simex

TRS

- collection, recording and sharing of information on temperature and humidity
- temperature measurement range: -40°C ÷ +85°C
- humidity measurement range: 0% ÷ 100% RH
- RS-485 / Modbus RTU communication
- possibility of connecting max. 127 modules on the RS-485 line in one network
- network solutions
- SimCorder software to support the system

Temperature and humidity recording **TRS** system is a family of measuring equipment based on the SimCorder Soft software and dedicated temperature and humidity measuring converters. Its main tasks can include: collection, recording and sharing information on temperature and humidity, e.g. in cold rooms, production halls. TRS system is featured by ease of mounting, so that the purchaser can install it by itself.
TRS system is mainly used in the food industry: in meat, fish and milk processing plants etc., in pharmaceutical and cosmetic and as well as in all other places where continuous measurement and recording of temperature and humidity are required. The standards impose an obligation to record temperature in rooms with controlled temperature and to store the data for more than 2 - 3 years (depending on the industry).
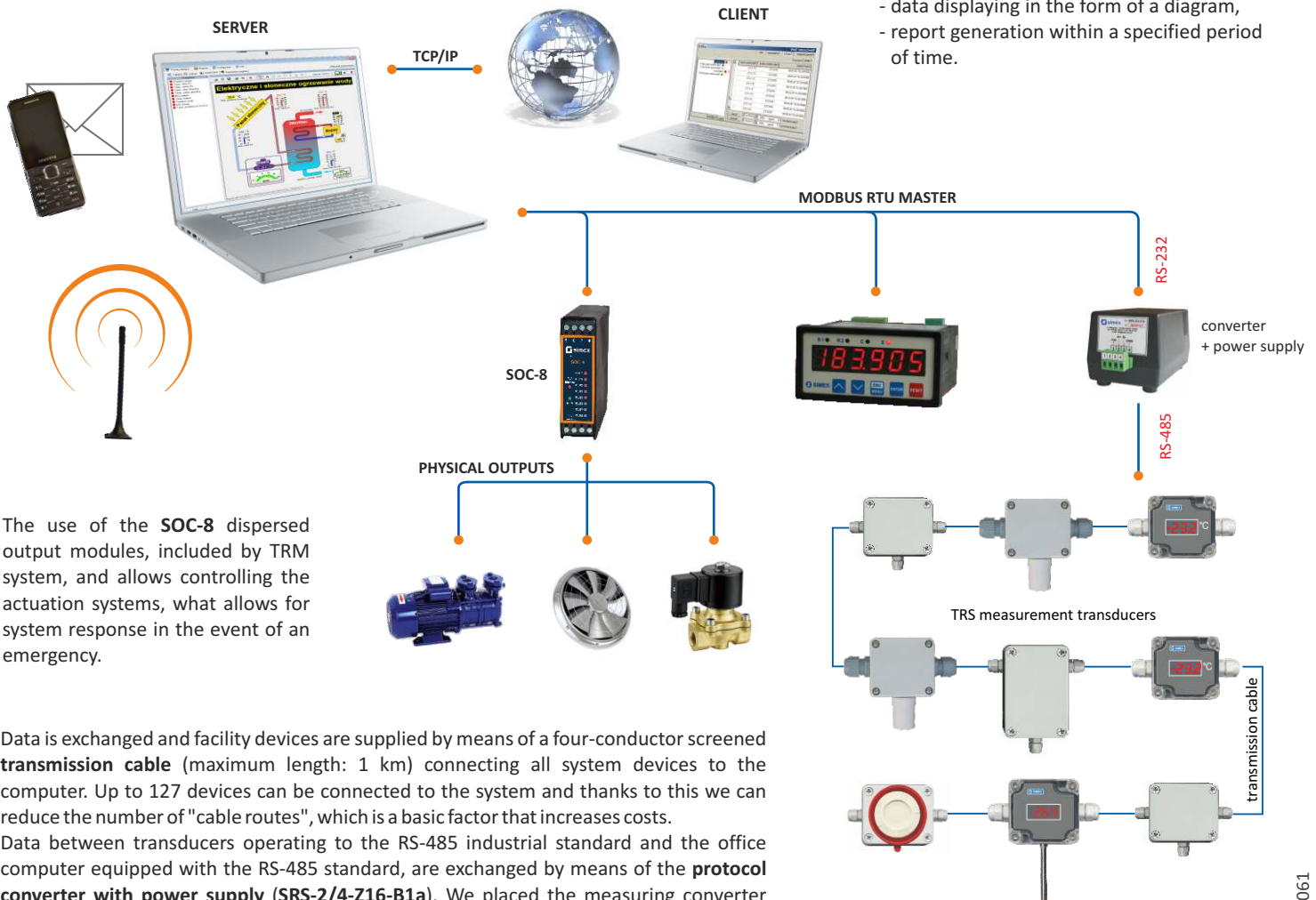
SYSTEM STRUCTURE AND COMPONENTS

At present the TRS System includes: ambient temperature transducer (**TRS-01a**), temperature transducer to work with a Pt100 sensor (**TRS-02a**), temperature and humidity transducer (**TRS-04a**), ambient temperature transducer with display (**TRS-11a**), wall mounted indicator (**TRS-10a**), additional power supply (**TRS-09a**) and sound signal device (**TRS-B1a**).

COMPUTER COMMUNICATION

SimCorder Soft visualisation software was created to improve the operation with extended networks of SIMEX devices:
- temperature and humidity recording from a long period of time,
- data displaying in the form of a diagram,
- report generation within a specified period of time.

SERVER · TCP/IP · CLIENT · MODBUS RTU MASTER · RS-232 · converter + power supply · SOC-8 · PHYSICAL OUTPUTS · RS-485 · TRS measurement transducers · transmission cable

The use of the **SOC-8** dispersed output modules, included by TRM system, and allows controlling the actuation systems, what allows for system response in the event of an emergency.

Data is exchanged and facility devices are supplied by means of a four-conductor screened **transmission cable** (maximum length: 1 km) connecting all system devices to the computer. Up to 127 devices can be connected to the system and thanks to this we can reduce the number of "cable routes", which is a basic factor that increases costs.
Data between transducers operating to the RS-485 industrial standard and the office computer equipped with the RS-485 standard, are exchanged by means of the **protocol converter with power supply** (**SRS-2/4-Z16-B1a**). We placed the measuring converter power supply in one casing to make assembly as easy as possible.
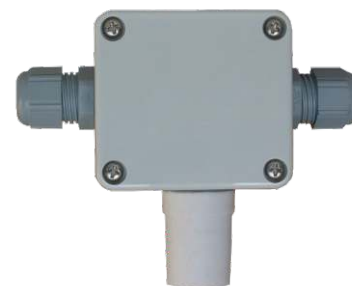
TRS-01a

TRS-02a

TRS-04a

TECHNICAL DATA

	TRS-01a	TRS-02a	TRS-04a
	Ambient temperature transducer	Temperature transducer + Pt100 sensor	Temperature and humidity transducer
	TRS-01a is designed particularly for multipoint temperature and humidity measurement systems to measure temperature in rooms where food products are manufactured and stored. It is equipped with RS-485 / Modus RTU communication interface. Measures temperature within the range of -40°C to +85°C. Has a small plastic casing.	**TRS-02a** is designed for multipoint measurement of temperature by means of a standard Pt100 sensor. In particular it is designed for use with bayonet sensors to be used, for example, in smoke-houses. It may be used with any Pt100 sensors. This module features very good compensation of effect of connection cable resistance on the result of temperature measurement. Non-linear characteristics of the sensor is digitally linearized. It is equipped with RS-485 / Modus RTU communication interface.	**TRS-04a** is designed for multipoint temperature and humidity measurement systems. In particular it is used for measuring conditions in rooms where food products are manufactured and stored. It is equipped with RS-485 / Modus RTU communication interface.
Power supply / Power consumption	10V DC (9V ÷ 12V DC) / typ. 4,2 mA (during operation); up to 60 mA (during Modbus transmission)	10V DC (9V ÷ 12V DC) / typ. 12 mA (during operation); up to 65 mA (during Modbus transmission)	10V DC (9V ÷ 12V DC) / typ. 4,2 mA (during operation); up to 60 mA (during Modbus transmission)
Temperature sensor	semiconductor integrated circuit; measurement range: -40°C ÷ +85°C; measurement error: ±0,5°C (-10°C ÷ +50°C)	Pt 100 sensor, resistance compensation of connecting conductors from 0 to 20 Ω; measurement range: -50°C ÷ +550°C; measurement error: ±0,2°C	semiconductor integrated circuit; measurement range: 0°C ÷ +70°C; measurement error: ±0,5°C (-10°C ÷ +50°C)
Czujnik wilgotności	none	none	measurement range: 0% RH ÷ 100% RH; accuracy: ±2% RH @25°C, non-condensing; linearity: ±0,5% RH (typically); hysteresis: ±1,2% RH; repeatability: ±0,5% RH; stability: ±1% RH @50% RH, within 5 years
Number of modules	up to 127 in 1 network	up to 127 in 1 network	up to 127 in 1 network
Communication interface	RS-485, 9600 bit/s, Modbus RTU	RS-485, 9600 bit/s, Modbus RTU	RS-485, 9600 bit/s, Modbus RTU
Operating temp.	-40°C ÷ +85°C	-40°C ÷ +85°C	0°C ÷ +70°C, non-condensing
Storage temp.	-40°C ÷ +85°C	-40°C ÷ +85°C	-40°C ÷ +85°C
Protection class	IP 65 (case), IP 40 (sensor)	IP 65	IP 65 (case), IP 40 (sensor)
Installation	to wall, 2 x M3 bolts	to wall, 2 x M3 bolts	to wall, 2 x M3 bolts
Connection cable	4 conductors (2 supply conductors + 2 data transmission conductors)	4 conductors (2 supply conductors + 2 data transmission conductors)	4 conductors (2 supply conductors + 2 data transmission conductors)
Case	wall mounting; material: ABS	wall mounting; material: ABS	wall mounting; material: ABS
Dimensions (WxHxD)	case, without glands: 64 x 58 x 35 mm, with glands and sensor protective cap: 114 x 92 x 35 mm	case, without glands: 82 x 80 x 55 mm with glands: 130 x 105 x 55 mm	case, without glands: 64 x 58 x 35 mm with glands and sensor protective cap: 114 x 92 x 35 mm
Weight	106 g max.	183 g max.	106 g max.

TRS-10a

TRS-11a

TRS-B1a

TECHNICAL DATA

TRS-10a	TRS-11a	TRS-B1a
Wall mounted indicator	Ambient temperature transducer with display	Sound signal device
The **TRS-10a** is designed to display digital values and short, 4-letter messages. This superior system makes the display flicker when a displayed value is not refreshed. It is a slave device that communicates with the Master device via RS-485 interface with Modbus RTU protocol. The indicator is dedicated to the TRS Temperature Recording System, yet it can cooperate with any superior system equipped with RS-485 link with Modbus RTU protocol.	The **TRS-11a** is designed for multipoint temperature measurement within the range of -40°C up to +85°C. It is particularly designed to measure temperature in rooms where food products are manufactured and stored. A display located on the front panel enables the reading of current temperature and autonomous operation of the module (without a computer system). It is equipped with RS-485 / Modus RTU communication interface.	The **TRS-B1a sound signal device** is designed to signal events with a sound or light. It is controlled by means of RS-485 link, which allows for activating of the sound signal (a buzzer with variable tone) and/or light signal (a flickering diode). The module is dedicated to the TRS Temperature Recording System and it is equipped with RS-485 / Modus RTU communication interface. It can be used with other systems where the communication is consistent with the Modbus RTU standard.
Power supply / Power consumption	10V DC (9V ÷ 12V DC) / up to 30 mA (during operation); up to 80 mA (during Modbus transmission)	10V DC (9V ÷ 12V DC) / up to 30 mA (during operation); up to 80 mA (during Modbus transmission)	10V DC (9V ÷ 12V DC) / typ. 9,5 mA (in standby); up to 70 mA (during sound signalisation); up to 60 mA (during Modbus transmission, without sound signalisation)
Temperature sensor	none	semiconductor integrated circuit measurement range: -40°C ÷ +85°C measurement error: ±0,5°C (-10°C ÷ +50°C)	none
Display	LED, 4 x 9 mm, red, **increased brightness**	LED, 4 x 9 mm, red, **increased brightness**	none
Number of modules	up to 127 in 1 network	up to 127 in 1 network	up to 127 in 1 network
Communication interface	RS-485, 9600 bit/s, Modbus RTU	RS-485, 9600 bit/s, Modbus RTU	RS-485, 9600 bit/s, Modbus RTU
Operating temp.	-40°C ÷ +85°C	-40°C ÷ +85°C	-40°C ÷ +85°C
Storage temp.	-40°C ÷ +85°C	-40°C ÷ +85°C	-40°C ÷ +85°C
Protection class	IP 65	IP 65 (case), IP 30 (sensor)	IP 65
Installation	to wall, 2 x M3 bolts	to wall, 2 x M3 bolts	to wall, 2 x M3 bolts
Connection cable	4 conductors (2 supply conductors + 2 data transmission conductors)	4 conductors (2 supply conductors + 2 data transmission conductors)	4 conductors (2 supply conductors + 2 data transmission conductors)
Case	wall mounting; material: ABS	wall mounting; material: ABS	wall mounting; material: ABS
Dimensions (WxHxD)	case, without glands: 64 x 58 x 35 mm; with glands: 114 x 58 x 35 mm	case, without glands: 64 x 58 x 35 mm; with glands and sensor protective cap: 114 x 120 x 35 mm	case, without glands: 64 x 66 x 90 mm; with glands: 114 x 66 x 90 mm
Weight	max. 110 g	max. 150 g	max. 170 g

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Complementary devices of TRS system

TRS-09a

- supporting power supply of TRS system
- current efficiency 200 mA
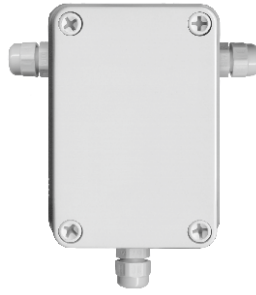
TRS-09a is a supporting power supply for the TRS System which supplies stabilized direct voltage 11,5V. It can work in two modes: as a controlled supply (switched on with external voltage 7-12V) or a non-controlled supply. The configuration is selected by means of a link. Current efficiency is 200 mA. The supply is resistant to output voltage short circuit. The device is located in a casing that completely protects it against dust or low pressure streams of water.

TRS-09a TECHNICAL DATA

Power supply **Power consumption**	230V AC +10/-5% max. 6 VA
Output voltage	11,5 V ±5%
Control voltage	7 ÷ 12 V, max. 2 mA
Current efficiency	200 mA
Operating temp.	0°C ÷ +50°C (standard), -20°C ÷ +50°C (option)
Storage temp.	-10°C ÷ +70°C (standard), -20°C ÷ +70°C (depending on option)
Protection class	IP 65
Installation	to wall, 4 x M3 bolts
Case	wall mounting; material: ABS
Dimensions (WxHxD)	without glands: 110 x 80 x 67 mm with glands: 133 x 130 x 67 mm
Weight	max. 365 g

SRS-2/4-Z16-B1a

- power supply for measurement sensors system
- RS-232/RS-485 standard converter
- galvanic separator of RS-232 and RS-485 circuits
- data recorder
- built-in battery powered RTC clock

Recorder **SRS-2/4-Z16-B1a** is a two-processor device equipped with a real time clock powered with a lithium battery and flash nonvolatile memory (1 MB) to record approx. 40 000 measurements. After re-activating **SimCorder Soft** all recorded measurements are copied to a PC, and the recorder buffer is emptied. Basic tasks of the device are connection of the TRS System modules network with a PC equipped with RS-232 interface and automatic recording of measurements when the SimCorder Soft (or the computer) is switched off. Built-in **RS-232/RS-485 interface converter**, adjusted to the requirements of Modbus RTU protocol, ensures full galvanic isolation between RS-232 interface and RS-485 lines and it can work with any SIMEX devices equipped with a RS-485 standard link. It can also be used for the transmission between devices equipped with RS-485 interface and a computer with RS-232 link.

SRS-2/4-Z16-B1a TECHNICAL DATA

Power supply **Power consumption**	12V DC up to 100 mA (without modules)
Output voltage	10,5 V DC ±5%
Current efficiency	0,5 A max.
Galvanic separation	between RS-485 line and RS-232 interface
RS-232 connector	1 x 9 PIN Canon, cable length ca. 1,3 m
Transmission parameters	Modbus RTU, 9600 bit/s, 8N1
Data logger memory	1 Mb (about 40 000 measurements)
Operating temp.	0°C ÷ +50°C (standard), -20°C ÷ +50°C (option)
Storage temp.	-10°C ÷ +70°C (standard), -20°C ÷ +70°C (depending on option)
Dimensions (WxHxD)	70 x 68 x 150 mm
Weight	220 g

Fastrack Supreme FS20

- GSM / GPRS external modem
- dual band GSM 900/1800 MHz

Fastrack FS20 modem has proven itself for stable, reliable performance on wireless networks worldwide. Dual Band GSM/GPRS modem (EGSM900/1800 MHz) designed for data, fax, SMS and voice applications is fully type approved and fully compliant with ETSI GSM Phase 2. Offers two general purpose input/output access points to connect peripherals. Fully certified, the dual-band 900/1800 MHz Fastrack M1306B offers GPRS Class 10 capability, supports Open AT and IT protocols such as IP connectivity.

GSM supplementary services: Call Forwarding; Call Barring; Multiparty; Call Waiting and Call Hold; Calling Line Identity; Advice of Charge; USSD; Closed User Group; Explicit Call Transfer.

FASTRACK SUPREME FS20 TECHNICAL DATA

Power supply **Power consumption**	5,5V ÷ 32V 8 mA in idle mode 110 mA in communication GSM 900 @ 13,2V 80 mA in communication GSM 1800 @ 13,2V
Peak	1,7A @ 5,5V
Communication interface	RS-232 i Audio through mini sub-D 15-pin connector supporting serial link autoshutdown controlled by software AT (GSM 07.07 i 07.05); 300 ÷ 115,200 bit/s
Memory	4MB Flash/ 512MB SRAM
Dimensions (WxHxD)	73 x 54 x 25 mm
Weight	82 g