



Operating instructions

Series S302

Numeric large size displays
with Modbus-RTU interface

1 Contact

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2 Legal note

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3 Safety precautions



Bus errors may result in personal injury or material damage. Therefore it must be noted that the activation of the menu may cause a bus error.

Important information

Read these operating instructions before starting the unit. They provide you with important information on the use, safety and maintenance of the units. This helps you to protect yourself and prevent damage to the unit.



Information intended to help you to avoid death, bodily harm or considerable damage to property is highlighted by the warning triangle shown here; it is imperative that this information be properly heeded.

The operating instructions are intended for trained professional electricians familiar with the safety standards of electrical technology and industrial electronics.

Store these operating instructions in an appropriate place.

The manufacturer is not liable if the information in these operating instructions is not complied with.

Safety



Components inside the units are energized with electricity during operation. For this reason, mounting and maintenance work may only be performed by professionally-trained personnel while observing the corresponding safety regulations.

The repair and replacement of components and modules may only be carried out by the manufacturer for safety reasons and due to the required compliance with the documented unit properties.

The units do not have a power switch. They are operative as soon as the operating voltage is applied.

Intended use

The units are intended for use in industrial environments. They may only be operated within the limit values stipulated by the technical data.

When configuring, installing, maintaining and testing the units, the safety and accident-prevention regulations relevant to use in each individual case must be complied with.

Trouble-free, safe operation of the units requires proper transport, storage, installation, mounting and careful operation and maintenance of the units.

Mounting and installation

The attachment options for the units were conceived in such a way as to ensure safe, reliable mounting.



The user must ensure that the attachment hardware, the unit carrier and the anchoring at the unit carrier are sufficient to securely support the unit under the given surrounding conditions.

The units are to be mounted in such a way that they can be opened up while mounted. Sufficient space for the cables must be available in the unit near the cable entries.

Sufficient space is to be kept clear around the units to ensure air circulation and to prevent the build-up of heat resulting from use. The relevant information must be heeded in the case of units ventilated by other means.



When the housing fasteners are opened, the front frame of the housing hinges out upward or downward (depending on the unit version) automatically.

Grounding

All devices are equipped with a metal housing. They comply with safety class I and require a protective earth connection. The connecting cable for the operating voltage must contain a protective earth wire of a sufficient cross section (DIN VDE 0106 part 1, DIN VDE 0411 part 1).

EMC measures

The devices comply with the EU Directive 89/336/EEC (EMC Directive) and provide the required interference immunity. Observe the following when connecting the operating voltage and data cables:

Use shielded data cables.

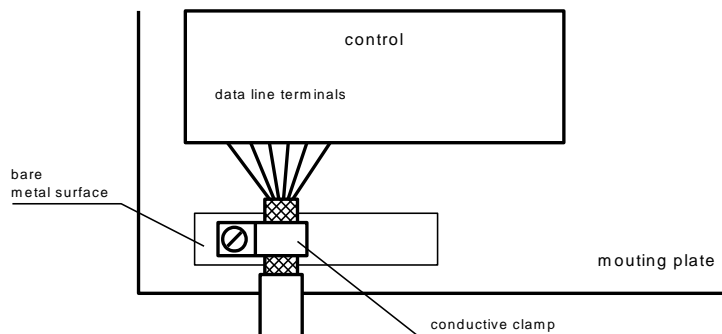
The data and operating voltage cables must be laid separately. They may not be laid together with heavy-current cables or other interference-producing cables.

The cable thickness must be properly assessed (DIN VDE 0100 Part 540).

The cable lengths inside the units are to be kept as short as possible to prevent interference. This applies especially to unshielded operating voltage cables. Shielded cables are also to be kept short due to any interference which might be emitted by the shielding.

Neither excessively long cables nor cable loops may be placed inside the units.

The connection of the cable shielding to the functional ground (PE) must be as short and low-impedance as possible. It should be made directly to the mounting plate over a large area with a conductive clip:



The cable shielding is to be connected at both cable ends. If equipotential bonding currents are expected due to the cable arrangement, electrical isolation is to be performed on one side. In this case, capacitive connection (approx. $0.1\mu\text{F}/600\text{ V AC}$) of the shielding on the isolated side must occur.

Disposal

Units or unit parts which are no longer needed are to be disposed of in accordance with the regulations in effect in your country.

4 Unit description

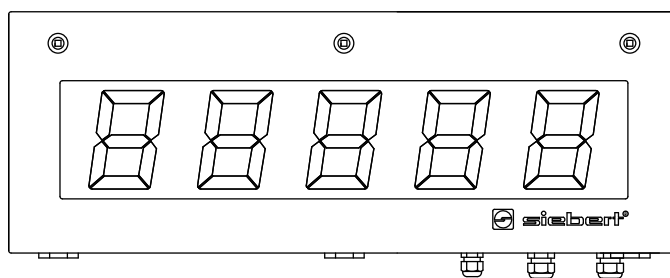
Model designation

This manual applies to units with the following model designation (x = the 'x's in the model designation indicate the size and design of the units (see Chapter 8):

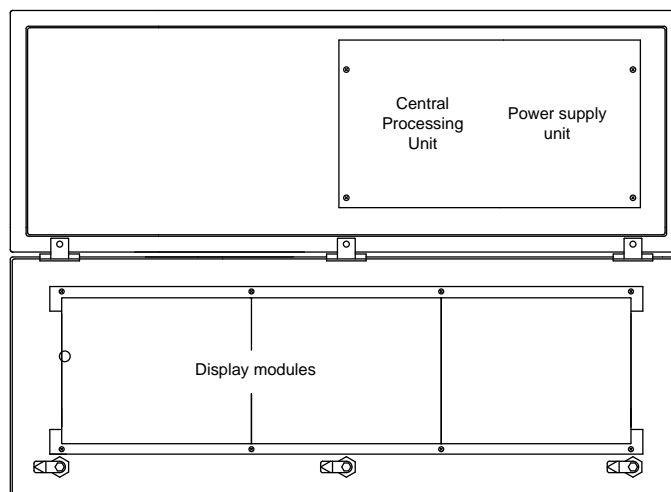
S302-xx/xx/xx-xxx/xx-M0

Unit construction

The following figure shows model type S302-05/10/xx-xxx/xx-xx as example for the other model types. The front frame of the housing is locked with quick-action releases. When opening the unit the front frame hinges downward.

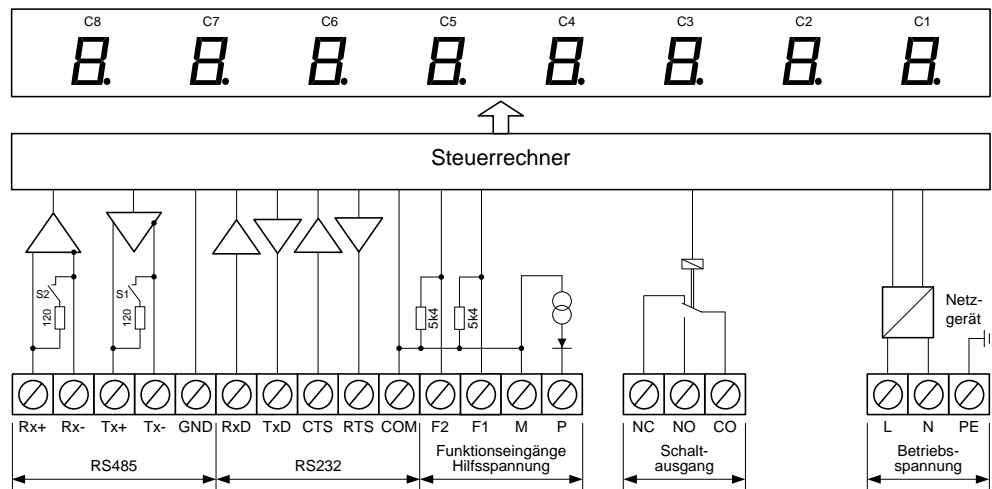


The following figure shows the unit when open.



Units with double-sided display show the same information on the front and on the rear side.

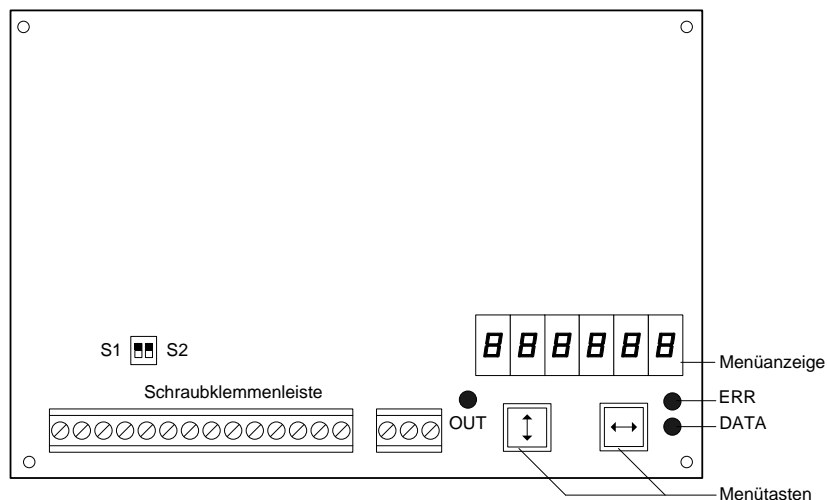
Principle circuit diagram



Steuerrechner	Central Processing Unit
Funktionseingänge/ Hilfsspannung	Function inputs/ Auxiliary voltage
Schaltausgang	Switching output
Netzgerät Betriebsspannung	Power supply unit Power supply

Central Processing Unit

The following figure shows the Central Processing Unit, located in the lower part of the housing.



Schraubklemmenleiste	Screw-type terminal strip
Menüanzeige	Menu display
Menütasten	Menu buttons

Serial interface

The serial interface is located on the screw-type terminal strip of the control computer. It has the formats RS485 and RS232 (see Notes on RS485 interface configuration Chapter 7).

The type of interface format is set in menu item 1 (see Chapter 6).

The interface RS485 is to be used for Modbus interfacing. It is galvanically isolated from all other electric circuits.

The switches S1 (Tx) and S2 (Rx) serve for locking the data lines of the RS485 (see chapter 7).

The RS232 interface is determined for testing and not to be used as Modbus interface.

Function inputs

The function inputs are located on the screw-type terminal strip of the control computer. They allow reduction in brightness and flashing of the display, independently of commands via the Modbus/RTU interface (see Chapter 5).

The function inputs are designed for the following signal voltages:

Signal voltage: L = -3.5...+5 V (open input = L)
H = +18...30 V (active H), M = reference potential

Auxiliary voltage

The units supply terminal P with an auxiliary voltage galvanically isolated from the operating voltage (24 V \pm 20%, max. 50 mA, M = reference potential). It can be used for supplying power to the current loop or as H signal for the function inputs.

Menu display

The parameterization of the units is carried out in a menu of the menu display (see Chapter 6). In normal mode, the menu display corresponds to the main display. For devices with more than six positions, *000000* is shown in the menu display in normal operation.

Menu buttons

The menu buttons are used to control the menu (see Chapter 6).

Switching output

The devices dispose of a switching output (relay) with potential-free make contact (NC, NO, CO).

Status indicators

The status indicators (LEDs) of the control computer have the following meaning:

DATA	Data are received
ERR	Error in data format
OUT	Switching output is active

Power supply

The screw-type terminals for the power supply are located on the power supply unit in the bottom section of the housing. They have the following designations:

Devices for a power supply 115 V AC or 230 V AC	L, N and PE
Devices for a power supply 24 V DC	+, – and PE

5 Control

Function Code

The devices are Modbus-RTU slaves (Remote Terminal Unit) according to the *Modbus over serial line specification and implementation guide*. They support *Function Code 16 (0x10) Write Multiple Registers* according to *Modbus Application Protocol Specification* (see 'www.modbus.org').

Slave address

In menu item 9 (from 1 to 247) the slave address is set (see Chapter 6).

Data format

The data format for the evaluation of Modbus data is determined by the starting address.

Start address

Data format INTEGER	Start address 0x0000	UI16 (16 bit unsigned integer)
	Start address 0x0010	SI16 (16 bit signed integer)
	Start address 0x0020	UI24 (24 bit unsigned integer)
	Start address 0x0030	SI24 (24 bit signed integer)
Data format ASCII	Start address 0x0040	

Data format INTEGER

The data is transmitted with 4 bytes.

Byte 0 contains the formatting of the display and the control of the switching output. The following bytes contain the indicator value in INTEGER format.

	Byte 0	Byte 1	Byte 2	Byte 3
UI16/SI16	7 6 5 4 3 2 1 0 Formatting	7 6 5 4 3 2 1 0 Reserved	7 6 5 4 3 2 1 0 MSB	7 6 5 4 3 2 1 0 LSB
UI24/SI24	7 6 5 4 3 2 1 0 Formatting	7 6 5 4 3 2 1 0 MSB	7 6 5 4 3 2 1 0	7 6 5 4 3 2 1 0 LSB
	: : : : : : : :			
	: : : : : 0 0 0	No decimal point		MSB: Most Significant Byte
	: : : : : 0 0 1	Decimal point digit C2		LSB: Least Significant Byte
	: : : : : 0 1 0	Decimal point digit C3		
	: : : : : 0 1 1	Decimal point digit C4		
	: : : : : 1 0 0	Decimal point digit C5		
	: : : : : 1 0 1	Decimal point digit C6		
	: : : : : 1 1 0	Decimal point digit C7		
	: : : : : 1 1 1	Decimal point digit C8		
	: : : : : :			
	: : : : : 0	Deactivate switching output (Relais off)		
	: : : : : 1	Activate switching output (Relais on)		
	: : : : : :			
	: : : : : 0	Normal brightness		
	: : : : : 1	Reduced brightness (only devices with LED display)		
	: : : : : :			
	: : : : : 0	Flashing off		
	: : : : : 1	Flashing on (only devices with LED display)		
	: : : : : :			
	0 0	Blanking off	Valid for units with monochrome LED display or LRD® display	
	0 1	Blanking on		
	1 0	Reserved		
	: :			
	0 0	LED color red	Valid for units with switchable LED color	
	0 1	LED color green		
	1 0	LED color orange		
	: :			
	1 1	Display test		

Depending on the operation mode chosen there are the following maximum display areas:

UI16 0...65535
 SI16 -32768...32767
 UI24 0...16777215
 SI24 -8388608...8388607

The display shows a ▯ (overflow) in case of a display overrange or a ▮ (underflow) in case of any display underrange.

Data format ASCII

The data is transmitted using a number of bytes depending on the number of digits of the device.

Byte 0 contains the formatting of the display and the control of the switching output. The following bytes contain the indicator value in ASCII format (C8...C1).

Units with 1 digit S302-x1/xx/xx-xxx/xx-xx	Byte 0 Charact.	Byte 1 C1							
Units with 2 digits S302-x2/xx/xx-xxx/xx-xx	Byte 0 Charact.	Byte 1 C2	Byte 2 C1						
Units with 3 digits S302-x3/xx/xx-xxx/xx-xx	Byte 0 Charact.	Byte 1 C3	Byte 2 C2	Byte 3 C1					
Units with 4 digits S302-x4/xx/xx-xxx/xx-xx	Byte 0 Charact.	Byte 1 C4	Byte 2 C3	Byte 3 C2	Byte 4 C1				
Units with 5 digits S302-x5/xx/xx-xxx/xx-xx	Byte 0 Charact.	Byte 1 C5	Byte 2 C4	Byte 3 C3	Byte 4 C2	Byte 5 C1			
Units with 6 digits S302-x6/xx/xx-xxx/xx-xx	Byte 0 Charact.	Byte 1 C6	Byte 2 C5	Byte 3 C4	Byte 4 C3	Byte 5 C2	Byte 6 C1		
Units with 7 digits S302-x7/xx/xx-xxx/xx-xx	Byte 0 Charact.	Byte 1 C7	Byte 2 C6	Byte 3 C5	Byte 4 C4	Byte 5 C3	Byte 6 C2	Byte 7 C1	
Units with 8 digits S302-x8/xx/xx-xxx/xx-xx	Byte 0 Charact.	Byte 1 C8	Byte 2 C7	Byte 3 C6	Byte 4 C5	Byte 5 C4	Byte 6 C3	Byte 7 C2	Byte 8 C1

Byte 0							
7	6	5	4	3	2	1	0
:	:	:	:	:	:	:	:
:	:	:	:	0	0	0	No decimal point
:	:	:	:	0	0	1	Decimal point digit C2
:	:	:	:	0	1	0	Decimal point digit C3
:	:	:	:	0	1	1	Decimal point digit C4
:	:	:	:	1	0	0	Decimal point digit C5
:	:	:	:	1	0	1	Decimal point digit C6
:	:	:	:	1	1	0	Decimal point digit C7
:	:	:	:	1	1	1	Decimal point digit C8
:	:	:	:	:	:	:	:
:	:	:	:	0	Deactivate switching output (Relais off)		
:	:	:	:	1	Activate switching output (Relais on)		
:	:	:	:	:	:	:	:
:	:	:	:	0	Normal brightness		
:	:	:	:	1	Reduced brightness (only devices with LED display)		
:	:	:	:	:	:	:	:
:	:	:	:	0	Flashing off		
:	:	:	:	1	Flashing on (only devices with LED display)		
:	:	:	:	:	:	:	:
0	0	Blanking off					
0	1	Blanking on		Valid for units with monochrome LED display or LRD® display			
1	0	Reserved					
:	:						
0	0	LED color red					
0	1	LED color green		Valid for units with switchable LED color			
1	0	LED color orange					
:	:						
1	1	Display test					

Flashing

If in byte 0 bit 5 is set, the whole display flashes.

Flashing of the display can also be activated by application of the H signal to function input F1 (priority over bit 5 in byte 0).

For devices with LRD[®] display flashing is not possible.

LED color

The LED color can be defined in byte 0 with bit 7 and bit 6 (only for units with switchable LED color).

Blanking

If in byte 0 bit 6 is set, the display will be blank (priority over flashing; not possible for devices with switchable LED color).

Brightness

If in byte 0 bit 4 is set the brightness of the display will be reduced

The brightness can be reduced with an H signal on function input F2 (Priority over bit 4 in byte 0).

For units provided with a LRD[®] display brightness reduction is not possible.

Switching output

The units have a switching output (relay) with a potential free changeover contact (NC, NO, CO).

If in menu point r the setting is OFF the switching output can be activated by setting bit 3 in byte 0.

When setting 1, 2 or 4 in menu item r, setting bit 3 in byte 0 causes a wiping pulse at the switching output with a duration of 1, 2 or 4 seconds.

When setting A1, A2 or A4 in menu item r, the switching output automatically gives a wiping pulse with a duration of 1, 2 or 4 seconds with every valid telegram.

The wipe function is suitable p. e. for controlling optical and acoustic signal generators.

When the switching output is active the status indicator OUT of the Central Processing Unit is lightening.

Time-out

In menu item t, it is possible to set whether a time-out occurs, and if so, after what time. Time-out means that minus signs appear on the display if the device has not received a data telegram after a defined time.

Decimal point

You can set a decimal point in menu item A.

The decimal point can also be controlled by setting the bits 2...0 in byte 0. In menu item A, the setting 0 (no fixed decimal point) is to be selected.

A decimal point set in menu item A has priority.

Units with LRD[®] display have no decimal points.

Leading zero suppression

In menu item C it is set if leading zeros are to be displayed or suppressed.

Display test

In menu item F, you can set whether a display test is to be performed after the operating voltage is applied.

The display test can also be activated by setting bits 7 and 6 in byte 0.

The display test has priority over flashing and blanking.

Demo operation mode

If the setting *PLRY* is selected in menu item F, random characters are displayed. In this case, it is impossible to control the unit.

Power-on reset

After power-on, minus signs are displayed to signalize that the unit is ready for operation. If a display test has been preselected in menu item F, it will run beforehand.

Character set

20/2B	2D	30	31	32	33	34	35	36	37	38	39	2C/2E
	-	0	1	2	3	4	5	6	7	8	9	.
41/61	42/62	43	44/64	45/65	46/66	47/67	48	49	4A/6A	4C/6C	50/70	55
A	b	C	d	E	F	G	H	I	J	L	P	U
59/79	5F	63	68	69	4E/6E	4F/6F	52/72	54/74	75	58/78	other	
y	-	c	h	i	n	o	r	t	u	v	w	x

6 Parametrization

Menu

The parameterization of the devices is carried out in a menu in the menu display.



Bus errors may result in personal injury or material damage. Therefore it must be noted that the activation of the menu may cause a bus error.

Menu operation

To start the menu, press both menu buttons simultaneously (approx. 1 sec.) until the first menu item appears in the menu display. It is now possible to navigate in the menu as follows:

Next menu item	Shortly press key [↕]
Page menu items forward	Press key [↕] long
Previous menu item	Double-click on key [↕]
Page menu items backward	Double-click on key [↕] and keep it pressed
Next setting	Shortly press key [↔]
Page settings forward	Press key [↔] long
Previous setting	Double-click on key [↔]
Page setting backward	Double-click on key [↔] and keep it pressed

To exit the menu shortly press the key [↕] in menu item U. Depending on the setting in menu item U the settings made are either saved (set) or not saved (escape) or the factory settings are reset (default).

Canceling the menu without saving the settings made is possible by pressing both menu buttons simultaneously (approx. 1 sec.). It will occur automatically if 60 seconds pass without a menu button being pressed.

Once the menu is closed, the device behaves in the same manner as when the operating voltage was applied.

In the menu mode the character Ξ appears in the main display. Control of the display is not possible in menu mode.

Menu table

The menu items are displayed in the following menu table. The factory settings are marked with an *. Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

Menu item	Settings	Display
4 Baud rate	1200	4 1200
	2400	4 2400
	4800	4 4800
	9600	4 9600
	19200*	4 192
9 Address	Address 1*	9 001
	Address 2	9 002
	↓	↓
	Address 247	9 247
r Switching output	No wiping puls*	r OFF
	Wiping pulse 1 s	r 1
	Wiping pulse 2 s	r 2
	Wiping pulse 4 s	r 4
	Automatic wiping pulse 1 s	r R1
	Automatic wiping pulse 2 s	r R2

		Automatic wiping pulse 4 s	r	RY
t	Time-out	No time-out*	t	0
		Time-out after 2 s	t	2
		Time-out after 4 s	t	4
		Time-out after 8 s	t	8
		Time-out after 16 s	t	16
		Time-out after 32 s	t	32
		Time-out after 64 s	t	64
		Time-out after 128 s	t	128
		A	Decimal point	No decimal point*
Decimal point digit C1	A			1
Decimal point digit C2	A			2
↓	↓			
Decimal point digit C8	A			8
C	Leading zeros	Leading zeros not displayed*	C	00
		Leading zeros displayed	C	0000
F	Display test	No display test at power-on*	F	----
		Display test at power-on	F	BBBB
		Demo operation mode	F	PLAY
U	Save	Save parameters* (Set)	U	SEt
		Not saving parameters (Escape)	U	ESC
		Restore to factory settings (Default)	U	DEF

7 Notes on RS485 interface configuration

Interface

For the Modbus control the RS485 interface is to be used. The RS232 interface is determined for testing and not to be used as Modbus interface.

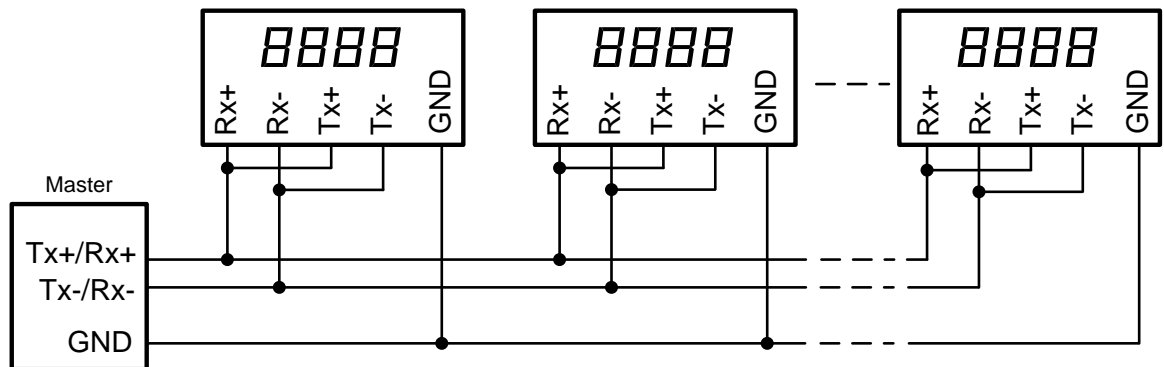
Interface parameters

Parity and baud rate are set in the menu items 3 and 4 (see Chapter 6).

Connection

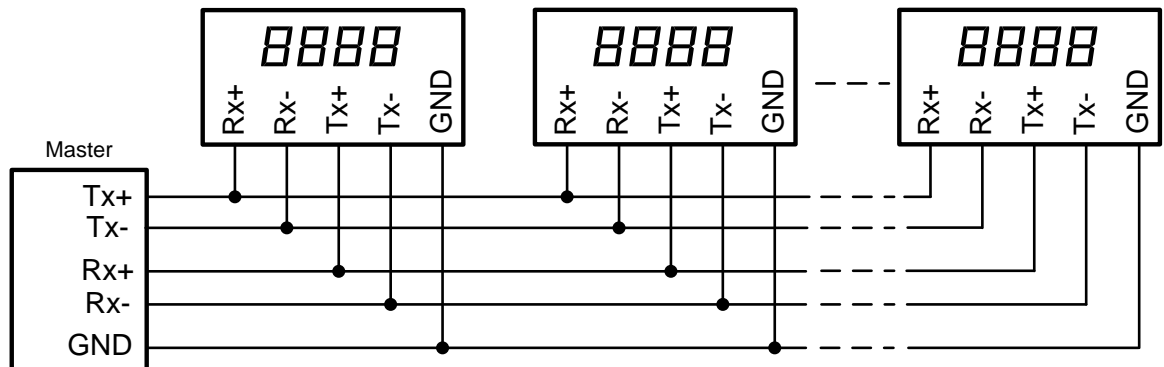
Control via RS485 2-wire bus (two-wire Modbus definition) as described as follows is recommended by *Modbus over serial line specification and implementation guide*.

Setting in menu item 1: RS485.2

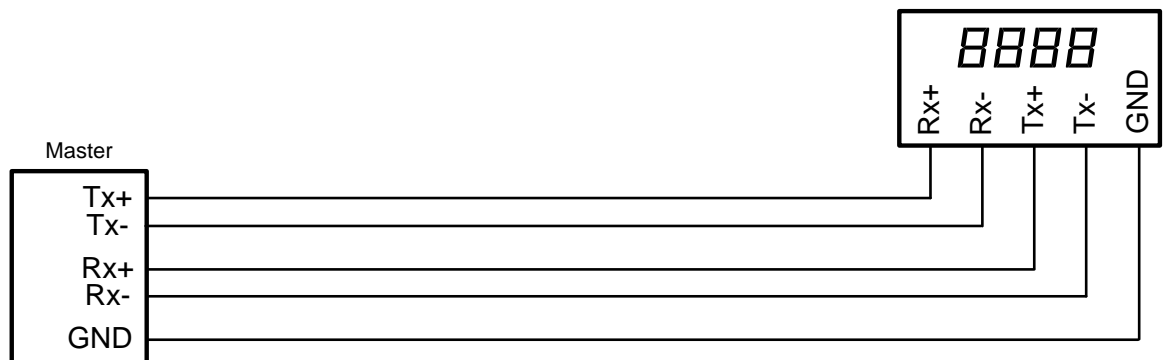


As an option interfacing can be effected via a RS485 4-wire bus (optional four-wire Modbus definition) as described as follows.

Setting in menu item 1: RS485.4



If the Modbus only consists of one master and one display as described as follows, in menu item 1 setting 485 can also be selected.



Data lines

To achieve the highest possible interference immunity, the data lines of the RS485 have to be terminated on both ends. The required resistors are provided in the control computer and can be connected on the screw terminal strip with the switches S1 (Tx) and S2 (Rx) (see Chapter 4, Principle Circuit Diagram).

The polarization of the data lines must be ensured by means of the master.

For the data lines, you always have to ensure that:

Shielded twisted-pair cables of sufficiently large cross-section are used

The shielding is connected on both line ends

For the signal ground (GND) use a wire pair short-circuited on both ends in the data cable. The shielding may not be used as the signal ground

A twisted pair of conductors is used each for Tx+ and Tx- and for Rx+ and Rx-. Non-observance of this instruction causes the protective function of the twisted-pair cable to be lost.

Improperly terminated data lines cause faults during data transfer.

8 Technical data

Unit properties

The model designation is structured as follows:

S302	-	<input type="text"/>	/	<input type="text"/>	/	<input type="text"/>	-	<input type="text"/>	/	<input type="text"/>	-	<input type="text"/>	<input type="text"/>
No dimension symbol	0	:	:	:	:	:	:	:	:	:	:	:	:
Dimension symbol	F	:	:	:	:	:	:	:	:	:	:	:	:
1 Digit	1	:	:	:	:	:	:	:	:	:	:	:	:
2 Digits	2	:	:	:	:	:	:	:	:	:	:	:	:
↓	↓	:	:	:	:	:	:	:	:	:	:	:	:
8 Digits	8	:	:	:	:	:	:	:	:	:	:	:	:
Character height 25 mm	0 3	:	:	:	:	:	:	:	:	:	:	:	:
Character height 57 mm	0 6	:	:	:	:	:	:	:	:	:	:	:	:
Character height 100 mm	1 0	:	:	:	:	:	:	:	:	:	:	:	:
Character height 160 mm	1 6	:	:	:	:	:	:	:	:	:	:	:	:
Character height 250 mm	2 5	:	:	:	:	:	:	:	:	:	:	:	:
LED Standard	0	:	:	:	:	:	:	:	:	:	:	:	:
LED, SMD technology		:	:	:	:	:	:	:	:	:	:	:	:
LED for outdoor use	2	:	:	:	:	:	:	:	:	:	:	:	:
LRD [®]	4	:	:	:	:	:	:	:	:	:	:	:	:
Character color red	R	:	:	:	:	:	:	:	:	:	:	:	:
Character color green	G	:	:	:	:	:	:	:	:	:	:	:	:
Character color white	W	:	:	:	:	:	:	:	:	:	:	:	:
Character color red/green/orange switchable	M	:	:	:	:	:	:	:	:	:	:	:	:
Display readable on one side	1	:	:	:	:	:	:	:	:	:	:	:	:
Display readable on both sides	2	:	:	:	:	:	:	:	:	:	:	:	:
Steel sheet housing, coated	0	:	:	:	:	:	:	:	:	:	:	:	:
Steel sheet housing, bilayer painting	1	:	:	:	:	:	:	:	:	:	:	:	:
Stainless steel housing V2A, coated	2	:	:	:	:	:	:	:	:	:	:	:	:
Stainless steel housing V2A, brushed	3	:	:	:	:	:	:	:	:	:	:	:	:
Stainless steel housing V4A, brushed	5	:	:	:	:	:	:	:	:	:	:	:	:
Protection type IP54	0	:	:	:	:	:	:	:	:	:	:	:	:
Protection type IP65	1	:	:	:	:	:	:	:	:	:	:	:	:
Protection type IP54 with climate adjustment	2	:	:	:	:	:	:	:	:	:	:	:	:
Protection type IP54 with climate adjustment and heating	4	:	:	:	:	:	:	:	:	:	:	:	:
Wall mounting, cable entry point from the bottom	0	:	:	:	:	:	:	:	:	:	:	:	:
Wall mounting, cable entry point from the top	1	:	:	:	:	:	:	:	:	:	:	:	:
Hanging installation, cable entry point from the bottom	2	:	:	:	:	:	:	:	:	:	:	:	:
Hanging installation, cable entry point from the top	3	:	:	:	:	:	:	:	:	:	:	:	:
Wall mounting and hanging installation, cable entry point from the bottom	4	:	:	:	:	:	:	:	:	:	:	:	:
Wall mounting and hanging installation, cable entry point from the top	5	:	:	:	:	:	:	:	:	:	:	:	:
Power supply 230 V AC ±15 %, 50 Hz	A	:	:	:	:	:	:	:	:	:	:	:	:
Power supply 24 V DC ±15 %	B	:	:	:	:	:	:	:	:	:	:	:	:
Power supply 115 V AC ±15 %, 60 Hz	C	:	:	:	:	:	:	:	:	:	:	:	:
Interface		:	:	:	:	:	:	:	:	:	:	x	x

Max. power consumption

Units with one-sided display	[VA] ¹⁾
1 digit	
S302-x1/10/xx-1xx/xx-xx	12 (50)
S302-x1/16/xx-1xx/xx-xx	22 (50)
S302-x1/25/xx-1xx/xx-xx	26
2 digits	
S302-x2/06/xx-1xx/xx-xx	12
S302-x2/10/xx-1xx/xx-xx	15 (50)
S302-x2/16/xx-1xx/xx-xx	37 (50)
S302-x2/25/xx-1xx/xx-xx	46
3 digits	
S302-x3/06/xx-1xx/xx-xx	13
S302-x3/10/xx-1xx/xx-xx	17 (50)
S302-x3/16/xx-1xx/xx-xx	51 (50)
S302-x3/25/xx-1xx/xx-xx	63
4 digits	
S302-x4/06/xx-1xx/xx-xx	14
S302-x4/10/xx-1xx/xx-xx	21 (50)
S302-x4/16/xx-1xx/xx-xx	64 (50)
S302-x4/25/xx-1xx/xx-xx	79
5 digits	
S302-x5/06/xx-1xx/xx-xx	15
S302-x5/10/xx-1xx/xx-xx	23 (50)
S302-x5/16/xx-1xx/xx-xx	77 (50)
S302-x5/25/xx-1xx/xx-xx	96
6 digits	
S302-x6/03/xx-1xx/xx-xx	16
S302-x6/06/xx-1xx/xx-xx	16
S302-x6/10/xx-1xx/xx-xx	26 (50)
S302-x6/16/xx-1xx/xx-xx	91 (50)
S302-x6/25/xx-1xx/xx-xx	113
7 digits	
S302-x7/06/xx-1xx/xx-xx	17
S302-x7/10/xx-1xx/xx-xx	30 (50)
S302-x7/16/xx-1xx/xx-xx	104 (50)
S302-x7/25/xx-1xx/xx-xx	130
8 digits	
S302-x8/06/xx-1xx/xx-xx	18
S302-x8/10/xx-1xx/xx-xx	32 (50)

Units with double-sided display	[VA] ¹⁾
1 digit	
S302-x1/10/xx-2xx/xx-xx	16 (91)
S302-x1/16/xx-2xx/xx-xx	35 (91)
S302-x1/25/xx-2xx/xx-xx	42
2 digits	
S302-x2/06/xx-2xx/xx-xx	15
S302-x2/10/xx-2xx/xx-xx	21 (91)
S302-x2/16/xx-2xx/xx-xx	66 (91)
S302-x2/25/xx-2xx/xx-xx	83
3 digits	
S302-x3/06/xx-2xx/xx-xx	17
S302-x3/10/xx-2xx/xx-xx	26 (91)
S302-x3/16/xx-2xx/xx-xx	92 (91)
S302-x3/25/xx-2xx/xx-xx	116
4 digits	
S302-x4/06/xx-2xx/xx-xx	19
S302-x4/10/xx-2xx/xx-xx	33 (91)
S302-x4/16/xx-2xx/xx-xx	119 (91)
S302-x4/25/xx-2xx/xx-xx	150
5 digits	
S302-x5/06/xx-2xx/xx-xx	21
S302-x5/10/xx-2xx/xx-xx	38 (91)
S302-x5/16/xx-2xx/xx-xx	146 (91)
S302-x5/25/xx-2xx/xx-xx	184
6 digits	
S302-x6/03/xx-2xx/xx-xx	23
S302-x6/06/xx-2xx/xx-xx	23
S302-x6/10/xx-2xx/xx-xx	43 (91)
S302-x6/16/xx-2xx/xx-xx	173 (91)
S302-x6/25/xx-2xx/xx-xx	217
7 digits	
S302-x7/06/xx-2xx/xx-xx	25
S302-x7/10/xx-2xx/xx-xx	51 (91)
S302-x7/16/xx-2xx/xx-xx	200 (91)
S302-x7/25/xx-2xx/xx-xx	250
8 digits	
S302-x8/06/xx-2xx/xx-xx	27
S302-x8/10/xx-2xx/xx-xx	55 (91)

¹⁾ The values given are approximate values. For units with built-in heating, the values for power consumption specified in the table increase by approx. 10 – 100 VA (exact values on request), depending on the unit size.

() Values in parentheses are valid for LRD[®] versions.

The power consumption for the unit version model S302-xx/xx/0x-xxx/xx-xx is also valid for the unit version S302-xx/xx/2x-xxx/xx-xx (LEDs for external use).

Switching output

Maximum switching voltage 30 V AC/DC
Maximum switching current 500 mA (ohmic load)

Screw-type terminals

Control computer Capacity of terminals 0,14...1,5 mm²
Power supply Capacity of terminals 0,2...4 mm²

Housing colors

Case front RAL 5002 ultramarine
Case rear part RAL 7035 light grey

Front frame

S302-xx/xx/xR-xxx/xx-xx	Plastic, tinted red, non-reflective
S302-xx/06/xG-xxx/xx-xx	Plastic, tinted green, non-reflective
S302-xx/10/xG-xxx/xx-xx	Plastic, tinted green, non-reflective
Other model types	Plastic, clear, non-reflective

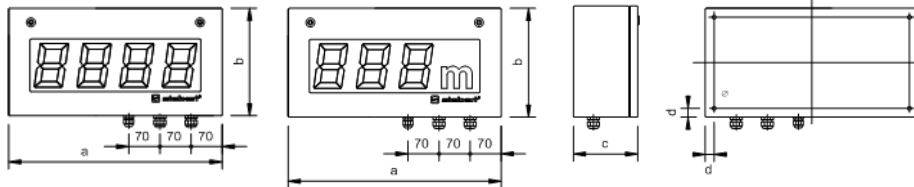
Ambient conditions

Operating temperature	0...55 °C
Storage temperature	-30...85 °C
Relative humidity	max. 95 % (non-condensing)

Measurements and weights

Units with one-side display

The following figure shows unit versions S302-04/10/4x-1xx/xx-xx and S302-F3/10/4x-1xx/xx-, representing the other unit versions listed in the following table.



1 digit		a [mm]	b [mm]	c [mm]	d [mm]	Ø [mm]	Weight [kg] ¹⁾
S302-01/10/xx-1xx/xx-xx		330 ²⁾	245	110 (145)	16	7	6 (7) ²⁾
S302-01/16/xx-1xx/xx-xx		390	300	110 (145)	20	9	7 (9)
S302-01/25/xx-1xx/xx-xx		570	400	110	20	9	11
2 digits	1 digit + dimension symbol						
S302-02/06/xx-1xx/xx-xx	-	300 ³⁾	185	110	16	7	5 ³⁾
S302-02/10/xx-1xx/xx-xx	S302-F1/10/xx-1xx/xx-xx	330 ²⁾	245	110 (145)	16	7	6 (7) ²⁾
S302-02/16/xx-1xx/xx-xx	S302-F1/16/xx-1xx/xx-xx	390	300	110 (145)	20	9	7 (9)
S302-02/25/xx-1xx/xx-xx	S302-F1/25/xx-1xx/xx-xx	570	400	110	20	9	11
3 digit	2 digit + dimension symbol						
S302-03/06/xx-1xx/xx-xx	S302-F2/06/xx-1xx/xx-xx	300 ³⁾	185	110	16	7	5 ³⁾
S302-03/10/xx-1xx/xx-xx	S302-F2/10/xx-1xx/xx-xx	480	245	110 (145)	16	7	8 (9)
S302-03/16/xx-1xx/xx-xx	S302-F2/16/xx-1xx/xx-xx	670	300	110 (145)	20	9	11 (13)
S302-03/25/xx-1xx/xx-xx	S302-F2/25/xx-1xx/xx-xx	1030	400	110	20	9	18
4 digit	3 digit + dimension symbol						
S302-04/06/xx-1xx/xx-xx	S302-F3/06/xx-1xx/xx-xx	300 ³⁾	185	110	16	7	5 ³⁾
S302-04/10/xx-1xx/xx-xx	S302-F3/10/xx-1xx/xx-xx	480	245	110 (145)	16	7	8 (9)
S302-04/16/xx-1xx/xx-xx	S302-F3/16/xx-1xx/xx-xx	670	300	110 (145)	20	9	11 (13)
S302-04/25/xx-1xx/xx-xx	S302-F3/25/xx-1xx/xx-xx	1030	400	110	20	9	18
5 digit	4 digit + dimension symbol						
S302-05/03/xx-1xx/xx-xx	-	300 ³⁾	185	110	16	7	5 ³⁾
S302-05/06/xx-1xx/xx-xx	S302-F4/06/xx-1xx/xx-xx	400	185	110	16	7	6
S302-05/10/xx-1xx/xx-xx	S302-F4/10/xx-1xx/xx-xx	680	245	110 (145)	16	7	10 (12)
S302-05/16/xx-1xx/xx-xx	S302-F4/16/xx-1xx/xx-xx	960	300	110 (145)	20	9	14 (17)
S302-05/25/xx-1xx/xx-xx	S302-F4/25/xx-1xx/xx-xx	1500	400	110	20	9	24
6 digit	5 digit + dimension symbol						
S302-06/03/xx-1xx/xx-xx	S302-F5/03/xx-1xx/xx-xx	300 ³⁾	185	110	16	7	5 ³⁾
S302-06/06/xx-1xx/xx-xx	S302-F5/06/xx-1xx/xx-xx	400	185	110	16	7	6
S302-06/10/xx-1xx/xx-xx	S302-F5/10/xx-1xx/xx-xx	680	245	110 (145)	16	7	10 (12)
S302-06/16/xx-1xx/xx-xx	S302-F5/16/xx-1xx/xx-xx	960	300	110 (145)	20	9	14 (17)
S302-06/25/xx-1xx/xx-xx	S302-F5/25/xx-1xx/xx-xx	1500	400	110	20	9	24
7 digit	6 digit + dimension symbol						
-	S302-F6/03/xx-1xx/xx-xx	300 ³⁾	185	110	16	7	5 ³⁾
S302-07/06/xx-1xx/xx-xx	S302-F6/06/xx-1xx/xx-xx	510	185	110	16	7	7
S302-07/10/xx-1xx/xx-xx	S302-F6/10/xx-1xx/xx-xx	870	245	110 (145)	16	7	12 (14)
S302-07/16/xx-1xx/xx-xx	S302-F6/16/xx-1xx/xx-xx	1100	300	110 (145)	20	9	16 (20)
S302-07/25/xx-1xx/xx-xx	S302-F6/25/xx-1xx/xx-xx	1730	400	110	20	9	28
8 digit	7 digit + dimension symbol						
S302-08/06/xx-1xx/xx-xx	S302-F7/06/xx-1xx/xx-xx	510	185	110	32	7	7
S302-08/10/xx-1xx/xx-xx	S302-F7/10/xx-1xx/xx-xx	870	245	110 (145)	32	7	12 (14)

¹⁾ The figures shown for weight are approximate.

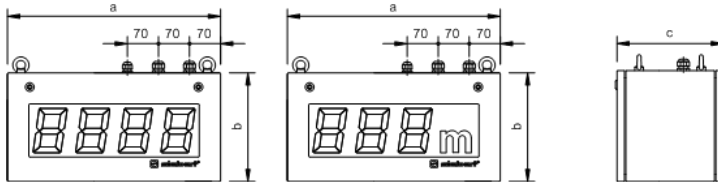
²⁾ Units with Profibus interface: a = 480 mm, Weight = 8 (9) kg

³⁾ Units with Profibus interface or integrated heating: a = 400 mm, Weight = 6 kg;
Units with Profibus interface and integrated heating: a = 510 mm, Weight = 7 kg

() Values in round brackets are valid for LRD[®] versions.

Units with double-side display

The following figure shows unit versions S302-04/10/4x-2xx/xx-xx and S302-F3/10/4x-2xx/xx-, representing the other unit versions listed in the following table.



Units with character height of 25 mm (S302-xx/03/xx-2xx/xx-xx) and 57 mm (S302-xx/06/xx-2xx/xx-xx) are provided with 2 eyes instead of 4.

		a [mm]	b [mm]	c [mm]	Weight [kg] ¹⁾
1 digit					
S302-01/10/xx-2xx/xx-xx		330 ²⁾	245	170 (240)	9 (11) ²⁾
S302-01/16/xx-2xx/xx-xx		390	300	170 (240)	11 (12)
S302-01/25/xx-2xx/xx-xx		570	400	170	17
2 digit	1 digit + dimension symbol				
S302-02/06/xx-2xx/xx-xx	-	300 ³⁾	185	170	7 ³⁾
S302-02/10/xx-2xx/xx-xx	S302-F1/10/xx-2xx/xx-xx	330 ²⁾	245	170 (240)	9 (9) ²⁾
S302-02/16/xx-2xx/xx-xx	S302-F1/16/xx-2xx/xx-xx	390	300	170 (240)	11 (11)
S302-02/25/xx-2xx/xx-xx	S302-F1/25/xx-2xx/xx-xx	570	400	170	17
3 digit	2 digit + dimension symbol				
S302-03/06/xx-2xx/xx-xx	S302-F2/06/xx-2xx/xx-xx	300 ³⁾	185	170	7 ³⁾
S302-03/10/xx-2xx/xx-xx	S302-F2/10/xx-2xx/xx-xx	480	245	170 (240)	12 (15)
S302-03/16/xx-2xx/xx-xx	S302-F2/16/xx-2xx/xx-xx	670	300	170 (240)	17 (19)
S302-03/25/xx-2xx/xx-xx	S302-F2/25/xx-2xx/xx-xx	1030	400	170	27
4 digit	3 digit + dimension symbol				
S302-04/06/xx-2xx/xx-xx	S302-F3/06/xx-2xx/xx-xx	300 ³⁾	185	170	7 ³⁾
S302-04/10/xx-2xx/xx-xx	S302-F3/10/xx-2xx/xx-xx	480	245	170 (240)	12 (15)
S302-04/16/xx-2xx/xx-xx	S302-F3/16/xx-2xx/xx-xx	670	300	170 (240)	17 (19)
S302-04/25/xx-2xx/xx-xx	S302-F3/25/xx-2xx/xx-xx	1030	400	170	27
5 digit	4 digit + dimension symbol				
S302-05/03/xx-2xx/xx-xx	-	300 ³⁾	185	170	7 ³⁾
S302-05/06/xx-2xx/xx-xx	S302-F4/06/xx-2xx/xx-xx	400	185	170	8
S302-05/10/xx-2xx/xx-xx	S302-F4/10/xx-2xx/xx-xx	680	245	170 (240)	15 (19)
S302-05/16/xx-2xx/xx-xx	S302-F4/16/xx-2xx/xx-xx	960	300	170 (240)	21 (26)
S302-05/25/xx-2xx/xx-xx	S302-F4/25/xx-2xx/xx-xx	1500	400	170	36
6 digit	5 digit + dimension symbol				
S302-06/03/xx-2xx/xx-xx	S302-F5/03/xx-2xx/xx-xx	300 ³⁾	185	170	7 ³⁾
S302-06/06/xx-2xx/xx-xx	S302-F5/06/xx-2xx/xx-xx	400	185	170	8
S302-06/10/xx-2xx/xx-xx	S302-F5/10/xx-2xx/xx-xx	680	245	170 (240)	15 (19)
S302-06/16/xx-2xx/xx-xx	S302-F5/16/xx-2xx/xx-xx	960	300	170 (240)	21 (27)
S302-06/25/xx-2xx/xx-xx	S302-F5/25/xx-2xx/xx-xx	1500	400	170	36
7 digit	6 digit + dimension symbol				
-	S302-F6/03/xx-2xx/xx-xx	300 ³⁾	185	170	7 ³⁾
S302-07/06/xx-2xx/xx-xx	S302-F6/06/xx-2xx/xx-xx	510	185	170	9
S302-07/10/xx-2xx/xx-xx	S302-F6/10/xx-2xx/xx-xx	870	245	170 (240)	18 (23)
S302-07/16/xx-2xx/xx-xx	S302-F6/16/xx-2xx/xx-xx	1100	300	170 (240)	24 (29)
S302-07/25/xx-2xx/xx-xx	S302-F6/25/xx-2xx/xx-xx	1730	400	170	42
8 digit	7 digit + dimension symbol				
S302-08/06/xx-2xx/xx-xx	S302-F7/06/xx-2xx/xx-xx	510	185	170	9
S302-08/10/xx-2xx/xx-xx	S302-F7/10/xx-2xx/xx-xx	870	245	170 (240)	18 (23)

¹⁾ The figures shown for weight are approximate.

²⁾ Units with Profibus interface: a = 480 mm, Weight = 12 (15) kg

³⁾ Units with Profibus interface or integrated heating: a = 400 mm, Weight = 8 kg;
Units with Profibus interface and integrated heating: a = 510 mm, Weight = 9 kg

() Values in round brackets are valid for LRD[®] versions.