



Hardware and Engineering

ZB4-501-TC1

ZB4-501-TC2

Telecontrol Modules

05/00 AWB27-1297-GB

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See list of modifications on page II

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Subject to modifications.



Warning! Dangerous electrical voltage!

Before commencing the installation

- Disconnect the power supply of the device.
- Ensure that devices cannot be accidentally restarted.
- Verify isolation from the supply.
- Earth and short circuit.
- Cover or enclose neighbouring units that are live.
- Follow the engineering instructions (AWA) of the device concerned.
- Only suitably qualified personnel in accordance with EN 50 110-1/-2 (VDE 0105 Part 100) may work on this device/system.
- Before installation and before touching the device ensure that you are free of electrostatic charge.
- The functional earth (FE) must be connected to the protective earth (PE) or to the potential equalisation. The system installer is responsible for implementing this connection.
- Connecting cables and signal lines should be installed so that inductive or capacitive interference do not impair the automation functions.
- Install automation devices and related operating elements in such a way that they are well protected against unintentional operation.
- Suitable safety hardware and software measures should be implemented for the I/O interface so that a line or wire breakage on the signal side does not result in undefined states in the automation devices.
- Ensure a reliable electrical isolation of the low voltage for the 24 volt supply. Only use power supply units complying with IEC 60 364-4-41 (VDE 0100 Part 410) or HD 384.4.41 S2.
- Deviations of the mains voltage from the rated value must not exceed the tolerance limits given in the specifications, otherwise this may cause malfunction and dangerous operation.
- Emergency stop devices complying with IEC/EN 60 204-1 must be effective in all operating modes of the automation devices. Unlatching the emergency-stop devices must not cause restart.
- Devices that are designed for mounting in housings or control cabinets must only be operated and controlled after they have been installed with the housing closed. Desktop or portable units must only be operated and controlled in enclosed housings.
- Measures should be taken to ensure the proper restart of programs interrupted after a voltage dip or failure. This should not cause dangerous operating states even for a short time. If necessary, emergency-stop devices should be implemented.
- Wherever faults in the automation system may cause damage to persons or property, external measures must be implemented to ensure a safe operating state in the event of a fault or malfunction (for example, by means of separate limit switches, mechanical interlocks etc.).

List of modifications to the manual AWB27-1297-GB

Edition date	Page	Description	New	Modifica- tion	Omitted
05/00	General	Complete revision by the addition of ZB4-501-TC2	×		

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About This Manual

This manual describes the setup, engineering, configuration, installation, operation, testing and commissioning of the ZB4-501-TC1/-TC2 telecontrol modules.

This documentation is intended for design engineers, commissioning engineering and programmers. It should enable these readers to connect the PS4/PS416 to a telecontrol system.

A general knowledge of control and communication engineering is required to understand this manual properly.

For easier orientation in this manual, the chapter titles are shown at the top of the left-hand pages and the current section at the top of the right-hand pages.

The symbols in this manual have the following meaning:

► Indicates handling instructions



Draws your attention to interesting tips and additional information



Attention!

Warns of the possibility of damage.



Caution!

Warns of the possibility of serious damage and slight injury.

Other manuals (AWBs)

The components of the telecontrol system are described in the following manuals:

PS416-TCS-200:

Hardware and Engineering, PS416-TCS-200 Telecontrol Control Card, AWB27-1298-GB

S40-AM-TL leased line:

Telecontrol via a Leased Line, S40-AM-TL Application Module, AWB27-1301-GB

S40-AM-TD dial-up line:

Telecontrol via a Dial-Up Line, S40-AM-TD Application Module, AWB27-1300-GB

1 About The Modules

**Task of the
ZB4-501-TC1/-TC2**

The telecontrol modules were developed for telemetering, teleindication and teleswitching tasks and support the data security protocols FT1.2 and FT3 (asynchronous) in compliance with the DIN EN 60870-5 telecontrol standard. This standard replaces the German standard 19 244.

The ZB4-501-TC1/-TC2 telecontrol modules are used in conjunction with PS4 (not PS4-100/-400). The TC2 can also be used with a PS416. They operate as slaves on the Suconet K bus and are connected to the controllers via the bus. They are provided with an RS232 serial interface to which a leased line modem or dial-up modem can be connected. A telecontrol station is made up of the PS4 (PS416) and the module with modem. To exchange data with other stations the relevant application module for leased or dial-up lines must be incorporated in the user program.

The -TC1 version is connected to the Suconet K interface of the PS4 via the integrated cable. The module is permanently assigned the bus address "2".

The -TC2 version is connected to the Suconet K interface of the PS4 or PS416 via a separate cable. The bus address can be set from 2 to 15 via the DIP switch. The bus terminating resistors are switched on and off in the same way via two DIP switches.

The module requires a 24 V DC power supply from a separate power supply unit. The LT308.092.2 mains filter must be used in the 24 V line. This will provide sufficient noise immunity and minimize emission. Install the filter as close to the module as possible.

Table 1: Features

	ZB4-501-TC1	ZB4-501-TC2
Master PLC	PS4 (not PS4-100/-400)	PS4 and PS416 (not PS4-100/-400)
Connection	Via integrated cable to Suconet K interface of the PS4	Via separate cable ¹⁾ to the PS4/PS416
Supply voltage	From the PS4	24 V DC from a separate power supply unit
Bus address	Permanent address: 2	Variable address: 2 to 15

1) Use the Suconet K/K1 data cable (LT309.096) or similar

Communication layer model The communication layer model describes the interrelationship between the programming software, function blocks and the required hardware.

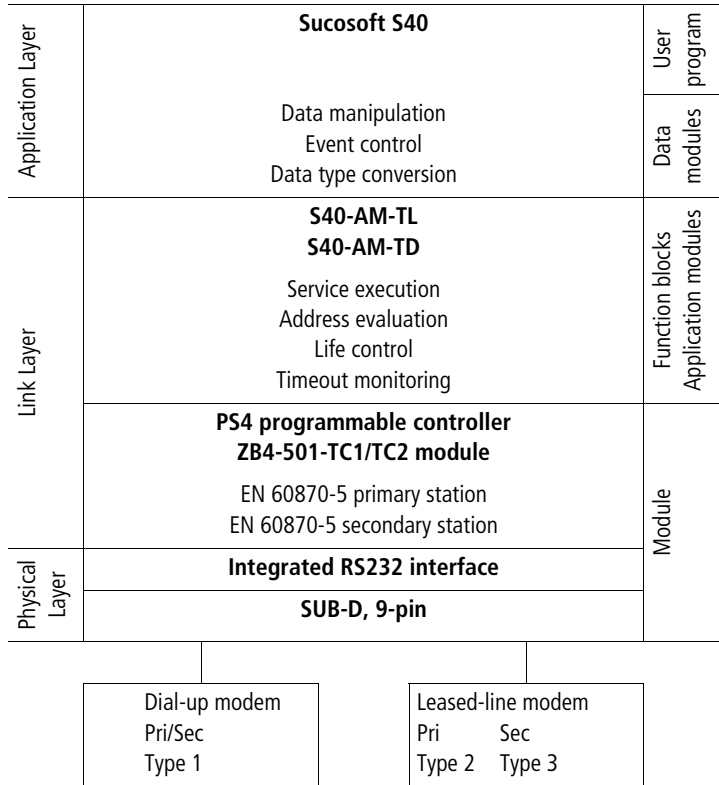


Figure 1: Communication layer model

Application Layer

The Application Layer is where user data is processed.

Link Layer

This layer generates the frames in compliance with the DIN EN 60870-5 standard and synchronizes data transfer between station and telecontrol system.

Physical Layer

This layer is where the signals are generated according to the transmission medium provided.

Hardware/software requirements

Table 2 provides an overview of the relevant hardware/software requirements.

Table 2: Hardware/software requirements

	ZB4-501-TC1	ZB4-501-TC2
Software		
Programming software	S40 from V2.0	S40 from V4.1 ¹⁾
Application modules		
Dial-up line	S40-AM-TD from V1.0	S40-AM-TD from V2.0
Leased line	S40-AM-TD from V1.0	S40-AM-TL from V2.0
Bus system	Suconet K	Suconet K
Hardware		
Programmable controller	PS4 (not PS4-100/-400)	PS4/PS416 (not PS4-100/-400))
Modem cable	ZB4-254-KB1	ZB4-254-KB1

1) To configure the ZB4-501-TC2 you need the most recent CFG and BMP files. These files can be obtained from the Internet: <http://www.moeller.net> under "Service → Automation Support → Updates → 1. Service Packs/Update Files SucoSoft".

Setup

ZB4-501-TC1

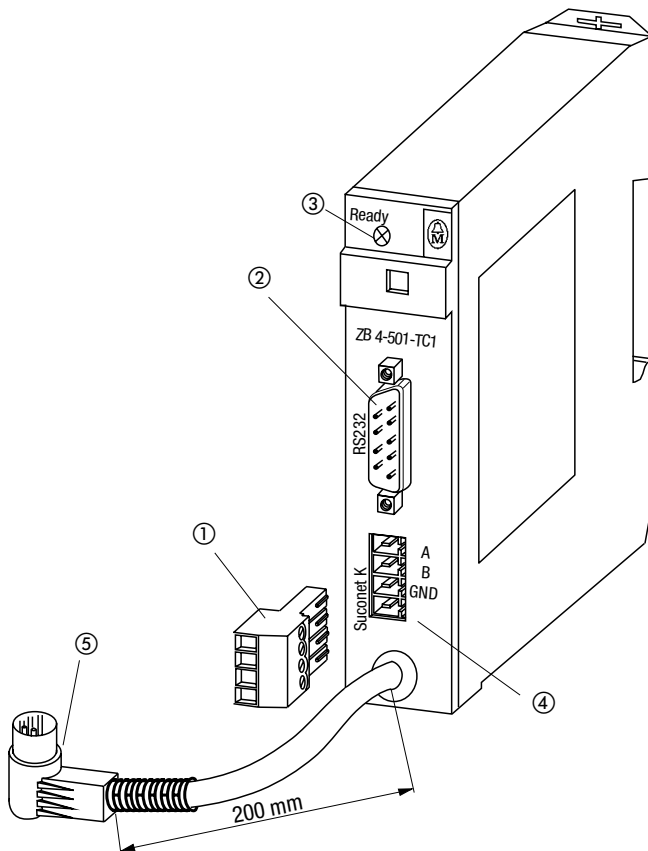


Figure 2: ZB4-501-TC1 telecontrol module

- ① Plug-in screw terminal, connection cross section $\cong 1.5 \text{ mm}^2$
- ② RS232 interface – modem connection
- ③ LEDs
- ④ Suconet K interface for the outgoing bus
- ⑤ Suconet K interface to master PLC

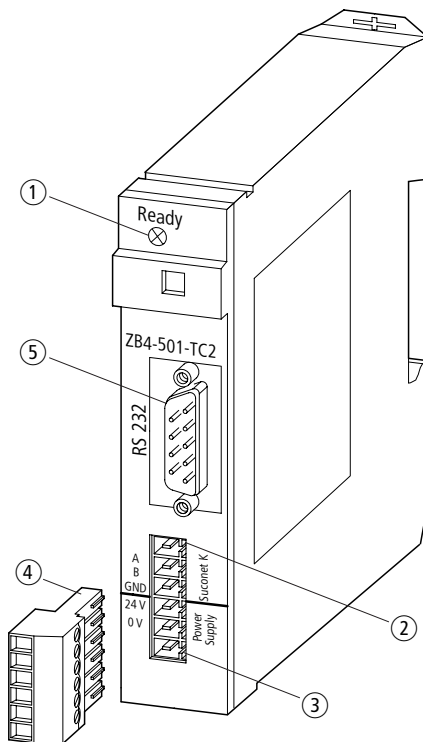
ZB4-501-TC2

Figure 3: ZB4-501-TC2 telecontrol module

- ① LEDs
- ② Suconet K interface
- ③ 24 V DC power supply (not from PS4)
- ④ Plug-in screw terminal, connection cross section $\cong 1.5 \text{ mm}^2$
- ⑤ RS232 interface (modem connection)

2 Structure of a Telecontrol Station

A telecontrol module is connected to the PS4 (except for PS4-100/-400) or PS416 programmable controller. Together with the PLC and the modem this forms a telecontrol station. The station can be used either as a master station or outstation within a telecontrol system. The communication to the telecontrol network is established via the modem and modem cable. This communication is also supported by application modules (function blocks) which are selected according to the task at hand.

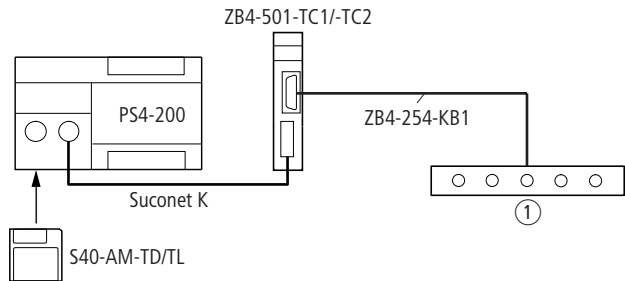


Figure 4: Structure of a telecontrol station with the PS4-200 compact PLC

① Modem

A dial-up line or a leased line can be used as the transmission medium.

The dial-up line uses existing telephone networks as the transmission medium. All modems in the master station and the outstation must be dial-up modems. The modems will establish a connection with a specified telephone number as requested by the master station or outstation.

The dial-up line allows the master station and the outstation to take on the function of a primary or secondary station:

- Primary station:
Station that initiates data transfer
- Secondary station:
Station that responds to a data request

The simultaneous communication between one station and several others is not possible.

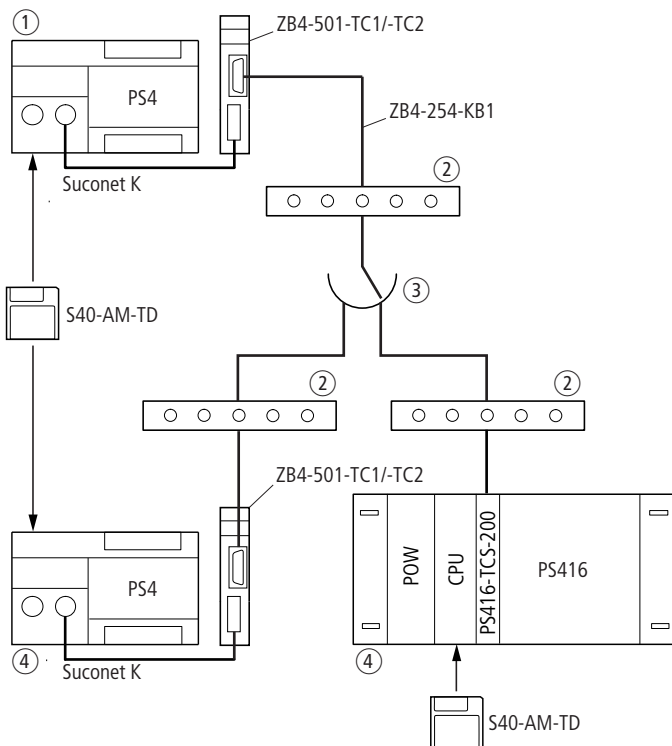


Figure 5: Telecontrol system with PS4/PS416 components and dial-up line configuration

- ① Master station – Primary station/secondary station
- ② Dial-up modem
- ③ Dial-up line
- ④ Outstation – Primary station/secondary station

With a **leased line** all outstations are permanently connected to the master station.

If more than one secondary station is to be addressed via the leased line, only partyline modems should be used. The master station in this case is always a primary station and the outstations are always secondary stations. This enables the master station to send messages to all outstations simultaneously.

Only the master station can initiate communication. An outstation cannot initiate communication to the master station or to another outstation on its own.

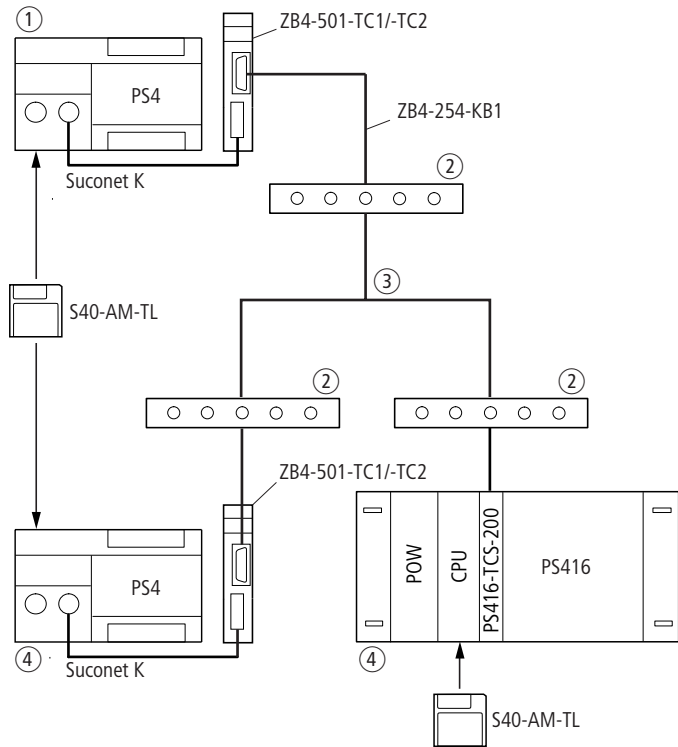


Figure 6: Telecontrol system with PS4 components and leased line (partyline) configuration

- ① Master station – Primary station
- ② Partyline modem
- ③ Leased line
- ④ Outstation – secondary station

Procedure

Observe the following steps to connect the PS4 to a telecontrol system.

- ▶ Define all the requirements of the telecontrol system, such as data security, number of stations etc.
- ▶ Select the application module most suitable for the requirements at hand. The criteria are as follows: PLC type (modular – compact), station type (primary – secondary), number of stations.
- ▶ Incorporate the application module into your user program and set the parameters accordingly.
- ▶ Incorporate the module into your configuration using the SUCOSOF S40 Topology Configurator.
- ▶ Connect the module to the Suconet K bus.
- ▶ Connect the module to the modem via the ZB4-254-KB1 modem cable.

The module is then installed, programmed, configured and can now be put into operation.

3 Engineering

ZB4-501-TC1/-TC2 in Suconet K network

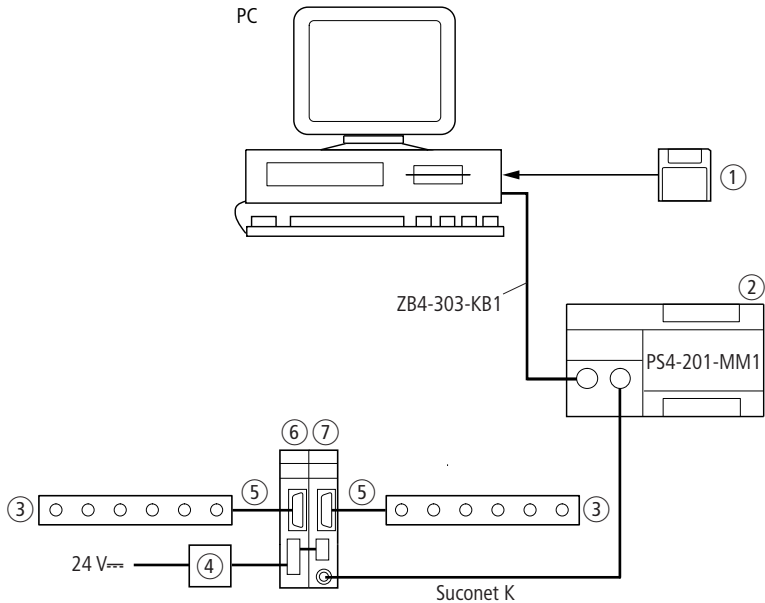


Figure 7: Telecontrol module in the Suconet K network

- ① S40-AM-TD/-TL application module
- ② Master
- ③ Modem
- ④ LT308.092.2 mains filter
- ⑤ ZB4-254-KB1 modem cable
- ⑥ Slave 2 (ZB4-501-TC2)
- ⑦ Slave 1 (ZB4-501-TC1)

The modules operate as slaves in the Suconet K network. Data exchange requires 36 bytes of send data and 36 bytes of receive data. These send and receive data values each contain 30 bytes of user data.

The modules allow send and receive asynchronous transmissions of frames in the telecontrol protocol formats FT1.2 and FT3 with a user data length of up to 220 bytes.

Power supply

ZB4-501-TC1

The module power supply is provided via the Suconet K interface of the compact PLC. An external supply voltage for the telecontrol module is not required.

ZB4-501-TC2

The module requires a separate supply voltage of 24 V DC. This cannot be taken from the PS4. Refer to the technical data for further information on voltage.

The LT308.092.2 mains filter must be used in the 24 V line. This will provide sufficient noise immunity and minimize emission. Install the filter as close to the module as possible.

Connections



Attention!

Before touching the module or any of its elements on the front plate the user must be sure to discharge any electrostatic electricity by touching a grounded surface. This will prevent damage to components caused by ESD.

Suconet K connections

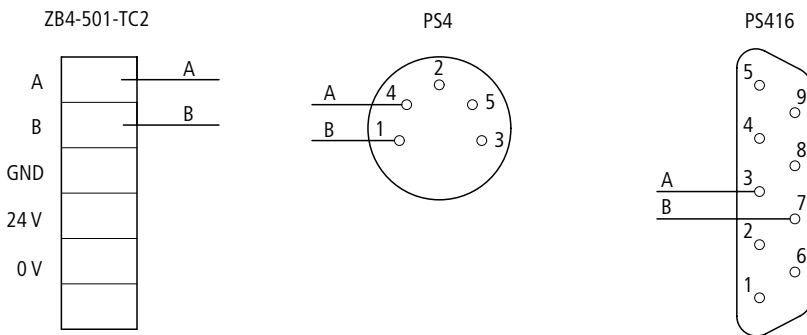


Figure 8: Suconet K connection assignment

Modem connection

The RS232 interface is full-duplex compatible, i.e. data can be sent and received simultaneously.



Caution!

There is no potential isolation between the RS232 and RS485 interfaces. Faulty engineering may give rise to potential equalization currents and damage components.

To connect the modem use the ZB4-254-KB1 modem cable.

Modem cable

Table 3 below shows the wiring of the ZB4-254-KB1 modem cable. Table 4 shows a wiring example of a modem with 9-pole plug connectors. The tables give the following information:

- the pin assignment of the plug on the cable,
- the signal numbering in compliance with the CCITT V24/V28 recommendation,
- the RS232C signal designation,
- the signal flow.

Table 3: Wiring of the ZB4-254-KB1 modem cable

Modem 25-pole SUB-D pin connector			ZB4-501-TC1/-TC2 9-pole SUB-D socket connector	
Pin no.	Signal designation	Signal flow	Pin no.	
1	Protective ground (screening)	–	not assigned	
8	DCD (Data Carrier Detect)	→	1	
3	RxD (Receive data)	←	2	
2	TxD (Transmit data)	→	3	
20	DTR (Data Terminal Ready)	←	4	
7	SGND (Signal Ground)	–	5	
6	DSR (Data Set Ready)	→	6	
4	RTS (Request To Send)	←	7	
5	CTS (Clear To Send)	→	8	
22	RI (Ring indicator)	→	9	

Table 4: Wiring example of a modem cable with 9-pole plug connectors

Modem 9-pole SUB-D pin connector			ZB4-501-TC1/-TC2 9-pole SUB-D socket connector	
Pin no.	Signal designation	Signal flow	Pin no.	
1	DCD (Data Carrier Detect)	→	1	
2	RxD (Receive data)	←	2	
3	TxD (Transmit data)	→	3	
4	DTR (Data Terminal Ready)	←	4	
5	SGND (Signal Ground)	–	5	
6	DSR (Data Set Ready)	→	6	
7	RTS (Request To Send)	←	7	
8	CTS (Clear To Send)	→	8	
9	RI (Ring indicator)	→	9	

Table 5: Meaning of signals

Signal	Meaning
TxD output	Transmit Data, idle ≤ 3 V
RxD input	Receive Data
SGND	Signal Ground
RTS output	The modem is switched to Transmit and remains in this state for as long as the "On" state is present. RTS is active ≥ 3 V. (Request To Send)
CTS input	The modem is ready to send signals or receive data for connection setup. CTS is active ≥ 3 V. (Ready for sending)
DTR output	The telecontrol module is ready for operation: DTR is active ≥ 3 V, CPU in "Run". (Data Terminal Ready)
DSR input	The modem is ready for operation: DSR is active ≥ 3 V. (Data Set Ready)
DCD input	The modem signals that the transmission link is ready for data transmission (modem carrier frequency stable). DCD is active ≥ 3 V. (Data Carrier Detection)

Selecting a modem

Select a modem that is provided with potential isolation between the RS232 and the dial-up or leased line (partyline). This will prevent the occurrence of potential equalization currents.



Modems must support the 11-bit character format (8E1).

EMC

Refer to the following sections of this chapter for information related to EMC. Please also refer to the engineering instructions in the manual "EMC Engineering Guidelines for Automation Equipment" (AWB27-1287-GB) and the EMC guide "Electromagnetic Compatibility of Machines and Plants" (TB02-022GB).

- Ensure that screening measures are carried out thoroughly and carefully in order to reduce the inductive and capacitive interference produced by electromagnetic fields.

- ▶ Connect the screen of the data cable to the protective ground by connecting the screen to the potential equalization bar at both ends (see Page 22).

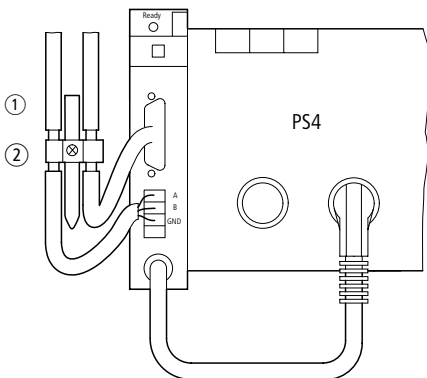


Figure 9: Grounding the data cable for the ZB4-501-TC1

- ① Mounting with top-hat rail on mounting plate
- ② Mounting on mounting plate

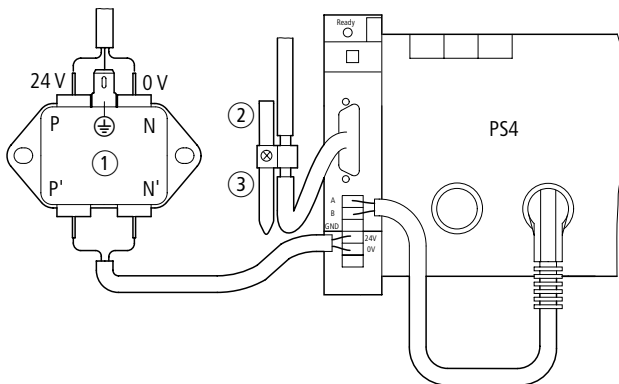


Figure 10: Grounding the data cable for the ZB4-501-TC2

- ① Mains filter
- ② Mounting with top-hat rail on mounting plate
- ③ Mounting on mounting plate

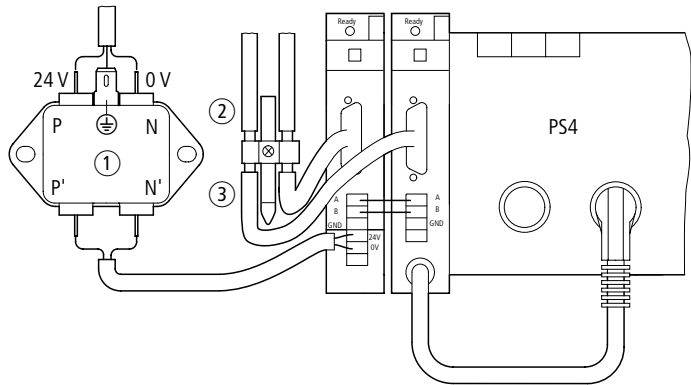


Figure 11: Grounding the data cable for the ZB4-501-TC1 and ZB4-501-TC2

- ① Mains filter
- ② Mounting with top-hat rail on mounting plate
- ③ Mounting on mounting plate

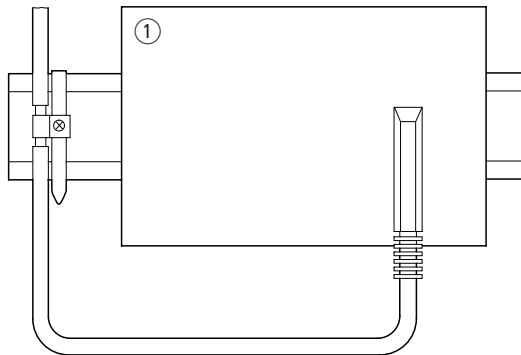


Figure 12: Grounding the data cable of the modem

- ① Modem

Grounding the data cables

- ▶ Strip the cable in the area of the contact clamp. The screen braid must not be broken.
- ▶ Fasten one contact clamp around the stripped section of the data cable or press the stripped section into the snap fastener of the terminal clip.
- ▶ Connect the contact clamp or terminal clip to the top-hat rail with a low impedance connection over a large surface area.
- ▶ Fasten the top-hat rail on the mounting plate.

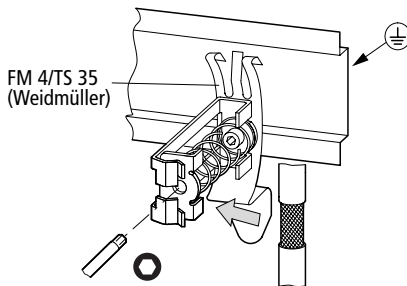
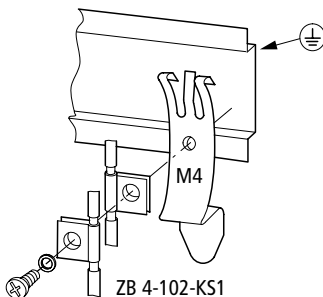


Attention!

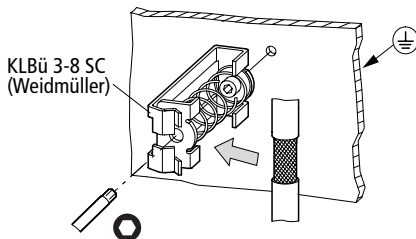
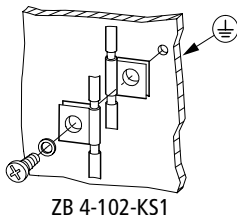
Ensure that all connection points are protected against corrosion and that the paint is removed at the connection points on painted mounting plates.

- ▶ Ground the top-hat rail ensuring a large contact area.

Mounting with top-hat rail on mounting plate



Mounting on mounting plate:



4 Configuration

Software configuration

The module must be configured using the Topology Configurator before data can be exchanged with the PS4/PS416 via telecontrol system.

- ▶ Call up the Topology Configurator in Sucusoft S40.
- ▶ Add a remote configuration with the module:
 - ZB4-501-TC1
 - Attention! The card is permanently assigned Suconet K address 2 (first slave).
 - ZB4-501-TC2
 - Set the bus address (see also "Hardware configuration").

Interface parameters for data transfer

The RS232 interface parameters can be set in the S40-AM-TD (see AWB27-1300-GB) or S40-AM-TL (see AWB27-1301-GB) application module.

Hardware configuration for ZB4-501-TC2



The following specifications only apply to the ZB4-501-TC2. The hardware configuration for the ZB4-501-TC1 is fixed and cannot be changed.

The hardware configuration is carried out on two switch blocks. The DIP switches of switch block S2 are used to activate the bus terminating resistors. The DIP switches of switch block S1 are used to set the device address.

Open the unit to operate the DIP switch.

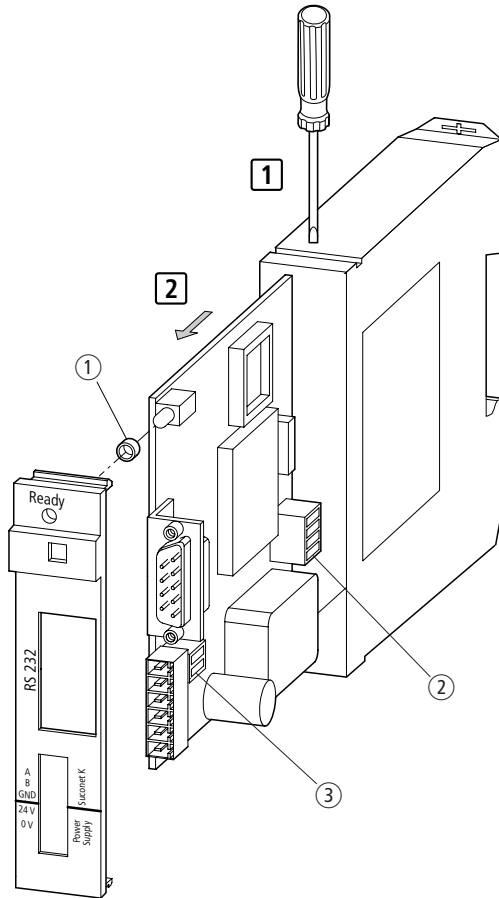


Figure 13: Switch block S1, S2

- ① LED sleeve
- ② Address coding S1
- ③ S2 switch for bus terminating resistors

Switching the bus terminating resistors on and off

Bus terminating resistance prevents signal disturbance caused by signal reflections at the end of the bus cable.

The device is factory set with the bus terminating resistors switched on.

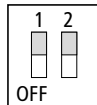


Figure 14: Factory set position of switch S2

The bus terminating resistor must be switched on if the device is located at the start or end of the line:

- ▶ The two DIP switches on switch block S2 must be in the "ON" position for this purpose.

The bus terminating resistor must be switched off on modules not located at the end of the data cable:

- ▶ Switch both DIP switches of switch block S2 to the "OFF" position.

Address setting

The address DIP switches of the module are factory set for address 2 as:

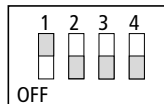


Figure 15: Factory set position of switch S1

The module must be assigned an address so that the master can detect and scan it, once installed.

- ▶ Switch off the power supply of the controller.
- ▶ Select a station address from the table and set the DIP switches of switch block S1 accordingly.



Ensure that the address has not already been assigned to another module, otherwise the master can no longer assign the data to the device (station number + 1 = address).

Table 6: Switch block S1 – address coding

Station	DIP switch			
	1	2	3	4
1	0	0	0	0
1	1	0	0	0
1	0	1	0	0
2	1	1	0	0
3	0	0	1	0
4	1	0	1	0
5	0	1	1	0
6	1	1	1	0
7	0	0	0	1
8	1	0	0	1
9	0	1	0	1
10	1	1	0	1
11	0	0	1	1
12	1	0	1	1
13	0	1	1	1
14	1	1	1	1

1 = ON, 0 = OFF

5 Operation

Method of operation of ZB4-501-TC1/-TC2

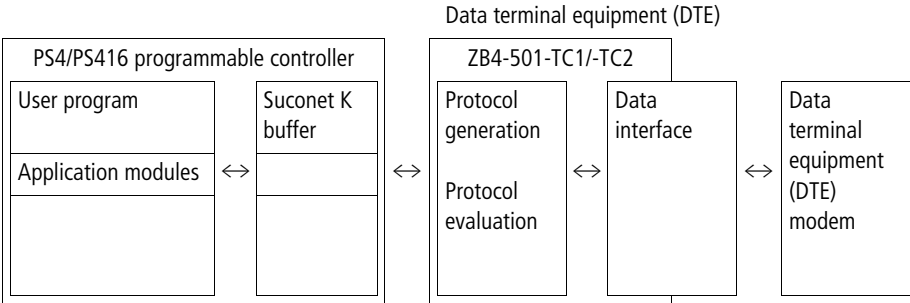


Figure 16: How the module works in a telecontrol station

A telecontrol module generates the protocol for the data to be sent and evaluates frames it has received. The application module on the CPU prepares the user and control data for a telecontrol module. This data is sent via Suconet K to the telecontrol module. The module compresses this user data of up to 220 bytes into the telecontrol protocol and sends it via the integrated RS232 interface to the modem. This, in turn, transfers the data via the telecontrol network in the telecontrol frames.

The received data is evaluated according to the frame protocol used. The telecontrol module sends the user and control data via Suconet K to the CPU.

The application module in the CPU evaluates this data and makes it available to the user program for further processing.

Operating phase	Transmit/receive operations are organised by an application module in the CPU so that no data transfer is possible via the telecontrol link if the CPU is in "Halt" status. If the telecontrol module receives a data exchange request when the CPU is in "Halt" status, it will respond with the message "PLC not in Run".
Startup behaviour	The module switches to the factory setting every time supply voltage is switched on. Modifications to this setting must be carried out in the application module, refer to Chapter „Configuration“.
Shutdown behaviour	Data exchange is interrupted as soon as the module power supply is switched off. All data in the telecontrol module is deleted.

6 Diagnostics

LED function on startup

When the power supply is switched on, the module automatically performs a hardware test. The LED lights up if this test is positive. If the test is negative, the LED flashes and thus indicates a hardware error.

LED function during operation

During operation the LED indicates the status of the bus connection.

Table 7: LED function during operation

LED status	Bus connection status
On	<ul style="list-style-type: none"> – Module is connected – Master is in "Run"
Flashing	<ul style="list-style-type: none"> – Module not connected
Off	<ul style="list-style-type: none"> – Module is connected – Master is in "Halt"

Appendix

Technical Data	ZB4-501-TC1
Number of modules per PS4 master controller	1
Network address	2; fixed
Suconet send data	36 bytes (30 bytes user data)
Suconet receive data	36 bytes (30 bytes user data)
Interfaces	Two RS485: Suconet K <ul style="list-style-type: none"> – One 5-pole DIN plug connector for connecting to master PLC – One screw terminal for outgoing Suconet bus – Bus terminating resistors integrated One RS232: <ul style="list-style-type: none"> – 9-pole SUB-D connector for connecting to the modem
Handshake lines	RTS, CTS, DCD, DTR, DSR
Data transfer protocols	FT1.2, FT3 asynchronous
Maximum number of user bytes in telecontrol frame	220 bytes
Transfer rate	600, 1200, 2400, 4800, 9600, 19 200 baud
Supply voltage	9 V via PLC, no external power supply required
Potential isolation	RS485/RS232: None
Cable recommendation	RS485 (Suconet K): Cable $2 \times 0.5 \text{ mm}^2$, screened twisted pair cable for making up Suconet cables, Moeller type LT 309.096 or similar. The connection cable to the CPU is an integral part of the telecontrol module. Do not use a different cable. RS232: Screened modem cable type ZB4-254-KB1, Cable length: max. 2 m
Mounting	Snap-fit on top-hat rail to DIN 50 022
Ambient temperature	0 to +55 °C

Transport and storage temperature	-20 to +70 °C
Degree of protection	IP 20
EMC	See Page 33
Weight	Approx. 180 g

ZB4-501-TC2

Number of modules per PS4/PS416 master PLC	14
Network address	2 to 15, adjustable via DIP switch
Suconet send data	36 bytes (30 bytes user data)
Suconet receive data	36 bytes (30 bytes user data)
Interfaces	One RS485: Suconet K <ul style="list-style-type: none"> – Plug-in screw terminal connection cross section $\leq 1.5 \text{ mm}^2$ – Bus terminal resistors adjustable via DIP switch One RS232: <ul style="list-style-type: none"> – 9-pole SUB-D connector for connecting to the modem
Handshake lines	RTS, CTS, DCD, DTR, DSR
Data transfer protocols	FT1.2, FT3 asynchronous
Maximum number of user bytes in telecontrol frame	220 bytes
Transfer rate	600, 1200, 2400, 4800, 9600, 19200 baud
Potential isolation	RS485/RS232: None
Cable recommendation	RS485 (Suconet K): Cable $2 \times 0.5 \text{ mm}^2$, screened twisted pair cable for making up Suconet cables, Moeller type LT 309.096 or similar. RS232: Screened modem cable type ZB4-254-KB1, Cable length: max. 2 m
Mounting	Snap-fit on top-hat rail to DIN 50 022
Ambient temperature	0 to +55 °C
Transport and storage temperature	-20 to +70 °C
Degree of protection	IP 20

EMC	See below
Weight	Approx. 180 g
Supply voltage	
Rated voltage U_e	24 V DC
Permissible range	20.4 to 28.8 V DC
Residual ripple	5 %
Reverse polarity protection	Yes
Rated current I_e	100 mA
Inrush current and duration	1 A/< 5 ms
Power dissipation	2.4 W
Protection class	1
Potential isolation between 24 V supply voltage and interfaces:	Yes
Terminals	Plug-in screw terminal connection cross section $\leq 1.5 \text{ mm}^2$

General specifications on electromagnetic compatibility (EMC) of automation equipment

Emission	EN 55 011/22 Class A		
Noise immunity			
ESD	DIN/EN 61 000-4-2	Contact discharge air discharge	4 kV 8 kV
RFI	DIN/EN 61 000-4-3	AM/PM	10 V/m
Burst	DIN/EN 61 000-4-4	Mains, fieldbus	2 kV 1 kV
Surge	DIN/EN 61 000-4-5	DC supply, asymmetrical DC supply, symmetrical	1 kV 0.5 kV
Line-conducted interference	DIN/EN 61 000-4-6	AM	10 V

Dimensions

ZB4-501-TC1

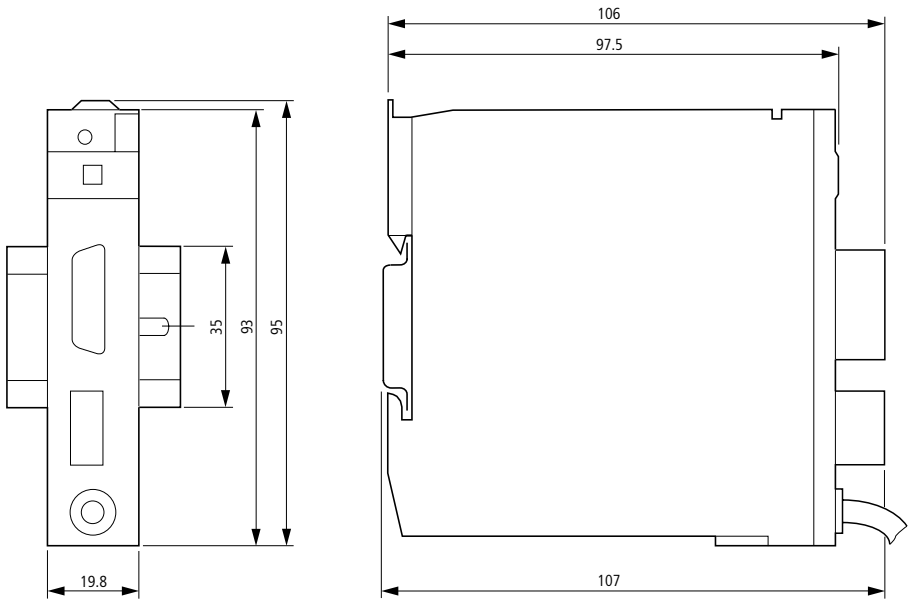


Figure 17: Dimension drawing of the ZB4-501-TC1

ZB4-501-TC2

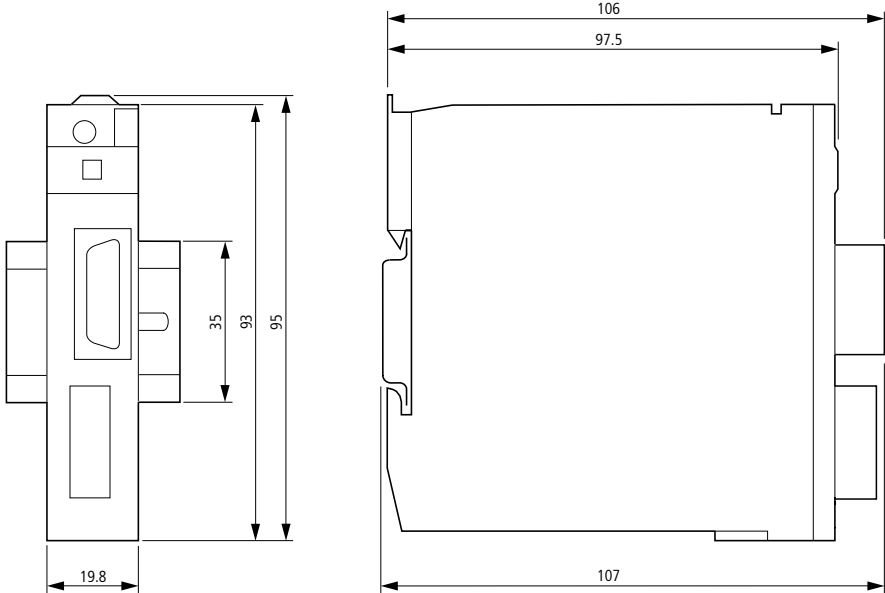


Figure 18: Dimension drawing of the ZB4-501-TC2

Glossary**Application module**

Application modules are programs or parts of programs for the PLC or PC which support a function in an application or which execute it entirely. Application modules provide ready-made solutions for the most varied applications.

Asymmetrical configuration

Configurations of telecontrol stations which consist of primary and secondary stations are referred to as asymmetrical configurations.

Asynchronous transmission

Each message character is synchronised individually, usually by means of start and stop elements.

Character

Convention on data format, e.g. 1 start bit, 8 data bits, 1 check bit, 1 stop bit; i.e. 1 character = 11 bits.

Dial-up line

A transmission line which can be used after dialling.

DTE

Data Terminal Equipment can mean devices such as computers, terminals or other I/O devices. A DTE that sends data is called the data source. A DTE that receives data is referred to a data sink. See also „Modem“

Handshake

Defined sequence of signals for setting up and checking a connection.

ISO/OSI

The ISO / OSI model describes a model for classifying data transmission and processing between two computers.

Leased line

A permanently switched transmission line.

Master station

The station which remotely monitors outstations and/or remotely controls them.

Modem

Abbreviation for “**M**odulator **D**emodulator”. Device that converts digital signals to analog signals and vice versa.

Outstation

A station which is monitored or monitored and controlled by a master station.

Parity

Method of providing data security. A checkbit is added to each character.

Partyline configuration

A configuration in which the master station is connected with more than one outstation via a central transmission medium in such a way that only one outstation can transfer data to the master station at the same time. The master station can send data to one or several outstations. General frames can be sent to all outstations at the same time.

Primary station

Station that initiates a data transfer.

Secondary station

A station that responds to a data request from a remote device.

Symmetrical configuration

Configurations of telecontrol stations which consist of stations with equal rights are referred to as symmetrical configurations. The stations in these configurations combine the properties of primary and secondary stations.

Telecontrol

Telecontrol is the monitoring and control of processes at a distance by means of coded bit-serial data transmission.

Telecontrol configuration

The combination of telecontrol stations and the transmission paths between the stations.

Telecontrol station

Master station or outstation in a telecontrol system.

Telecontrol system

A telecontrol system used for controlling and monitoring processes at distance.

The system includes all equipment and functions for data acquisition, processing, transmission and display of the requisite process information.

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