caractéristiques techniques

	Transceiver à une interface 6GK1901-0AA00-0AA0	**Transceiver à deux interfaces** 6GK1901-0AA00-0AC0
Alimentation en courant	10,3 V ...15,75 V	9,5 V ...15,75 V
	Le terminal doit satisfaire aux exigences d'une "séparation électrique sûre" par rapport au réseau (voir DIN VDE 0160 et DIN IEC 435/VDE 0805)	
Courant absorbé	150 à 300 mA	300 à 500 mA
Résistance d'isolement	10 M Ω	
Tension d'isolement	1,5 KV CA entre le câble bus et le boîtier	
Antiparasitage	Le transceiver SINEC H1 répond aux exigences de la classe de seuils B selon DIN 57871/VDE et possède ainsi l'"Agrément d'exploitation général" conforme à l'arrêté 1046/84 du Ministère fédéral des Postes et Télécommunications. Cet agrément n'est valable que si les appareils raccordés possèdent également l'agrément général.	Le transceiver SINEC H1 satisfait aux exigences de la classe de seuils A et porte le numéro d'essai en séries A700345 C/HF du FTZ (Centre technique des télécommunications).
Raccordement au bus	Connecteur de bus à "connecteurs N"	
Connexion de terminaux	Connecteur subminiature D - 15 points	
Brochage Détection de collisions Emission Réception Alimentation en courant Blindage interne Blindage	 2 + et 9 - 3 + et 10 - 5 + et 12 - 13 + et 6 - 1, 4, 8, 11 et 14 Boîtier	
Conditions ambiantes Températ. d'exploitation Températ. de stockage Humidité Degré de protection	 0 °C à 55 °C -40 °C à + 70 °C 95 % (sans condensation) IP 40 (en cas de vissage sur platine)	

4 Ce que vous devez faire !

4.1 Déballage

✔ Vérifiez si le lot livré est complet (voir chapitre 2 "Formes de livraison").

✔ Enlevez entièrement le matériel d'emballage de toutes les pièces.

✔ Vérifiez si les pièces détachées présentent des avaries de transport.

☞ **Ne mettez en service que des pièces intactes.**

4.2 Montage (voir figure 1)

4.2.1 Montage du connecteur de bus SINEC

☞ **L'inobservation des instructions de montage et des interventions autres dans l'appareil peuvent entraîner une augmentation des émissions parasites et avoir pour conséquence une extinction de l'"agrément général".**

Condition préalable : Avant le montage du connecteur de bus, les extrémités de raccordement du câble bus doivent être confectionnées conformément aux prescriptions avec des fiches coaxiales N et des raccords de blindage.

✔ Fixez la protection antipoussière sur le connecteur de bus à l'aide des bandes-lieuses pour câble fournies (uniquement si vous ne montez pas le transceiver immédiatement après -> lot 1 SIBUKO).

✔ Vissez le connecteur de bus aux fiches coaxiales N du câble bus.

✔ Relier les deux raccords de blindage avec le câble de terre joint.

4.2.2 Montage du transceiver

✔ Percez les trous pour fixer la platine. Ce faisant, vous pouvez utiliser la platine comme gabarit.

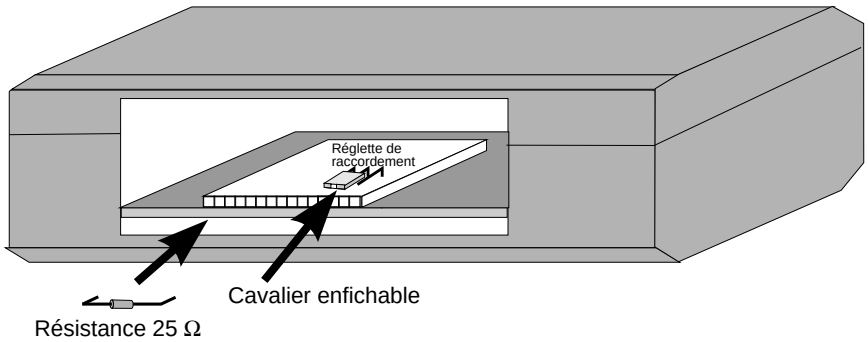
✔ Fixez le transceiver SINEC à la platine avec les 4 vis de fixation.

✔ Retirez le cas échéant la protection antipoussière du connecteur de bus.

✔ Retirez le couvercle du transceiver. A cet effet, dévissez les deux vis à droite et à gauche du logo SIEMENS. -> uniquement pour le transceiver à deux interfaces.

✔ Procédez au préréglage du transceiver SINEC - test SQE en marche ou à l'arrêt - (voir figure 2). Etat à la livraison : le test SQE est à l'arrêt.

✔ Enfichez le transceiver SINEC sur le raccord de bus - assemblé - et vissez les deux éléments. Utilisez à cet effet les deux vis du couvercle.



1 Transceiver avec **une** interface
Cavalier enfichable
enfiché à fleur à **gauche** --> test SQE **arrêt**
enfiché à fleur à **droite** --> test SQE marche

2 Transceiver avec **deux** interface
Cavalier enfichable
enfiché à fleur à **gauche** --> Test SQE **marche**
enfichè à fleur à **droite** --> Test SQE **arrêt**

Figure 2: Réglage test SQE

✔ Fixez la platine.

✔ Connectez les raccords de blindage des extrémités du câble bus à la masse sur la platine avec les câbles de terre courts. Dans ce cas, le câble de terre long est sans objet (voir 4.2.1).

✔ Reliez le transceiver à la terre avec une bande de mise à la masse en cuivre (section 6 mm) en reliant la platine à la terre locale la plus proche par le chemin le plus court possible. (Cette mesure est sans objet en cas de fixation directe sur des éléments de construction conducteurs mis à la terre.)

✔ Raccordez le câble de liaison 727-1 (câble de dérivation) du terminal de données (ETTD) au transceiver. Bloquez le connecteur à l'aide du dispositif de verrouillage coulissant.

4.2.3 Montage du transceiver à 2 interfaces sans raccordement au bus

Vous pouvez également employer le transceiver à deux interfaces pour le couplage direct de deux terminaux sans raccordement au réseau. Dans ce cas, procédez de la façon suivante :

✔ Retirez le raccord de bus ou le couvercle du transceiver. Pour retirer le couvercle, dévissez les deux vis à droite et à gauche du logo SIEMENS.

✔ Procédez au préréglage du transceiver SINEC - test SQE en marche ou à l'arrêt - (voir figure 2). Etat à la livraison : le test SQE est à l'arrt.

✔ Enfichez la résistance terminale sur la réglette de raccordement simple rangée dans le transceiver, en l'alignant à gauche ou à droite, et revissez le couvercle (à droite et à gauche du logo SIEMENS). Dans ce cas, il ne faut pas monter le connecteur de bus.

✔ Raccordez le câble de liaison 727-1 (dérivation) des deux terminaux de données (ETTD) au transceiver. Bloquez le connecteur à l'aide du dispositif de verrouillage coulissant.

☞ **En cas de raccordement ultérieur du transceiver au bus, il faut impérativement retirer la résistance - avant la liaison avec le transceiver.**

5 Lorsque le transceiver est relié au réseau !

5.1 Ce que vous devez respecter !

- ➢ N'utilisez que des terminaux (ETTD) qui répondent à l'exigence d'une "séparation électrique sûre" par rapport au réseau (voir DIN/VDE 0160 et DIN/IEC 435/VDE 0805).
- ➢ Il n'est permis de brancher le câble de liaison 727-1 qu'une fois le transceiver raccordé au bus par l'intermédiaire du connecteur de bus.
- ➢ Inversement, il faut d'abord interrompre la liaison vers l'ETTD avant de déconnecter le transceiver du bus lors d'une mise hors service.

☞ **En service (c'est-à-dire lorsque le câble de liaison vers l'ETTD est raccordé), le transceiver ne saurait être déconnecté du bus. -> Danger de destruction**

5.2 Lorsque vous mettez le transceiver en service !

L'alimentation en courant du transceiver SINEC est effectuée par l'intermédiaire du câble de liaison 727-1 (câble de dérivation). Le transceiver SINEC est en ordre de marche lorsque le câble de liaison est branché aux deux appareils, au transceiver SINEC et au terminal (ETTD), et que le terminal délivre la tension d'alimentation.

5.3 Lorsque les DEL sont allumées !

Seul le transceiver à 2 interfaces est équipé de DEL.

	DEL		Signification
PWR	Power	(verte)	Cette DEL est allumée lorsque le transceiver est alimenté en courant.
RX	Receive	(jaune)	Cette DEL s'allume quand le transceiver reçoit des données du réseau ou d'un interface propre ETTD.
COLL	Collision	(rouge)	a) Cette DEL s'allume brièvement - en même temps que les DEL TX1 ou TX2 - lorsque le test SQE est en marche. b) Cette DEL s'allume quand des collisions ont été reconnues sur le câble bus.
TX1, **TX2**		(verte)	Cette DEL s'allume lorsque l'interface correspondante, 1 ou 2, envoie des données sur le réseau.

5.4 Comment mettre le transceiver hors service !

La mise hors service du transceiver est effectuée par démontage. Pour le démontage, il faut procéder dans l'ordre inverse par rapport au montage. Veillez cependant à retirer d'abord les câbles de dérivation du transceiver. Les échanges généraux sur le bus ne sont pas interrompus si le connecteur de bus reste dans le câble bus. ❑

1 Il transceiver SINEC H1 con i connettori di bus

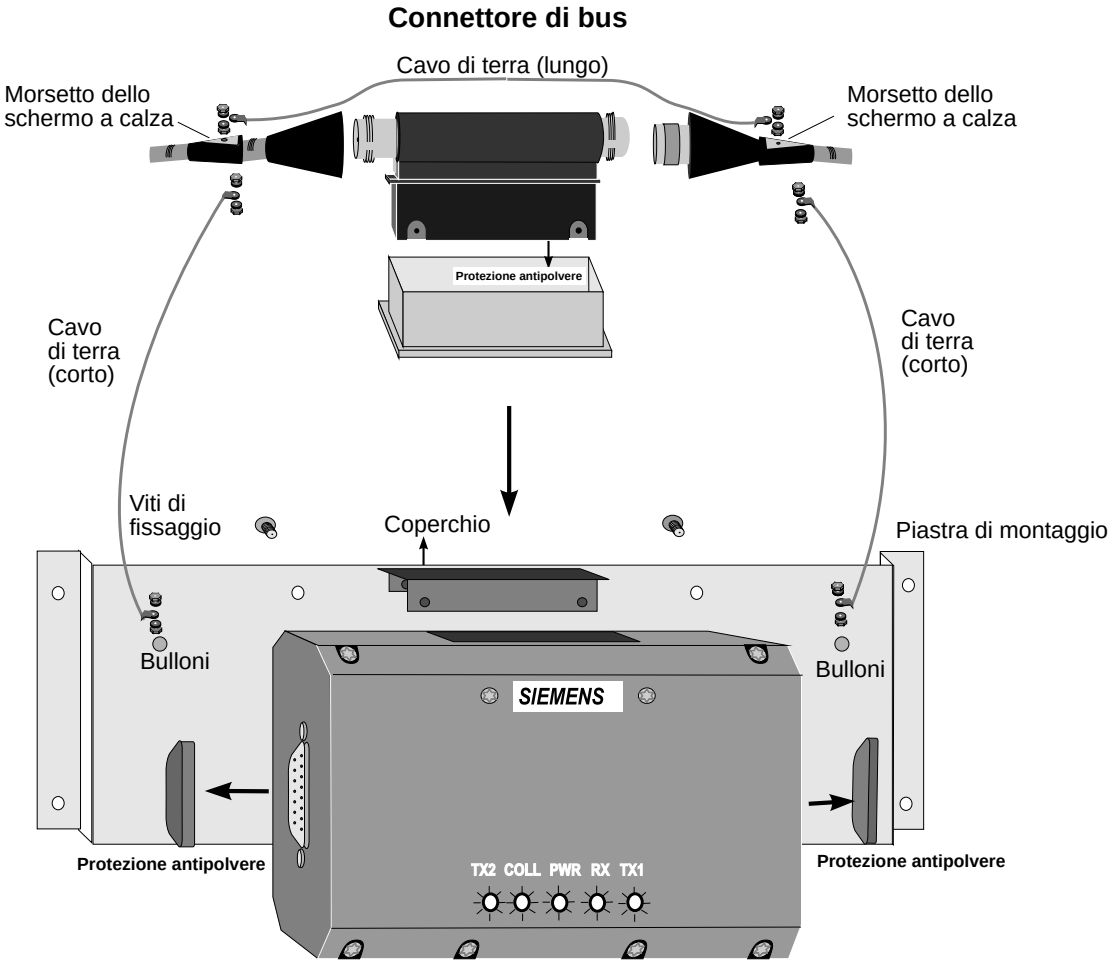


Figura 1: Montaggio del transceiver e dei connettori di bus

2 Le versioni disponibili

	Connettore di bus con connettore N	Transceiver SINEC H1 con una interfaccia 6GK1901 - 0AA00 - 0AA0	Transceiver SINEC H1 con due interfacce 6GK1901 - 0AA00 - 0AC0	Piastra di montaggio	Set per il montaggio fisso	Protezione antipolvere	Materiale per il fissaggio	Cavo di terra	Resistenza ad innesto 25 Ω	Coperchio
SIBUKO Confez. 1 6GK1100-0AA00	●					●		● 1 x lungo		
SIBUKO Confez. 2 6GK1100-0AB00	●	●		●	●		●	● 2 x corto		
SIBUKO Confez. 6 6GK1100-0AJ00	●		●	●	●		●	● 2 x corto	●	
Transceiver SINEC H1 con **una** interfaccia 6GK1901-0AA00-0AA0		●		●	●		●	● 2 x corto		
Transceiver SINEC H1 con **due** interfacce 6GK1901-0AA00-0AC0			●	●	●		●	● 2 x corto	●	●

Nelle condizioni di fornitura, i punti di collegamento per i drop cable sono protetti dalla polvere tramite tappi di protezione.

Le spine coassiali tipo N necessarie per il collegamento del bus SINEC H1, i morsetti per lo schermo a calza e le fascette in gomma non sono compresi nella fornitura. Essi possono essere ordinati con il numero di listino 6ES5 755-4AA11 (1 confezione da 2 pezzi).

3 Che cosa occorre sapere

3.1 Descrizione tecnica

Il transceiver SINEC H1 con una o due interfacce è necessario per il collegamento delle stazioni alla rete SINEC H1. Il transceiver con due interfacce può essere anche utilizzato per il collegamento di due DTE privi di connessione al bus. Il transceiver con due interfacce (connettori N) corrisponde alla norma IEEE 802.3 (CSMA/CD). I transceiver sono alimentati con la tensione di esercizio dal transceiver.
Il transceiver ha le seguenti funzioni:

Trasferimento dei dati in trasmissione sul cavo SINEC H1

Prelievo dei dati in ricezione dal cavo SINEC H1

Rilevamento di collisioni

Funzione jabber (controllo del tempo di trasmissione)

Test Signal Quality Error (SQE) (Heartbeat)

3.2 Dati tecnici

	Transceiver con una interfaccia 6GK1901-0AA00-0AA0	**Transceiver con due interfacce** 6GK1901-0AA00-0AC0
Alimentazione	10,3 V ...15,75 V	9,5 V ...15,75 V
	Il DTE deve soddisfare i requisiti per un "isolamento elettrico sicuro" dalla rete di alimentazione (vedi DIN VDE 0160 e DIN IEC 435/VDE 0805)	
Assorbimento	150 ... 300 mA	300 ... 500 mA
Resistenza di isolamento	10 M Ω	
Tensione di isolamento	1,5 KV AC tra cavo di bus e custodia	
Soppressione dei radio disturbi	Il transceiver SINEC H1 soddisfa i requisiti della classe B secondo DIN 57871/VDE ed è quindi qualificato per l'impiego generalizzato in accordo con la normativa 1046/84 del ministero delle poste tedesco. Questa qualificazione è valida solo a condizione che le apparecchiature collegate sia anch'esse qualificate.	Il transceiver SINEC H1 soddisfa i requisiti della classe A ed ha il numero di test FTZ A700345 C/HF.
Collegamento al bus	Connettore di bus con "N-Connectors"	
Collegamento ai DTE	spina subminiatura D a 15 poli	
Assegnazione dei collegamenti		
Riconoscimento delle collisioni	2 + e 9 -	
Trasmissione	3 + e 10 -	
Ricezione	5 + e 12 -	
Alimentazione	13 + e 6 -	
Schermo, interno	1, 4, 8, 11 e 14	
Schermo	Custodia	

Condizioni ambientali	
Temperatura di esercizio	0 °C ... 55 °C
Temperatura di magazzinaggio	-40 °C ... + 70 °C
Umidità	95 % (senza condensa)
Tipo di protezione	IP 40 (se avvitato alla piastra di montaggio)

4 Che cosa occorre fare

4.1 Apertura dell'imballo

✔ Controllare la completezza della fornitura (vedi il capitolo 2 "Versioni disponibili").

✔ Liberare tutti i componenti dal materiale di imballaggio.

✔ Controllare che i singoli componenti non abbiano subito danni durante il trasporto.

☞ **Mettere in servizio solo componenti non danneggiati.**

4.2 Montaggio (vedi Fig. 1)

4.2.1 Montaggio del connettore di bus SINEC

☞ **Se non si rispettano le istruzioni di montaggio e si effettuano lavori di altro tipo sull'apparecchio, si può avere un aumento dei radio disturbi con conseguente decadimento della qualificazione all'impiego.**

Condizioni: prima del montaggio del connettore di bus, le estremità del cavo devono essere preconfezionate con connettori coassiali tipo N e con morsetti per lo schermo a calza secondo le normative.

✔ fissare sul connettore di bus la cappa antipolvere con l'impiego delle fascette per cavi fornite a corredo (solo se non si intende installare immediatamente il transceiver -> SIBU-KO Confez. 1).

✔ avvitare il connettore coassiale tipo N del cavo di bus nel connettore di bus.

✔ collegare i due morsetti degli schermi a calza con il cavo di terra a corredo.

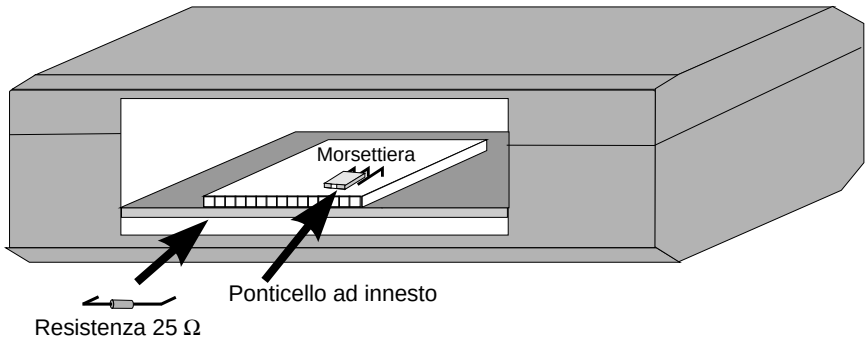
4.2.2 Montaggio del transceiver

✔ Realizzare i fori per il fissaggio della piastra di montaggio. Per questo scopo si può utilizzare la piastra di montaggio come dima.

✔ Fissare il transceiver SINEC sulla piastra di montaggio con le 4 viti di fissaggio

✔ Se necessario, eliminare la cappa antipolvere dal connettore di bus.

✔ Eliminare il coperchio del transceiver. Per questo allentare le due viti a destra e a sinistra del marchio SIEMENS. -> solo per transceiver con 2 interfacce.



1 Transceiver con **una** interfaccia
Ponticello
innestato **a sinistra** --> Test SQE **OFF**
innestato **a destra** --> Test SQE **ON**

2 Transceiver con due interfacce
Ponticello
innestato **a sinistra** --> Test SQE **ON**
innestato **a destra** --> Test SQE **OFF**

Figura 2: Predisposizione SQE-Test

✔ Selezionare l'impostazione del transceiver SINEC - Test SQE ON opp. OFF - (vedi Fig. 2). Nelle condizioni di fornitura, il test SQE è disinserito.

✔ Innestare il transceiver SINEC sul connettore premontato e avvitarli tra loro utilizzando per questo scopo le due viti del coperchio.

✔ Fissare la piastra di montaggio.

✔ Collegare a terra i morsetti degli schermi a calza delle estremità del cavo sulla piastra di montaggio con i cavi di terra corti. In questo caso il cavo di terra lungo non è necessario (vedi 4.2.1).

✔ Collegare a terra il transceiver collegando la piastra di montaggio con un nastro di massa in rame (sezione 6 mm^2) con un collegamento il più breve con la terra locale più vicina.
(Questa operazione può essere omessa se il fissaggio avviene direttamente su parti connesse direttamente con la terra)

✔ Collegare il cavo con connettori 727-1 (drop cable) all'apparecchio (DTE) ed al transceiver. Fissare il collegamento ad innesto con l'impiego del blocco a slitta.

4.2.3 Montaggio del transceiver con 2 interfacce senza connettore di bus

Il transceiver con due interfacce può essere anche utilizzato per il collegamento diretto di due apparecchi privi di connettore di bus. In questo caso procedere nel modo seguente:

✔ Eliminare il connettore di bus ed il coperchio del transceiver. Per togliere la piastra di copertura allentare le due viti a destra e sinistra del marchio SIEMENS,

✔ Selezionare l'impostazione del transceiver SINEC - test SQE ON opp. OFF - (vedi Fig. 2). Nelle condizioni di fornitura il test SQE è disinserito.

✔ Innestare la resistenza di chiusura a sinistra o destra nella morsettiera femmina a una riga nel transceiver e riavvitare il coperchio (a destra e a sinistra del marchio SIEMENS).
In questo caso non si deve montare il connettore di bus.

✔ Collegare il cavo con connettori 727-1 (drop cable) all'apparecchio (DTE) e al transceiver. Fissare il collegamento con il blocco a slitta.

☞ **In caso di un successivo collegamento al bus del transceiver, la resistenza deve essere tassativamente eliminata prima del collegamento con il transceiver.**

5 Impiego del transceiver in rete

5.1 Di cosa si deve tener conto.

Utilizzare solo apparecchi (DTE) che rispondano ai requisiti di un isolamento elettrico sicuro dalla rete (vedi DIN/VDE 0160 e DIN/IEC 435/VDE 0805).

Il drop cable 727-1 può essere innestato solo se il transceiver è collegato al bus tramite il connettore di bus.

Inversamente, in caso di messa fuori servizio, occorre dapprima interrompere il collegamento con il DTE prima di separare il transceiver dal bus.

☞ **Durante l'esercizio (cioè con drop cable collegato al DTE) il transceiver non può essere scollegato dal bus. -> Pericolo di distruzione!**

5.2 Come si mette in servizio un transceiver.

L'alimentazione del transceiver SINEC avviene tramite il cavo con connettori 727-1 (drop cable). Il transceiver SINEC è pronto per l'esercizio quando il drop cable è innestato su entrambi gli apparecchi, il transceiver SINEC e l'apparecchio (DTE) e l'apparecchio fornisce la tensione di alimentazione.

5.3 Quando si accendono i LED.

Solo i transceiver con 2 interfacce sono dotati di LED.

	LED		Significato
PWR	Power	(verde)	Questo LED è acceso quando il transceiver è alimentato.
RX	Receive	(giallo)	Questo LED è acceso quando transceiver riceve dati dalla rete oppure dall'interfaccia del DTE.
COLL	Collision	(rosso)	a) Questo LED si accende brevemente - contemporaneamente ai LED TX1 opp. TX2 - quando il test SQE è inserito. b) Questo LED si accende quando vengono riconosciute collisioni sul cavo.
TX1, **TX2**		(verde)	Questo LED si accende quando la corrispondente interfaccia, 1 risp. 2, trasmette dati sulla rete.

5.4 Messa fuori servizio del transceiver.

La messa fuori servizio del transceiver ha luogo con lo smontaggio. Per lo smontaggio occorre seguire la sequenza inversa del montaggio. **Tener conto però che dapprima occorre scollegare il drop cable dal transceiver.** Il traffico generale del bus non viene interrotto, se il connettore di bus resta collegato al cavo del bus. q

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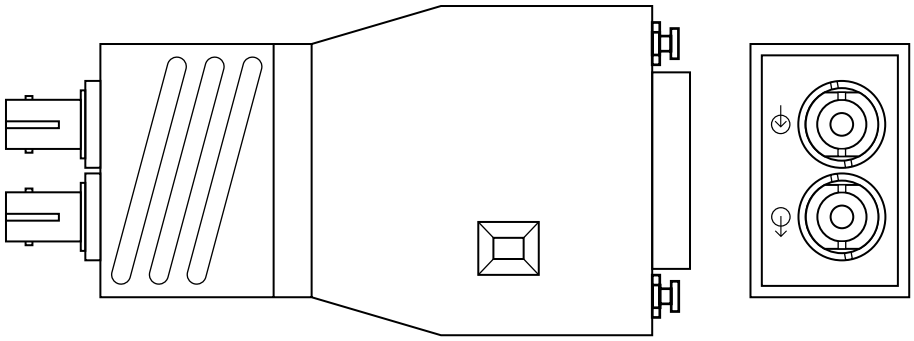
4. 2 Fiber Optic Interfaces Mini-OTDE

Technical Data

Hirschmann

Optical Transceiver
Mini-OTDE



Contents

Introduction

The Hirschmann Mini-OTDE optical transceiver facilitates the connection of terminal equipment to a fiber optic segment of a 10 Mbit/s CSMA/CD LAN. It conforms to the specifications of ISO/IEC standard 8802-3 (10BASE-FL).

The Mini-OTDE transceiver can be plugged directly to the AUI interface of the device. There is no need for an AUI cable.

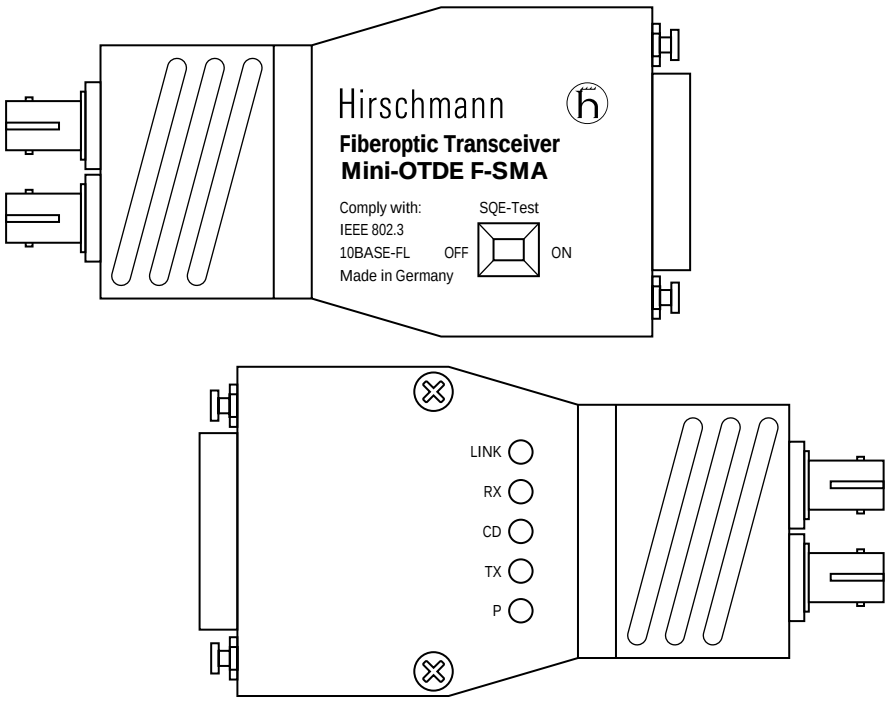


Fig. 1: Mini-OTDE Optical Transceiver

Functional Description

Definition of transmit and receive directions:
The direction of a signal passing from the AUI interface through the transceiver and into a connected fiber cable is termed the transmit direction.
The direction of a signal passing from a connected fiber optic cable through the transceiver to the AUI interface is termed the receive direction.

Transceiver Functions

- Signal regeneration
  The Mini-OTDE optical transceiver conditions the curve shape and amplitude of the transmitted and received data.

- Collision treatment
  If the Mini-OTDE optical transceiver detects a data collision, it reports it to the AUI interface of the connected device via the collision line pair.

- SQE test
  At the end of each transmit operation, the Mini-OTDE optical transceiver sends a brief (approx. 1µs) collision signal (heartbeat) to ensure that the electronic components are still functioning properly. This function can be disabled via an externally accessible switch. The operating instructions of the connected device generally contain information as to whether the device requires the SQE test or not.

Jabber protect

The network can be continuously occupied with data, for example by a defective LAN controller. To protect the network from such jabber, the Mini-OTDE optical transceiver interrupts transmission of data packets that are too long (>70 ms).

IDLE / Low light

In the pauses between the data packets, the Mini-OTDE optical transceiver sends an IDLE signal (square wave signal) into the connected fiber optic network. Reception of this signal by other network components indicates to them that the connection to the Mini-OTDE is working properly. The IDLE signal also increases input sensitivity at the other end, because it causes the receiver circuitry to stay tuned.

In case of a fault (optical input power <1 µW), which might be caused by a broken cable, the device will raise a low-light condition. When this happens,

– the Mini-OTDE blocks the optical input and output and transmits an IDLE signal into the fiber optic cable connected to the optical output.
– the Mini-OTDE interrupts the feedback of the transmitted data to the connected equipment (loopback function). The equipment no longer receives its own data as an echo.

Displays

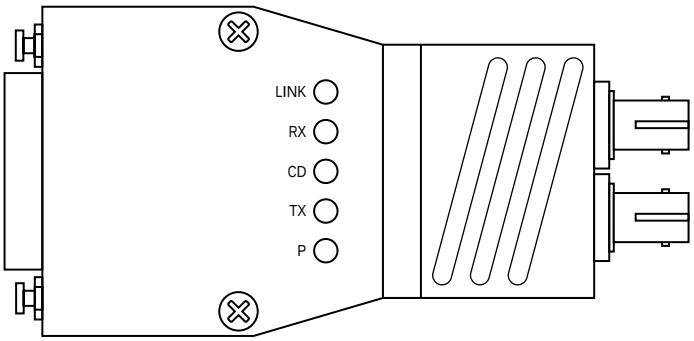


Fig. 2: Display Field on the Mini-OTDE Optical Transceiver

Device-related display

This LED group supplies information relating to the Mini-OTDE optical transceiver as a whole.

P Power
Green LED
– lit green: power from connected device is present.

Transmission-related display

This LED group supplies information relating to the data transmission.

Tx-Data
Yellow LED
– flashes briefly: Data is being transmitted into the fiber optic cable.

Rx-Data
Yellow LED
– flashes briefly: Data is being received from the fiber optic cable.

CD Collision Detect
Red LED
– flashes briefly: collision detected.

– lit continuously: Jabber protect is active.

LS Link Status
Green LED
– lit continuously: The fiber optic link to the other component is working properly.

Interfaces

Fiber optic segment

Two BFOC or two F-SMA sockets provide the Mini-OTDE optical transceiver with connections to a fiber optic segment. One connection is used for transmitting ⟲ data to the fiber optic link and one for receiving ⟳ data from the link.

AUI Interface

The Mini-OTDE optical transceiver has a 15-pole Sub-D plug for connecting it to a device or AUI cable.

Pin assignments of the Sub-D plug:
Fig. 3 shows the pin assignments of the Sub-D plug. Pins 7 and 15 are not connected.

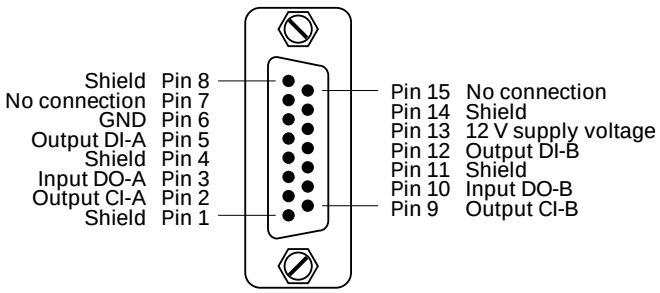


Fig. 3: AUI Interface Pin Assignments

Block Diagram

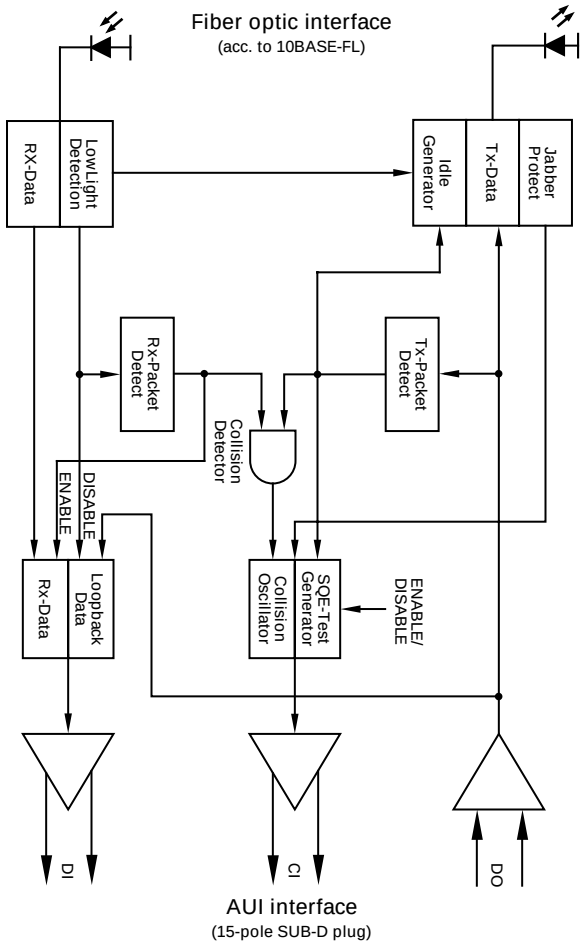


Fig. 4: Block Diagram

Installation

Switch Setting

☐ Please consult the operating instructions supplied with the device to which the transceiver is attached to determine whether the SQE test is needed or not. Set the switch to "OFF" to disable the SQE test.

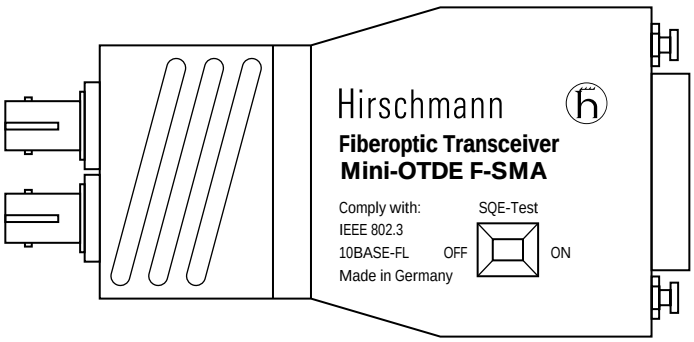


Fig. 5: Location of the SQE Switch

As supplied from the factory, the switch is set to "ON".

Connection

- ☐ Connect the end of the fiber optic cable over which data is to be received to the socket marked ⊖ .
- ☐ Connect the end of the fiber optic cable over which data is to be transmitted to the socket marked ⊕ .
- ☐ Plug the Mini-OTDE optical transceiver onto the connected equipment or connect the device to the transceiver with an AUI cable.

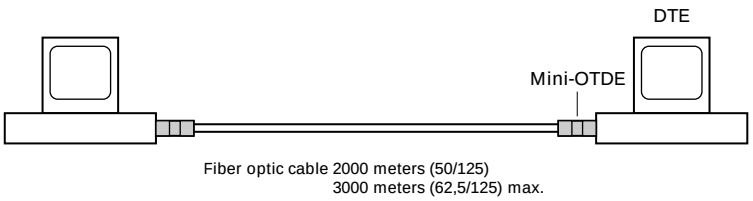


Fig. 6: Connecting two Devices

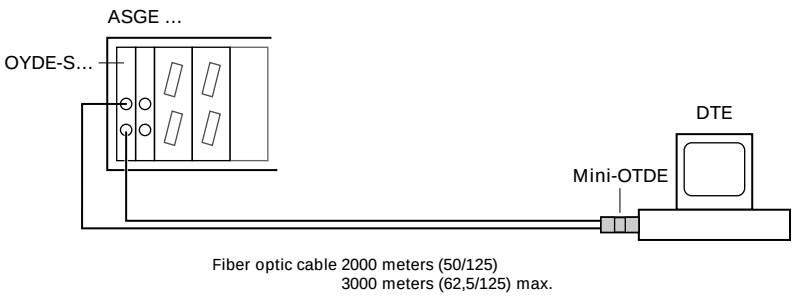


Fig. 7: Connecting the Mini-OTDE to an Optical Interface Card

Technical Data

General Data

Operating voltage	+12 V
Current consumption	200 mA (without signal)
Bit rate (Manchester code)	10 Mbit/s
Dimensions W x H x D	44 mm x 21 mm x 91 mm
Weight	130 g
Ambient temperature	0 °C to +50 °C
Storage temperature	–20 °C to +80 °C
Relative humidity	10% to 90% (non condensing)

Network Size (see Chapter 8.2)

Propagation Equivalent	100 m

Transmitter

AUI Interface → Fiber Optic Cable

Input	
Termination resistance	78 Ω ±1%
Sensitivity	500 mV_{pp}
Maximum DC component	±50 V
Output	
Optical Source	LED
Wave length	820 nm
Fiber type	gradient
Minimum peak optical power fed into the fiber optic cable [in dBm / µW]	
50 / 125	–19 / 12.6
62.5 / 125	–16 / 25
IDLE Signal	1 MHz ±10%,
Preamble loss transmit	typ. 1 bit; max. 2 bit
Steady state delay	20 ns
Jabber protect time out	70 ms
Jabber reset	450 ms

Receiver

Fiber Optic Cable → AUI Interface

Input	
Photo detector	PIN diode
Optical input power	> –31 dBm (0.8 µW)
Bit error rate (1 µW)	< 10^{-9}
Low light threshold	–30 dBm (1 µW)
Saturation limit	> –9 dBm

Output	
Output voltage	1.6 V_{pp}
CD signal frequency	10 MHz ±10%
SQE test (heartbeat)	
Delay	1100 ns
Length	1000 ns
Steady state delay	20 ns
Preamble loss receive	typ. 1 bit; max. 3 bit

Interfaces

Connections	
LWL-Schnittstelle	2 x IEC 874-10 BFOC/2.5 sockets or 2 x IEC 874-2 F-SMA sockets
Transceiver interface (AUI)	15-pole Sub-D plug
DO-A/DO-B input	pin 3 / pin 10
DI-A/DI-B output	pin 5 / pin 12
CI-A/CI-B output	pin 2 / pin 9
Power +12 V / GND	pin 13 / pin 6
Shield	pin 1, 4, 8, 11 ,14
Connection options	– plugged directly on to the AUI interface of the associated device or via 1 AUI cable, maximum length 50 m and – 1 fiber optic cable segment, maximum length 2000 m (50/125) or 3000 m (62.5/125)

Displays

Device-related	– green LED P (power) supply voltage present
Transmission-related	– yellow LED Tx (Tx-data) data being transmitted over the fiber optic cable link – yellow LED Rx (Rx-data) data being received over the fiber optic cable link – red LED CD (collision detect) brief flash – data collision continuously on – jabber control active – green LED LS (link status) fiber optic connection OK

Order Numbers

Mini-OTDE (F-SMA)	943 303-001
Mini-OTDE (BFOC)	943 303-021

CE Conformity

Comply with	EN 50082-2
Conducted Emission	EN 55022, Class B
Radiated Emission	EN 55022, Class B

5 Fan-out Units

SIEMENS

SINEC

H1 Schnittstellenvervielfacher SSV 102 C
H1 Multipoint Repeater SSV 102 C
H1 Multiplicateur d'interfaces SSV 102 C

Montageanleitung
Installation Instructions
Instructions de montage

Bestell-Nr.: C79000-G8900-C044
Order no.: C79000-G8900-C044
N° de commande: C79000-G8900-C044

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Allgemeines

WARNUNG !

!

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- Der einwandfreie und sichere Betrieb dieses Gerätes setzt sachgemäßen Transport, fachgerechte Lagerung und Montage sowie sorgfältige Bedienung und Instandhaltung voraus.

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– Ausbildung oder Unterweisung bzw. Berechtigung, Stromkreise und Geräte bzw. Systeme gemäß den aktuellen Standards der Sicherheitstechnik ein- und auszuschalten, zu erden und zu kennzeichnen;
– Ausbildung oder Unterweisung gemäß den aktuellen Standards der Sicherheitstechnik in Pflege und Gebrauch angemessener Sicherheitsausrüstungen;
– Schulung in Erster Hilfe.

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General

WARNING !

!

- This device is electrically operated. In operation, certain parts of this device carry a dangerously high voltage.
- Failure to heed warnings may result in serious physical injury and/or material damage.
- Only appropriately qualified personnel may operate this equipment or work in its vicinity. Personnel must be thoroughly familiar with all warnings and maintenance measures in accordance with these operating instructions.
- Correct and safe operation of this equipment requires proper transport, storage and assembly as well as careful operator control and maintenance.

Personnel qualification requirements

Qualified personnel as referred to in the operating instructions or in the warning notes are defined as persons who are familiar with the installation, assembly, startup and operation of this product and who posses the relevant qualifications for their work, e.g.:

– Training in or authorization for connecting up, grounding or labelling circuits and devices or systems in accordance with current standards in saftey technology;
– Training in or authorization for the maintenance and use of suitable saftey equipment in accordance with current standards in safety technology;
– First Aid qualification.

Information

Le contenu de ces instructions de service ne fait pas partie d'une convention, d'un accord ou d'un rapport juridique existant ou ayant existè. Il n'est pas non plus destiné à modifier de tels textes. L'ensemble des devoirs de Siemens résulte de chaque contrat de vente qui comprend la totalitè du seul règlement appplicable en matière de garantie. Le contenu des présentes instructions de service ne constitue ni une extension ni une restriction des dispositions contractuelles relatives à cette garantie.

Par souci de clarté, ces instructions de service ne traitent pas non plus tous le problèmes imaginables qui peuvent se poser en relation avec l'emploi de cet appareil. Si vous aves besoin d'informations complèmentaires ou si vous êtes confrontés à des problèmes particuliers qui ne sont pas traités en détail dans ce manuel, la filiale Siemens de votre région vous fournira les renseignements nécessaires.

Généralités

ATTENZION !

!

- Cet appareil fonctionne avec du courant électrique. Pendent l'exploitation d'appareils électriques, certaines pièces sont forcément sous tension dangereuse.
- Pour éviter de graves blessures corporelles et/ou de sérieux dégâts matériels, il est indispensable de respecteur les avertissements.
- Toute intervention sur cet apppareil ou tout travail exécuté à proximité de cet appareil sont réservés à un personnel qui possède une qualification correspondante. Ce personnel aura une parfaite connaissance de tous les avertissements et de toutes les mesures de maintenance conformes à ces instructions de service.
- Le bon fonctinnement de cet appareil suppose un transport adéquat, un stockage et unmontage appropriés, ainsi qu'une utilisation et une maintenance correctes.

Exigences relatives à la qualification du personnel

Au sens de ces instructions de service ou des avertissements, "personnel qualifié" désigne des personnes familiarisées avec l'installation, le montage et la mise en service de ce produit et spécialisées dan le domaine relatif à leurs activités. Elles auront par example:

– une formation, une instruction ou une habilitation qui les autorisent à brancher/débrancher, mettre à la terre ou repérer des circuits électriques, des appareils ou des systèmes conformes aux normes actulles des technique de sécurité;
– une formation ou une instruction conforme aux normes actuelles des techniques de sécurité en matière de d'entretien et d'utilisation des équipements de sécurité;
– une information en premiers soins ❑.

Contents **Page**

1 The SINEC Fan-out Unit SSV 102 C

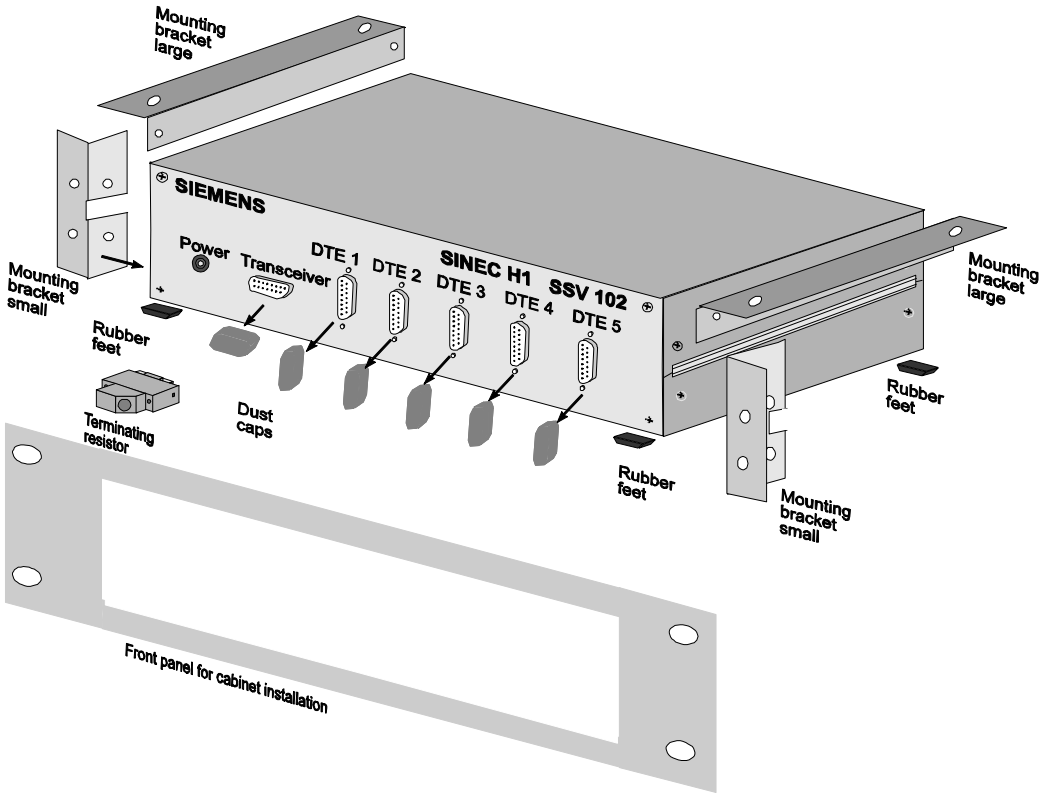
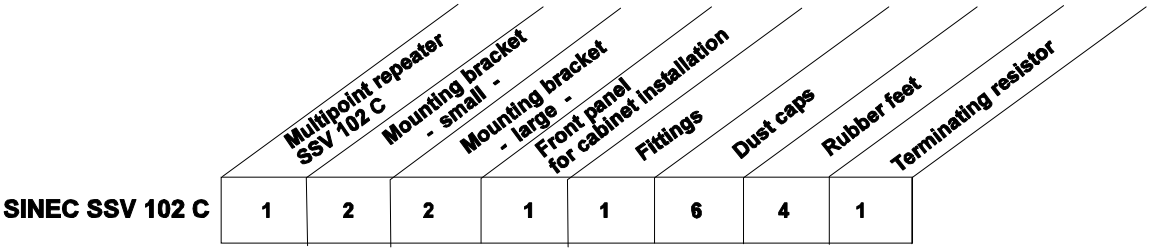


Fig. 1: Assembly of the SINEC fan-out unit 102 C

2 Components Supplied



	Multipoint repeater SSV 102 C	Mounting bracket - small -	Mounting bracket - large -	Front panel for cabinet installation	Fittings	Dust caps	Rubber feet	Terminating resistor
SINEC SSV 102 C	1	2	2	1	1	6	4	1

☞ **When the components are supplied, the connections are protected by dust caps.**

3 What You Should Know

3.1 Technical Description

The SINEC fan-out unit SSV 102 C is an electronic device which allows communications processors (CPs) to communicate with each other and to be connected to a SINEC H1 bus. The device functions as a data distributor, distributing incoming data to all the devices connected to it regardless of whether the data comes from a connected CP or from the transceiver. The SSV 102 C intended for data transmission protocols complying with IEEE 802.3 (CSMA/CD).

The SSV 102 C can be operated in two ways:

- in the stand-alone mode without a connection to the SINEC H1-Bus

- with a connection to a SINEC H1 bus (via a transceiver)

The SINEC SSV 102 C is always supplied with power by the DTE. This means that each DTE must have an adequate power supply available.

The SINEC SSV 102 C can be operated either as a desk-top device or can be mounted in a 19" cabinet.

3.2 Technical Data

Environmental conditions:	
Operating temperature	+5 °C to 55 °C
Storage temperature	-40 °C to + 70 °C
Type of protection	IP 40
Mechanical data:	
Dimensions (W x D x H)	260 mm x 210 mm x 85 mm (77 mm) desk-top device with (without) rubber feet 2 vertical modules in 19" cabinet
Weight	1.6 kg (desk-top device)
Connections:	
Transceiver connection	1 x 15-pin D subminiature female connector (MIL-C-24308)
DTE connections	5 x 15-pin D subminiature male connector (MIL-C-24308)
Pin assignment:	Meaning:
2+ and 9-	Collision detect
3+ and 10-	Send
5+ and 12-	Receive
13+ and 6-	Power supply
1, 4, 8, 11 and 14	Shield, internal
Connector housing	Shield, external, housing SSV 102 C
Elektrical data:	
Power supply	10.0 - 15.75 V (d.c. voltage from DTE) The data terminal equipment must satisfy the requirements of "safe electrical isolation" from the network (see DIN VDE 0160 and DIN IEC 435/VDE 9805).
Power input	
Stand-alone with terminating resistor	max 3.4 W
Stand-alone without terminating resistor	max 2.4 W
Normal operation with load	2.4 W + load on the transceiver interface
Data transfer rate	10 Mbps
Interference suppression	Limit value class B complying with DIN 57871/VDE 0871

4 What You Need To Do

4.1 Unpacking

✔ Check that you have received the complete package (see Section 2 "Components Supplied").

✔ Remove all the packing material from the parts.

✔ Check each item for damage .

☞ **Only use undamaged parts.**

4.2 Selecting the Location

The SINEC SSV 102 C is designed so that it can be used without modification in an industrial environment.

Avoid locations with direct sunlight and do not install close to heating fans or hot air ventilators of other devices.

Since the SINEC SSV 102 C does not require any additional power supply, it can be installed or set up anywhere providing the environmental conditions are suitable.

4.3 Assembly

4.3.1 As a Desk-Top Device

If you want to operate the SINEC SSV 102 C as a desk-top device (see Fig. 1):

✔ Attach the supplied self-adhesive rubber feet to the bottom of the device.

4.3.2 Screwed to a Base Plate (Top Plate)

If you want to screw the SINEC SSV 102 C to a base plate (top plate) (see Fig. 1):

✔ Undo the two lower (upper) screws in the right and left side panels .

✔ Using the two screws, screw the two large mounting brackets to the housing.

✔ Screw the mounting bracket to the base or top plate.
The required screws are not supplied.

4.3.3 In a Cabinet

If you want to operate the SINEC SSV 102 C in a cabinet (see Fig. 1):

✔ Undo the two front screws on the side panels.

✔ Screw the mounting brackets to the side panels using these screws. Make sure that the slotted part of the bracket is attached to the housing.

✔ Secure the front panel to the mounting brackets using the supplied nuts and bolts.

✔ Screw the front panel to the mounting frame in the cabinet.
The screws etc. are not supplied.

5 Starting Up the SSV 102 C

Since the SINEC SSV 102 C is supplied with power from the DTEs, it is active as soon as it is connected to the DTEs.

LEDs
If you have connected two or more DTEs to the SSV 102 C, and these are active, the green LED (POWER) is lit.

5.1 Points to Note

➢ Only use DTEs which are safely isolated from the network (see DIN/VDE 0160 and DIN/IEC 435/VDE 0805).

➢ Only use AUI cables which meet the requirements of IEEE 802.3 Section 7.4.3 .

➢ Connecting or disconnecting the cables when the power is on can cause brief disturbances.

5.2 No Connection to the SINEC H1 Bus

The SINEC SSV 102 C can be operated without a connection to the SINEC H1 bus (stand-alone). It then forms its own network with the connected DTEs.

The SSV 102 C generates an SQE test signal after each received frame and distributes it to all connected stations (only in stand-alone mode).
If you do not require an SQE signal, the terminating resistor must be plugged in.

✔ Plug the terminating resistor into the transceiver socket on the SINEC SSV 102 C and secure it (see Fig. 1).

✔ Plug the connecting cables of the DTEs into the appropriate interfaces (DTE1 to DTE 5) on the SINEC SSV 102 C and secure them.

Once the DTEs are connected (and if necessary, the terminating resistor is plugged in) the SINEC SSV 102 C is ready for operation.

5.3 Connection to the SINEC H1 Bus

You want to connect the SINEC SSV 102 C to the SINEC H1 bus. To avoid unnecessary interference on the network, please keep to the order below.

✔ Plug in and secure the connecting cables of the DTEs at the appropriate interfaces (DTE 1 to DTE 5) on the SINEC SSV 102 C.

✔ Plug in and secure the cable to the transceiver at the interface.

Once the DTEs and transceiver are connected, the SINEC SSV 102 C is ready for operation

☞ **The automatic switchover from "stand-alone" to "network mode" is only possible when there is load on the power supply at the interface to the transceiver. If a device with its own power supply is operated on this interface (e.g. SSV 755 or a SINEC H1 transceiver with two interfaces), then the cable to the transceiver interface must be connected using an adapter.**

The adapter plug can be ordered as follows:

Adapter plug for SSV 102 C, No. RF SIPAC 520 850

Order from:

SIEMENS AG
Werk für Kombinationstechnik Fürth
Abt. AUT 75
Würzburger Str. 121
90766 Fürth
Germany

5.4 How to Take the SSV 102 C Out of Service

To avoid unnecessary interference on the network, please keep to the order below.

✔ Release and remove the cable to the transceiver interface (if connected).

✔ Release and remove the cables to the DTEs.

5.5 If You Want More Information about the SSV 102 C

Information beyond the scope of these installation instructions can be found in the SINEC H1 network manual (Order no.: 6GK1970-1AA00-0AA0). ❑

1 Der SINEC Schnittstellenvervielfacher SSV 102 C

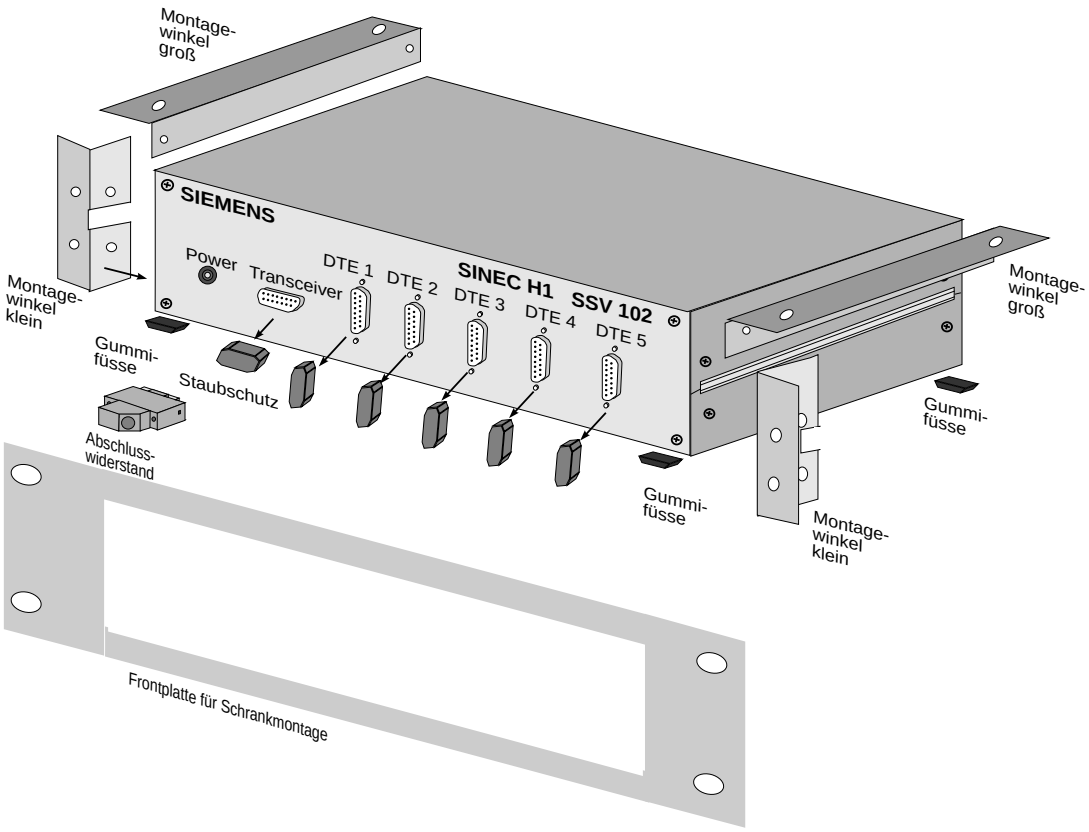
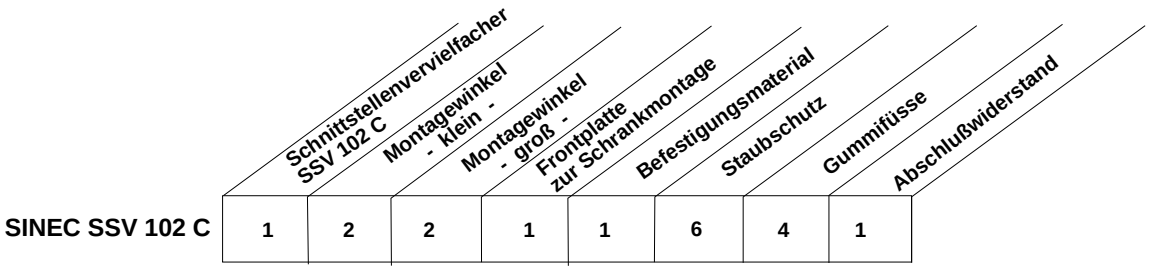


Bild 1: Montage des SINEC Schnittstellenvervielfachers 102 C

2 Welche Lieferformen es gibt !



Bei den gelieferten Komponenten sind die Anschlußstellen mit Staubschutzkappen geschützt.

3 Was Sie wissen sollten !

3.1 Technische Beschreibung

Der SINEC Schnittstellenvervielfacher SSV 102 C ist ein elektronisches Gerät, mit dessen Hilfe Kommunikationsprozessoren (CPs) miteinander kommunizieren und an einen SINEC H1-Bus angeschlossen werden können. Er hat die Funktion eines Datenverteilers. Er verteilt die ankommenden Daten an alle an ihm angeschlossenen Geräte. Dies geschieht unabhängig davon, ob die Daten von einem angeschlossenen CP oder vom Transceiver (Buskoppler) kommen. Der SSV102 C ist für den Betrieb von Datenübertragungsprotokollen nach IEEE 802.3 (CSMA/CD) vorgesehen.

Der SSV 102 C kann auf 2 Arten betrieben werden:

- ohne Anschluß am SINEC H1-Bus im Einzelbetrieb (Stand-alone-Betrieb)

- mit Anschluß an einen SINEC H1-Bus (über Transceiver)

Der SINEC SSV 102 C wird grundsätzlich vom Endgerät mit Betriebsspannung versorgt. Das heißt, jedes Endgerät muß eine ausreichende Versorgungsspannung zur Verfügung stellen können.

Der SINEC SSV 102 C kann entweder als Tischgerät oder in einem 19" Einbauschrank betrieben werden.

3.2 Technische Daten

Umgebungsbedingungen:	
Betriebstemperatur	+5 °C bis 55 °C
Lagertemperatur	-40 °C bis + 70 °C
Schutzart	IP 40
Mechanische Daten:	
Maße (B x T x H)	260 mm x 210 mm x 85 mm (77 mm) Tischgerät mit (ohne) Gummifüssen 2 HE bei 19" Schrankmontage
Gewicht	1,6 Kg (Tischgerät)
Steckverbindungen:	
Anschluß für den Transceiver	1 x 15polige D-Subminiaturbuchse (MIL-C-24308)
Anschluß der Endgeräte	5 x 15poliger D-Subminiaturstecker (MIL-C-24308)
Steckerbelegung:	Bedeutung:
2+ und 9-	Kollisionserkennung
3+ und 10-	Senden
5+ und 12-	Empfangen
13+ und 6-	Spannungsversorgung
1, 4, 8, 11 und 14	Schirm, intern
Steckergehäuse	Schirm, extern, Gehäuse SSV 102 C
Elektrische Daten:	
Spannungsversorgung	10,0 - 15,75 V (Gleichspannung über Endgerät) Das Endgerät muß die Anforderungen der "Sicheren elektrischen Trennung" vom Netz erfüllen (siehe DIN VDE 0160 und DIN IEC 435/VDE 9805).
Leistungsaufnahme	
Stand alone mit Abschlußwiderstand	max 3,4 W
Stand alone ohne Abschlußwiderstand	max 2,4 W
Normalbetrieb mit Last	2,4 W + Last an der Transceiver-Schnittstelle
Datenübertragungsrate	10 MBit/sec
Funkentstörung	Grenzwertklasse B nach DIN 57871/VDE 0871

4 Was Sie tun müssen !

4.1 Auspacken

✔ Überprüfen Sie, ob das Paket komplett ausgeliefert wurde (siehe Kapitel 2 "Lieferformen")

✔ Befreien Sie alle Teile vollständig vom Verpackungsmaterial.

✔ Überprüfen Sie die Einzelteile auf Transportschäden.

☞ **Nehmen Sie nur unbeschädigte Teile in Betrieb.**

4.2 Standort wählen

Der SINEC SSV 102 C ist so konzipiert, daß er ohne zusätzlichen Aufwand in industrieller Umgebung eingesetzt werden kann.

Direktes Sonnenlicht, die Nähe von Heizlüftern und von Heizluftventilatoren von anderen Geräten sollten vermieden werden.

Da der SINEC SSV 102 C keine zusätzliche Stromversorgung benötigt, kann dieser an beliebiger Stelle unter Einhaltung der Betriebsbedingungen montiert bzw. aufgestellt werden.

4.3 Montieren

4.3.1 Als Tischgerät

Wenn Sie den SINEC SSV 102 C als Tischgerät betreiben (siehe Bild 1):

✔ Befestigen Sie die mitgelieferten, selbstklebenden Gummifüsse an der Unterseite des Gerätes.

4.3.2 Verschraubt mit der Bodenplatte (Deckenplatte)

Wenn Sie den SINEC SSV 102 C mit der Bodenplatte (Deckenplatte) verschrauben möchten (siehe Bild 1):

✔ Lösen Sie die beiden unteren (oberen) Schrauben an den Seitenwänden rechts und links des Gehäuses.

✔ Verschrauben Sie mit Hilfe der beiden Schrauben die beiden großen Montagewinkel mit dem Gehäuse.

✔ Verschrauben Sie die Montagewinkel mit der Bodenplatte (Deckenplatte).
Die erforderlichen Schrauben sind nicht im Lieferumfang enthalten.

4.3.3 Im Einbauschrank

Wenn Sie den SINEC SSV 102 C einem Schrank betreiben (siehe Bild 1):

✔ Lösen Sie jeweils die beiden vorderen Schrauben an den Seitenwänden des Gehäuses.

✔ Verschrauben Sie die Montagewinkel mit Hilfe der vorher gelösten Schrauben an den Seitenwänden des Gehäuses. Achten Sie darauf, daß der geschlitzte Teil der Winkel am Gehäuse befestigt wird.

✔ Befestigen Sie die Frontplatte mit Hilfe der Stehbolzen und mitgelieferten Muttern an den montierten Montagewinkeln.

✔ Verschrauben Sie die Frontplatte mit dem Einbaurahmen.
Das erforderliche Befestigungsmaterial ist nicht im Lieferumfang enthalten.

5 Der SSV 102 C wird in Betrieb genommen !

Da der SINEC SSV 102 C von den Endgeräten mit Spannung versorgt wird, ist er mit dem Anschluß an die Datenendgeräte bereits aktiv.

LEDs
Wenn Sie zwei oder mehr Endgeräte am SSV 102 C angeschlossen haben und diese aktiv sind, leuchtet die grüne LED (POWER).

5.1 Was Sie beachten müssen !

➢ Verwenden Sie nur Endgeräte die die Anforderung der "Sicheren Elektrischen Trennung" vom Netz erfüllen (siehe DIN/VDE 0160 und DIN/IEC 435/VDE 0805).

➢ Verwenden Sie nur AUI-Kabel, die den in IEEE 802.3 Abschnitt 7.4.3 spezifizierten Anforderungen genügen.

➢ Beim Stecken und Ziehen der Kabel unter Spannung können kurzzeitig Betriebsstörungen auftreten.

5.2 Ohne Anschluß am SINEC H1 Bus

Der SINEC SSV 102 C kann ohne Anschluß am SINEC H1 Bus (Stand Alone) betrieben werden. Er bildet mit den angeschlossenen Endgeräten ein eigenständiges Netz.

Der SSV 102 C erzeugt (nur im Stand alone-Betrieb) im Anschluß an jedes empfangene Telegramm ein SQE-Testsignal und verteilt es an alle angeschlossenen Teilnehmer.
Soll kein SQE-Signal erzeugt werden, muß der Abschlußwiderstand gesteckt sein.

✔ Stecken und verriegeln Sie den Abschlußwiderstand auf die Transceiver-Abschlußbuchse am SINEC SSV 102 C (siehe Bild 1).

✔ Stecken und verriegeln Sie die Anschlußkabel der Endgeräte an den entsprechenden Schnittstellen (DTE1 ... DTE 5) am SINEC SSV 102 C.

Mit dem Anschluß der Endgeräte (und dem Abschlußwiderstand falls, erforderlich) ist der SINEC SSV 102 C betriebsbereit.

5.3 Mit Anschluß am SINEC H1 Bus

Der SINEC SSV 102 C wird an den SINEC H1 Bus angeschlossen. Um unnötige Störungen auf dem Netz zu vermeiden, halten Sie bitte diese Reihenfolge ein.

✔ Stecken und verriegeln Sie die Anschlußkabel der Endgeräte an den entsprechenden Schnittstellen (DTE 1 ... DTE 5) am SINEC SSV 102 C.

✔ Stecken und verriegeln Sie das Verbindungskabel zum Transceiver an der entsprechenden Schnittstelle.

Mit dem Anschluß der Endgeräte und dem Transceiver ist der SINEC SSV 102 C betriebsbereit.

☞ **Die automatische Umschaltung von "Stand alone"" auf "Netzbetrieb" erfordert, daß die Versorgungsspannung an der Schnittstelle zum Transceiver belastet wird. Wird an dieser Schnittstelle anstelle eines Transceivers ein Gerät mit eigener Stromversorgung betrieben (z. B. SSV 755 oder auch ein SINEC H1 Buskoppler mit zwei Schnittstellen), so muß das Kabel an der Transceiverschnittstelle über einen Adapterstecker angeschlossen werden.**

Der Adapterstecker ist unter folgender Bezeichnung

Adapterstecker für SSV 102 C, Nr. RF SIPAC 520 850

bei

SIEMENS AG
Werk für Kombinationstechnik Fürth
Abt. AUT 75
Würzburger Str. 121
90766 Fürth

erhältlich.

5.4 Wie Sie den SSV 102 C außer Betrieb nehmen !

Um unnötige Störungen auf dem Netz zu vermeiden, halten Sie bitte diese Reihenfolge ein.

✔ Entriegeln und ziehen Sie das Verbindungskabel an der Transceiver-Schnittstelle (falls angeschlossen).

✔ Entriegeln und ziehen Sie die Verbindungskabel zu den Datenendgeräten.

5.5 Wenn Sie noch mehr über den SSV 102 C wissen möchten !

Informationen, die über diese Montageanleitung hinausgehen, finden Sie im SINEC H1 Netzhandbuch (Bestell-Nr: 6GK1970-1AA00-0AA0). ❑

1 Le multiplicateur d’interfaces SINEC SSV 102 C

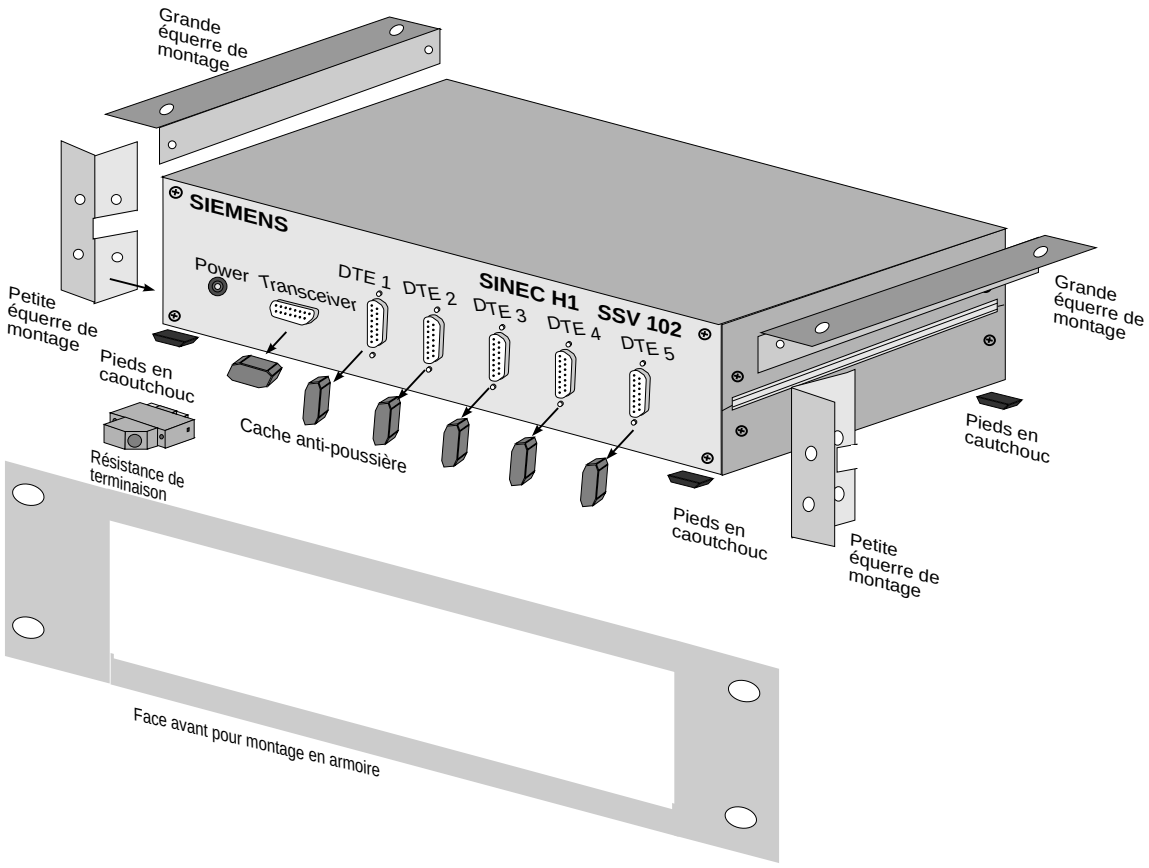
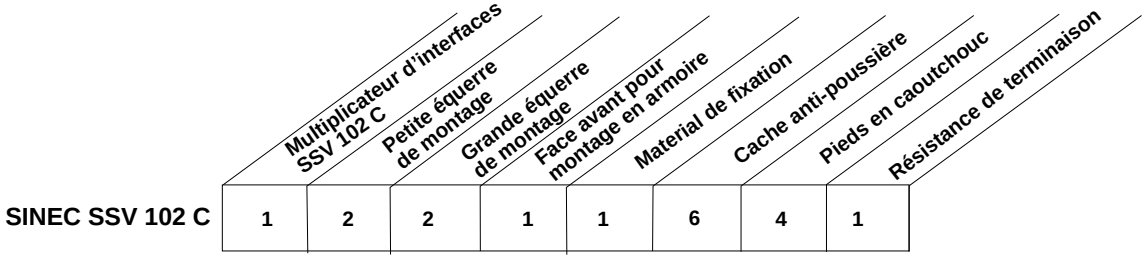


Figure 1 : Montage du multiplicateur d’interfaces SINEC 102 C

2 Les configurations existantes !



	Multiplicateur d'interfaces SSV 102 C	Petite équerre de montage	Grande équerre de montage	Face avant pour montage en armoire	Material de fixation	Cache anti-poussière	Pieds en caoutchouc	Résistance de terminaison
SINEC SSV 102 C	1	2	2	1	1	6	4	1

Sur les composants livrés, les points de connexion sont protégés par des caches anti-poussière.

3 Ce qu'il faut savoir !

3.1 Description technique

Le multiplicateur d'interfaces SINEC SSV 102 C est un appareil électronique permettant à des processeurs de communication (CP) de communiquer entre eux et d'être raccordés à un bus SINEC H1. Il a la fonction d'un répartiteur de données. Il redistribue les données en provenance de tous les appareils qui lui sont raccordés, et ce indépendamment du fait que celles-ci proviennent d'un CP raccordé ou du transmetteur. Le SSV102 C est conçu pour les protocoles de transmission de données selon IEEE 802.3 (CSMA/CD).

Le SSV 102 C peut fonctionner de deux manières :

- en mode individuel, sans raccordement sur le bus SINEC H1 (mode Stand-alone)

- en étant raccordé à un bus SINEC H1 (au travers d'un transmetteur)

La tension de service du SINEC SSV 102 C est en principe délivrée par le terminal. Ceci signifie que chaque terminal doit pouvoir fournir une tension d'alimentation suffisante.

Le SINEC SSV 102 C peut être exploité en appareil de table ou dans une armoire encastrée 19".

3.2 Caractéristiques techniques

Conditions environnantes :	
Température de service	+5 °C à 55 °C
Température de stockage	-40 °C à + 70 °C
Classe de protection	IP 40
Caractéristiques mécaniques :	
Dimensions (L x P x H)	260 mm x 210 mm x 85 mm (77 mm) appareil de table avec (sans) pieds en caoutchouc 2 HE dans le cas du montage en armoire 19"
Poids	1,6 Kg (appareil de table)
Connecteurs :	
Raccordement au transmetteur	1 x Prise SUB-D 15 broches (MIL-C-24308)
Raccordement des terminaux	5 x Fiche SUB-D 15 broches (MIL-C-24308)
Brochage :	Signification :
2+ et 9-	Détection de porteuse
3+ et 10-	Émission données
5+ et 12-	Réception données
13+ et 6-	Alimentation
1, 4, 8, 11 et 14	Blindage interne
Boîtier de connecteurs	Blindage externe, boîtier SSV 102 C
Caractéristiques électriques :	
Alimentation électrique	10,0 - 15,75 V (tension continue par terminal) Le terminal doit répondre aux exigences d'une "isolation électrique parfaite" par rapport au secteur (voir DIN VDE 0160 et DIN IEC 435/VDE 9805).
Consommation	
Stand alone avec résistance de terminaison	max 3,4 W
Stand alone sans résistance de terminaison	max 2,4 W
Fonctionneemnt normal en charge	2,4 W + charge sur l'interface du transmetteur
Taux de transfert de données	10 MBit/sec
Antiparasitage	Classe de valeur limite B conformément à DIN 57871/VDE 0871

4 Ce que vous devez faire !

4.1 Déballage

✔ Vérifiez que la livraison est complète (voir chapitre 2 "Formulaires de livraison")

✔ Retirez complètement le matériau d'emballage de toutes les pièces.

✔ Vérifiez chacune des pièces en vue d'enventuels dommages pendant le transport.

☞ **N'utilisez que les pièces non endommagées.**

4.2 Le choix du lieu d'implantation

Le SINEC SSV 102 C est conçu de telle façon qu'il peut être implanté dans un environnement industriel sans frais supplémentaires.

Il faut éviter le rayonnement solaire direct, la proximité de souffleries à air chaud ainsi que les ventilateurs à air chaud d'autres appareils.

Du fait que le SINEC SSV 102 C ne nécessite pas d'alimentation électrique supplémentaire, celui-ci peut être monté ou installé n'importe où en respectant les conditions d'utilisation.

4.3 Montage

4.3.1 Comme appareil de table

Si vous utilisez le SINEC SSV 102 C comme appareil de table (voir figure 1) :

✔ Fixez les pieds en caoutchouc autocollants livrés sur le dessous de l'appareil.

4.3.2 Vissé sur la plaque inférieure (ou plaque supérieure)

Si vous voulez visser le SINEC SSV 102 C sur la plaque inférieure (ou plaque supérieure) (voir figure 1) :

✔ Desserrez les deux vis inférieures (ou supérieures) sur les parois latérales à droite et à gauche de l'appareil.

✔ A l'aide des deux vis, fixer les deux grandes équerres de montage sur le boîtier.

✔ Vissez les équerres de montage avec la plaque inférieure (ou plaque supérieure).
Les vis nécessaires ne sont pas comprises dans la livraison.

4.3.3 Dans une armoire

Si vous destinez le SINEC SSV 102 C à une armoire (voir figure 1) :

✔ Desserrez chacune des deux vis à l'avant des parois latérales du boîtier.

✔ Vissez les équerres de montage sur les parois latérales du boîtier à l'aide des vis précédemment desserrées. Veillez à ce que la partie fendue de l'equerre soit fixée sur le boîtier.

✔ Fixez la face frontale sur les équerres de montage à l'aide des goujons filetés et des écrous livrés.

✔ Vissez la face frontale avec le cadre d'encastrement.
Le matériel de fixation nécessaire n'est pas compris dans la livraison.

5 La mise en service du SSV 102 C !

Du fait que l'alimentation électrique du SINEC SSV 102 C est délivrée par les terminaux, l'appareil est déjà actif lors de son raccordement à ces derniers.

DEL
La DEL verte (POWER) s'allume lorsque vous avez raccordé deux terminaux ou plus au SSV 102 C et que ceux-ci sont actifs.

5.1 Ce à quoi vous devez veiller !

➢ N'utilisez que des terminaux qui répondent aux exigences d'une "parfaite isolation électrique" par rapport au secteur (voir DIN/VDE 0160 et DIN/IEC 435/VDE 0805).

➢ N'utilisez que des câbles AUI qui répondent aux exigences spécifiées dans IEEE 802.3 paragraphe 7.4.3.

➢ De brèves perturbations du fonctionnement peuvent survenir lors de l'insertion et de l'extraction d'un câble sous tension.

5.2 Sans raccordement au bus SINEC H1

Le SINEC SSV 102 C peut être utilisé sans être raccordé au bus SINEC H1 (Stand Alone). Il forme, avec les terminaux raccordés, un réseau autonome.

Le SSV 102 C génère un signal de test SQE (seulement en mode Stand alone) à la suite de chaque télégramme reçu et le retransmet vers tous les abonnées raccordés.
Si le signal SQE ne doit pas être généré, il faut insérer la résistance de terminaison.

✔ Insérez et verrouillez la résistance de terminaison sur la prise de raccordement du transmetteur du SINEC SSV 102 C (voir figure 1).

✔ Insérez et verrouillez les câbles de raccordement des terminaux aux interfaces correspondantes (DTE1 ... DTE 5) du SINEC SSV 102 C.

Le SINEC SSV 102 C est prêt à fonctionner après le raccordement des terminaux (et, si nécessaire, de la résistance de terminaison).

5.3 Avec raccordement au bus SINEC H1

Le SINEC SSV 102 C est raccordé au bus SINEC H1. Veuillez respecter la chronologie suivante afin d'éviter des perturbations indésirables sur le réseau.

✔ Insérez et verrouillez les câbles de raccordement des terminaux aux interfaces correspondantes (DTE 1 ... DTE 5) du SINEC SSV 102 C.

✔ Insérez et verrouillez le câble de raccordement vers le transmetteur sur l'interface correspondante.

Le SINEC SSV 102 C est prêt à fonctionner après le raccordement des terminaux et du transmetteur.

☞ **La commutation automatique du mode "Stand alone" en mode "Réseau" nécessite que la tension d'alimentation de l'interface vers le transmetteur soit en charge. Si un autre appareil que le transmetteur est utilisé sur cette interface, le dit appareil disposant de sa propre alimentation électrique (par exemple SSV 755 ou encore un coupleur de bus SINEC H1 avec deux interfaces), le câble vers l'interface du transmetteur doit alors être raccordé au travers d'un connecteur d'adaptation.**

Le connecteur d'adaptation est disponible chez

SIEMENS AG
Werk für Kombinationstechnik Fürth
Abt. AUT 75
Würzburger Str. 121
90766 Fürth

sous la référence

Connecteur d'adaptation pour SSV 102 C, N° RF SIPAC 520 850.

5.4 La mise hors service du SSV 102 !

Veuillez respecter la chronologie suivante afin d'éviter des perturbations indésirables sur le réseau.

✔ Déverrouillez et retirez le câble de liaison vers l'interface du transmetteur (s'il est raccordé).

✔ Déverrouillez et retirez les câbles de liaison vers les terminaux.

5.5 Si vous voulez obtenir des informations supplémentaires sur le SSV 102 C !

Vous trouverez toutes les informations ne se trouvant pas dans cette notice de montage dans le manuel du réseau SINEC H1 (N° de commande : 6GK1970-1AA00-0AA0). ❑

SIEMENS

SINEC

H1 Schnittstellenvervielfacher SSV 104
H1 Fan-out Unit SSV 104
H1 Multiplicateur d'interfaces SSV 104

Montageanleitung
Installation Instructions
Instructions de montage

Bestell-Nr.: C79000-G8963-C050-01
Order no.: C79000-G8963-C050-01
N° de commande: C79000-G8963-C050-01

Wichtiger Hinweis

Wir weisen darauf hin, daß der Inhalt dieser Betriebsanleitung nicht Teil einer früheren oder bestehenden Vereinbarung, Zusage oder eines Rechtsverhältnisses ist oder diese abändern soll. Sämtliche Verpflichtungen von Siemens ergeben sich aus dem jeweiligen Kaufvertrag, der auch die vollständige und allein gültige Gewährleistungsregel enthält. Diese vertraglichen Gewährleistungsbestimmungen werden durch die Ausführungen dieser Betriebsanleitung weder erweitert noch beschränkt. Wir weisen außerdem darauf hin, daß aus Gründen der Übersichtlichkeit in dieser Betriebsanleitung nicht jede nur erdenkliche Problemstellung im Zusammenhang mit dem Einsatz dieses Gerätes beschrieben werden kann. Sollten Sie weitere Informationen benötigen oder sollten besondere Probleme auftreten, die in der Betriebsanleitung nicht ausführlich genug behandelt werden, können Sie die erforderliche Auskunft über die örtliche Siemens-Niederlassung anfordern.

Allgemeines

WARNUNG !

!

- Dieses Gerät wird mit Elektrizität betrieben. Beim Betrieb elektrischer Geräte stehen zwangsläufig bestimmte Teile dieser Geräte unter gefährlicher Spannung.
- Bei Nichtbeachtung der Warnhinweise können deshalb schwere Körperverletzungen und/oder Sachschäden auftreten.
- Nur entsprechend qualifiziertes Personal sollte an diesem Gerät oder in dessen Nähe arbeiten. Dieses Personal muß gründlich mit allen Warnungen und Instandhaltungsmaßnahmen gemäß dieser Betriebsanleitung vertraut sein.
- Der einwandfreie und sichere Betrieb dieses Gerätes setzt sachgemäßen Transport, fachgerechte Lagerung und Montage sowie sorgfältige Bedienung und Instandhaltung voraus.

Anforderungen an die Qualifikation des Personals

Qualifiziertes Personal im Sinne dieser Betriebsanleitung bzw. der Warnhinweise sind Personen, die mit Aufstellung, Montage, Inbetriebsetzung und Betrieb dieses Produktes vertraut sind und über die ihrer Tätigkeit entsprechenden Qualifikation verfügen, wie z.B.:

– Ausbildung oder Unterweisung bzw. Berechtigung, Stromkreise und Geräte bzw. Systeme gemäß den aktuellen Standards der Sicherheitstechnik ein- und auszuschalten, zu erden und zu kennzeichnen;
– Ausbildung oder Unterweisung gemäß den aktuellen Standards der Sicherheitstechnik in Pflege und Gebrauch angemessener Sicherheitsausrüstungen;
– Schulung in Erster Hilfe.

Note

We would point out that the contents of this product documentation shall not become a part of or modify any prior or existing agreement, commitment or legal relationship. The Purchase Agreement contains the complete and exclusive obligations of Siemens. Any statements contained in this documentation do not create new warranties or restrict the existing warranty.We would further point out that, for reasons of clarity, these operating instructions cannot deal with every possible problem arising from the use of this device. Should you require further information or if any special problems arise which are not sufficiently dealt with in the operating instructions, please contact your local Siemens representative.

General

WARNING !

!

- This device is electrically operated. In operation, certain parts of this device carry a dangerously high voltage.
- Failure to heed warnings may result in serious physical injury and/or material damage.
- Only appropriately qualified personnel may operate this equipment or work in its vicinity. Personnel must be thoroughly familiar with all warnings and maintenance measures in accordance with these operating instructions.
- Correct and safe operation of this equipment requires proper transport, storage and assembly as well as careful operator control and maintenance.

Personnel qualification requirements

Qualified personnel as referred to in the operating instructions or in the warning notes are defined as persons who are familiar with the installation, assembly, startup and operation of this product and who posses the relevant qualifications for their work, e.g.:

– Training in or authorization for connecting up, grounding or labelling circuits and devices or systems in accordance with current standards in saftey technology;
– Training in or authorization for the maintenance and use of suitable saftey equipment in accordance with current standards in safety technology;
– First Aid qualification.

Information

Le contenu de ces instructions de service ne fait pas partie d'une convention, d'un accord ou d'un rapport juridique existant ou ayant existè. Il n'est pas non plus destiné à modifier de tels textes. L'ensemble des devoirs de Siemens résulte de chaque contrat de vente qui comprend la totalitè du seul règlement appplicable en matière de garantie. Le contenu des présentes instructions de service ne constitue ni une extension ni une restriction des dispositions contractuelles relatives à cette garantie.

Par souci de clarté, ces instructions de service ne traitent pas non plus tous le problèmes imaginables qui peuvent se poser en relation avec l'emploi de cet appareil. Si vous aves besoin d'informations complèmentaires ou si vous êtes confrontés à des problèmes particuliers qui ne sont pas traités en détail dans ce manuel, la filiale Siemens de votre région vous fournira les renseignements nécessaires.

Généralités

ATTENZION !

!

- Cet appareil fonctionne avec du courant électrique. Pendent l'exploitation d'appareils électriques, certaines pièces sont forcément sous tension dangereuse.
- Pour éviter de graves blessures corporelles et/ou de sérieux dégâts matériels, il est indispensable de respecteur les avertissements.
- Toute intervention sur cet apppareil ou tout travail exécuté à proximité de cet appareil sont réservés à un personnel qui possède une qualification correspondante. Ce personnel aura une parfaite connaissance de tous les avertissements et de toutes les mesures de maintenance conformes à ces instructions de service.
- Le bon fonctinnement de cet appareil suppose un transport adéquat, un stockage et unmontage appropriés, ainsi qu'une utilisation et une maintenance correctes.

Exigences relatives à la qualification du personnel

Au sens de ces instructions de service ou des avertissements, "personnel qualifié" désigne des personnes familiarisées avec l'installation, le montage et la mise en service de ce produit et spécialisées dan le domaine relatif à leurs activités. Elles auront par example:

– une formation, une instruction ou une habilitation qui les autorisent à brancher/débrancher, mettre à la terre ou repérer des circuits électriques, des appareils ou des systèmes conformes aux normes actulles des technique de sécurité;
– une formation ou une instruction conforme aux normes actuelles des techniques de sécurité en matière de d'entretien et d'utilisation des équipements de sécurité;
– une information en premiers soins ❑.

Contents **Page**

RADIATED ENERGY

U.S. Federal Communications

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note:

Modifications or changes not expressly approved by the manufacturer or the FCC, can void your right to operate this equipment.

Canadian Department of Communications

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appariel numérique n'émet pas de bruits radioélectriques dépassant les limites appicables aux appariels numériques de Classe A. Prescrites dans le réglement sur le brouillage radioélectrique édicté par le minestére des Communications Du Canada.

This product has been tested and complies with the German Vfg 243/1991 requirements for Class B device.

SAFETY

Electrical notices

Warning:Electric schock hazard

To prevent ELECTRIC shock, do not remove cover. No user-serviceable parts inside. This unit contains HAZARDOUS VOLTAGES and should only be opened by a trained and qualified techician.

To avoid the possibility of ELETRIC SHOCK, disconnect electric power to the product before connecting or disconnecting the LAN cables.

Lightning danger

Danger:Do not work on equipment or cables during periods of lightning activity.

Caution:Power cord is used as a disconnection device.

To de-energise equipment, disconnect the power cord.

INSTALLATION

Electrical-auto voltage adjustment

This product will automatically adjust to any voltage between the ranges shown on the label.

Electrical-type class 1 equipment

This equipment must be earthed. Power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accesble metal parts.

Electrical-cord notice

Use power cord, maximum 4.5 meters long, rated 6 amp minimum, 250V, made of HAR cordage molded IEC 320 connector on one end and on the other end a plug approved by the country of end use.

MOUNTING INSTRUCTIONS

Caution:

These models are designed for operation in the HORIZONTAL position. VERTICAL MOUNTING must not be done without the use of an Siemens vertical mount chassis designed for this purpose. Please contact your vendor for information.

Caution:

Air vents must not be blocked and must have free access to the room ambient air for cooling.

Caution:

DO NOT detach rubber feet from the product unlesss a Siemens vertical mounting schassis is being used.

Caution:

MECHANICAL LOADING - Mounting of the equipment in the rack should be such that hazardous condition is not achieved due to uneven loading.

Operating temparature

This product is designed for a maximum ambient temperature of 50 degrees Celsius.

All countries:

Install product in accordance with local and National Electrical Codes.

❑

1 The SINEC Fan-Out Unit SSV 104

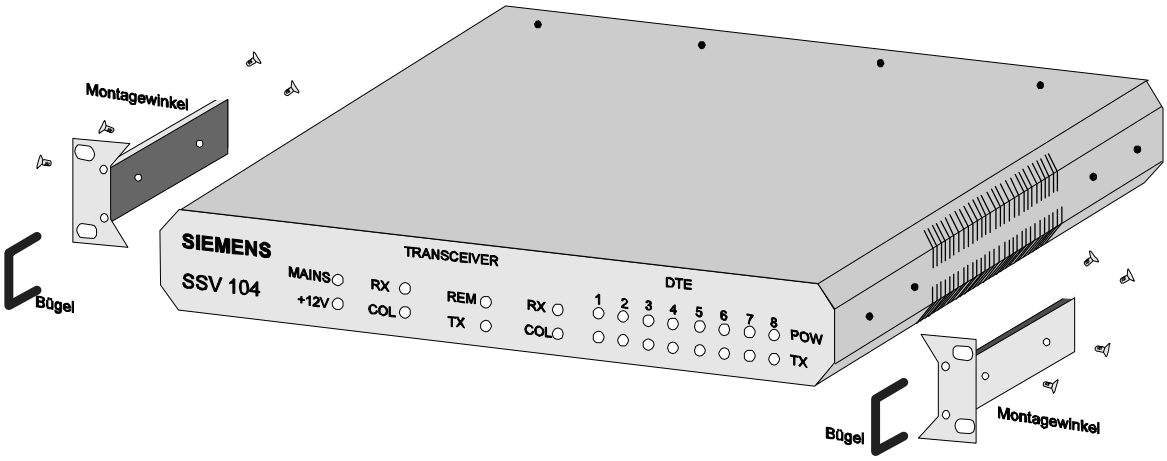


Fig. 1: Assembly of the SINEC Fan-Out Unit SSV 104, Front View

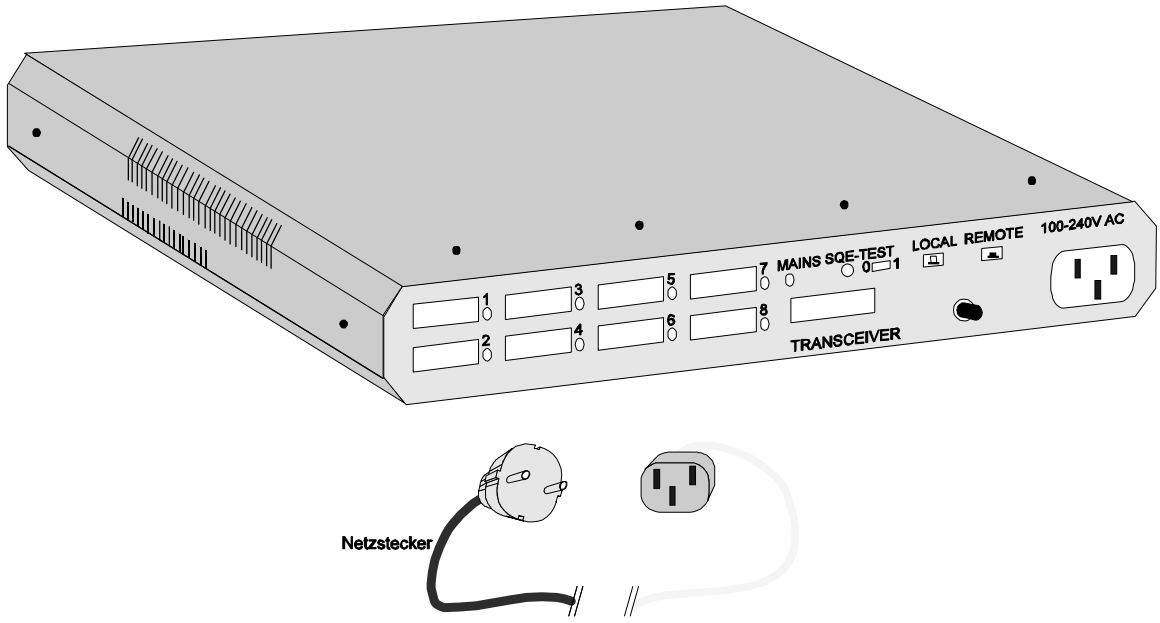
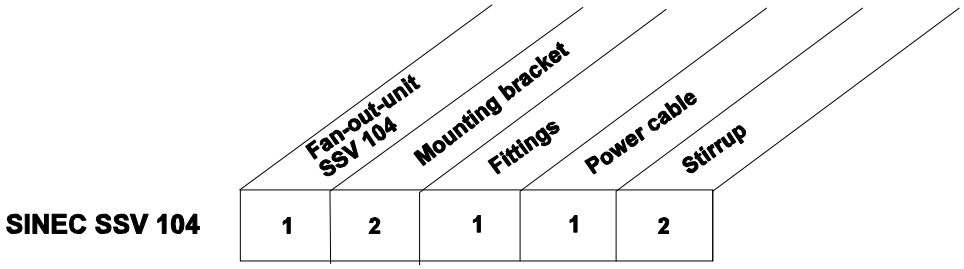


Fig. 2: SINEC Fan-Out Unit SSV 104, Rear View

2 Components Supplied



3 What You Should Know

3.1 Technical Description

The SINEC fan-out unit SSV 104 allows a maximum of 8 SINEC H1 DTEs/communications processors (CPs) to be connected to a SINEC H1/H1FO network. The number of DTEs connected to a SINEC H1/H1FO network using a single SINEC H1/H1FO transceiver can also be increased. The SSV 104 is intended for data transmission protocols complying with IEEE 802.3 (CSMA/CD).

The SSV 104 can be operated in 3 ways:

- ➢ in the stand-alone mode without a connection to the SINEC H1/H1FO network
- ➢ by cascading up to 2 SSV 104 fan-out units without a connection to the SINEC H1/H1FO network
- ➢ with a connection to a SINEC H1 bus cable via a transceiver or to the SINEC H1FO network using a SINEC H1FO transceiver

The SSV 104 requires an external power supply of 100V - 240V AC.

The 12V power supply from the connected DTEs is not necessary for operating the SSV 104. It is only used for the status indicator.

The SINEC SSV 104 can be operated either as a desk-top device or can be mounted in a 19" cabinet using the installation kit supplied.

3.2 Technical Data

Environmental conditions: Operating temperature Storage temperature Rel. humidity Type of protection	 0°C to 50°C - 20°C to 60°C 5% to 80%, non condensing
Mechanical data: Dimensions (W x H x D) Weight	 432 mm x 46 mm x 252 mm 2.1 kg
Connections: Transceiver connection DTE connections Pin assignment: 2 + and 9 - 3 + and 10 - 5 + and 12 - 13 + and 6 - 1, 4, 8, 11 and 14 Connector housing	 1 x 15-pin D subminiature female connector (MIL-C-24308) 8 x 15-pin D subminiature male connector (MIL-C-24308) Collision detect Send Receive Power supply Shield, internal Shield, external, housing SSV 104
Electrical data: Power supply (automatic switchover) Power input Interference suppression Immunity	 100V AC to 240V AC, 50 Hz to 60 Hz max. 40 W complying with EN 50081, part 1 complying with EN 50082, part 2

4 What You Need To Do

4.1 Unpacking

✔ Check that you have received the complete package.

✔ Remove all the packing material from the parts.

✔ Check each item for damage .

4.2 Selecting the Location

The SINEC SSV 104 is designed so that it can be used without modification in an industrial environment.

Avoid locations with direct sunlight and do not install close to heating fans or hot air ventilators of other devices.

The SINEC SSV 104 requires an external power supply of 100V AC to 240V AC. The supplied cable is 3 m long so that the unit must be installed close to a suitable power source.

4.3 Assembly

4.3.1 As a Desk-Top Device

The SSV 104 is delivered as a desk-top device and requires no further installation after connecting the power supply.

4.3.2 In a Cabinet

If you want to operate the SINEC SSV 104 in a 19" cabinet (see Fig. 1):

✔ Screw the stirrups to the mounting brackets (installation kit).

✔ Screw the mounting brackets to the side panels right and left of the SSV 104 housing.
You can mount the brackets to the front or back of the side panels of the SSV 104. It is advisable to screw them to the back when the drop cables hang free pulling down the back of the unit.

✔ Secure the SSV 104 in your cabinet.

5 Starting Up the SSV 104

✔ Make sure that the power supply is within the range of 100V to 240V AC.

✔ Connect the unit using the power cable supplied. The unit does not have a separate power switch and is ready for operation as soon as the power is connected.

When the "MAINS" LEDs on the front and back of the unit are lit, the unit is ready for operation.

5.1 Points to Note

➢ Only use DTEs which are safely isolated from the network (see DIN/VDE 0160 and DIN/IEC 435/VDE 0805).

➢ Only use drop cables which meet the requirements of IEEE 802.3 section 7.4.3.

➢ Connecting or disconnecting the cables when the power is on can cause brief disturbances.

5.2 No Connection to the SINEC H1/H1FO network

The SINEC SSV 104 can be operated without a connection to the SINEC H1/H1FO network (stand- alone). It then forms its own network with the connected DTEs or fan-out units

☞ **The Local/Remote selector on the rear of the unit must be set to Local.**

➢ SQE test signal off
Move the switch for the SQE test on the rear of the unit to the setting "O".
The SQE test is not required with SINEC components.

➢ SQE test signal on
Move the switch for the SQE test on the rear of the unit to the setting "1".

If the Local/Remote selector is correctly set, the "REM" LED on the front panel must not light up.

✔ Plug the connecting cables of the DTEs into the appropriate interfaces (DTE 1 to DTE 8) on the SINEC SSV 104 and secure them.

5.2.1 What the LEDs mean !

The "**POW**" LEDs on the front panel of the unit and the LEDs to the right of the connections on the rear indicate whether or not the connected DTE is switched on (the SSV 104 checks whether the power supply for the DTE interface is present or not).

The "**TX**" LEDs indicate whether and which of the connected DTEs is transmitting data.

the "**RX**" LED indicates that the message sent by one DTE is being distributed to all other DTEs.

The "**COL**" LED indicates when there is a collision. The COL signal for the indication is not saved. The LED is only lit when too many collisions occur one after the other and data exchange is threatened.

5.3 With a connection to the SINEC H1/H1FO network

The SSV 104 is connected to the SINEC bus cable with a transceiver. This allows the connection of up to 8 DTEs via one transceiver interface.

To avoid interference on the network, please keep to the sequence outlined below:

✔ Plug in and secure the connecting cables of the DTEs at the appropriate interfaces (DTE 1.....DTE 8) on the SINEC SSV 104.

✔ The Local/Remote selector on the rear of the unit must be set to remote, the "REM" LED on the front panel must be lit.

✔ Make sure that the "+12V" LED on the front of the unit is lit (this indicates that the power supply for the transceiver is present).

✔ Plug in and secure the cable to the transceiver at the interface.

5.3.1 What the LEDs mean !

The "**POW**" LEDs on the front panel of the unit and the LEDs to the right of the connections on the rear indicate whether or not the connected DTE is switched on (the SSV 104 checks whether the power supply for the DTE interface is present or not).

The "**TX**" LEDs indicate whether and which of the connected DTEs is sending data.

The "**RX**" LED is lit when data is being sent to the DTEs, the "**COL**" LED is lit when there is a collision.

The LEDs for the transceiver interface have the following significance:

REM: The transceiver interface is active

TX: The SSV 104 sends data to the transceiver

RX: The SSV 104 receives data from the transceiver

COL: The transceiver signals a collision

5.4 Further Points to Note!

If activated, the SQE test signal is always distributed to all connected DTEs and not only to the DTE that has just transmitted. This applies both to operation on the SINEC H1/H1FO network (the SQE test signal is generated by the transceiver) and in the stand-alone mode (the SQE test signal is generated by the SSV 104).

If the Local/Remote selector is set to Local, the signal connection to the transceiver interface is interrupted but not the +12V power supply for the transceiver.

5.5 How to Take the SSV 104 Out of Service

To avoid unnecessary interference on the network, please keep to the sequence below:

✔ When operating on the SINEC H1/H1FO network switch the Local/Remote selector to the setting for the stand-alone mode.

✔ Release and remove the cable to the transceiver interface (if connected)

✔ Release and remove the cables to the DTEs.

✔ Disconnect the power cable

5.6 If You Want More Information about the SSV 104

Information beyond the scope of these installation instructions can be found in the SINEC H1 manual for triaxial networks (Order no.: 6GK1970-1AA10-0AA0). ❑

1 SINEC H1 Schnittstellenvervielfacher SSV 104

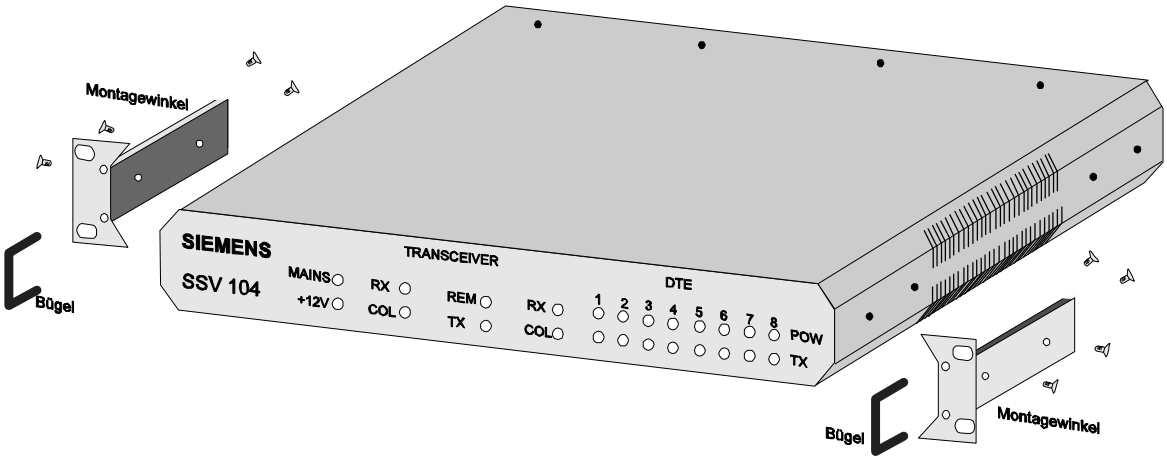


Bild 1: Montage des SINEC Shnittstellenvervielfacher SSV 104, Frontansicht

2 Welche Lieferformen es gibt!

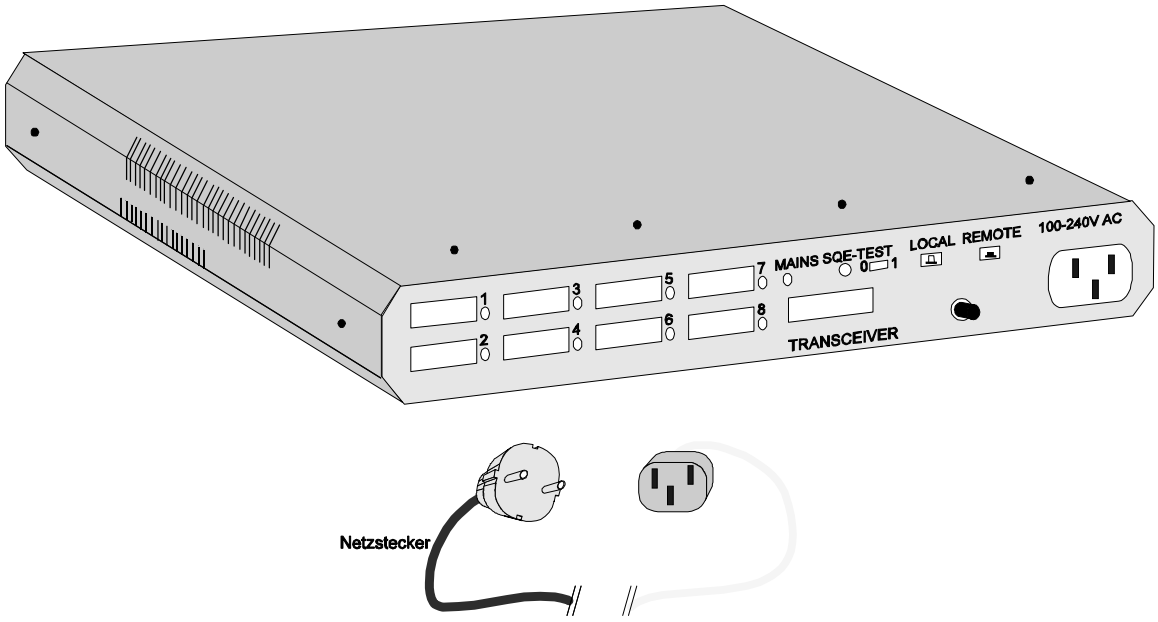
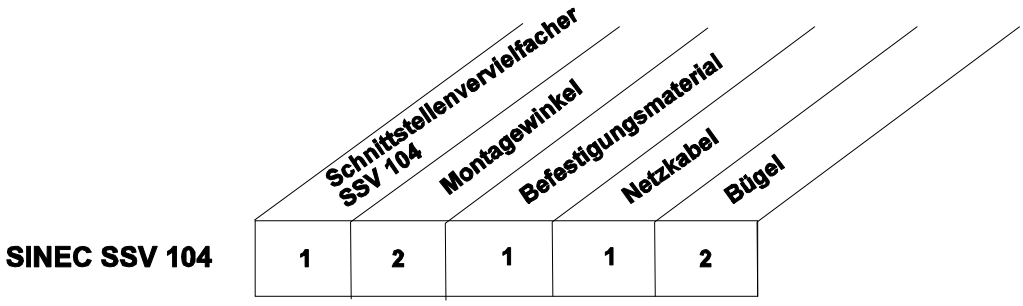


Bild 2: SINEC Schnittstellenvervielfacher SSV 104, Rückwandansicht

3 Was Sie wissen sollten!



3.1 Technische Beschreibung

Der SINEC Schnittstellenvervielfacher SSV 104 ermöglicht den Anschluß von max. 8 SINEC H1 Engeräten/Kommunikationsprozessoren. Mit ihm kann die Anzahl der Endgeräte erhöht werden, die über einen einzelnen SINEC H1/H1FO-Buskoppler an ein SINEC H1/H1FO-Netz angeschlossen sind. Der SSV 104 ist für den Betrieb von Datenübertragungsprotokollen nach IEEE 802.3 (CSMA/CD) geeignet.

Der SSV 104 kann auf 3 Arten betrieben werden:

- ohne Anschluß an das SINEC H1/H1FO-Netz im Einzelbetrieb (Stand-alone-Betrieb)
- Kaskadierung von bis zu zwei Schnittstellenvervielfachern SSV 104 ohne Anschluß an das SINEC H1/H1FO-Netz
- mit Anschluß an das SINEC H1-Netz über einen Buskoppler (Transceiver), bzw. an das SINEC H1FO-Netz über einen SINEC H1FO-Buskoppler.

Der SSV 104 benötigt eine externe Versorgungsspannung von 100V - 240V AC.

Die 12V Versorgungsspannung von den angeschlossenen Datenendgeräten ist für den Betrieb des SSV 104 nicht erforderlich. Sie wird nur für Statusanzeigen verwendet.

Der SSV 104 kann entweder als Tischgerät oder, mit Hilfe des mitgelieferten Montagesatzes, als Einbaugerät in einem 48 cm (19") Einbauschrank betrieben werden.

3.2 Technische Daten

Umgebungsbedingungen:	
Betriebstemperatur	0°C bis 50°C
Lagertemperatur	- 20°C bis 60°C
Rel. Luftfeuchtigkeit	5% bis 80%, nicht kondensierend
Schutzart	
Mechanische Daten:	
Maße (B x H x T)	432 mm x 46 mm x 252 mm
Gewicht	2,1 kg
Steckverbindungen:	
Anschluß für den Transceiver	1 x 15polige D-Subminiaturbuchse (MIL-C-24308)
Anschluß der Endgeräte	8 x 15poliger D-Subminiaturstecker (MIL-C-24308)
Steckerbelegung:	
2 + und 9 -	Kollisionserkennung
3 + und 10 -	Senden
5 + und 12 -	Empfangen
13 + und 6 -	Spannungsversorgung
1, 4, 8, 11 und 14	Schirme, intern
Steckergehäuse	Schirm, extern, Gehäuse SSV 104
Elektrische Daten:	
Spannungsversorgung (automatische Umschaltung)	100V AC bis 240V AC, 50 Hz bis 60 Hz
Leistungsaufnahme	max. 40 Watt
Funkentstörung	entsprechend EN 50081, Teil 1
Störfestigkeit	entsprechend EN 50082, Teil 2

4 Was Sie tun müssen!

4.1 Auspacken

✔ Überprüfen Sie, ob das Paket vollständig geliefert wurde.

✔ Befreien Sie alle Teile vollständig vom Verpackungsmaterial.

✔ Überprüfen Sie alle Teile auf Transportschäden.

4.2 Standort wählen

Der SINEC SSV 104 ist so konzipiert, daß er ohne zusätzlichen Aufwand in industrieller Umgebung eingesetzt werden kann.

Direktes Sonnenlicht, die Nähe von Heizlüftern und von Heizluftventilatoren anderer Geräte sollten vermieden werden.

Der SINEC SSV 104 benötigt eine externe Spannungsversorgung von 100V AC bis 240V AC. Das mitgelieferte Netzkabel von 3 m Länge erfordert die Installation in der Nähe einer geeigneten Versorgungsspannungsquelle.

4.3 Montieren

4.3.1 Als Tischgerät

Der SSV 104 wird als Tischgerät ausgeliefert und ist nach Anschluß der Versorgungsspannung ohne weitere Montage einsatzfähig.

4.3.2 Im Einbauschrank

Wenn Sie den SINEC SSV 104 in einem 19" (48 cm)-Schrank betreiben (siehe Bild 1):

✔ Verschrauben Sie die beiden Bügel mit den Montagewinkeln (Montageset).

✔ Verschrauben Sie die beiden Winkel rechts und links des Gehäuses des SSV 104.
Sie können die Winkel entweder an der Frontseite oder an der Rückseite des SSV 104 befestigen. Die Befestigung an der Rückseite empfiehlt sich, wenn die Steckleitungen (Dropcable) frei durchhängen können und damit die Geräterückseite zusätzlich belasten.

✔ Befestigen Sie den SSV 104 in Ihrem Einbauschrank.

5 Der SSV 104 wird in Betrieb genommen!

✔ Vergewissern Sie sich, daß die zur Verfügung stehende Versorgungsspannung im Bereich von 100V bis 240V AC liegt.

✔ Schließen Sie das Gerät mit dem mitgelieferten Netzkabel an. Das Gerät verfügt über keinen eigenen Netzschalter und ist damit sofort betriebsbereit.

Das Aufleuchten der LEDs "MAINS" auf der Vorder- und Rückseite des Gerätes zeigt an, daß das Gerät betriebsbereit ist.

5.1 Was Sie beachten müssen!

➢ Verwenden Sie nur Endgeräte, die die Anforderungen der "Sicheren Elektrischen Trennung" vom Netz erfüllen (siehe DIN/VDE 0160 und DIN/IEC 435/VDE 0805).

➢ Verwenden Sie nur Steckleitungen (Dropcable), die den in IEEE 802.3 Abschnitt 7.4.3 spezifizierten Anforderungen genügen.

➢ Beim Ziehen und Stecken der Steckleitungen unter Spannung können kurzzeitig Betriebsstörungen auftreten.

5.2 Ohne Anschluß an das SINEC H1/H1FO-Netz

Der SINEC SSV 104 kann ohne Anschluß das SINEC H1/H1FO-Netz betrieben werden (Stand Alone). Er bildet mit den angeschlossenen Endgeräten oder Schnittstellenvervielfachern ein eigenständiges Netz.

☞ **Die Local/Remote Umschalttaste auf der Rückseite des Gerätes muß in der Stellung Local sein.**

➢ SQE-Testsignal ausgeschaltet
Schieben Sie den Schalter für den SQE-Test auf der Rüchseite des Gerätes in die Stellung "O".
Bei SINEC-Komponenten ist der SQE-Test nicht erforderlich.

➢ SQE-Testsignal eingeschaltet
Schieben Sie den Schalter für den SQE-Test auf der Rückseite des Gerätes in die Stellung "1".

Ist die Local/RemoteUmschalttaste in der richtigen Stellung, so darf die LED "REM" auf der Frontseite des Gerätes nicht leuchten.

✔ Stecken und verriegeln Sie die Steckleitungen zu den Endgeräten an den entsprechenden Schnittstellen auf der Rückseite des SSV 104 (DTE 1 ... DTE 8).

5.2.1 Was die LEDs bedeuten !

Die LEDs "**POW**" auf der Frontseite des Gerätes und die LEDs rechts neben dem entsprechenden Anschluß auf der Rückseite des Gerätes zeigen an, ob das entsprechende Endgerät eingeschaltet ist (der SSV 104 überwacht, ob die Versorgungsspannung an der DTE-Schnittstelle vorhanden ist).

Die LEDs "**TX**" zeigen, ob eines und welches der angeschlossenen Endgeräte Daten aussendet.

Die LED "**RX**" zeigt an, daß die von einer DTE gesendete Nachricht an alle anderen Endgeräte verteilt wird.

Die LED "**COL**" leuchtet, wenn Kollisionen vorliegen. Das COL-Signal wird für die Anzeige nicht gespeichert. Die LED leuchtet nur dann, wenn viele Kollisionen aufeinander folgen, d.h. wenn der Datenaustausch ernsthaft gefährdet ist.

5.3 Mit Anschluß an das SINEC H1/H1FO-Netz

Der SSV 104 wird über einen Transceiver (Buskoppler) mit der SINEC H1-Busleitung verbunden. Er ermöglicht den Anschluß von bis zu 8 Endgeräten an das Netz über eine Transceiver-Schnittstelle.

Um Störungen auf dem Netz zu vermeiden, halten Sie bitte folgende Reihenfolge ein:

✔ Stecken und verriegeln Sie die Steckleitung der Endgeräte an den entsprechenden Schnittstellen (DTE 1.....DTE 8) am SINEC SSV 104.

✔ Die Local/Remote Umschalttaste auf der Rückseite des Gerätes muß in der Stellung Remote sein; die LED "REM" auf der Frontseite des Gerätes muß leuchten.

✔ Vergewissern Sie sich, daß die LED "+12V" auf der Frontseite des Gerätes leuchtet (sie zeigt an, daß die Versorgungsspannung für den Transceiver vorhanden ist).

✔ Stecken und verriegeln Sie die Steckleitung zum Transceiver an der entsprechenden Schnittstelle.

5.3.1 Was die LEDs bedeuten !

Die LEDs "**POW**" auf der Frontseite und die LEDs rechts neben den Anschlüssen auf der Rückseite des Gerätes zeigen an, ob das entsprechende Endgerät eingeschaltet ist (der SSV 104 überwacht, ob die Versorgungsspannung an der DTE-Schnittstelle vorhanden ist).

Die LEDs "**TX**" zeigen an, ob eines und welches der angeschlossenen Endgeräte Daten aussendet.

Die LED "**RX**" leuchtet, wenn Daten an die Endgeräte gesendet werden, die LED "**COL**", wenn eine Kollision vorliegt.

Die LEDs für die **Transceiver-Schnittstelle** haben folgende Bedeutung:

REM: Die Transceiver-Schnittstelle ist aktiv

TX: Der SSV 104 sendet Daten an den Transceiver

RX: Der SSV 104 empfängt Daten vom Transceiver

COL: Der Transceiver meldet das Vorliegen einer Kollision

5.4 Was Sie noch beachten müssen!

Das SQE-Test-Signal, falls aktiviert, wird immer an alle angeschlossenen Endgeräte verteilt und nicht nur an das Endgerät, das gerade gesendet hat. Dieses gilt sowohl für den Betrieb am SINEC H1/H1FO-Netz (das SQE-Test-Signal wird vom Transceiver erzeugt) als auch im Stand-alone Betrieb (das SQE-Test-Signal wird vom SSV 104 erzeugt).

Ist die Local/Remote-Umschalttaste in der Stellung Local, ist die Signalverbindung zur Transceiver-Schnittstelle unterbrochen, nicht aber die +12V-Versorgungsspannung für den Transceiver.

5.5 Wie Sie den SSV 104 außer Betrieb nehmen!

Um unnötige Störungen auf dem Netz zu vermeiden, halten Sie bei der Außerbetriebnahme bitte folgende Reihenfolge ein:

✔ Bei Betrieb am SINEC H1/H1FO-Netz betätigen Sie die Local/Remote Umschalttaste für die Umschaltung in den Stand-alone Betrieb.

✔ Entriegeln und ziehen Sie die Steckleitung an der Transceiver-Schnittstelle (falls angeschlossen).

✔ Entriegeln und ziehen Sie die Steckleitungen zu den angeschlossenen Endgeräten.

✔ Ziehen Sie das Netzverbindungskabel.

5.6 Wenn Sie noch mehr über den SSV 104 wissen möchten!

Informationen, die über diese Montageanleitung hinausgehen, finden Sie im SINEC H1 Handbuch für Triaxialnetze.❑

1 Multiplicateur d'interfaces SINEC H1 SSV 104

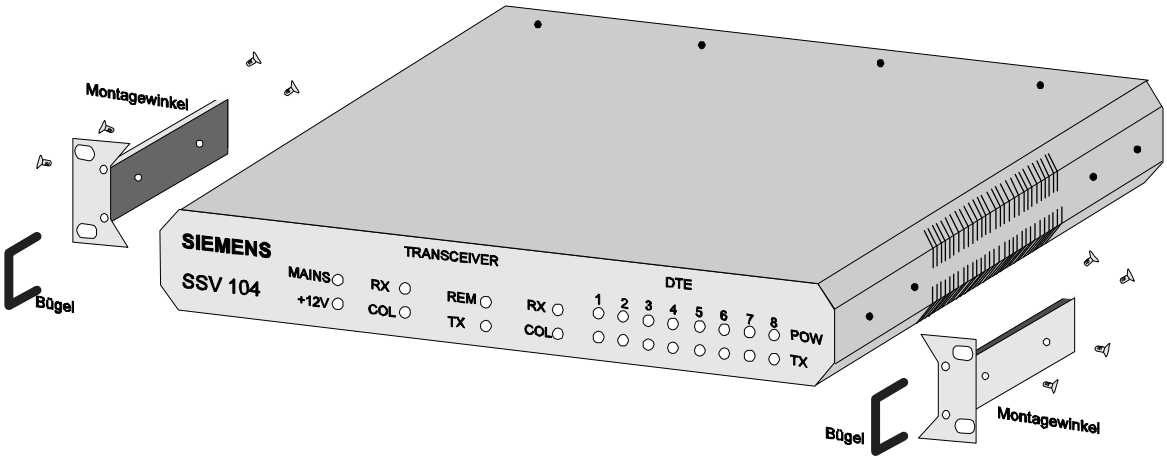


Figure 1: Montage du multiplicateur d'interfaces SINEC SSV 104, vue de face

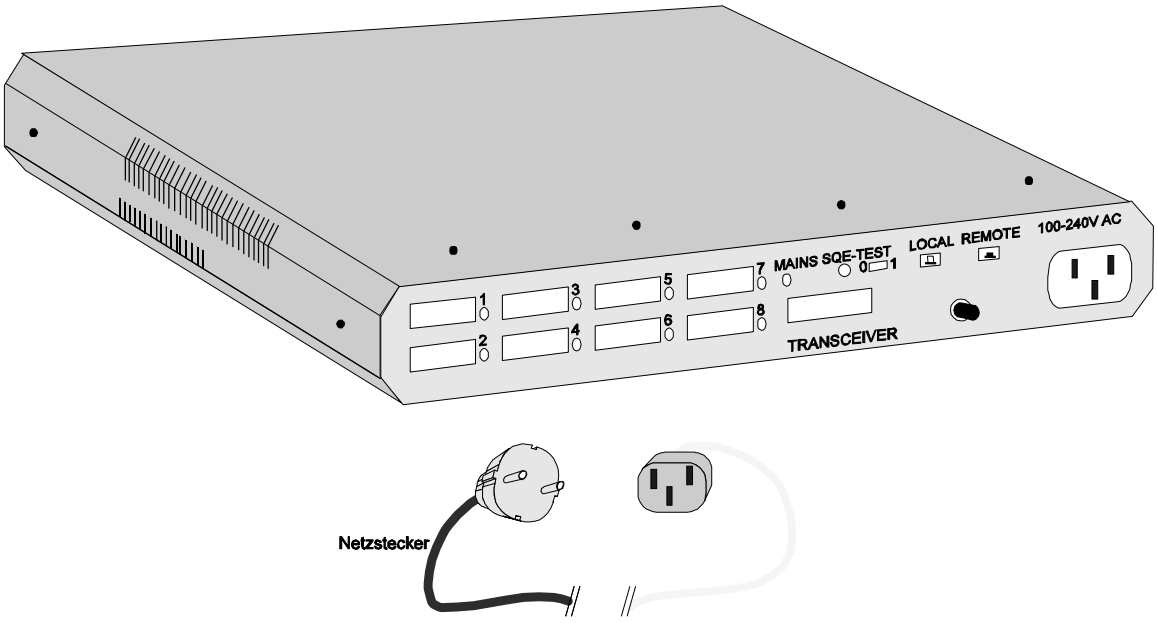
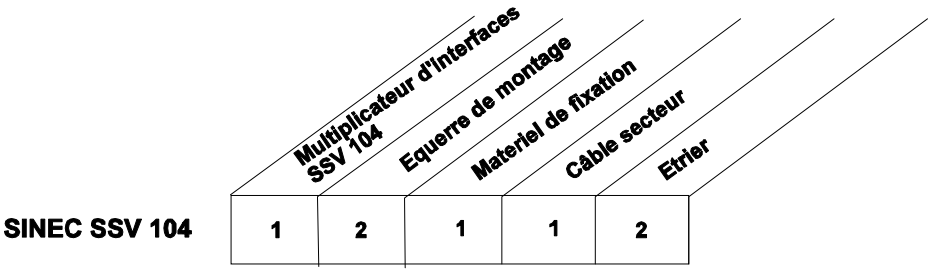


Figure 2: Multiplicateur d'interfaces SINEC SSV 104, vue arrière

2 Les configurations existantes !



3 Ce qu'il faut savoir !

3.1 Description technique

Le multiplicateur d'interfaces SINEC SSV 104 permet le raccordement de maximum 8 terminaux/processeurs de communication SINEC H1. Grâce à lui, il est possible d'augmenter le nombre de terminaux raccordés à un réseau SINEC H1/H1FO via un seul transmetteur SINEC H1/H1FO. Le SSV 104 est approprié pour la commande de protocoles de transmission de données selon IEEE 802.3 (CSMA/CD).

Le SSV 104 peut fonctionner de trois manières :

- ➢ en mode individuel, sans raccordement au réseau SINEC H1/H1FO (mode Stand-alone)
- ➢ en cascade avec jusqu'à 2 multiplicateurs d'interfaces SSV 104, sans raccordement au réseau SINEC H1/H1FO
- ➢ avec raccordement au réseau SINEC H1 via un transmetteur (Transceiver), ou au réseau SINEC H1FO via un transmetteur SINEC H1FO.

Le SSV 104 nécessite une alimentation externe en tension de 100V - 240V CA.

La tension de service 12V des terminaux de données raccordés n'est pas nécessaire au fonctionnement du SSV 104. Elle est uniquement utilisée pour les indications d'état.

Le SSV 104 peut être exploité soit en tant qu'appareil de table ou, à l'aide de l'insert de montage livré, comme appareil encastrable dans une armoire de 48 cm (19").

3.2 Caractéristiques techniques

Conditions environnantes : Température de service Température de stockage Humidité relative de l'air Classe de protection	 0°C à 50°C - 20°C à 60°C 5% à 80%, non condensé
Caractéristiques mécaniques : Dimensions (l x H x P) Poids	 432 mm x 46 mm x 252 mm 2,1 kg
Connecteurs : Raccordement au transmetteur Raccordement des terminaux Brochage : 2 + et 9 - 3 + et 10 - 5 + et 12 - 13 + et 6 - 1, 4, 8, 11 et 14 Boîtier de connecteurs	 1 x Prise SUB-D 15 broches (MIL-C-24308) 8 x Fiche SUB-D 15 broches (MIL-C-24308) Détection de porteuse Emission données Réception données Alimentation Blindage interne Blindage externe, boîtier SSV 104
Caractéristiques électriques : Alimentation électrique (commutation automatique) Consommation Antiparasitage Résistance au brouillage	 100V CA à 240V CA, 50 Hz à 60 Hz max. 40 Watts conforme à EN 50081, partie 1 conforme à EN 50082, partie 2

4 Ce que vous devez faire !

4.1 Déballage

✔ Vérifiez que la livraison est complète.

✔ Retirez complètement le matériau d'emballage de toutes les pièces.

✔ Vérifiez chacune des pièces en vue d'éventuels dommages pendant le transport.

4.2 Le choix du lieu d'implantation

Le SINEC SSV 104 est conçu de telle façon, qu'il peut être implanté dans un environnement industriel sans frais supplémentaires.

Il faut éviter le rayonnemnt solaire direct, la proximité de souffleries à air chaud ainsi que les ventilateurs à air chaud d'autres appareils.

Le SSV 104 nécessite une alimentation externe en tension de 100V CA à 240V CA. Le câble secteur d'une longueur de 3 m compris dans la livraison requiert une installation à proximité d'une source d'énergie appropriée.

4.3 Montage

4.3.1 Comme appareil de table

Le SSV 104 est livré comme appareil de table. Il est apte à l'utilisation après raccordement de la tension de service sans autre montage.

4.3.2 Dans une armoire

Si vous exploitez le SINEC SSV 104 dans une armoire 19" (48 cm) (voir figure 1):

✔ Boulonnez les deux triers avec les équerres de montage (set de montage).

✔ Vissez les équerres droite et gauche du boîtier du SSV 104.
Vous pouvez fixer les équerres soit sur la face avant ou sur la face arrière du SSV 104. La fixation sur la face arrière est conseillée lorsque les câbles de liaison (Dropcable) peuvent pendre librement et forment ainsi une charge additionnelle sur la face arrière de l'appareil.

✔ Encastrez le SSV 104 dans votre armoire.

5 La mise en service du SSV 104 !

✔ Assurez-vous que la tension d'alimentation disponible se situe dans la plage de 100V 240V CA.

✔ Raccordez l'appareil l'aide du câble réseau compris dans la livraison. L'appareil ne dispose d'aucun commutateur réseau et il est de ce fait immdiatement prêt à fonctionner.

Les DEL "MAINS" qui s'allument sur la face avant et arrière de l'appareil indiquent que celui-ci est prêt à fonctionner.

5.1 Ce quoi vous devez veiller !

➢ N'utilisez que des terminaux qui répondent aux exigences d'une "parfaite isolation électrique" par rapport au secteur (voir DIN/VDE 0160 et DIN/IEC 435/VDE 0805).

➢ N'utilisez que des câbles de liaison (Dropcable) satisfaisant aux exigences spécifiées selon IEEE 802.3 paragraphe 7.4.3.

➢ Il peut se produire de brèves perturbations du fonctionnement lors de l'extraction et de l'insertion d'un câble sous tension.

5.2 Sans raccordement au réseau SINEC H1/H1FO

Le SINEC SSV 104 peut être utilisé sans être racordé au réseau SINEC H1/H1F (Stand Alone). Il forme avec les terminaux ou les multiplicateurs d'interfaces raccords un réseau autonome.

☞ **Le commutateur Local/Remote sur la face arrière de l'appareil doit être sur position "local".**

➢ Signal test SQE éteint
Faites coulisser l'interrupteur pour le test SQE en position "O" sur la face arrière de l'appareil.
Le test SQE n'est pas nécessaire pour les composants SINEC.

➢ Signal test SQE allumé
Faites coulisser l'interrupteur pour le test SQE en position "1" sur la face arrière de l'appareil.

Si la touche de commutation Local/Remote est dans la bonne position, la DEL "REM" sur la face avant de l'appareil ne doit pas s'allumer.

✔ Enfichez et verrouillez les câbles de liaison aux terminaux au niveau des interfaces correspondantes sur la face arrière du SSV 104 (DTE 1 ... DTE 8).

5.2.1 La signification des DEL !

Les DEL "**POW**" sur la face avant de l'appareil et les DEL droite du raccordement correspondant sur la face arrière de l'appareil indiquent si le terminal correspondant est en service.

Les DEL "**TX**" indiquent si un terminal et lequel des terminaux raccordés émet des données.

La DEL "**RX**" indique qu'une information mise par une DTE est distribuée à tous les autres terminaux.

La DEL "**COL**" s'allume qu'en cas de présence de collisions. Le signal COL n'est pas mémorisé pour l'affichage. La DEL s'allume uniquement lorsque de nombreuses collisions se succèdent, c'est--dire lorsque l'échange de données est fortement compromis.

5.3 Avec raccordement au réseau SINEC H1/H1FO

Le SSV 104 est relié avec le câble de bus SINEC via un transmetteur (Buskoppler). Il permet le raccordement jusqu' 8 terminaux au réseau via une interface transmetteur.

Veuillez respecter la chronologie suivante afin d'éviter des perturbations indésirables sur le réseau :

✔ Insérez et verrouillez le câble de liaison des terminaux aux interfaces correspondantes (DTE 1.....DTE 8) sur le SINEC SSV 104.

✔ La touche de commutation Local/Remote sur la face arrière de l'appareil doit être en position "Rmote" ; la DEL "REM" sur la face avant de l'appareil doit s'allumer.

✔ Assurez-vous que la DEL "+12V" située sur la face avant de l'appareil soit allumée (elle indique que la tension de service est disponible pour le transmetteur).

✔ Enfichez et verrouillez les câbles de liaison au transmetteur sur l'interface correspondante.

5.3.1 La signification des DEL !

Les DEL "**POW**" sur la face avant et les DEL droite des raccordements sur la face arrière de l'appareil, indiquent si le terminal correspondant est en service (le SSV 104 surveille si la tension de service est disponible au niveau de l'interface DTE).

Les DEL "**TX**" indiquent si un terminal et lequel des terminaux raccordés émet des données.

La DEL "**RX**" s'allume lorsque des données sont envoyées aux terminaux, la DEL "**COL**" lorsqu'une collision est présente.

Les DEL pour l'interface transmetteur ont la signification suivante:

REM: L'interface transmetteur est active

TX: Le SSV 104 envoie des données au transmetteur

RX: Le SSV 104 réceptionne des données du transmetteur

COL: Le transmetteur signale la présence d'une collision

5.4 Ce que vous devez encore respecter !

Le signal test SQE, si activé, est toujours distribué à tous les terminaux et non seulement au terminal qui vient tout juste d'émettre. Ceci est valable aussi bien pour le fonctionnement du réseau SINEC H1/H1FO (le signal test SQE est produit par le transmetteur) qu'en mode Stand-alone (le signal test SQE est produit par le SSV 104).

Si la touche de commutation local/distant est en position "local", la liaison des signaux vers l'interface transmetteur est interrompue, mais pas la tension d'alimentation +12V pour le transmetteur.

5.5 La mise hors service du SSV 104 !

Veuillez respecter la chronologie suivante lors de la mise hors service afin d'éviter des perturbations indésirables sur le réseau :

✔ En cas de fonctionnement sur le réseau SINEC H1/H1FO, activez la touche de commutation local/distant pour la commutation en mode Stand-alone.

✔ Déverrouillez et retirez le câble de liaison à de l'interface du transmetteur (s'il est raccordé).

✔ Déverrouillez et retirez le câble de liaison des terminaux raccords.

✔ Retirez le câble de liaison réseau.

5.6 Si vous voulez obtenir des informations supplémentaires sur le SSV 104 !

Vous trouverez toutes les informations ne se trouvant pas dans cette notice de montage dans le manuel du réseau triaxial SINEC H1. ❑

6 Repeater

SIEMENS

SIMATIC NET
Industrial Ethernet Repeater

Montageanleitung
Installation Instructions

C79000-M8900-C003/2
Stand / Dated 06/98

Wichtiger Hinweis
Wir weisen darauf hin, daß der Inhalt dieser Montageanleitung nicht Teil einer früheren oder bestehenden Vereinbarung, Zusage oder eines Rechtsverhältnisses ist oder diese abändern soll. Sämtliche Verpflichtungen von Siemens ergeben sich aus dem jeweiligen Kaufvertrag, der auch die vollständige und allein gültige Gewährleistungsregel enthält. Diese vertraglichen Gewährleistungsbestimmungen werden durch die Ausführungen dieser Montageanleitung weder erweitert noch beschränkt. Wir weisen außerdem darauf hin, daß aus Gründen der Übersichtlichkeit in dieser Montageanleitung nicht jede nur erdenkliche Problemstellung im Zusammenhang mit dem Einsatz dieses Gerätes beschrieben werden kann. Sollten Sie weitere Informationen benötigen oder sollten besondere Probleme auftreten, die in der Betriebsanleitung nicht ausführlich genug behandelt werden, können Sie die erforderliche Auskunft über die örtliche Siemens-Niederlassung anfordern.

Allgemeines

WARNUNG !

!

- Dieses Gerät wird mit Elektrizität betrieben. Beim Betrieb elektrischer Geräte stehen zwangsläufig bestimmte Teile dieser Geräte unter gefährlicher Spannung.
- Bei Nichtbeachtung der Warnhinweise können deshalb schwere Körperverletzungen und/oder Sachschäden auftreten.
- Nur entsprechend qualifiziertes Personal sollte an diesem Gerät oder in dessen Nähe arbeiten. Dieses Personal muß gründlich mit allen Warnungen und Instandhaltungsmaßnahmen gemäß dieser Montageanleitung vertraut sein.
- Der einwandfreie und sichere Betrieb dieses Gerätes setzt sachgemäßen Transport, fachgerechte Lagerung und Montage sowie sorgfältige Bedienung und Instandhaltung voraus.

Anforderungen an die Qualifikation des Personals
Qualifiziertes Personal im Sinne dieser Montageanleitung bzw. der Warnhinweise sind Personen, die mit Aufstellung, Montage, Inbetriebsetzung und Betrieb dieses Produktes vertraut sind und über die ihrer Tätigkeit entsprechenden Qualifikation verfügen, wie z.B.:

- Ausbildung oder Unterweisung bzw. Berechtigung, Stromkreise und Geräte bzw. Systeme gemäß den aktuellen Standards der Sicherheitstechnik ein- und auszuschalten, zu erden und zu kennzeichnen;
- Ausbildung oder Unterweisung gemäß den aktuellen Standards der Sicherheitstechnik in Pflege und Gebrauch angemessener Sicherheitsausrüstungen;
- Schulung in Erster Hilfe.

Note
We could point out that the contents of these installation instructions will not become a part of or modify any prior or existing agreement, commitment or legal relationship. The Purchase Agreement contains the complete and exclusive obligations of Siemens. Any statements contained in this documentation do not create new warranties or restrict the existing warranty. We would further point out that, for reasons of clarity, these installation instructions cannot deal with every possible problem arising from the use of this device. Should you require further information of if any special problems arise which are not sufficiently dealt with in the installation instructions, please contact your local Siemens representative.

General

WARNING !

!

- This device is electrically operated. In operation, certain parts of this device carry a dangerously high voltage.
- Failure to heed warnings may result in serious physical injury and/or material damage.
- Only appropriately qualified personnel may operate this equipement or work in its vicinity. Personnel must be thoroughly familiar with all warnings and maintenance measures in accordance with these installation instructions.
- Correct and safe operation of this equipment requires proper transport, storage and assembly as well as careful operator control and maintenance.

Personnel qualification requirements
Qualified personnel as referrred to in the installation instructions or in the warning notes are difined as persons who are familliar with the installation, assembly, startup and operation of this product and who posses the relevant qualifications for their work, e.g.:

- Training in or authorization for connecting up, grounding or labelling circuits and devices or systems in accordance with current standards in safety technologie;
- Training in or authorization for the maintenance and use of suitable safety equipment in accordance with current standards n safety technologie;
- First Aid qualification.

table of contents of installation instructions (english)

DOK_E200.DOC

RADIATED ENERGY

This product has been testet and complies with the european requirements CE for industrial devices.

SAFETY

Warning: Electric shock hazard:
To prevent ELECTRIC shock, do not remove cover. No user-serviceable parts inside. This unit contains HAZARDOUS VOLTAGES and should only opened by trained and qualified technician.

Ligthning danger
Danger: Do not work on equipment or cables during periods of lightning activity.

Caution:
Power cord is used as a disconnection device.

INSTALLATION

Electrical-auto voltage adjustment:
This product will automatically adjust to any voltage between the ranges shown on the label.

Electrical-type class 1 equipment

This equipment must be earthed. Power plug must be connected to aproperly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.

Electrical-cord notice:
Use power cord, maximum 4.5 meters long (delivered 2 meters), rated 6 amp minimum, 250V, made of HAR cordage molded IEC 320 connector on one end and on the other end a plug approved by the country of end use.

United States of America, Canada:
UL Listed, CN, Type SJT, 3 conductor, 18 AWG grounding type. Terminates in a NEMA parallel blade 5-15P, grounding type plug, configured for 120 V or a tandem blade, NEMA 6-15P, grounding type plug configured for 240 V. The moulded on connector body has standard IEC 320 female configuration.

MOUNTING INSTRUCTIONS

Caution:
Air vents must be blocked and must have free access to the room ambient air for cooling.

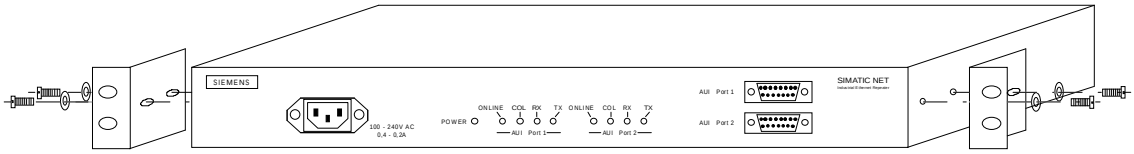
Caution:
DO NOT detach rubber feet from the product.

Caution:
MECHANICAL LOADING - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven loading.

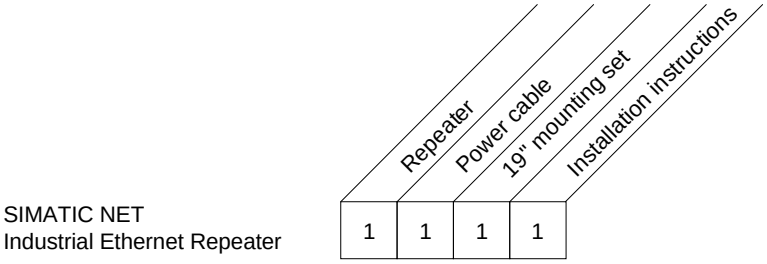
Operating temperature
This product is designed for a maximum ambient temperature of 50° Celsius.

All countries:
Install product in accordance with local and National Electrical Codes.

1 SIMATIC NET Industrial Ethernet Repeater



2 Components Supplied



19“ mountig set:

- 2 mounting brackets
- 4 screws M4 * 10mm
- 4 washers M4

3 What You Should Know

3.1 Technical Description

Repeaters for Industrial Ethernet are used to connect net segments. In the line between two stations there will be set max. two repeaters. This configuration allows a maximum distance between two anyone stations of 1.8 km in the net. This distance grows to 2.8 km by removing the repeater by a remote repeater configuration. A remote repeater exists of two repeaters, connected by a optical cable with maximum length of 1000m.

Details of the network structure and the configuring you could find in the SIMATIC NET Industrial Ethernet manual for triaxial networks. When configuring the network remember that the maximum of two repeaters can be located in the signal route between two DTEs.

The repeater has two connections for cable 727-1 (drop cable) each with a 15-pin socket. Nine LED displays indicates the status of the device.

The repeater can either be used as a desktop device or can be installed with the mounting set in a 19“ rack.

3.2 Technical Data

Environmental conditions: Operating temperature Storage temperature Rel. Humidity Type of protection	 0°C to 50°C -20°C to 60°C 5% to 80% (at 25°C), non condensing IP20
Mechanical Data: Dimensions (W * H * D) Weight	 431mm * 55mm * 200mm 4 kg
Ethernet-Interface: Data protocol Connections: Transceiver connection (AUI) Pin assignment: 2+ and 9- 3+ and 10- 5+ and 12- 13+ and 6- 1,4,8,11 and 14 Connector housing Delay time equivalent Variability value	 IEEE 802.3 (CSMA/CD) 2 * 15-pin D subminiature female connector Collision detect Send Receive Power supply Schield, internal Schield, external, housing repeater 140m (according to SIMATIC NET Ethernet Manual) 2 BT (according to SIMATIC NET Ethernet Manual)
Electrical Data: Power supply Power input Conformity Safety	 Auto Ranging 100V ... 230V AC, 50Hz / 60Hz max. 43W CE according to EMC-Directive (industrial environment) CE according to Low Voltage Directive EN60950 UL, cUL (File-Nr. E179426)

4 What You Need To Do

4.1 Unpacking

✓ Check that you have received the complete package.

✓ Remove all the packing material from the parts.

✓ Check each item for damage .

Warning:
Do not install damaged parts!

4.2 Selecting the Location

The SIMATIC NET Industrial Ethernet Repeater is designed, that it can be used without modification in an industrial environment.

Avoid locations with direct sunlight and do not install close to heating fans or hot air ventilators of other devices.

The repeater requires an external power supply of 100V AC to 230V AC. The supplied cable is 2 m long so that the unit must be installed close to a suitable power source.

4.3 Assembly

4.3.1 As a Desk-Top Device

The repeater is delivered as a desk-top device and requires no further installation after connecting the power supply and drop cables.

4.3.2 In a Cabinet

If you want to operate the repeater in a 19" cabinet:

✓ Screw the mounting brackets to the side panels right and left of the repeater housing with the enclosed screws and washers.

Use only these screws, longer screw will be shorten electrical circuits inside the housing!

✓ Secure the repeater in your cabinet. Vertical mounting of the repeater is possible.

Elevated Operating Ambient Temperature
If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment

compatible with the maximum rated operation temperature of 50°C.

Reduced Air Flow
Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Mechanical Loading
Mounting of the equipment in the rack should be such that hazardous condition is not achieved due to uneven mechanical loading.

Circuit Overloading
Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate rating should be used when addressing this concern.

Reliable Earthing
Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

4.4 Notes on the CE Marking

Product Name

SIMATIC NET Industrial Ethernet Repeater
6GK1 110-0AA00

EC EMC Directive 89/336/EEC

The product listet above meet the requirements of the EC Directive 89/336/EEC „Elektromagnetic Compatibility“.

EC Directive NSR 73/23/EEC

The product listet above meet the requirements of the EC Directive 73/23/EEC „Low Voltage Directive“ and the harmonized European standards (EN) listet in it.

CE

The EC conformity certificates are kept for the authorities responsible according to the EC directives listed above at the following address:

Siemens Aktiengesellschaft
Bereich Anlagentechnik und Technische Dienstleistungen
Geschäftsbereich Technische Dienstleistungen
Postfach 3220
D-91050 Erlangen

Area of Application EMC

The product meet the following requirements:

Area of Application	Requirements	
	Emission	Immunity
Industry	EN 50081-2 : 1993	EN 50082-2 : 1995

The product can also be used in the residential environment (residential, commercial and light industry).

Area of Application	Requirements	
	Emission	Immunity
Residential	Individual approval	EN 50082-1 : 1992

You must acquire the individual approval from the respective national authority or testing body.

Installation Guidelines

These product meet the requirements providing you adhere to the installation guidelines described in this product information and in the SIMATIC NET Manual Triaxial Net for Industrial Ethernet during installation and operation.

5 Starting Up the repeater

✓ Make sure that the power supply is within the range of 100V to 230V AC.

✓ Connect the unit using the power cable supplied. The unit does not have a separate power switch and is ready for operation as soon as the power is connected.

When the "POWER" LED on the front of the unit is lit, the unit is ready for operation.

5.1 Points to Note

Only use DTEs, which are safely isolated from the network (see DIN/VDE 0160 and DIN EN60950).

Only use drop cables which meet the requirements of IEEE 802.3 section 7.4.3.

Only transceivers without heartbeat function or with this function disabled can be used to connect repeaters to the bus (SQE = off). The transceivers used in SIMATIC NET Industrial Ethernet meet these requirements.

Connecting or disconnecting the cables when the power is on can cause brief disturbances.

Segmentation is aprocedure with which the repeater sometimes interrupts communication between network segments. Segmentation is triggered when a disproportionate number of collisions occur on one of these segments. Segmentation prevents a defective segment from interfering with the data traffic on a segment operating correctly.
If the network operates in the segmentation mode (partitioning), the corresponding LED „ONLINE“ is off. Once the disturbance is cleared on the defective segment, the repeater then automatically exits the segmentation mode.

5.2 What the LEDs mean

LED lettering	LED colour	LED sense
POWER	green	**Power supply: on** device is ready for operation
ONLINE	green	**Net segment: activ** lit: port is ready for operation or activ off: net segment has disturbances and the repeater partitions this segment (sementation mode)
COLL	yellow	**Collision:** lit, if collisions are detected on this port
TX	green	**Transmit:** flash whenever the repeater is transmitting out of this port
RX	green	**Receive:** flash whenever the repeater is receiving on this port

5.3 If You Want More Information about the repeater

Information beyond the scope of these installation instructions can be found in the SIMATIC NET Industrial Ethernet manual for triaxial networks

6 Maintenance

There is no maintenance required.

Warning:
Opening the housing ist not allowed.

7 Scale Drawings of Components

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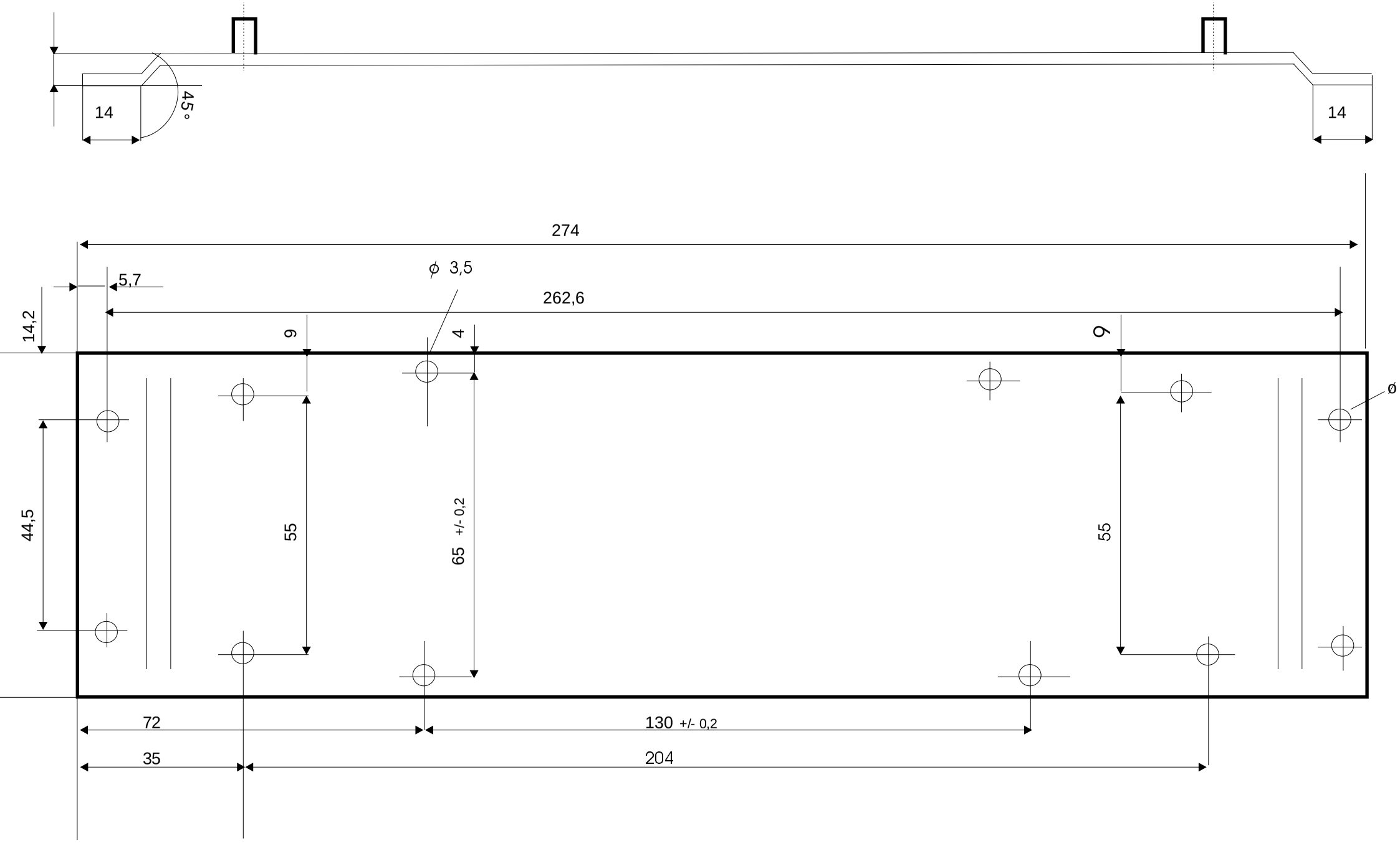
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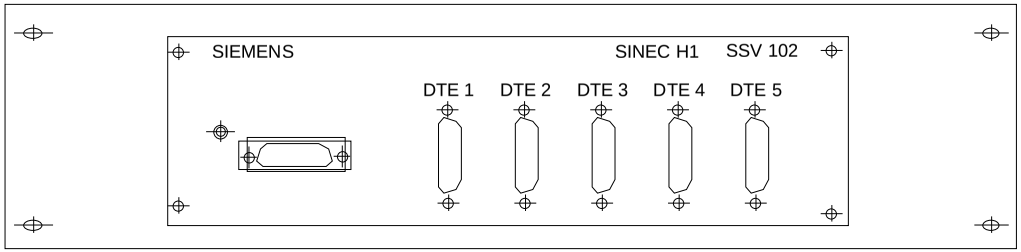
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SSV 102
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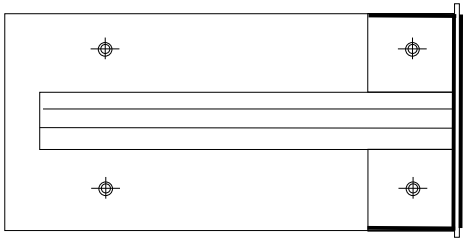
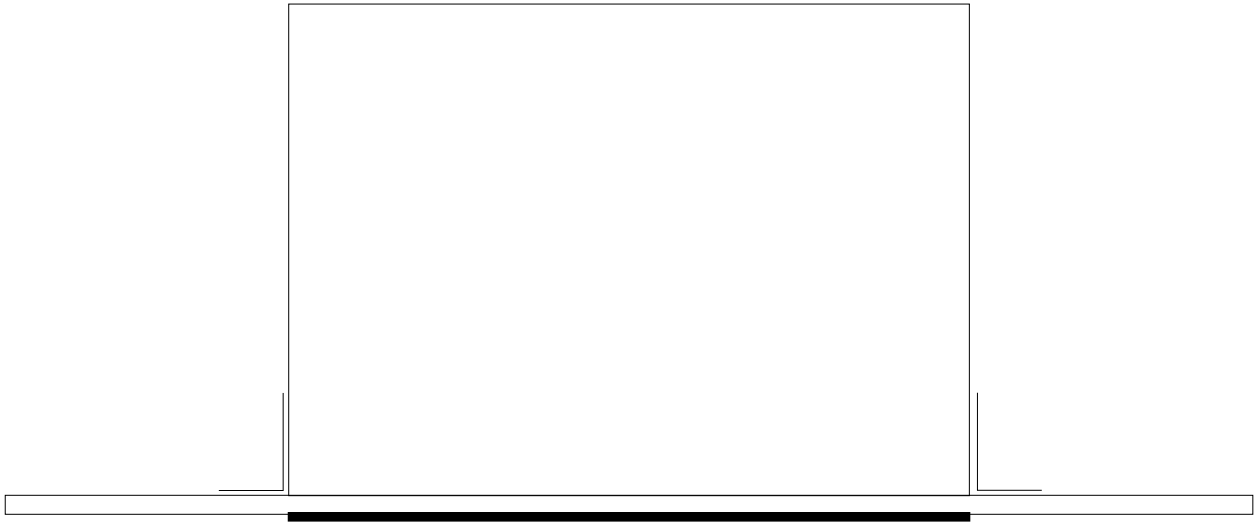
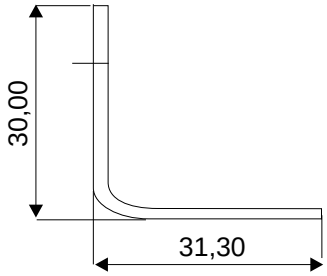
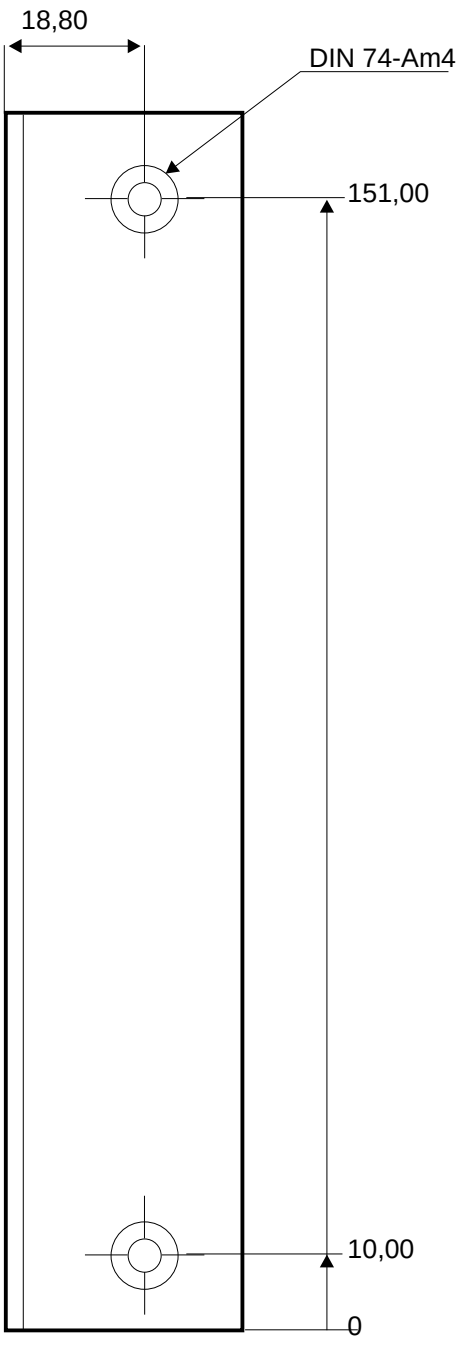
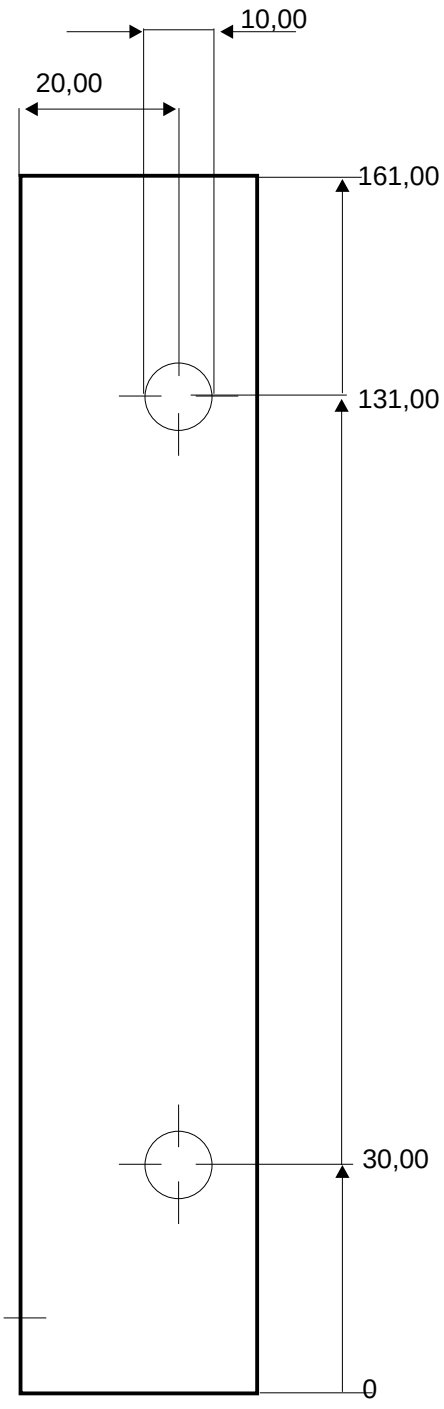
DTE 2
DTE 3
DTE 4
DTE 5











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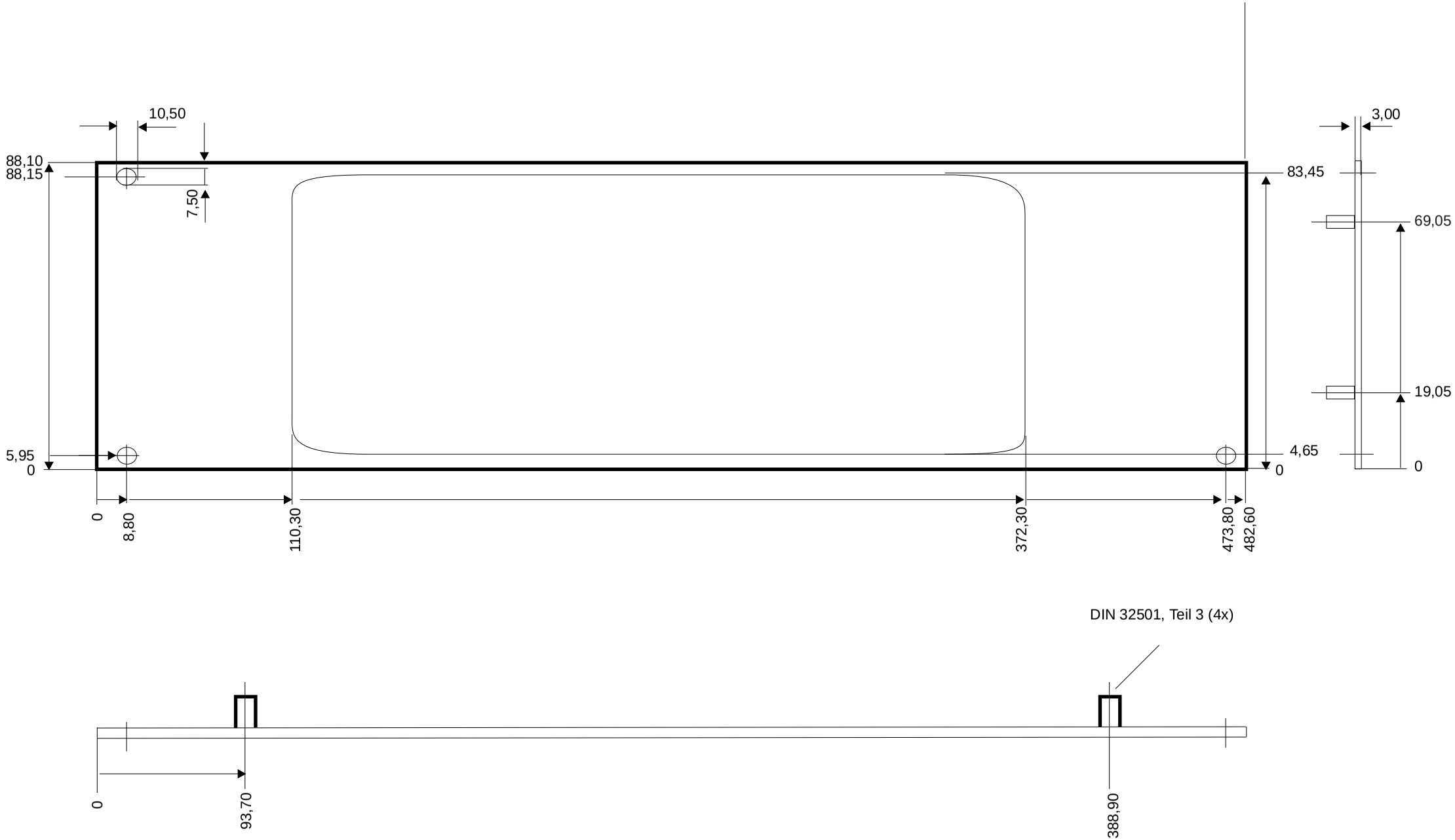
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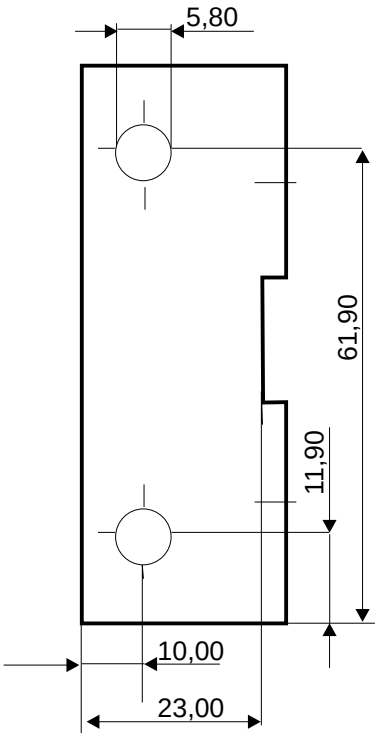

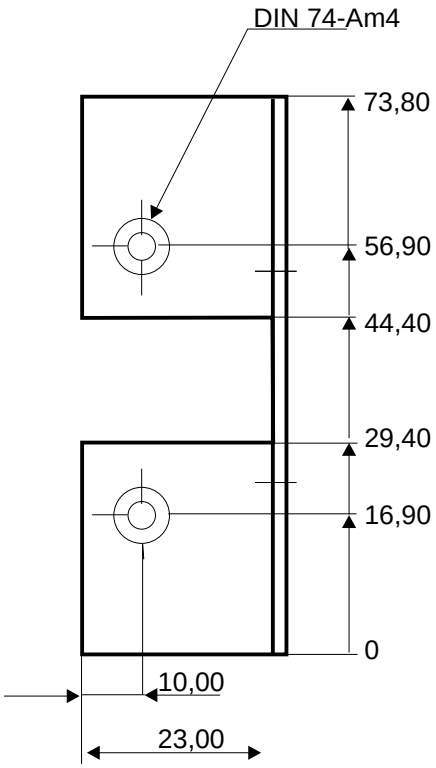

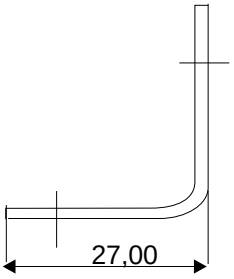

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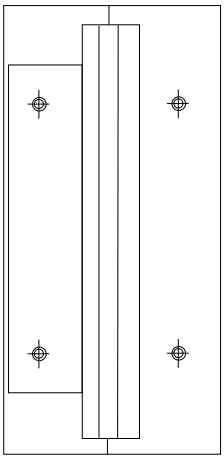

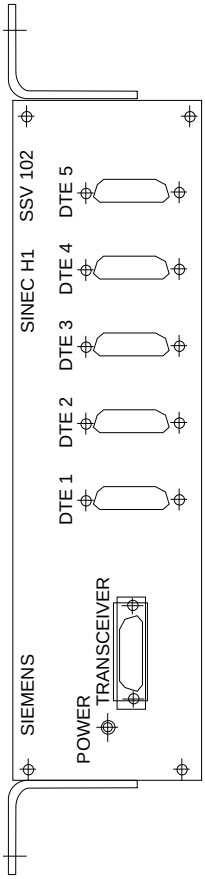
SIEMENS
SINEC H1
SSV 102
DTE 1
DTE 2
DTE 3
DTE 4
DTE 5
POWER
TRANSCEIVER