HIQUEL®
HIGH QUALITY ELECTRONICS

SLS-5ØØ
Master Controller

SLS-500 Hardware manual

CE

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SLS-500 – Hardware manual

Version: 2.10

Caution!

You are handling dangerous electrical current!

- Disconnect the supply voltage before making any wiring modifications.
- Ensure that the system cannot be switched on accidentally.
- Ensure that the device and its surroundings are potential free.
- Please refer to the specific installation and mounting instructions.
- Qualified personal only should handle the device.
- The device has to be mounted in such a way that no unintentional operation may occur.
- All control and supply voltage wiring must be routed so that no inductive or capacitive interference or any other severe electrical noise disturbance may interfere with the device.
- Supply voltage variation must not exceed the specifications in the technical details. If so, proper performance of the device can not be guaranteed.
- Emergency installations according to EN60204/IEC204(VDE0113) must remain active in all modes of the automated installation. Activation of the emergency installation must not cause an uncontrolled or undefined start cycle.
- The software engineer has to make sure, that no failure functions of the automated installation may occur when line faults or core faults arise.
- Notwithstanding the above, local regulations must be observed in all installations.

Contents

Safety precautions

Danger to life through electrical current!
Only skilled personal trained in electro-engineering should perform the described steps in the following chapters. Please observe the country specific rules and standards for the SLS-500 installation. Do not perform any electrical work while the device is connected to power.!

Pay attention to following rules:

- ❑ Switch off the automated installation
- ❑ Disable any automatic restart system
- ❑ Electrically isolate the installation
- ❑ Cover any non-isolated areas

Preface

The Solution SLS-500 (**S**mart **L**ogic **S**ystem) is a device from the new generation of HIQUEL products. SLS-500 is designed to bridge the gap between low end control modules (small intelligent relays) and specialised mini controls (Mini-PLC's).

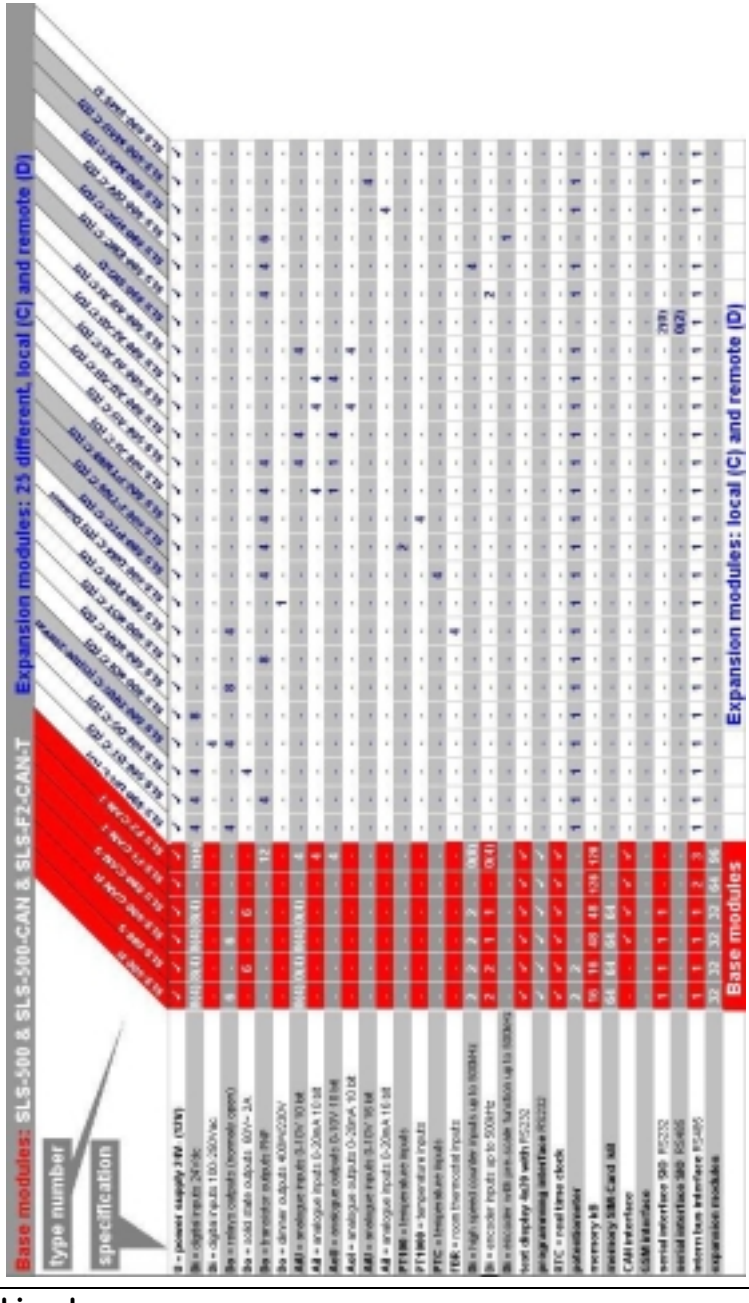
For this reason SLS-500 will control:

- **Industrial technology**
- **Water and wastewater technology**
- **Building management systems (BMS)**
- **Security technology**

Simply draw a circuit diagram for your application on your PC and SLS-500 will be ready to execute the following tasks:

- **House control and heating systems,**
- **Control systems for lights, doors, roller shutters and awnings,**
- **Blower and ventilation systems,**
- **Revolving doors**
- **Automated machines and installations**
- **presses, punches, belt conveyors,**
- **vibration conveyors, sorters,**
- **pumps, compressors,**
- **communicate with periphery machines**
- **send and receive messages**
- **etc.**

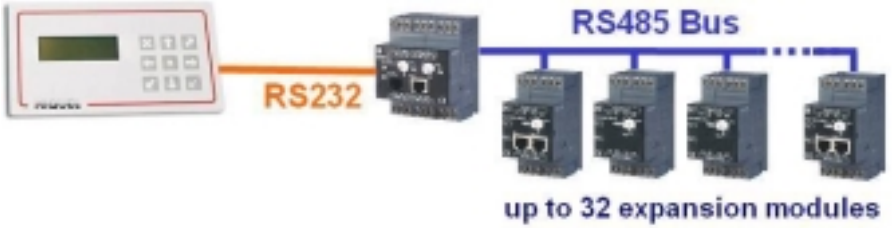
Module description



Application

There is a wide range of applications for the SLS-500 module. This module family can be used universally and object-oriented. After programming the module you can optionally connect a terminal, a touch panel or other peripheral units to operate the module. The following overview shows the completely autonomous PLC-Structures:

HIQUEL-TERM4

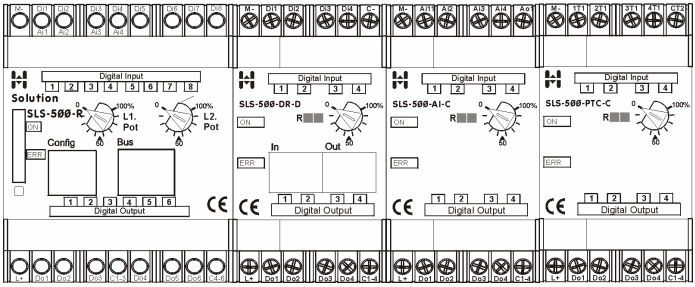


TOUCH-PANEL

Module connections

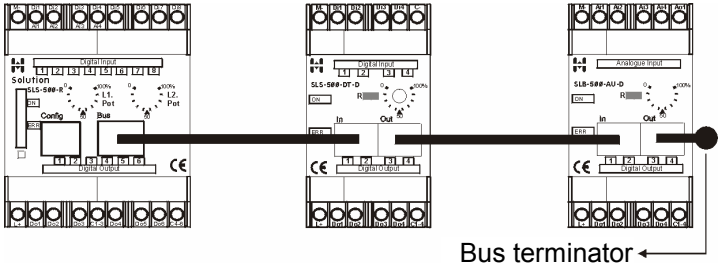
Expansion modules must be connected in a series configuration. Local and remote modules can be mixed, but attention must be given to the connection options of the modules.

Local Connection



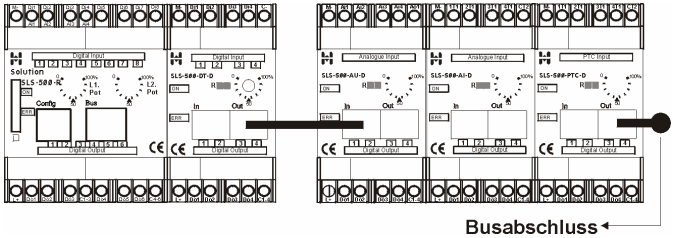
Local modules are placed side by side. It is possible to connect up to 32 expansion modules with the SLS-500. This makes up to 270 i/o. The maximum physical length of a local connection system, without bus terminator is 1 metre.

Remote Connection



Remote modules are connected by CAT5 cable and connectors. Connection between SLS-500 and the first expansion module is also with CAT5 cable. The maximum distance between two modules must not exceed 100 metres. The maximum overall distance of all SLS-500-modules in one system must not exceed 600 metres. A bus terminator must be used on the output port of the last module (network terminator).

Mixed connection



It is also possible to mix local and remote modules in one system.

(Example: SLS-500-R; SLS-500-DT-D; SLS-500-AU-D; SLS-500-AI-D; SLS-500-PTC-D)

Although remote modules have CAT5 ports on the front-plate they can also be side connected with recessed back-to-back connectors in the same way as the local modules. Therefore a remote module can be directly connected with the SLS-500 and a local module. The connection to an additional remote module can be made with CAT5 cable. In this case you have the opportunity to connect a local module directly, but you must ensure that the last module is remote, in order to fit a bus terminator.

Also ensure that the distance between the individual modules is not more than 100 metres, that the overall length of the system does not exceed 600 metres and that the last module in the system has a bus terminator fitted. In addition ensure that the total system is connected in a series configuration.

Communication

The communication between the modules occurs via RS485 with following parameters:

- 125.000 Baud
- 8 Data bits
- No Parity
- 1 Stop bit

SLS-500 Base module

- 8 digital inputs (also 4 analogue inputs)
- 6 digital outputs (or 3 analogue and 3 digital outputs)
- 2 external potentiometers
- 1 serial port for programming and for HIQUEL-TERM4
- 1 serial port for expansion modules or for periphery device

Description

Although the base module is the local controller in a SLS-500 system it can also be run stand-alone using just its 8 inputs and 6 outputs.

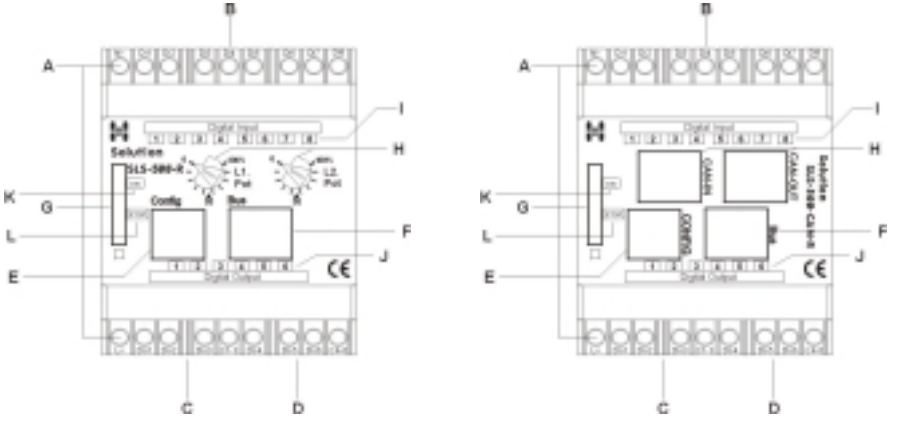


Fig: Front view of the base modules

A Supply voltage L+: +24Vdc M-: Ground

B 8 digital inputs Di1 to Di8

C 3 digital outputs Do1 to Do3
Terminal C1-3 is the common connection for digital outputs Do1 to Do3

D 3 digital outputs Do4 to Do6
Terminal C4-6 is the common connection for digital outputs Do4 to Do6

E Modular socket to connect programming cable (SLS-500-PC-RS232), the HIQUEL-TERM4 or other periphery devices

F CAT5 socket for bus connection

G Slot to insert memory card (SLS-500-SIM)

H 2 potentiometers for manual adjustment

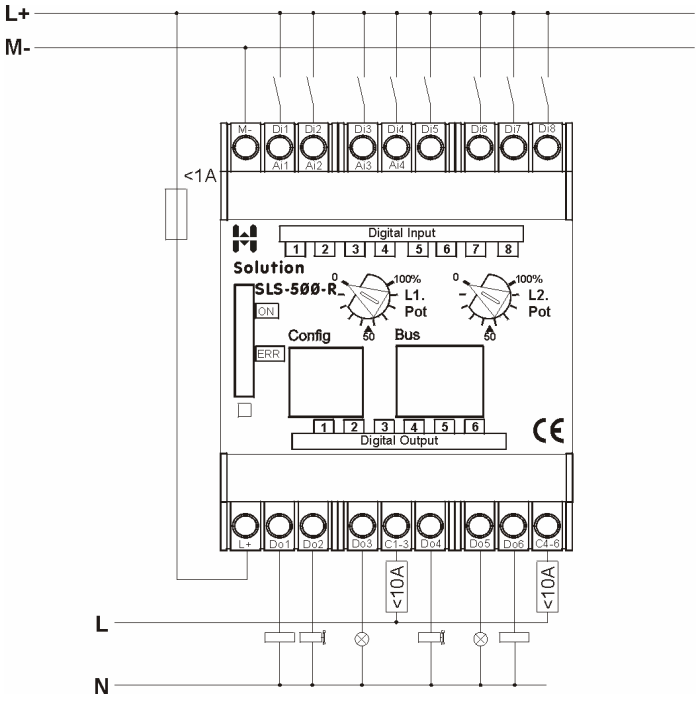
I LED-display for digital input status

J LED-display for digital output status

K LED-display: supply voltage is OK

L LED-display: module failure or program failure

Example



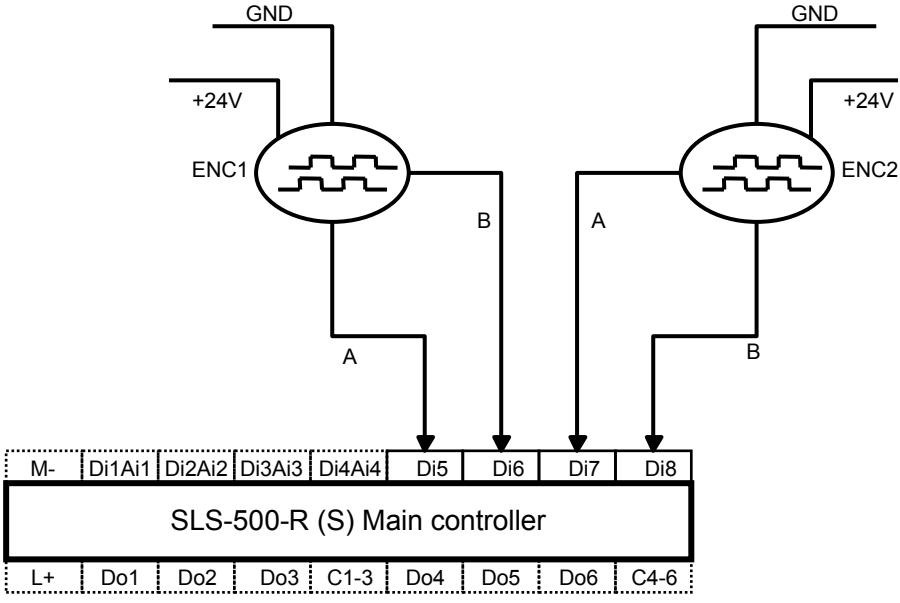
DI1	L1.DI1
DI2	L1.DI2
DI3	L1.DI3
DI4	L1.DI4
DI5	L1.DI5
DI6	L1.DI6
DI7	L1.DI7
DI8	L1.DI8
DO1	L1.DO1
DO2	L1.DO2
DO3	L1.DO3
DO4	L1.DO4
DO5	L1.DO5
DO6	L1.DO6
AI1	L1.AI1
AI2	L1.AI2
AI3	L1.AI3
AI4	L1.AI4
POTI1	
POTI2	

Type selection

SLS-500-	.	-	.	-	.	-	.	Base module
	CAN							CAN-Bus
			R					Relay output (normally open)
			S					Solid state output
					4AiI			Current input
							3AoI	Current output
							3AoU	Voltage output

Wiring with incremental encoder for SLS-500-R and SLS-500-S

As shown, you can wire up to two incremental encoders with the main controller:

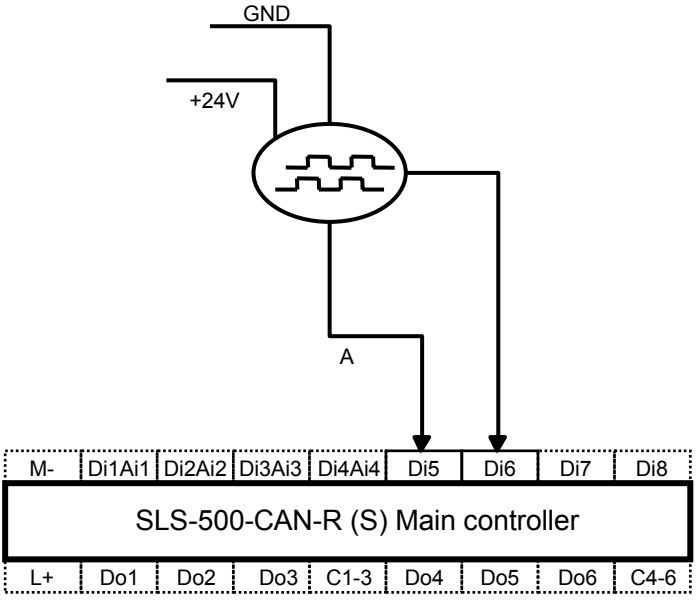


Connect the first encoder with digital inputs Di5 and Di6 and connect the second encoder with digital inputs Di7 and Di8.

IMPORTANT: The SLS-500 main controller cannot do more than 5000 edges per second! For the total of both encoders!

Wiring with incremental encoder for SLS-500-CAN-R and SLS-500-CAN-S

As shown below, you can wire the incremental encoder with the CAN main controller:

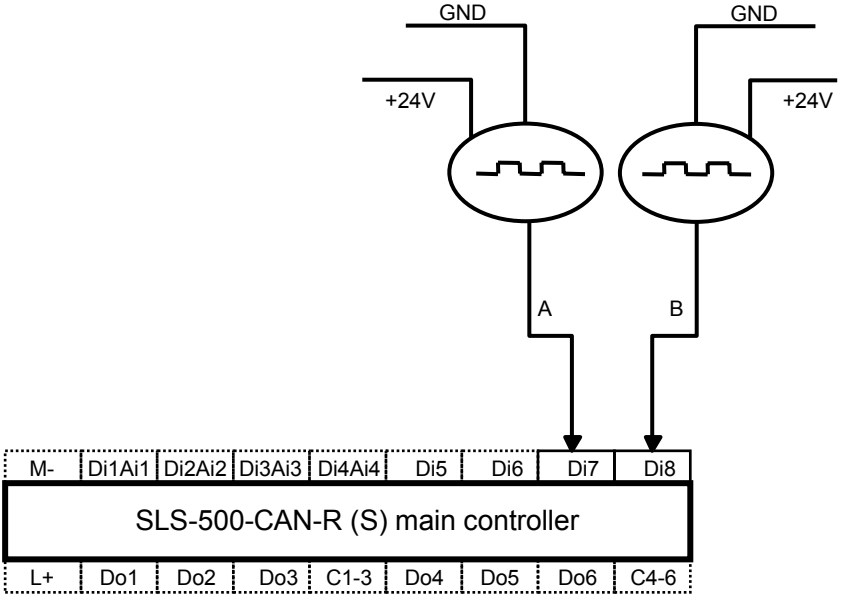


Connect the encoder with digital inputs Di5 and Di6.

IMPORTANT: The SLS-500 main controller cannot do more than 5000 edges per second!

Wiring with impulse generator for SLS-500-CAN-R and SLS-500-CAN-S

As shown below, you can wire two impulse generators up to 500kHz with the CAN main controller:



Connect the first impulse generator with digital input Di7 and connect the second with digital input Di8.

IMPORTANT: The SLS-500 main controller cannot do more than 5000 edges per second! For the total of both HS counter inputs!

Technical information (SLS-500)

Supply voltage	24VDC +/- 10%
Power consumption	1W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Di1 to Di8

Input resistance:	44kΩ

Ai1 to Ai4

Input voltage	0 to 10VDC
Input current	0 to 20mA
Resolution	10 Bit
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Outputs Do1 to Do6

Relay output	230VAC max. 5A
Ue/Ie AC-15	120V/1,5A 240V/1A
Ue/Ie DC-13	24V/1A
Life	$1x10^7$ mechanical, $1x10^5$ electrical

Solid state output

Ue DC-13 Photomos	60VAC/DC-2A

Ao1 to Ao3

Voltage output	0 to 10VDC
Current output	0 to 20mA

Data memory without power supply

Non-volatile markers and counters	min. 30 days
SIM-memory addresses	0 to 4095 I²C EEPROM
Real-time-clock-memory addresses	100000 to 100002
Time/Date	min. 30 days

Terminals

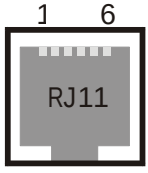
Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

Connector assignment CONFIG RS232

The connection to the PC is arranged by a RJ11 hub. All necessary RS232 signals are executed there:

ATTENTION: Also the +24V of the system are on this connector. Wrong wiring can lead to damages of your PC!

This RJ11 hub can also be used for connecting and programming HIQUEL-TERM4 text display or other peripherals.

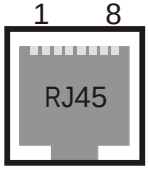


PIN	Signal	Name
1	NC	Currently unused
2	GND	0V -> PC 9-Pol DSUB Pin 5 or GND of next peripheral
3	BOOT	
4	+24V	24V
5	RXD	RS232 level -> PC 9-Pol DSUB Pin 3
6	TXD	RS232 level -> PC 9-Pol DSUB Pin 2

Connector assignment HIQUEL-BUS RS485

The connection to further SLS-500 expansion modules is arranged via CAT5 hub. This CAT5 hub can also be used, if no other expansion module is used, to connect and program other peripherals than RS232. The following signals are on this hub:

IMPORTANT: A bus termination is integrated in the module. Therefore this module must be the first or the last element within a HIQUEL-BUS!!

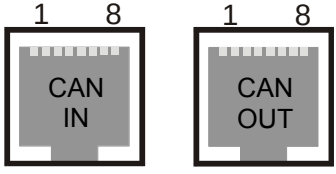


PIN	Signal	Name
1	RXD	RS232 level -> PC 9-Pol DSUB Pin 3
2	TXD	RS232 level -> PC 9-Pol DSUB Pin 2
3	BUSA	RS485 level -> Connection with BUSA of the next module
4	+24V	24V
5	GND	0V -> PC 9-Pol DSUB Pin 5 or GND of the next module
6	BUSB	RS485-Level -> Connection with BUSB of the next module
7	GND	0V -> PC 9-Pol DSUB Pin 5 or GND of the next module
8	INIT	TTS-Level -> Connection to next module INIT

Connector assignment CAN-BUS

The connection to further SLS-500-CAN base modules is arranged via CAT5 hub. The following signals are on this hub:

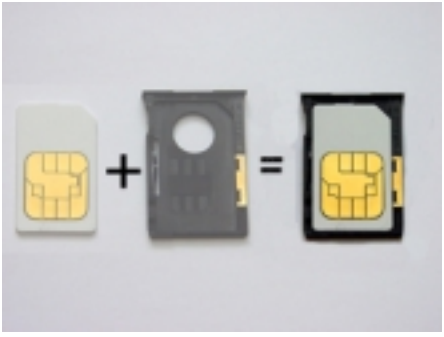
IMPORTANT: Bus detection is integrated in the module. Therefore no CAN messages must be sent if the bus is disconnected, otherwise the base module runs STOP!!



PIN	Signal	Name
1	IN to OUT	IN to OUT only looped
2	IN to OUT	IN to OUT only looped
3	CAN low	CAN low
4	+24V	24V
5	GND	0V -> PC 9-Pol DSUB Pin 5 or GND of the next module
6	CAN high	CAN high
7	IN to OUT	IN to OUT only looped
8	IN to OUT	IN to OUT only looped

SLS-500-SIM Memory card

Description



SLS-500 uses a memory card which is visually identical to the SIM card of a mobile phone (don't mix up). Insert the card into the cassette on the SLS-500 front plate.

Type selection

SLS-500-SIM	SIM – memory card 64kB

SLS-500-PC-RS232 Programming cable

Description

Programming SLS-500 takes place on the PC. SLS-500-PC-RS232 is required to transmit the program or to test the status. Connect the cable to the PC using the RS232 (COM) port and to the SLS-500 with the RJ45 connection.

It is applicable for all SLS-500 devices.

Type selection

SLS-500-PC-RS232	Programming cable PC/SLS-500 2,5m length

SLS-500-D Digital module

- 4 digital inputs
- 4 digital outputs
- 1 external potentiometer

Description

The digital expansion modules complement the available inputs/outputs of SLS-500. Up to 32 digital expansion modules can be connected with SLS-500.

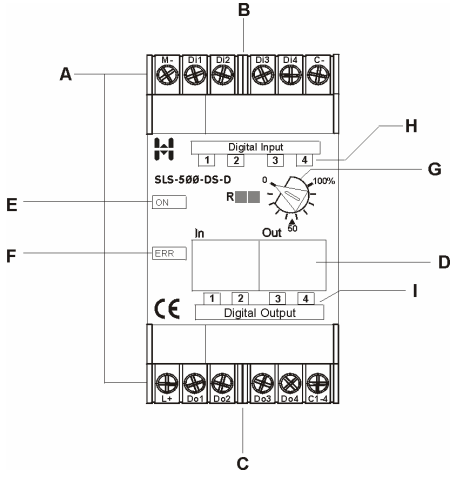
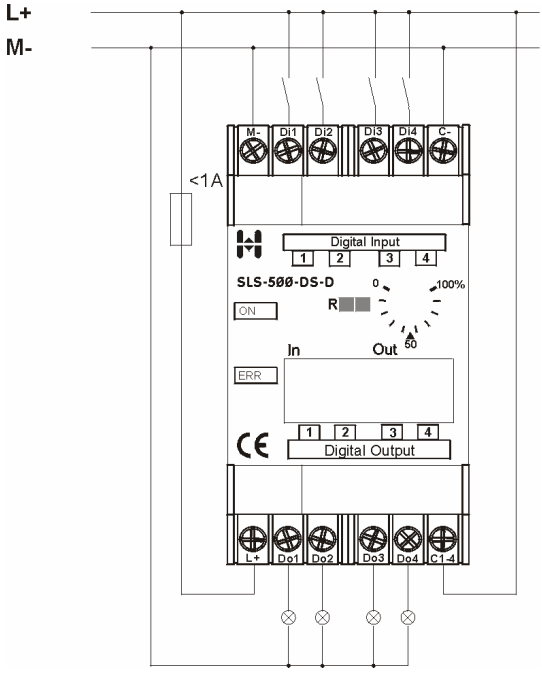


Fig: Front view of the digital expansion module

A Supply voltage L+: +24Vdc M-: Ground
B 4 digital inputs Di1 to Di4; C- is the common ground
C 4 digital outputs Do1 to Do4
Terminal C1-4 is the common connection for the digital outputs Do1 to Do4
D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.
E LED-display: Supply voltage is OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment
H LED-display for digital input status
I LED-display for digital output status

Example



Module addresses

DI1	Rx.DI1
DI2	Rx.DI2
DI3	Rx.DI3
DI4	Rx.DI4
DO1	Rx.DO1
DO2	Rx.DO2
DO3	Rx.DO3
DO4	Rx.DO4
POTI1	Rx.POTI1

x represents the identification number of the module in the system

Type selection

SLS-500-D	.	-	.	Digital 4/4 in- output module
	R			Relay output (normally open)
	T			Transistor output (PNP)
	S			Solid state output
			C	Local expansion module
			D	Remote expansion module

Technical information (SLS-500-D)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to + 55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Di1 to Di4

Input voltage	24VDC
Input resistance	min. 3kOhm

Outputs Do1 to Do4

Relay output	230VAC max. 5A
Ue/Ie AC-15	120V/1,5A 240V/1A
Ue/Ie DC-13	24V/1A
Life	$1x10^7$ mechanical, $1x10^5$ electrical
Transistor output (PNP)	24VDC/800mA short circuit proof
Solid state output Ue DC-13 Photomos	60VAC/DC/2A

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-DRR Digital module

- 4 digital inputs 100-250VAC
- 4 digital outputs
- 1 external potentiometer

Description

The digital expansion module complements the I/Os available with SLS-500. Up to 32 digital expansion modules can be connected with SLS-500.

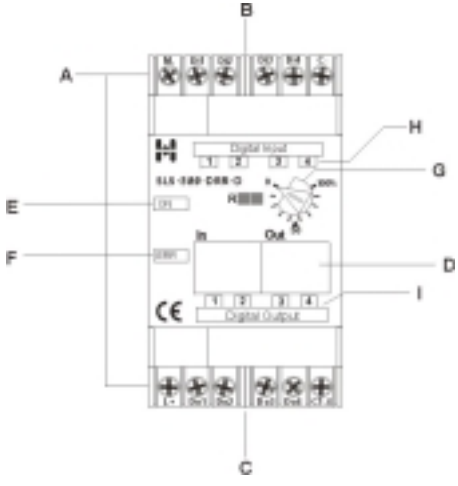
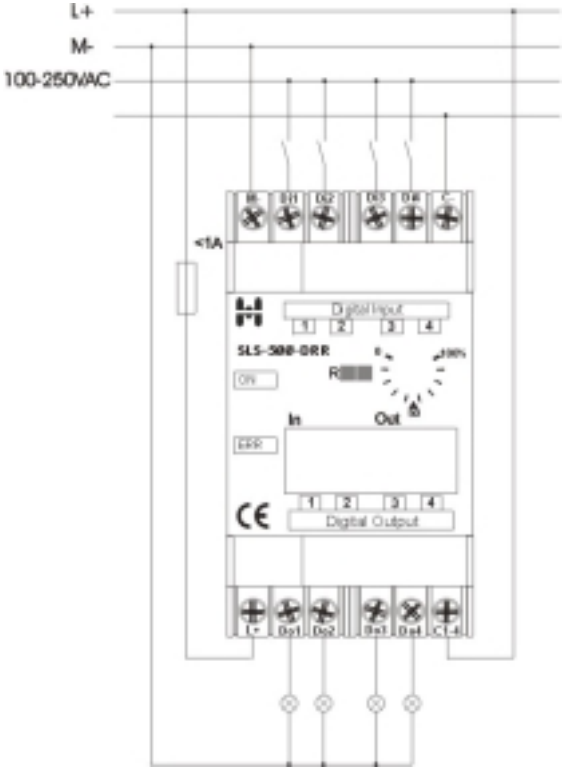


Fig: Front view of the digital module

A Supply voltage L+: +24Vdc M-: Ground
B 4 digital inputs Di1 to Di4; C- is the common ground
C 4 digital outputs Do1 to Do4
Terminal C1-4 is the common connection for the digital outputs Do1 to Do4
D CAT5 socket to connect remote(D) modules to the bus. Local(C) modules are connected by recessed back-to-back connectors.
E LED-display: Supply voltage is OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment
H LED-display for digital input status

I LED-display for digital output status

Example



DI1	Rx.DI1
DI2	Rx.DI2
DI3	Rx.DI3
DI4	Rx.DI4
DO1	Rx.DO1
DO2	Rx.DO2
DO3	Rx.DO3
DO4	Rx.DO4
POTI1	Rx.POTI1

Type selection

SLS-500-DR	.	-	.	Digital 4/4 in- output module with relay output
	R			Digital input 100-250VAC
			C	Local expansion module
			D	Remote expansion module

Technical information (SLS-500-DRR)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to + 55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing
Inputs Di1 to Di4	
Input voltage	100 to 250VAC
Life	$1x10^7$ mechanical $1x10^5$ electrical
Outputs Do1 to Do4	
Relay output	230VAC max. 5A
Ue/Ie AC-15	120V/1,5A 240V/1A
Ue/Ie DC-13	24V/1A
Life	$1x10^7$ mechanical, $1x10^5$ electrical
Terminals	
Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-8DI Digital module

☞ 8 digital inputs

☞ 1 external potentiometer

Description

The digital expansion module complements the inputs available with SLS-500. Up to 32 digital expansion modules can be connected with SLS-500.

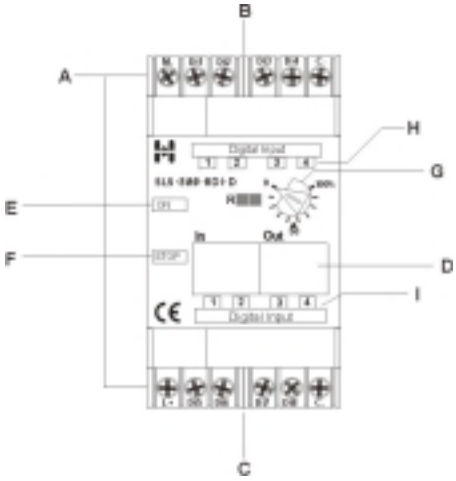
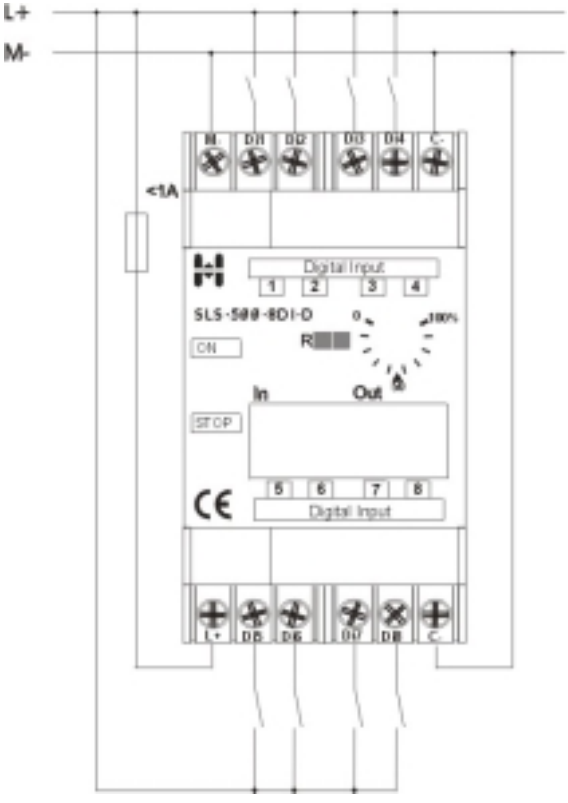


Fig: Front view of a digital module

A Supply voltage terminal L+: +24Vdc M-: Ground
B 4 digital inputs Di1 to Di4; C- is the common ground
C 4 digital inputs Di5 to Di8; C- is the common ground
D CAT5 socket to connect remote (D) modules to the bus. Local(C) modules are connected by recessed back-to-back connectors.
E LED-display: supply voltage is OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment
H LED-display for digital input status
I LED-display for digital input status

Example



Di1	Rx.DI1
Di2	Rx.DI2
Di3	Rx.DI3
Di4	Rx.DI4
Di5	Rx.DI5
Di6	Rx.DI6
Di7	Rx.DI7
Di8	Rx.DI8
Poti1	Rx.POTI1

Type selection

SLS-500-8DI-	.	Digital expansion module with 8DI
	C	Local expansion module
	D	Remote expansion module

Technical information (SLS-500-8DI)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to + 55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing
Inputs Di1 to Di8	
Input voltage	24VDC
Input resistance	min. 3kOhm
Terminals	
Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

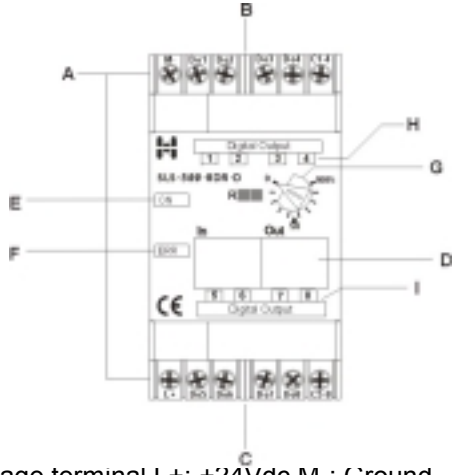
SLS-500-8D Digital module

☞ 8 digital outputs

☞ 1 external potentiometer

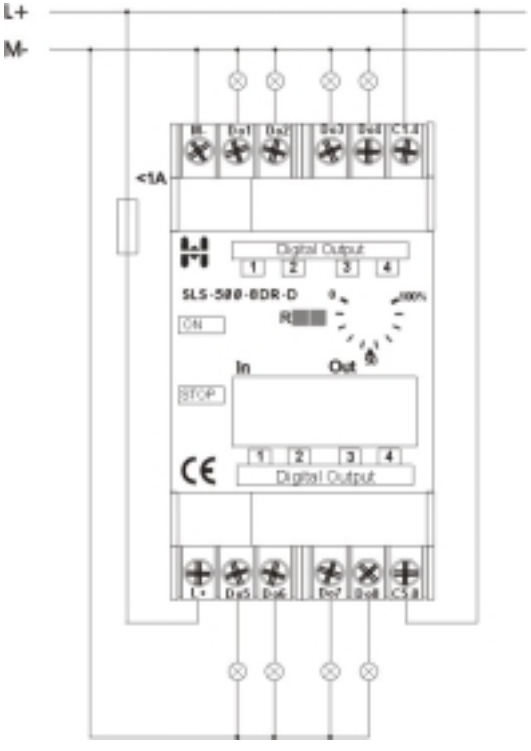
Description

The digital expansion module complements the outputs available with SLS-500. Up to 32 digital expansion modules can be connected with SLS-500.



A Supply voltage terminal L+: +24Vdc M-: Ground
B 4 digital outputs Do1 to Do4
Terminal C1-4 is the common connection for the digital outputs Do1 to Do4
C 4 digital outputs Do5 to Do8
Terminal C5-8 is the common connection for digital outputs Do5 to Do8
D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.
E LED-display: supply voltage is OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment
H LED-display for digital output status
I LED-display for digital output status

Example



Do1	Rx.DO1
Do2	Rx.DO2
Do3	Rx.DO3
Do4	Rx.DO4
Do5	Rx.DO5
Do6	Rx.DO6
Do7	Rx.DO7
Do8	Rx.DO8
Poti1	Rx.POTI1

Type selection

SLS-500-8D	.	-	.	Digital expansion module with 8DO
	R			Relay output (normally open)
	T			Transistor output (PNP)
			C	Local expansion module
			D	Remote expansion module

Technical information (SLS-500-8D)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to + 55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Outputs Do1 to Do8

Relay output	230VAC max. 5A
Ue/Ie AC-15	120V/1,5A 240V/1A
Ue/Ie DC-13	24V/1A
Life	$1x10^7$ mechanical, $1x10^5$ electrical
Transistor output (PNP)	24VDC/800mA Short circuit proof

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-FBR Room-control module

Digital room controller with thermostat, day/night, auto/manual & other controls.

- ☞ 4 FBR - inputs
- ☞ 4 digital outputs
- ☞ 1 external potentiometer

Description

With the FBR – expansion module you can connect up to 4 FBR – digital room thermostats. Up to 32 FBR – expansion modules can be connected with the SLS-500.

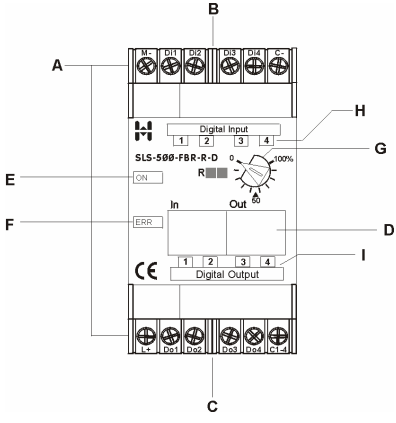
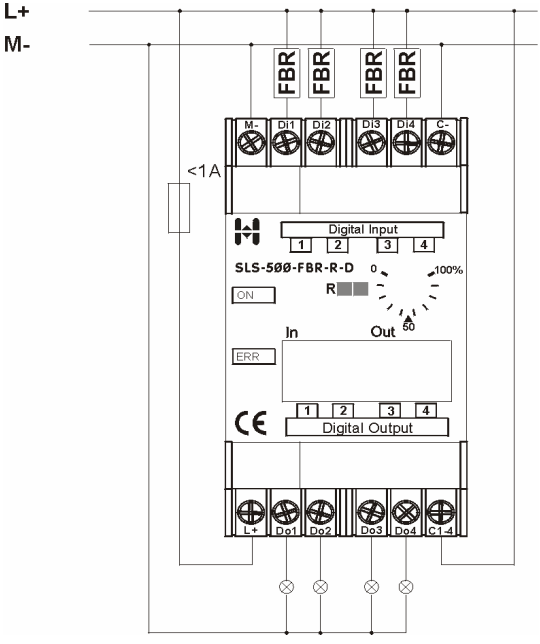


Fig: Front view of the FBR module

A Supply voltage L+: +24Vdc M-: Ground
B 4 FBR inputs Di1 to Di4; C- is the common ground
C 4 digital outputs Do1 to Do4
Terminal C1-4 is the common connection for digital outputs Do1 to Do4
D CAT5 socket for the connection of remote (D) modules with the bus. Local (C) modules are connected with recessed back-to-back connectors.
E LED-display: supply voltage is OK
F LED-display: module failure or program failure

G Potentiometer for manual adjustment
H LED-display for FBR input status
I LED-display for digital output status

Example



Module addresses

DI1	Rx.DI1
DI2	Rx.DI2
DI3	Rx.DI3
DI4	Rx.DI4
DAY1	Rx.DAY1
DAY2	Rx.DAY2
DAY3	Rx.DAY3
DAY4	Rx.DAY4
NIGHT1	Rx.NIGHT1
NIGHT2	Rx.NIGHT2
NIGHT3	Rx.NIGHT3
NIGHT4	Rx.NIGHT4
AUTO1	Rx.AUTO1
AUTO2	Rx.AUTO2
AUTO3	Rx.AUTO3
AUTO4	Rx.AUTO4
OPEN1	Rx.OPEN1
OPEN2	Rx.OPEN2
OPEN3	Rx.OPEN3
OPEN4	Rx.OPEN4
TEMP1	Rx.TEMP1
TEMP2	Rx.TEMP2
TEMP3	Rx.TEMP3
TEMP4	Rx.TEMP4
CORR1	Rx.CORR1
CORR2	Rx.CORR2
CORR3	Rx.CORR3
CORR4	Rx.CORR4
DO1	Rx.DO1
DO2	Rx.DO2
DO3	Rx.DO3
DO4	Rx.DO4
POTI1	Rx.POTI1

x represents the identification number of the module in the system

Type selection

SLS-500-FBR-	.	-	.	4 x room-control module for FBR
	R			Relay output (normally open)
			C	Local expansion module
			D	Remote expansion module

Technical information (SLS-500-FBR)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to + 55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing
Inputs Di1 to Di4	
Input resistance	min. 3kOhm
Outputs Do1 to Do4	
Relay output	230VAC max. 5A
Ue/Ie AC-15	120V/1,5A 240V/1A
Ue/Ie DC-13	24V/1A
Life	$1x10^7$ mechanical, $1x10^5$ electrical
Terminals	
Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-PTC Temperature module

- 4 analogue inputs (PTC)
- 4 digital outputs
- 1 external potentiometer

Description

With the PTC expansion module you are able to connect and analyse 4 PTC loops, each with up to 6 PTC´s in series according to DIN44081. You can connect up to 32 PTC – expansion modules with the SLS-500.

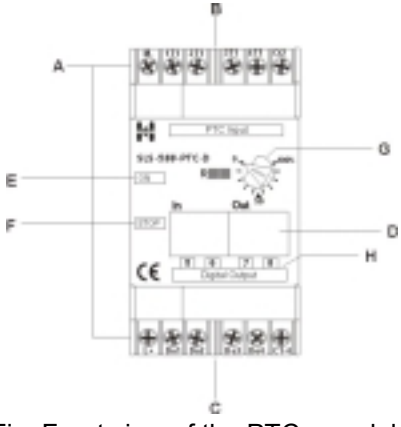
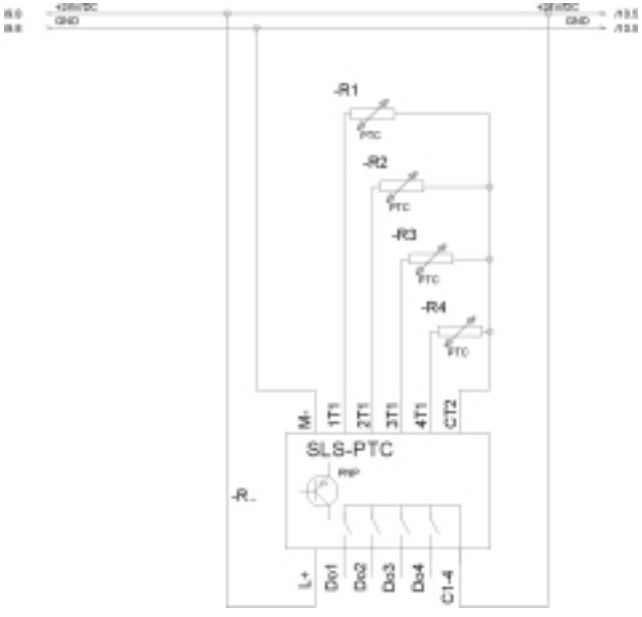


Fig: Front view of the PTC - module

A Supply voltage L+: +24Vdc M-: Ground
B 4 PTC - inputs 1T1, 2T1; 3T1, 4T1; CT2 is the common connection for the PTC sensors
C 4 digital outputs Do1 to Do4. Terminal C1-4 is the common connection for the digital outputs Do1 to Do4
D CAT5 socket to connect remote (D) modules with the bus. Local (C) modules are connected by recessed back-to-back connectors.
E LED-display: supply voltage OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment
I LED-display for digital output status

Example



Module addresses

PTC1	Rx.PTC1
PTC2	Rx.PTC2
PTC3	Rx.PTC3
PTC4	Rx.PTC4
ERR1	Rx.ERR1
ERR2	Rx.ERR2
ERR3	Rx.ERR3
ERR4	Rx.ERR4
DO1	Rx.DO1
DO2	Rx.DO2
DO3	Rx.DO3
DO4	Rx.DO4
POTI1	Rx.POTI1

x represents the identificatio
number of the module in the syste

Unused PTC inputs have to be linked out. In theory this would generate a short circuit alarm on each linked input. However as the addresses of these inputs are not used in your program the alarms will have no effect.

Type selection

SLS-500-PTC-	.	4 x temperature module for PTC-sensors
	C	Local expansion module
	D	Remote expansion module

Technical information (SLS-500-PTC)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs 1T1 to 1T4

Sensor	PTC Sensor to DIN44081
max. Overall resistor	500Ohm (6 Sensors)
Triggering threshold	3100Ohm +/-10%
Reset threshold	1650Ohm +/-10%
Short-circuit detection	0 – 20Ohm

Outputs

Transistor output (PNP)	24VDC/800mA short circuit proof

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-PT100 Temperature module

- ☞ 2 analogue inputs (PT100)
- ☞ 4 digital outputs
- ☞ 1 external potentiometer

Description

With the PT100 expansion module you are able to connect up to 2 PT100 sensors of 2-, 3- or 4 wire types. Up to 32 PT100 expansion modules can be connected with the SLS-500.

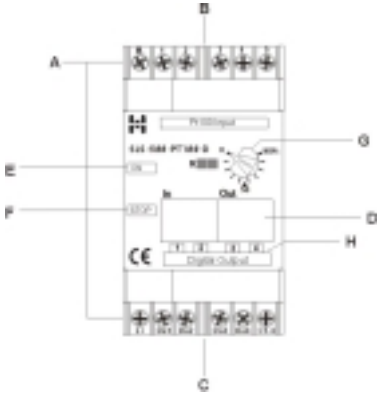
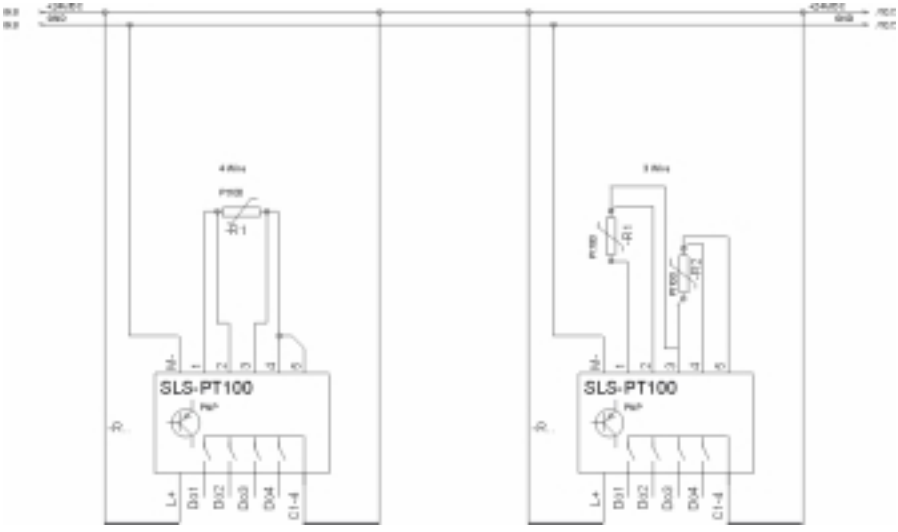


Fig: Front view of the PT100 module

A	Supply voltage L+: +24Vdc M-: Ground
B	5 inputs 1 to 5 for 2 PT100
C	4 digital outputs Do1 to Do4 Terminal C1-4 is the common connection for the digital outputs Do1 to Do4
D	CAT5 socket to connect remote (D) modules with the bus. Local (C) modules are connected by recessed back-to-back connectors
E	LED-display: supply voltage OK
F	LED-display: module failure or program failure
G	Potentiometer for manual adjustment
I	LED-display for digital output status

Example



Unused PT100 inputs have to be linked out.

Module addresses

TEMP1	Rx.TEMP1
TEMP2	Rx.TEMP2
DO1	Rx.DO1
DO2	Rx.DO2
DO3	Rx.DO3
DO4	Rx.DO4
POTI1	Rx.POTI1

x represents the identification number of the module in the system

Type selection

SLS-500-PT100-	.	PT100 expansion module
	C	Local expansion module
	D	Remote expansion module

Technical information (SLS-500-PT100)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

PT100 – inputs

Number	2
Measuring range	-50°C to +300°C
Accuracy	+/-0,1°C

Outputs Do1 to Do4

Transistor output (PNP)	24VDC max. 800mA short circuit proof

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-PT1000 Temperature module

- 4 analogue inputs (PT1000)
- 4 digital outputs
- 1 external potentiometer

Description

With the PT1000 expansion module you are able to connect up to 4 PT1000 sensors of 2 wire format. Up to 32 PT1000-expansion modules can be connected with the SLS-500.

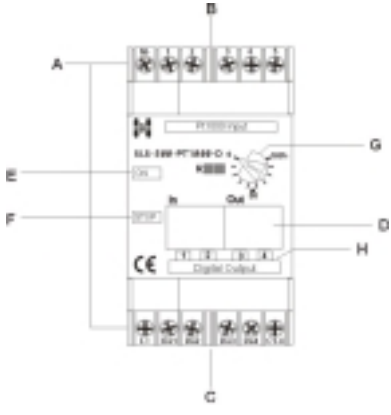
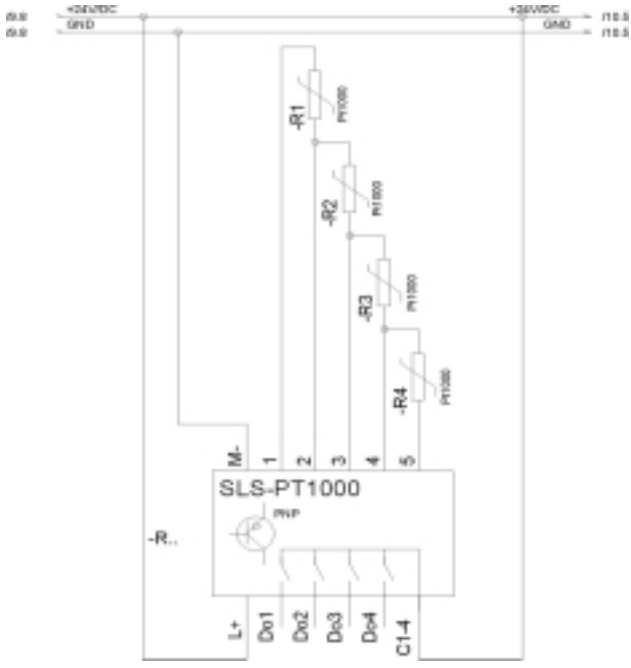


Fig: Front view of the PT1000 module

A	Supply voltage L+: +24Vdc M-: Ground
B	5 inputs, 1 to 5, for up to 4 x PT1000
C	4 digital outputs Do1 to Do4 Terminal C1-4 is the common connection for the digital outputs Do1 to Do4
D	CAT5 socket for the connection of remote (D) modules with the bus. Local (C) modules are connected with recessed back-to-back connectors
E	LED-display: supply voltage OK
F	LED-display: module failure or program failure
G	Potentiometer for manual adjustment
I	LED-display for digital output status

Example (SLS-500-PT1000)



Unused PT1000 inputs have to be linked out.

Module addresses	
TEMP1	Rx.TEMP1
TEMP2	Rx.TEMP2
TEMP3	Rx.TEMP3
TEMP4	Rx.TEMP4
DO1	Rx.DO1
DO2	Rx.DO2
DO3	Rx.DO3
DO4	Rx.DO4
POTI1	Rx.POTI1

x represents the identification number of the module in the system

Type selection

SLS-500-PT1000-	.	PT1000 expansion module
	C	Local expansion module
	D	Remote expansion module

Technical information (SLS-500-PT1000)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

PT1000 – inputs

Number	4
Measuring range	-50°C to +300°C
Accuracy	+/-0,1°C

Outputs Do1 to Do4

Transistor output (PNP)	24VDC max. 800mA short circuit proof

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-AU Analogue module

- 4 analogue inputs (voltage signal)
- 4 digital outputs
- 1 analogue outputs (voltage signal)
- 1 external potentiometer

Description

With the voltage input expansion module you are able to connect and analyse up to 4 voltage sources of 0 to 10V. Up to 32 voltage input – expansion modules can be connected with SLS-500.

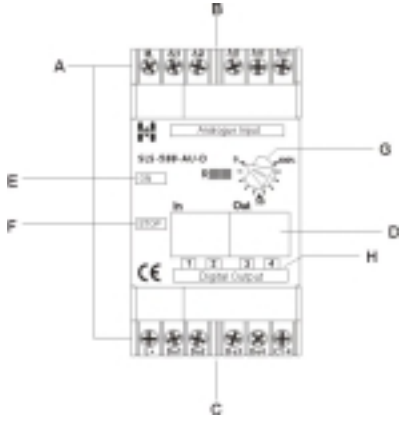
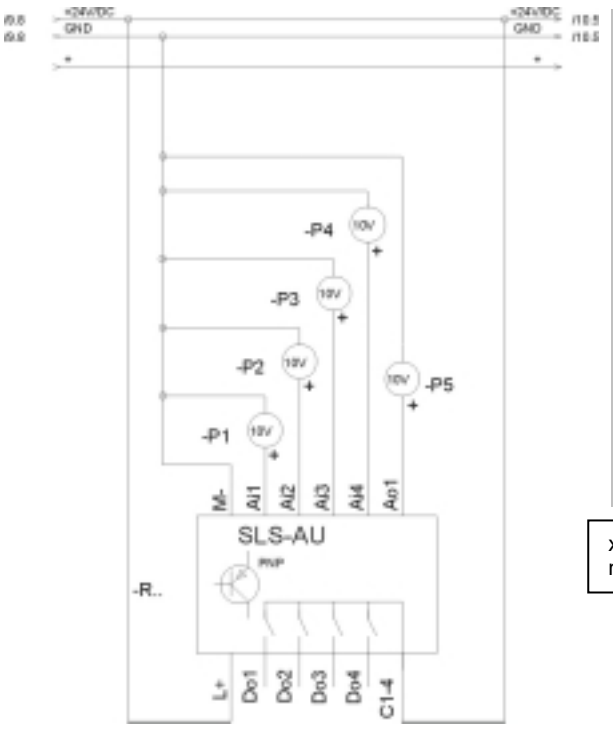


Fig: Front view of the AU - module

A Supply voltage L+: +24Vdc M-: Ground
B 4 voltage inputs Ai1 to Ai4; Output Ao1 is the voltage output from 0 to 10VDC
C 4 digital outputs Do1 to Do4. Terminal C1-4 is the common connection for the digital outputs Do1 to Do4
D CAT5 socket to connect remote(D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.
E LED-display: supply voltage OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment
I LED-display for digital output status

Example



Module addresses

AI1	Rx.AI1
AI2	Rx.AI2
AI3	Rx.AI3
AI4	Rx.AI4
AO1	Rx.AO1
DO1	Rx.DO1
DO2	Rx.DO2
DO3	Rx.DO3
DO4	Rx.DO4
POTI1	Rx.POTI1

x represents the identification number of the module in the system

Type selection

SLS-500-AU-	.	4 x analogue module for 0-10VDC inputs
	C	Local expansion module
	D	Remote expansion module

Technical information (SLS-500-AU)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Ai1 to Ai4

Input voltage	0 to 10VDC
Input resistance	50 kOhm
Resolution	10 Bit
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Output Ao1

Output voltage	0 to 10VDC
Output current	≤ 2mA
Resolution	12 Bits
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Outputs Do1 to Do4

Transistor output (PNP)	24VDC max. 800mA short circuit proof

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-AI Analogue module

- ☞ 4 analogue inputs (current signal)
- ☞ 4 digital outputs
- ☞ 1 analogue output (voltage signal)
- ☞ 1 external potentiometer

Description

With the current input expansion module you are able to connect and analyse up to 4 current sources of 0 to 20mA or 4 to 20mA. Up to 32 current input expansion modules can be connected with the SLS-500.

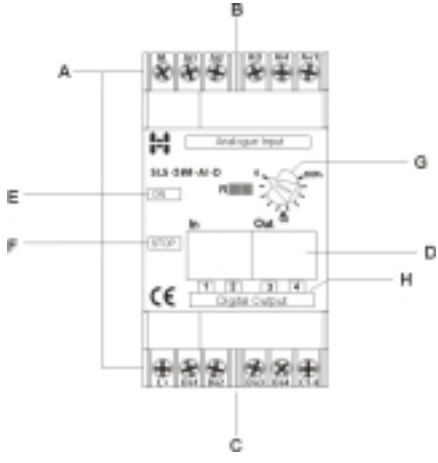
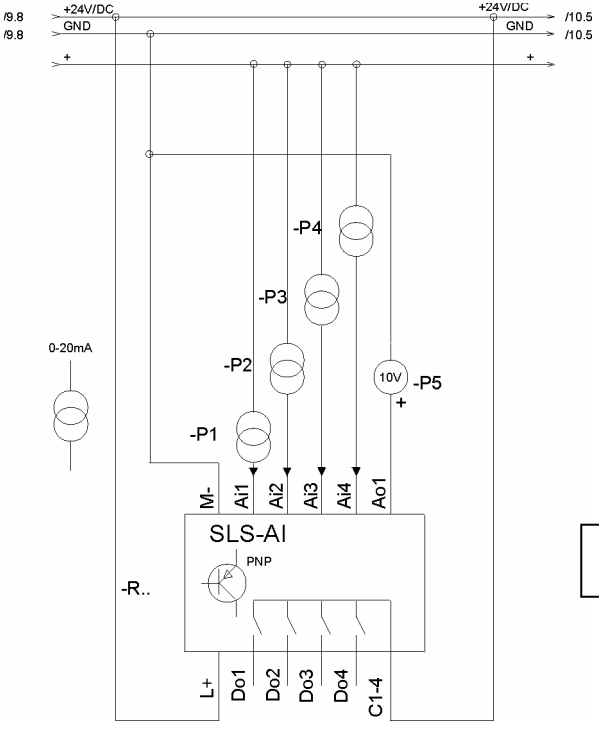


Fig: Front view of the AI module

A Supply voltage L+: +24Vdc M-: Ground
B 4 current inputs Ai1 to Ai4; Output Ao1 is a voltage output from 0 to 10VDC
C 4 digital outputs Do1 to Do4. Terminal C1-4 is the common connection for the digital outputs Do1 to Do4.
D CAT5 socket to connect remote(D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.
E LED-display: supply voltage is OK
F LED-display: module failure or program failure

G Potentiometer for manual adjustment
I LED-display for digital output status

Example



Module addresses

AI1	Rx.AI1
AI2	Rx.AI2
AI3	Rx.AI3
AI4	Rx.AI4
AO1	Rx.AO1
DO1	Rx.DO1
DO2	Rx.DO2
DO3	Rx.DO3
DO4	Rx.DO4
POTI1	Rx.POTI1

x represents the identification number of the module in the system

Type selection

SLS-500-AI-	.	4 x analogue module for 0-20mA inputs
	C	Local expansion module
	D	Remote expansion module

Technical information (SLS-500-AI)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Ai1 to Ai4

Input current	0 to 20mA
Input resistance	250Ohm
Resolution	10 Bit
Repeat accuracy	+/- 0,1%
Precision	+/- 0,5%

Output Ao1

Output voltage	0 to 10VDC
Current output	≤2mA
Resolution 12 Bits	
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Outputs Do1 to Do4

Transistor output (PNP)	24VDC max. 800mA short circuit proof

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-AU-AU Analogue module

- ☞ 4 analogue inputs (voltage signal)
- ☞ 4 analogue outputs (voltage signal)
- ☞ 1 external potentiometer

Description

Up to 4 voltage sources with 0 to 10V can be connected and analysed with the voltage in- output expansion module. Up to 4 voltage sources are available as outputs with 0 to 10V. Up to 32 voltage in- and output expansion modules can be connected to the SLS-500.

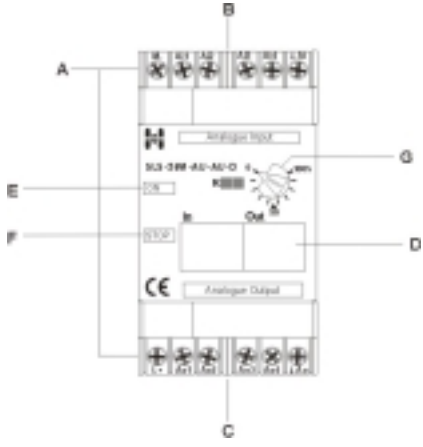
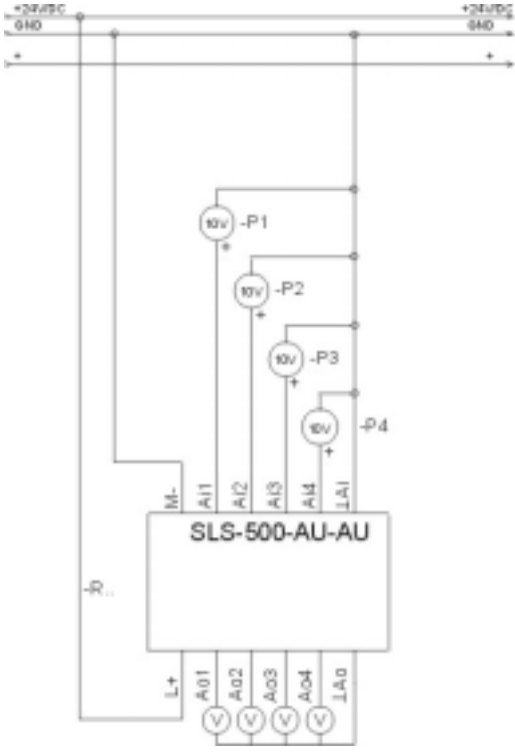


Fig: Front view of the AU-AU – module

A Supply voltage terminal L+: +24Vdc M-: Ground
B 4 voltage inputs Ai1 to Ai4. Terminal Ai is the common connection for the analogue inputs Ai1 to Ai4
C 4 voltage outputs Ao1 to Ao4. Terminal Ao is the common connection for the analogue outputs Ao1 to Ao4
D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.
E LED-display: supply voltage is OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment

Example



Ai1	Rx.AI1
Ai2	Rx.AI2
Ai3	Rx.AI3
Ai4	Rx.AI4
Ao1	Rx.AO1
Ao2	Rx.AO2
Ao3	Rx.AO3
Ao4	Rx.AO4
Poti1	Rx.POTI1

Type selection

SLS-500-AU-	.	-	.	Analogue module with 4 AI for 0-10VDC
	AU			Analogue module with 4 AO for 0-10VDC
			C	Local expansion module
			D	Remote expansion module

Technical information (SLS-500-AU-AU)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Ai1 to Ai4

Input voltage	0 to 10VDC
Input resistance	50 kOhm
Resolution	10 Bit
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Outputs Ao1 to Ao4

Output voltage	0 to 10VDC
Resolution 12 Bits	
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-AI-AI Analogue module

- ☞ 4 analogue inputs (power signal)
- ☞ 4 analogue outputs (power signal)
- ☞ 1 external potentiometer

Description

Up to 4 power sources with 0 to 20mA or 4 to 20mA can be connected and analysed with the power in- output expansion module. Up to 4 power sources are available as outputs with 0 to 20mA. Up to 32 current in- and output expansion modules can be connected to the SLS-500.

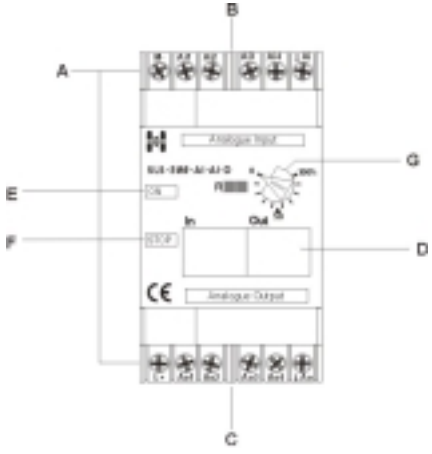


Fig: Front view of the AI-AI – module

A Supply voltage terminal L+: +24Vdc M-: Ground

B 4 power inputs Ai1 to Ai4
Terminal Ai is the common connection for the analogue inputs Ai1 to Ai4

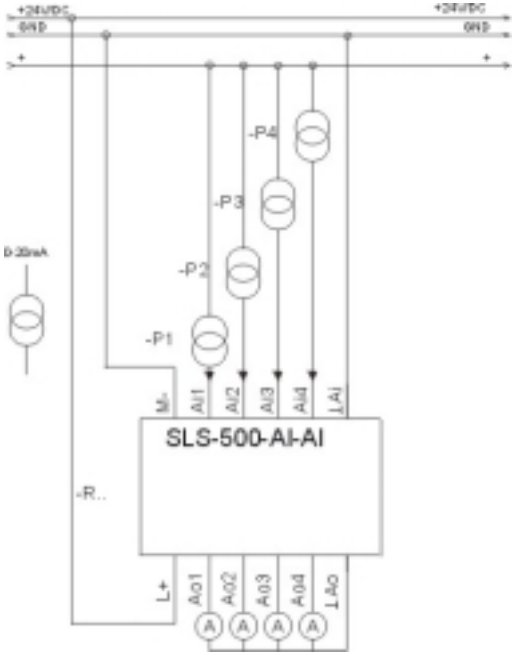
C 4 power outputs Ao1 to Ao4
Terminal Ao is the common connection for the analogue outputs Ao1 to Ao4

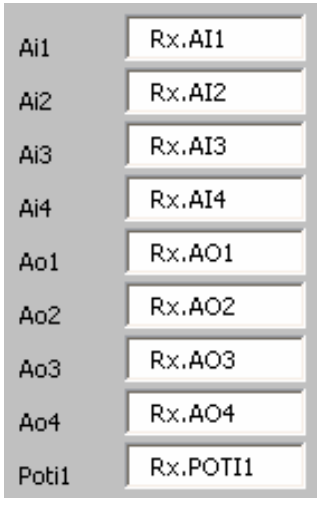
D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.

E LED-display: Supply voltage is OK

F LED-display: ‚module failure or program failure
G Potentiometer for manual adjustment

Example





Type selection

SLS-500-AI-	.	-	.	Analogue module with 4 AI for 0-20mA
	AI			Analogue module with 4 AO for 0-20mA
			C	Local expansion module
			D	Remote expansion module

Technical information (SLS-500-AI-AI)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Ai1 to Ai4

Input current	0 to 20mA
Input resistance	250 Ohm
Resolution 12 Bits	
Repeat accuracy	+/- 0,1%
Precision	+/- 0,5%

Outputs Ao1 to Ao4

Output current	0 to 20mA
Resolution	10 Bit
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-AI-AU Analogue module

- ☞ 4 analogue inputs (power signal)
- ☞ 4 analogue outputs (power signal)
- ☞ 1 external potentiometer

Description

Up to 4 power sources with 0 to 20mA or 4 to 20mA can be connected and analysed with the power input voltage output expansion module. Up to 4 voltage sources are available as outputs with 0 to 10V. Up to 32 current input and voltage output expansion modules can be connected to the SLS-500.

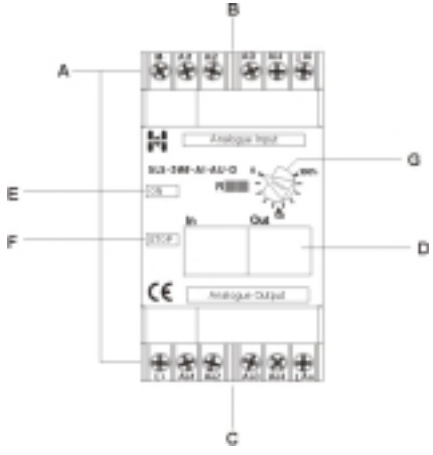


Fig: Front view of the AI-AU – module

A Supply voltage terminal L+: +24Vdc M-: Ground

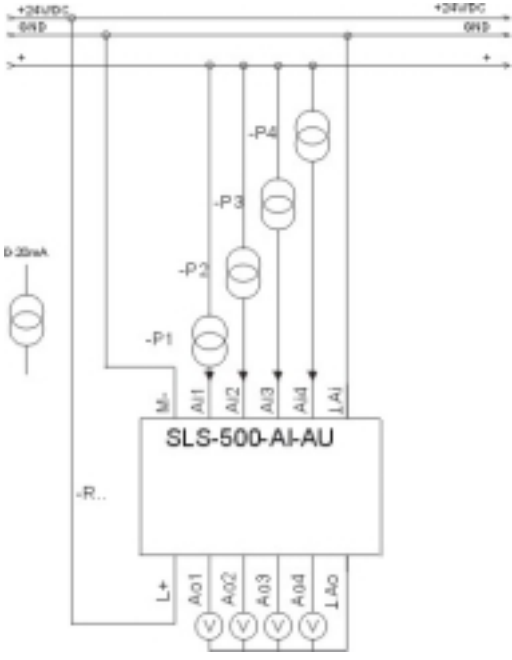
B 4 power inputs Ai1 to Ai4
Terminal Ai is the common connection for the analogue inputs Ai1 to Ai4

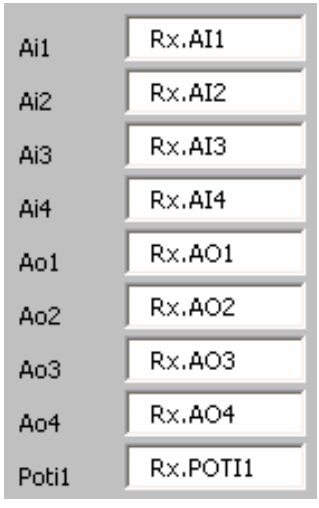
C 4 voltage outputs Ao1 to Ao4
Terminal Ao is the common connection for the analogue outputs Ao1 to Ao4

D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.

E LED-display: supply voltage is OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment

Example





Type selection

SLS-500-AI-		-	.	Analogue module with 4 AI for 0-20mA
	AU			Analogue module with 4 AO for 0-10VDC
			C	Local expansion module
			D	Remote expansion module

Technical information (SLS-500-AI-AU)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Ai1 to Ai4

Input current	0 to 20mA
Input resistance	250 Ohm
Resolution	10 Bit
Repeat accuracy	+/- 0,1%
Precision	+/- 0,5%

Outputs Ao1 to Ao4

Output voltage	0 to 10VDC
Resolution 12 Bits	
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-AU-AI Analogue module

- ☞ 4 analogue inputs (voltage signal)
- ☞ 4 analogue outputs (power signal)
- ☞ 1 external potentiometer

Description

Up to 4 voltage sources with 0 to 10V can be connected and analysed with the voltage input power output expansion module. Up to 4 power sources are available as outputs with 0 to 20mA. Up to 32 voltage input and current output expansion modules can be connected to the SLS-500.

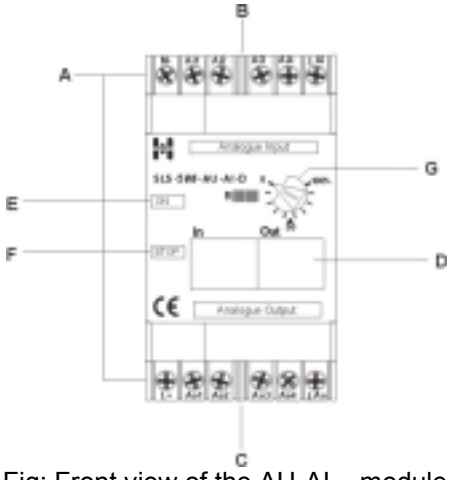


Fig: Front view of the AU-AI – module

A Supply voltage terminal L+: +24Vdc M-: Ground

B 4 voltage inputs Ai1 to Ai4
Terminal Ai is the common connection for the analogue inputs Ai1 to Ai4

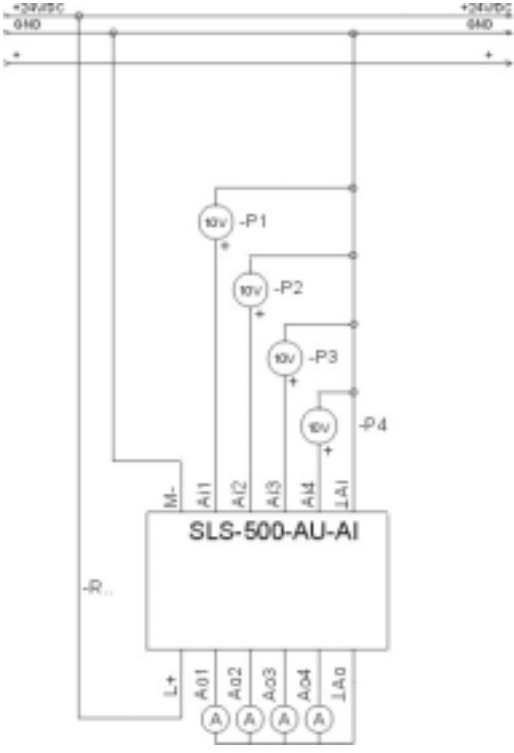
C 4 power outputs Ao1 to Ao4
Terminal Ao is the common connection for the analogue outputs Ao1 to Ao4

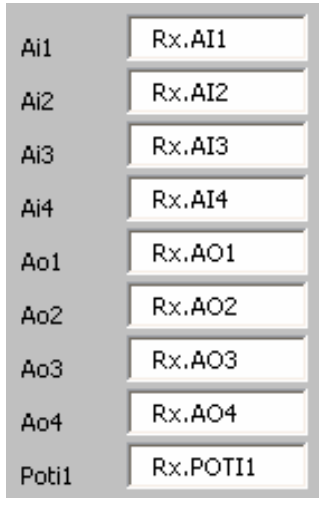
D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.

E LED-display: supply voltage is OK

F LED-display: module failure or program failure
G Potentiometer for manual adjustment

Example





Type selection

SLS-500-AU-	.	-	.	Analogue module with 4 AI for 0-10VDC
	AI			Analogue module with 4 AO for 0-20mA
			C	Local expansion module
			D	Remote expansion module

Technical information (SLS-500-AU-AI)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Ai1 to Ai4

Input voltage	0 to 10VDC
Input resistance	50 kOhm
Resolution	10 Bit
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Outputs Ao1 to Ao4

Output current	0 to 20mA
Resolution	12 Bits
Repeat accuracy	+/-0,1%
Precision	+/-0,5%

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-SIO Interface module

☞ 2 RS232/RS485 interfaces

Description

Up to 2 serial interfaces can be connected and analysed with the serial in-output expansion module. 2 RS232 or 2 RS485 interfaces are optionally available. Up to 32 serial expansion modules can be connected to the SLS-500.

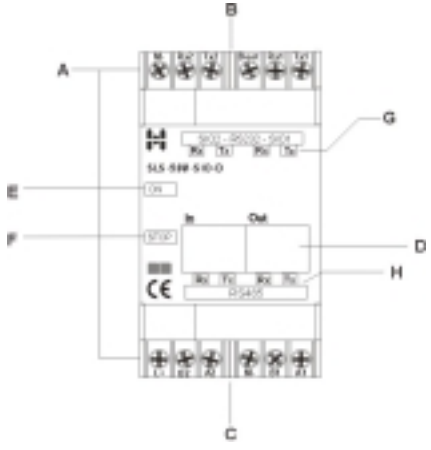
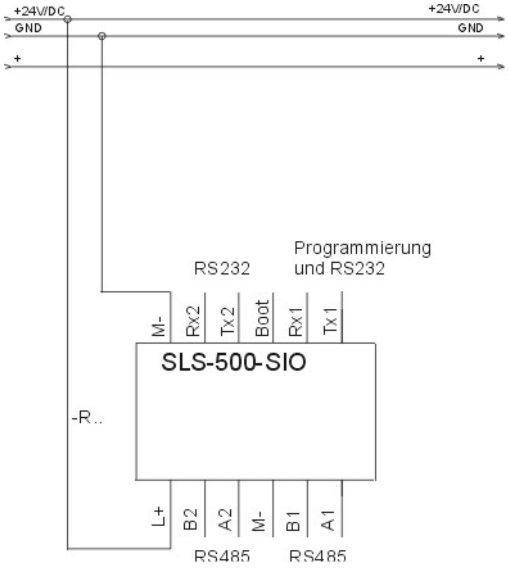


Fig: Front view of the SIO – module

A Supply voltage terminal L+: +24Vdc M-: Ground
B 2 RS232 interfaces
Terminal M- is the common ground for the serial interfaces
C 2 RS485 interfaces
Terminal M- is the common ground for the serial interfaces
D CAT5 socket to connect remote(D) modules to the bus.
E LED-display: Supply voltage is OK
F LED-display: Module failure or program failure
G LED-display for RS232 status
H LED-display for RS485 status

Example



Poti1	Rx.POTI1
RB1	Rx.RB1
RB2	Rx.RB2
RB3	Rx.RB3
RB4	Rx.RB4
WB1	Rx.WB1
WB2	Rx.WB2
WB3	Rx.WB3
WB4	Rx.WB4
RA1	Rx.RA1
RA2	Rx.RA2
RA3	Rx.RA3
RA4	Rx.RA4
WA1	Rx.WA1
WA2	Rx.WA2
WA3	Rx.WA3
WA4	Rx.WA4
RT1	Rx.RT1
WT1	Rx.WT1

RB1 to **RB16** are digital inputs

WB1 to **B16** are digital outputs

RA1 to **RA4** are analogue inputs

WA1 to **WA4** are analogue outputs

RT1 is a text input

WT1 is a text output

Type selection

SLS-500-SIO-	.	Interface module for 2 RS232/RS485
	D	Remote expansion module

Technical information (SLS-500-SIO)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing
Interface 1 RS232/RS485	
Baud rate	1200 to 38400
Mode	8 data bits 1 stop bit no parity
Interface 2 RS232/RS485	
Baud rate	1200 to 38400
Mode	7 or 8 date bits 1 or 2 stop bits even, odd or no parity
Terminals	
Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-ENC Encoder module

- ☞ 2 encoder inputs up to 500 kHz
- ☞ 4 digital outputs max. 500 kHz
- ☞ 1 external potentiometer

Description

The incremental encoder expansion module complements the encoder inputs available with the SLS-500. Up to 32 incremental encoder expansion modules can be connected with SLS-500.

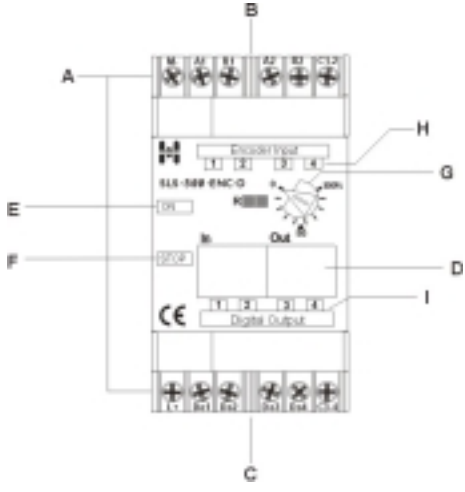


Fig: Front view of the encoder module

A Supply voltage terminal L+: +24Vdc M-: Ground

B 2 encoder inputs A1, B1 to A2, B2; C1-2 is the common connection for the digital outputs Do1 to Do2

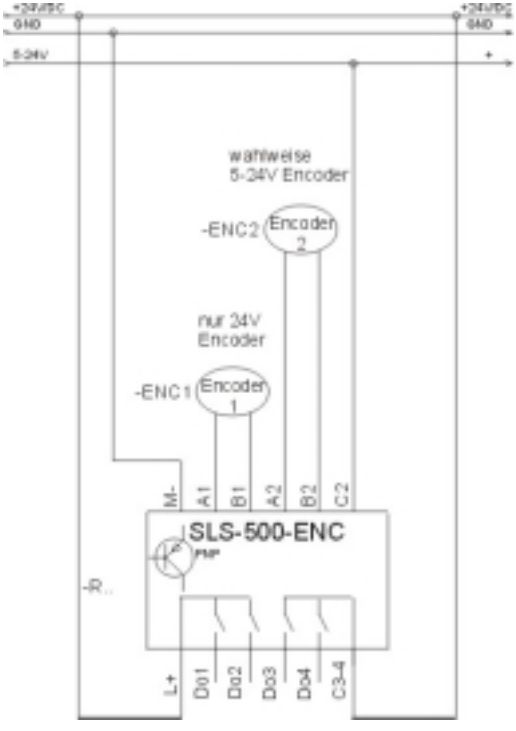
C 4 digital outputs Do1 to Do4. Terminal L+ is the common connection for the digital outputs Do1 to Do2.
Terminal C3-4 is the common connection for the digital outputs Do3 to Do4

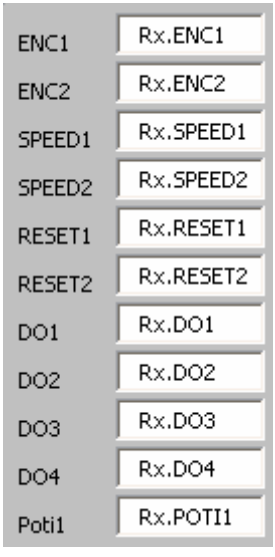
D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.

.

E LED-display: supply voltage is OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment
H LED-display for encoder input status
I LED-display for digital output status

Example





Type selection

SLS-500-ENC-	.	Incremental encoder module (2 encoder inputs)
	C	Local expansion module
	D	Remote expansion module

Technical information (SLS-500-ENC)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to + 55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs A1, B1 to A2, B2

Encoder input	up to 500 kHz
Register width	24 Bit

Outputs Do1 to Do4

Transistor outputs (PNP)	24VDC/100mA Short circuit proof max. 500 kHz

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-DIV Pre-scale function module for encoder

- 1 encoder input up to 500k Hz
- 6 digital outputs
- 1 external potentiometer

Description

The pre-scale function expansion module complements the encoder inputs and digital outputs with the SLS-500. Up to 32 pre-scale function expansion modules can be connected with SLS-500.

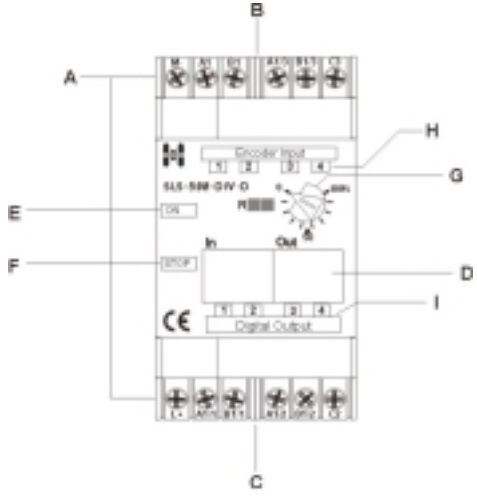


Fig: Front view of the pre-scale function module

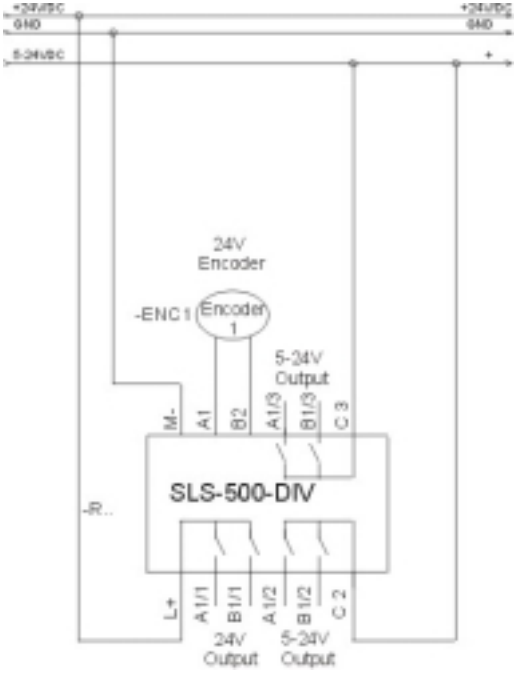
A Supply voltage terminal L+: +24Vdc M-: Ground

B 1 encoder input A1, B1 and 2 pre-scale function outputs A1/3, B1/3; C3 is the common connection for the digital outputs A1/3 and B1/3

C 4 pre-scale function outputs A1/1 to B1/1 and A1/2 to B1/2
Terminal L+ is the common connection for the digital outputs A1/1 and B1/1
Terminal C2 is the common connection for the digital outputs A1/2 and B1/2

D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.
E LED-display: supply voltage is OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment
H LED-display for encoder input and pre-scale function output status
I LED-display for pre-scale function output status

Example



Type selection

SLS-500-DIV-	.	Encoder pre-scale function module
	C	Local expansion module
	D	Remote expansion module

Technical information (SLS-500-DIV)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to + 55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs A1, B1

Encoder input	up to 500 kHz
Register width	24 Bit

Outputs A1/1 to B1/1

Transistor output (PNP)	24VDC/100mA Short circuit proof max. 500 kHz

Outputs A1/2 to B1/3

Transistor output (PNP)	5VDC to 24VDC/100mA Short circuit proof max. 500 kHz

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-HSC High speed counter module

- 4 counter inputs up to 500 kHz
- 4 digital outputs max. 8 kHz
- 1 external potentiometer

Description

The high speed counter – expansion module complements the high speed counter inputs of the SLS-500-CAN. Up to 32 HS counter expansion modules can be connected with SLS-500.

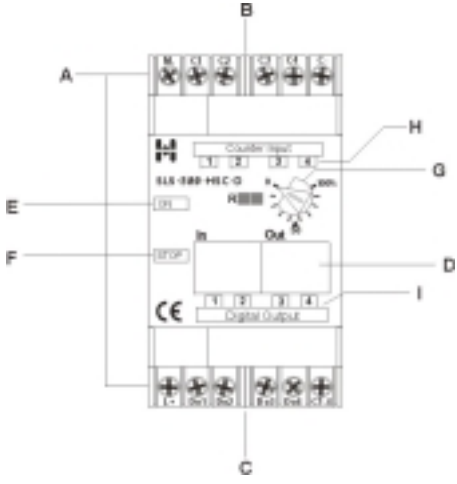
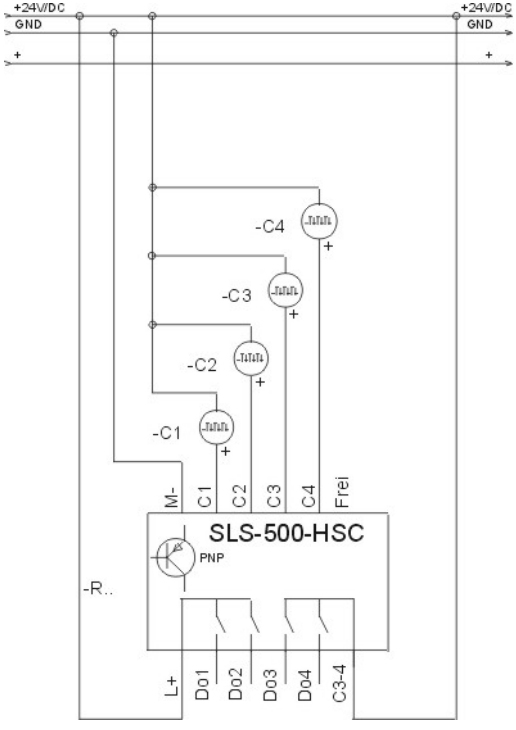


Fig: Front view of the counter module

A Supply voltage terminal L+: +24Vdc M-: Ground
B 4 counter inputs C1 to C4; C- is the common ground
C 4 digital outputs Do1 to Do4. Terminal L+ is the common connection for the digital outputs Do1 to Do2.
Terminal C3-4 is the common connection for the digital outputs Do3 to Do4
D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.
E LED-display: supply voltage is OK
F LED-display: module failure or program failure

G Potentiometer for manual adjustment
H LED-display for counter input status
I LED-display for digital output status

Example



COUNT1	Rx.COUNT1
COUNT2	Rx.COUNT2
COUNT3	Rx.COUNT3
COUNT4	Rx.COUNT4
SPEED1	Rx.SPEED1
SPEED2	Rx.SPEED2
SPEED3	Rx.SPEED3
SPEED4	Rx.SPEED4
RESET1	Rx.RESET1
RESET2	Rx.RESET2
RESET3	Rx.RESET3
RESET4	Rx.RESET4
DO1	Rx.DO1
DO2	Rx.DO2
DO3	Rx.DO3
DO4	Rx.DO4
Poti1	Rx.POTI1

Type selection

SLS-500-HSC-	.	Counter module (4 counter inputs)
	C	Local expansion module
	D	Remote expansion module

Technical information (SLS-500-HSC)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operation temperature	-15°C to + 55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs C1 to C4

Counter input	up to 500 kHz
Register width	24 Bit

Outputs Do1 to Do4

Transistor output (PNP)	24VDC/100mA Short circuit proof max. 8 kHz

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-MA analogue module

☞ 4 measure inputs (voltage or power signal)

☞ 1 external potentiometer

Description

Up to 4 voltage or power sources with 0 to 10V or 0 to 20mA can be connected and analysed with the measure input expansion module. Up to 32 measure input expansion modules can be connected to the SLS-500.

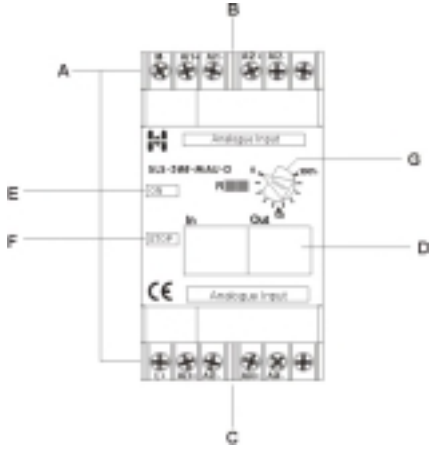
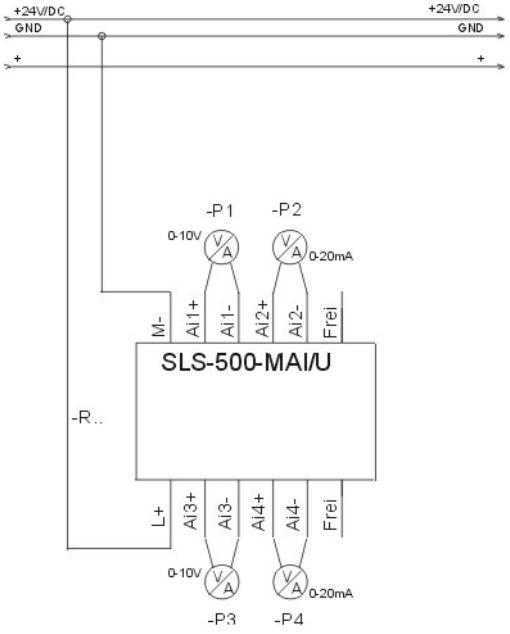
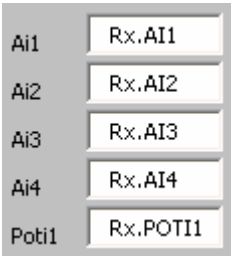


Fig: Front view of the measure module

A Supply voltage terminal L+: +24Vdc M-: Ground
B 2 measure inputs Ai1 to Ai2
C 2 measure inputs Ai3 to Ai4
D CAT5 socket to connect remote (D) modules to the bus. Local (C) modules are connected by recessed back-to-back connectors.
E LED-display: supply voltage is OK
F LED-display: module failure or program failure
G Potentiometer for manual adjustment

Example





Type selection

SLS-500-MA	.	-	.	Analogue module (4 analogue inputs)
	U			Voltage measure inputs 0-10VDC
	I			Power measure inputs 0-20mA
			C	Local expansion module
			D	Remote expansion module

Technical information (SLS-500-MA)

Power supply	24VDC +/-10%
Power consumption	0,5W
Operation temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Ai1 to Ai4

Input voltage	0 to 10VDC
Resolution:	16 Bit/14 Bit actual
Repeat accuracy:	+/-0,1%
Precision:	+/-0,5%
Input current	0 to 20mA
Resolution	16 Bit/14 Bit actual
Repeat accuracy:	+/- 0,1%
Precision:	+/- 0,5%

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-SMS interface module for GSM modem

☞ 1 GSM-Modem (RS232)

☞ 1 programming interface (RS232)

Description

One serial GSM modem can be connected and analysed by connecting it to the serial communication expansion module. One RS232 interface for programming is available. Up to 32 serial communication expansion modules can be connected to the SLS-500.

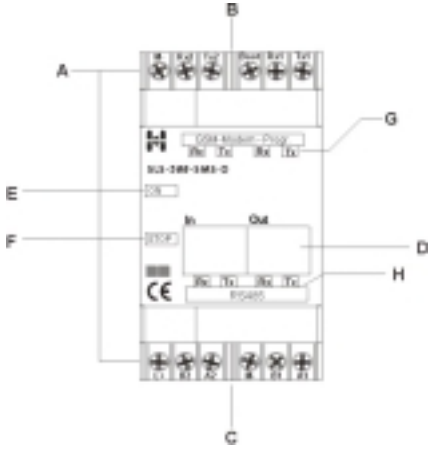
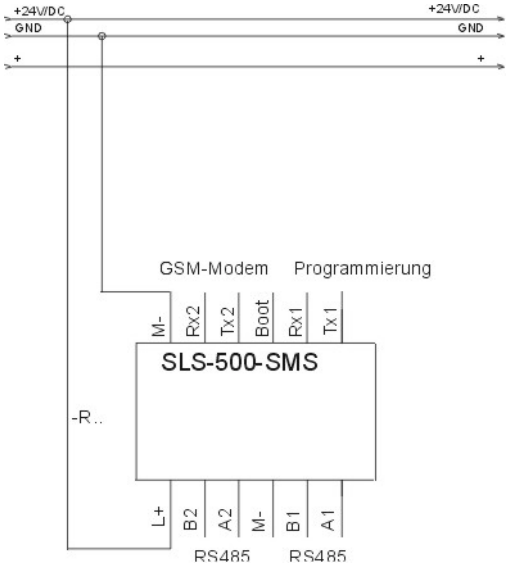


Fig: Front view of the SMS module

A	Supply voltage terminal L+: +24Vdc M-: Ground
B	2 RS232 interface Interface 1 is for programming the module Interface 2 is for the connection of the GSM modem Terminal M- is the common ground for the serial interfaces
C	2 RS485 interfaces Terminal M- is the common ground for the serial interfaces
D	CAT5 socket to connect remote (D) modules to the bus.
E	LED-display: supply voltage is OK
F	LED-display: module failure or program failure
G	LED-display for RS232 status
H	LED-display for RS485 status

Example



Poti1	Rx.POTI1
RB1	Rx.RB1
RB2	Rx.RB2
RB3	Rx.RB3
RB4	Rx.RB4
WB1	Rx.WB1
WB2	Rx.WB2
WB3	Rx.WB3
WB4	Rx.WB4
RA1	Rx.RA1
RA2	Rx.RA2
RA3	Rx.RA3
RA4	Rx.RA4
WA1	Rx.WA1
WA2	Rx.WA2
WA3	Rx.WA3
WA4	Rx.WA4
RT1	Rx.RT1
WT1	Rx.WT1

RB1 to **RB16** are digital inputs

WB1 to **WB16** are digital outputs

RA1 to **RA4** are analogue inputs

WA1 to **WA4** are analogue outputs

RT1 is a text input

WT1 is a text output

Type selection

SLS-500-SMS-	.	Communication module for GSM modem
	D	Remote expansion module

Technical information (SLS-500-SMS)

Supply voltage	24VDC +/-10%
Power consumption	0,5W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Interface 1 RS232 (PC)

Baud rate	1200 to 38400
Mode	8 Data bits 1 Stop bit no parity

Interface 2 RS232 (GSM-Modem)

Baud rate	1200 to 38400 (automatic)
Mode	8 Data bits 1 Stop bit no parity

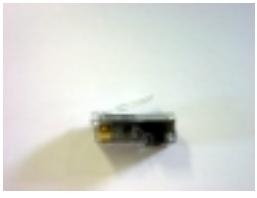
Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-500-BUS Bus terminator

Description

The bus terminator has to be installed on the last module in a remote or partly remote system and a local system physically longer than 1m.



Type selection

SLS-500-BUS	Bus terminator (RJ45 8/8)

SLS-500-CAN-BUS CAN terminator

Description

The bus terminator has to be installed on the last base module into CAN-OUT.

Type selection

SLS-500-CAN-BUS	CAN terminator (RJ45 8/8)

SLS-510 Master controller

- 8 digital inputs
- 4 digital outputs
- 2 external potentiometers
- 1 serial port for programming

Description

The master controller is a local controller and it can be run only stand-alone using its 8 inputs and 4 outputs.

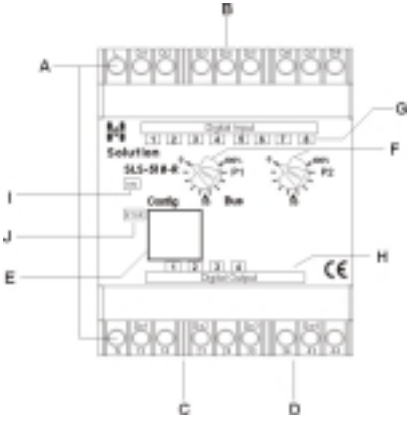


Fig: Front view of the master controller

A Supply voltage terminals L and N: 100 to 250VAC

B 8 digital inputs Di1 to Di8

C Terminal 13-14 digital output Do1 NO
Terminal 23-24 digital output Do2 NO

D Terminal 33-34 digital output Do3 NO
Terminal 43-44 digital output Do4 NO

E Modular socket to connect programming cable (SLS-500-PC-RS232) or other periphery devices

F 2 potentiometers for manual adjustment

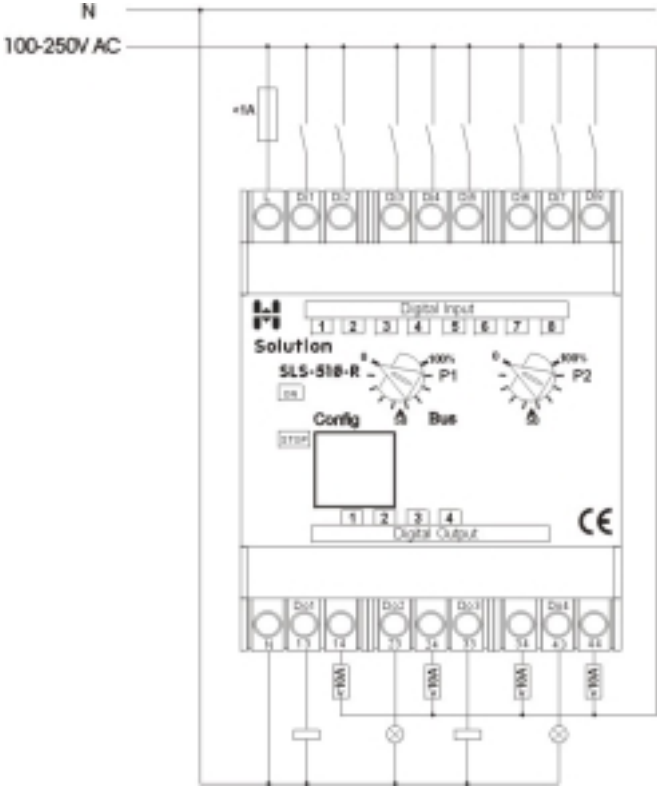
G LED-display for digital input status

H LED-display for digital output status

I LED-display: supply voltage is OK

J LED-display: module failure or program failure

Example



Di1	L1.DI1
Di2	L1.DI2
Di3	L1.DI3
Di4	L1.DI4
Di5	L1.DI5
Di6	L1.DI6
Di7	L1.DI7
Di8	L1.DI8
Do1	L1.DO1
Do2	L1.DO2
Do3	L1.DO3
Do4	L1.DO4
Poti1	L1.POTI1
Poti2	L1.POTI2

Type selection

SLS-510-R	Master controller

Technical information (SLS-510)

Supply voltage	100 to 250VAC +/- 10%
Power consumption	1W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Di1 to Di8

Input voltage:	100 to 250VAC

Outputs Do1 to Do4

Relay output	250VAC max. 10A
Ue/Ie AC-15	120V/5A 240V/4A
Ue/Ie DC-13	24V/4A
Life	$1x10^7$ mechanical, $1x10^5$ electrical

Data memory without power supply

Program	internal flash memory
Real-time-clock-memory	100000 to 100002 min. 30 days
Time/Date	min. 30 days

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

SLS-520 Master controller

- ☞ 8 digital inputs
- ☞ 6 digital outputs
- ☞ 2 external potentiometers
- ☞ 1 serial port for programming

Description

The master controller is a local controller and it can be run only stand-alone using its 8 inputs and 4 outputs.

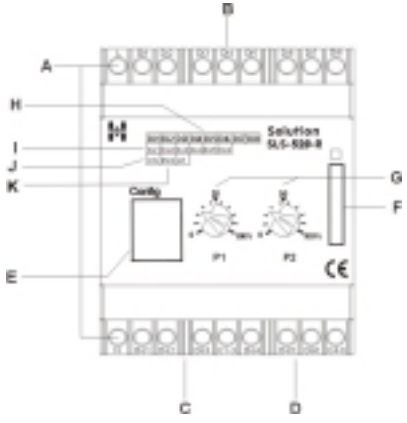


Fig: Front view of the master controller

A Supply voltage terminal L und N: 20 to 250V AC/DC

B 8 digital inputs Di1 to Di8

C 3 digital outputs Do1 to Do3

Terminal C1-3 is the common connection for digital outputs Do1 to Do3

D 3 digital outputs Do4 to Do6
Terminal C4-6 is the common connection for digital outputs Do4 to Do6

E Modular socket to connect programming cable (SLS-500-PC-RS232) or other periphery devices

F Slot to insert memory card (SLS-500-SIM)

G 2 potentiometers for manual adjustment

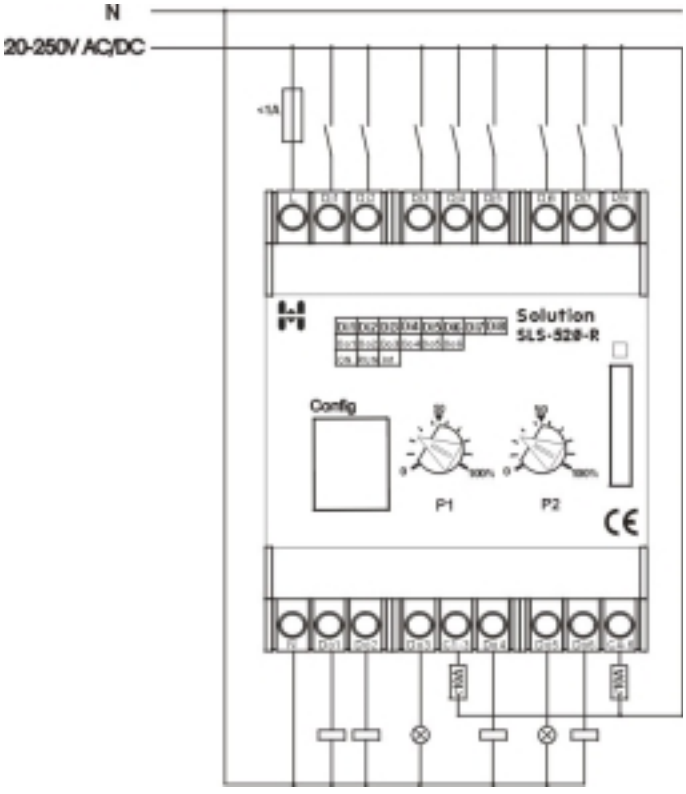
H LED-display for digital input status

I LED-display for digital output status

J LED-display: supply voltage is OK

K LED-display: module and program OK

Example



Type selection

SLS-520-R	Master controller

Technical information (SLS-520)

Supply voltage	20 to 250V AC/DC +/- 10%
Power consumption	1W
Operating temperature	-15°C to +55°C 50% to 90% rH non condensing
Storage temperature	-25°C to +70°C non condensing

Inputs Di1 to Di8

Input voltage:	20 to 250V AC/DC

Outputs Do1 to Do6

Relay output	230VAC max. 5A
Ue/Ie AC-15	120V/1,5A 240V/1A
Ue/Ie DC-13	24V/1A
Life	$1x10^7$ mechanical, $1x10^5$ electrical

Data memory without power supply

Program	internal flash memory
SIM-memory addresses	0 to 4095 I²C EEPROM
Real-time-clock-memory	100000 to 100002 min. 30 days
Time/Date	min. 30 days

Terminals

Wiring	max. 2 x 1,5mm²
Screw-type	Pozidrive 1
Tightening torque	1,0Nm

Installation

This chapter deals with the dimensions and the correct mounting of the SLS-500 and its expansion modules.

Module size SLS-500, SLS-510, SLS-520

The SLS-500 – base modules are 67,5mm wide, 85mm high and 70mm deep and suitable for mounting on a 35mm rail according to DIN/EN 50022.

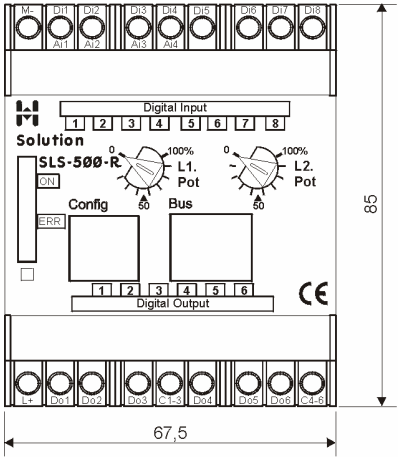


Fig: Front view of the SLS-500 with dimensions

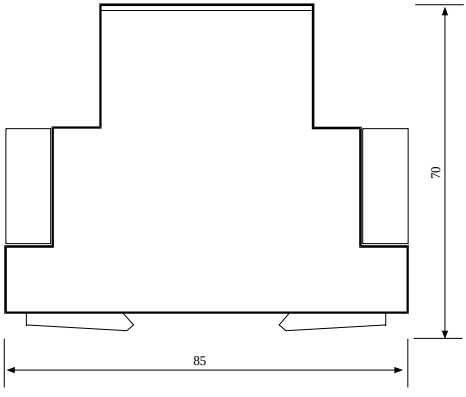


Fig: Side view of the SLS-500

Module size SLS-500 - expansion modules

The SLS-500 – expansion modules are 45mm wide, 85mm high, 70mm deep and suitable for mounting on a 35mm rail according to DIN/EN 50022.

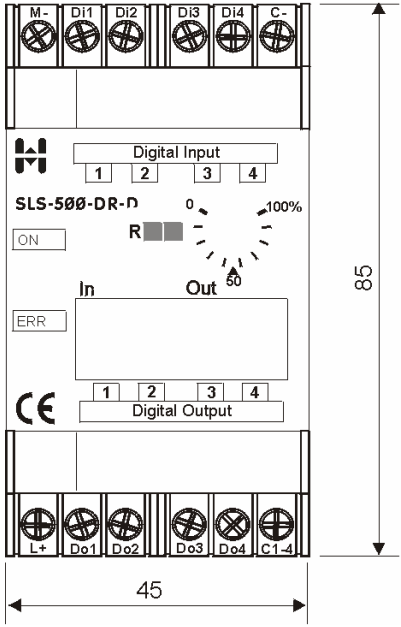


Fig: Front view of the SLS-500-DR module with dimensions

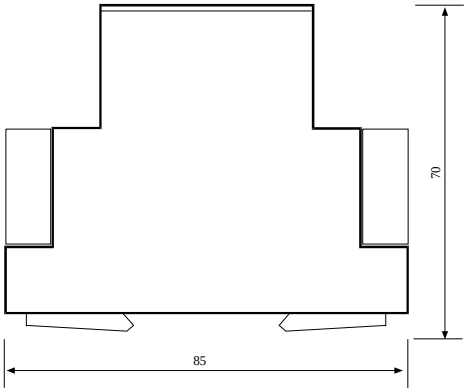


Fig: Side view of the SLS-500 – expansion module

DIN rail mounting

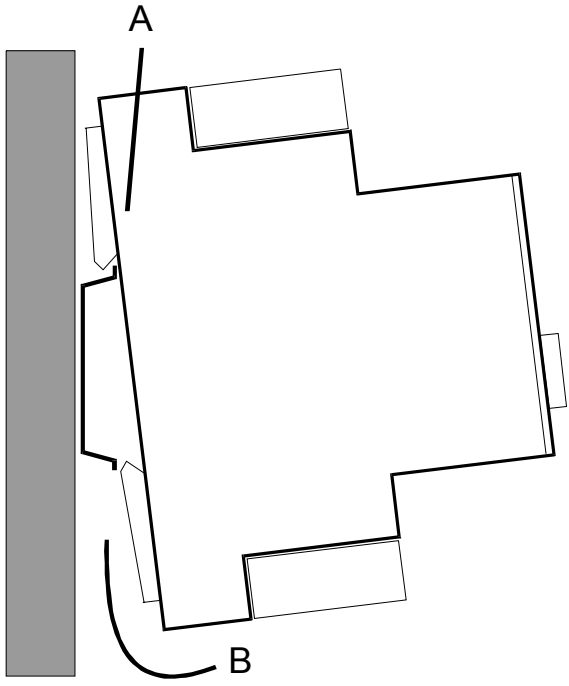


Fig: mounting of the SLS-500 and the SLS-500- expansion modules on the 35mm-rail

When mounting the SLS-500 and its expansion modules on DIN-rail attach the module on the top first (A) and then fix it by levering open the spring clip with a screw driver and easing back onto the rail (B)..

Advice:
Use a suitable Pozidrive screwdriver for connecting the terminals and fasten the terminals with max. 1.0 Nm tightening torque.
Type of screw: Pozidrive No 1.

Notes:

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