



Operating instructions

Series S302

Large size displays
for weighing technology

Devices for special protocols

1 Contact

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2 Legal note

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3 Safety precautions

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 2004/108/EC (EMC Directive) and provide the required interference immunity. Observe the following when connecting the operating voltage and data cables:

Use shielded data cables.

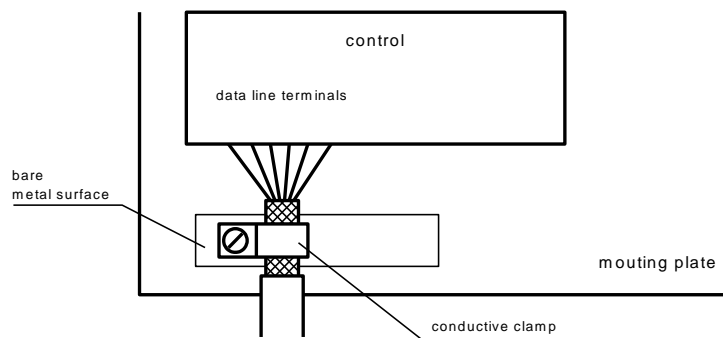
The data and operating voltage cables must be laid separately. They may not be laid together with heavy-current cables or other interference-producing cables.

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

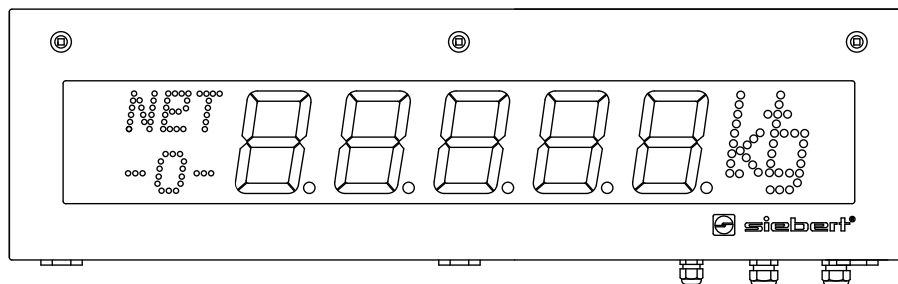
Model designation

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 9):

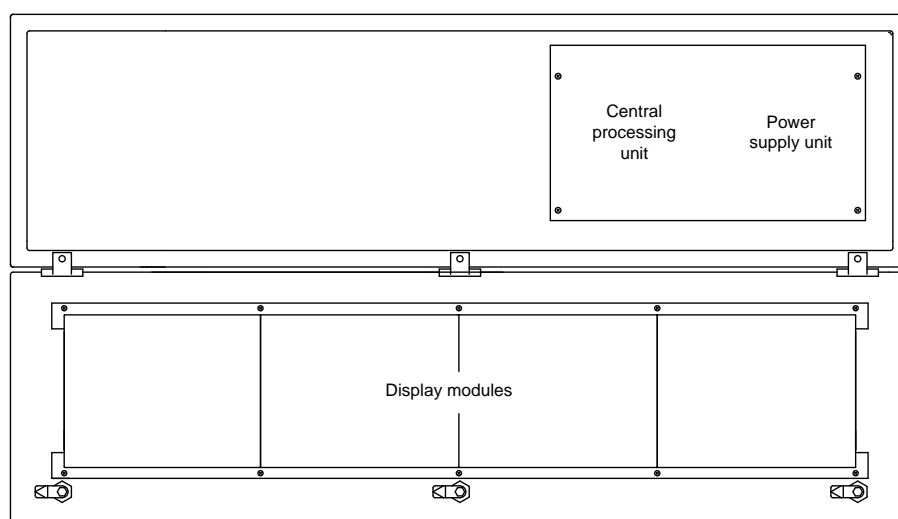
S302-xx/xx/xx-xxx/xx-xR	Data protocol Arpège
S302-xx/xx/xx-xxx/xx-xZ	Data protocol Bizerba
S302-xx/xx/xx-xxx/xx-xT	Data protocol Mettler-Toledo
S302-xx/xx/xx-xxx/xx-xL	Data protocol Phoenix Contact
S302-xx/xx/xx-xxx/xx-xE	Data protocol Precia-Molen
S302-xx/xx/xx-xxx/xx-xP	Data protocol Sartorius
S302-xx/xx/xx-xxx/xx-xC	Data protocol Schenck
S302-xx/xx/xx-xxx/xx-xM	Data protocol Siemens Siwarex
S302-xx/xx/xx-xxx/xx-Sx	Interface RS485/RS232
S302-xx/xx/xx-xxx/xx-Tx	Interface TTY 20mA/RS232

Unit construction

The following figure shows model type S302-W5/10/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.



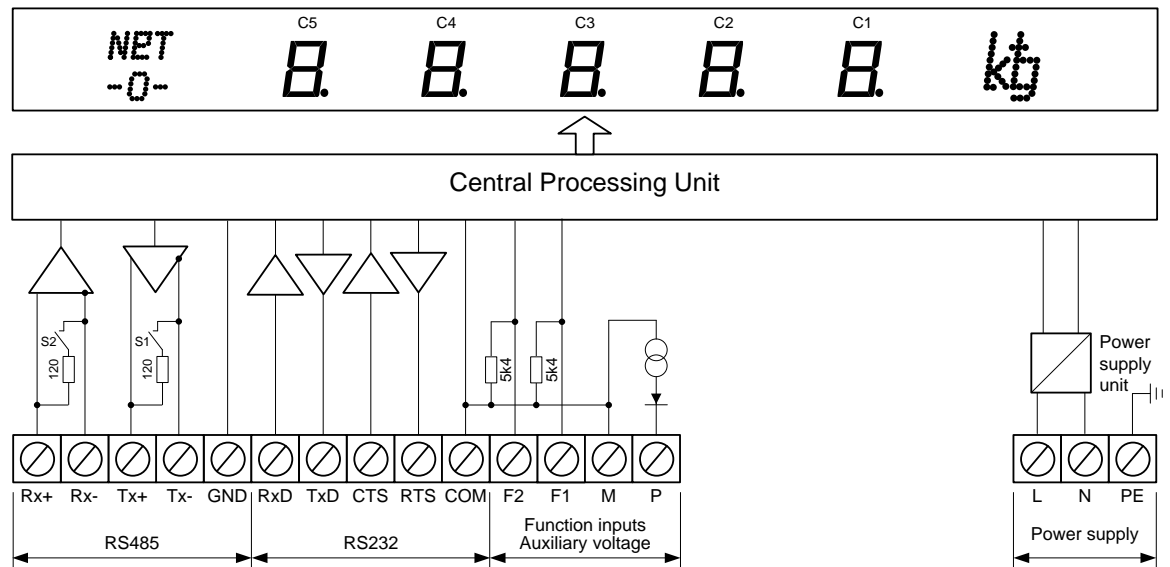
The following figure shows the unit when open.



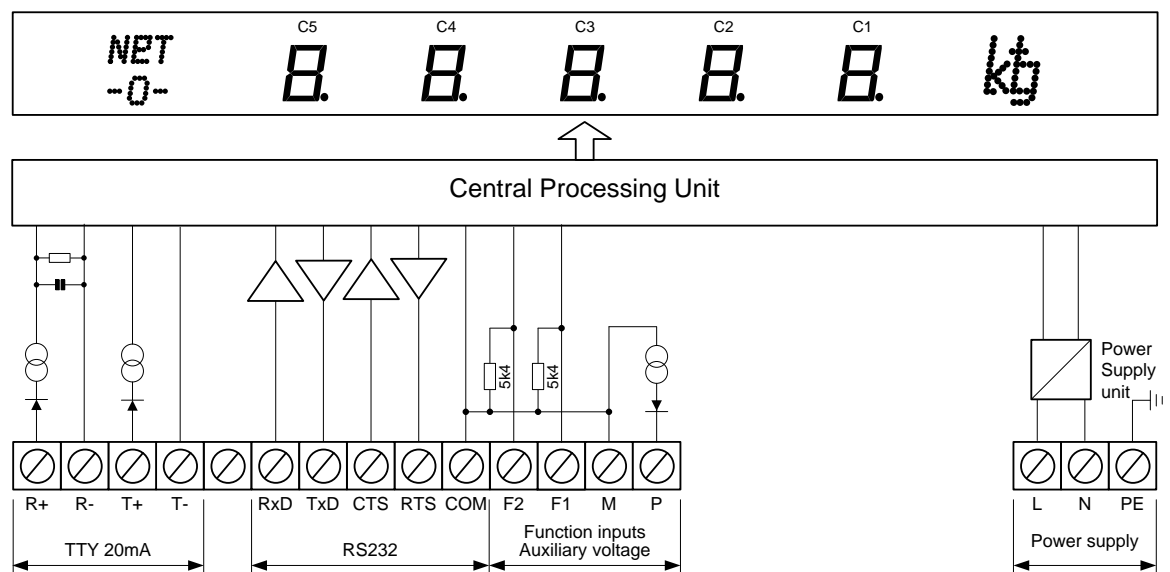
Units with double-sided display show the same information on the front and on the rear side.

Principle circuit diagram

Units with interface RS485/RS232 (S302-xx/xx/xx-xxx/xx-Sx)

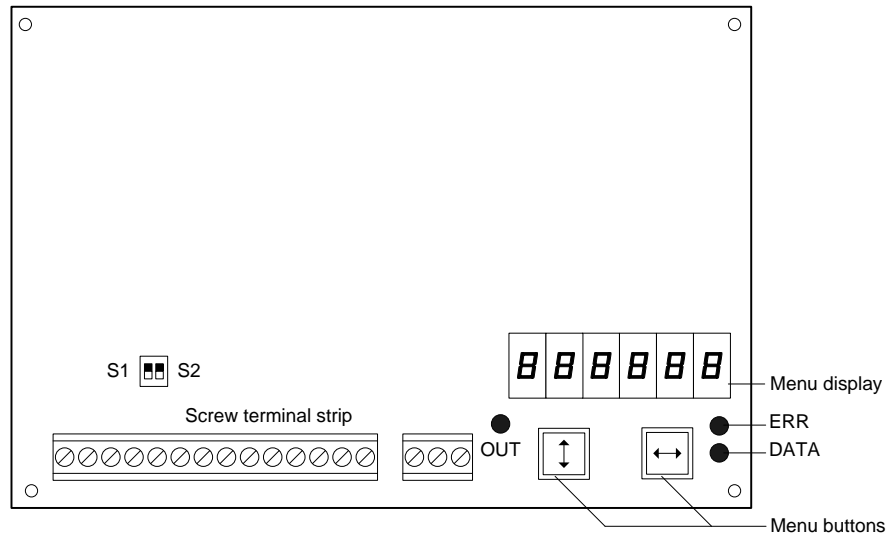


Units with interface TTY 20mA/RS232 (S302-xx/xx/xx-xxx/xx-Tx)



Central Processing Unit

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



Switches S1/S2 only S302-xx/xx/xx-xxx/xx-Sx
Three-pole screw-type terminal strip without function

Serial Interface

The serial interface is located on the screw-type terminal strip of the control computer. Depending on the unit version it has the following formats:

RS485 and RS232 (S302-xx/xx/xx-xxx/xx-Sx)
TTY 20mA and RS232 (S302-xx/xx/xx-xxx/xx-Tx)

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

Preferably, the interfaces RS485 or TTY 20 mA are to be used for activation unless otherwise defined by the weighing computer. They are galvanically isolated from all other electric circuits and provide optimum preconditions for a reliable and safe operation of the devices due to its physical characteristics.

The switches S1 (Tx) and S2 (Rx) serve for locking the data lines of the RS485 (see Chapter 8).

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.

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, $\overline{000000}$ is shown in the menu display in normal operation.

Menu buttons

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

Status indicators

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

DATA	Data reception
ERR	Communication error
OUT	No meaning

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

Important note

The displays are output units. They show information received by the weighing computer via the serial interface but they do not determine the content of this information. The weighing computer is responsible for the content of the information. In case of interferences, faulty display etc. the parameterization of the weighing computer is to be checked and its operating instructions must be observed.

We cannot be held liable for damages due to an improper activation of the units or to modifications of the weighing computer properties (protocols, addresses, etc.).

These operating instructions do not substitute the operating instructions of the weighing computer.

5 Control

Data protocol

The weighing computer sends a data protocol containing the information to be shown to the display. This protocol may differ according to the manufacturer of the weighing computer. The S302 series therefore includes different unit versions with specific protocol evaluation:

S302-xx/xx/xx-xxx/xx-xR	Protocol evaluation Arpège
S302-xx/xx/xx-xxx/xx-xZ	Protocol evaluation Bizerba
S302-xx/xx/xx-xxx/xx-xT	Protocol evaluation Mettler-Toledo
S302-xx/xx/xx-xxx/xx-xL	Protocol evaluation Phoenix Contact
S302-xx/xx/xx-xxx/xx-xE	Protocol evaluation Precia-Molen
S302-xx/xx/xx-xxx/xx-xP	Protocol evaluation Sartorius
S302-xx/xx/xx-xxx/xx-xC	Protocol evaluation Schenck
S302-xx/xx/xx-xxx/xx-xM	Protocol evaluation Siemens Siwarex

Balance stop

If the protocol contains information on the balance stop, the dimension symbol only appears on the display when the weighing computer reports a balance stop (only units with LED dimension symbol).

Flashing

Flashing of the display can also be activated by application of the H signal to functional input F1.

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

Brightness

The brightness can be reduced with an H signal on function input F2.

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

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.

6 Parametrization

Menu

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

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 tables

The menu differs according to the unit type (protocol evaluation). The different menus are listed in the following menu tables.

Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

The factory settings are marked with *.

The menu items are described in Chapter 7.

Menu table S302-xx/xx/xx-xxx/xx-xR (Arpèrge)

Menu item	Settings	Menu display
1 Serial interface	RS232	1 232
	RS485	1 485
	RS485 4-wire bus (do not use)	1 4854
	RS485 2-wire bus (do not use)	1 4852
	TTY 20mA	1 444
2 Data format	7 bit with even or odd parity	2 7b it
	8 bit with or without parity*	2 8b it
3 Parity	No parity*	3 nonE
	Odd parity	3 odd
	Even parity	3 EeEn
4 Baud rate	1200	4 1200
	2400	4 2400
	4800	4 4800
	9600*	4 9600
	19200	4 192
d Dimension symbol	No dimension symbol*	d 0
	Dimension symbol 'g'	d 1
	Dimension symbol 'kg'	d 2
	Dimension symbol 't'	d 3
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*	A 0
	Decimal point digit C1	A 1
	Decimal point digit C2	A 2
	↓	↓
	Decimal point digit C5	A 5
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

Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

Menu table S302-xx/xx/xx-xxx/xx-xZ (Bizerba)

Menu item	Settings	Menu display
1 Serial interface	RS232	1 232
	RS485	1 485
	RS485 4-wire bus (do not use)	1 4854
	RS485 2-wire bus (do not use)	1 4852
	TTY 20mA	1 444
2 Data format	7 bit with even or odd parity	2 7b 1E
	8 bit with or without parity*	2 8b 1E
3 Parity	No parity*	3 nonE
	Odd parity	3 odd
	Even parity	3 EeEn
4 Baud rate	1200	4 1200
	2400	4 2400
	4800	4 4800
	9600*	4 9600
	19200	4 192
d Dimension symbol	No dimension symbol*	d 0
	Dimension symbol 'g'	d 1
	Dimension symbol 'kg'	d 2
	Dimension symbol 't'	d 3
	Dimension symbol 'lb'	d 4
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*	A 0
	Decimal point digit C1	A 1
	Decimal point digit C2	A 2
	Decimal point digit C3	A 3
	Decimal point digit C4	A 4
	Decimal point digit C5	A 5
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 8888
U Save	Save parameters* (Set)	U 5EE
	Not saving parameters (Escape)	U ESC
	Restore to factory settings (Default)	U dEF

Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

Menu table S302-xx/xx/xx-xxx/xx-xT (Mettler-Toledo)

Menu item	Settings	Menu display
1 Serial interface	RS232	1 232
	RS485	1 485
	RS485 4-wire bus (do not use)	1 4854
	RS485 2-wire bus (do not use)	1 4852
	TTY 20mA	1 444
2 Data format	7 bit with even or odd parity	2 7b 4
	8 bit with or without parity*	2 8b 4
3 Parity	No parity*	3 nonE
	Odd parity	3 odd
	Even parity	3 EueN
4 Baud rate	1200	4 1200
	2400	4 2400
	4800	4 4800
	9600*	4 9600
	19200	4 192
9 Address	Address 0 (Gross)	9 0
	Address 1* (Net)	9 1
	Address 2 (Tara)	9 2
	Address 3 (Gross or Net)	9 3
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
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 8888
	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

Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

Menu table S302-xx/xx/xx-xxx/xx-xE (Precia-Molen)

Menu item	Settings	Menu display
1 Serial interface	RS232	1 232
	RS485	1 485
	RS485 4-wire bus (do not use)	1 4854
	RS485 2-wire bus (do not use)	1 4852
	TTY 20mA	1 444
2 Data format	7 bit with even or odd parity	2 7b 4
	8 bit with or without parity*	2 8b 4
3 Parity	No parity*	3 nonE
	Odd parity	3 odd
	Even parity	3 EeE
4 Baud rate	1200	4 1200
	2400	4 2400
	4800	4 4800
	9600*	4 9600
	19200	4 192
9 Address	Address 0 (Grosso or Net)	9 0
	Address 1* (Gross)	9 1
	Address 2 (Tara)	9 2
	Address 3 (Net)	9 3
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
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 8888
	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

Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

Menu table S302-xx/xx/xx-xxx/xx-xP (Sartorius)

Menu item	Settings	Menu display
1 Serial interface	RS232	1 232
	RS485	1 485
	RS485 4-wire bus (do not use)	1 4854
	RS485 2-wire bus (do not use)	1 4852
	TTY 20mA	1 444
2 Data format	7 bit with even or odd parity	2 7b 4
	8 bit with or without parity*	2 8b 4
3 Parity	No parity*	3 nonE
	Odd parity	3 odd
	Even parity	3 EeE
4 Baud rate	1200*	4 1200
	2400	4 2400
	4800	4 4800
	9600	4 9600
	19200	4 192
5 Protocol	PR1577*	5 1577
	PR1627	5 1627
6 Protocol reply	No protocol reply*	6 nonE
	ACK/NAK	6 ACKNAK
	Echo	6 ECHO
9 Address	Address 0* (Gross or Net)	9 0
	Address (Gross)	9 1
	Address (Net)	9 2
	Address (Tara)	9 3
P Weighing point	Weighing point A*	P A
	Weighing point B	P b
	Weighing point C	P c
	Weighing point D	P d
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
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 8888
U Save	Save parameters* (Set)	U SEE
	Not saving parameters (Escape)	U ESC
	Restore to factory settings (Default)	U DEF

Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

Menu table S302-xx/xx/xx-xxx/xx-xL (Phoenix Contact)

Menu item		Settings	Menu display	
9	Address	Address 0*	9	0
		Address 1	9	1
		↓	↓	
		Address 9	9	9
U	Save	Save parameters* (Set)	U	SEt
		Not saving parameters (Escape)	U	ESc
		Restore to factory settings (Default)	U	dEF

Menu table S302-xx/xx/xx-xxx/xx-xC (Schenck)

Menu item	Settings	Menu display
1 Serial interface	RS232	1 232
	RS485	1 485
	RS485 4-wire bus (do not use)	1 4854
	RS485 2-wire bus (do not use)	1 4852
	TTY 20mA	1 444
2 Data format	7 bit with even or odd parity	2 7b 1E
	8 bit with or without parity*	2 8b 1E
3 Parity	No parity	3 nonE
	Odd parity	3 odd
	Even parity*	3 EuEn
4 Baud rate	1200*	4 1200
	2400	4 2400
	4800	4 4800
	9600	4 9600
	19200	4 192
5 Protocol	DDP8 850*	5 850
	DDP8 861	5 861
	Disomat M1	5 d1
	AN5316	5 5316
6 Protocol reply	No protocol reply*	6 nonE
	ACK/NAK	6 ACKNAK
	Echo	6 ECHO
9 Address	Address 0*	9 0
	Address 1	9 1
	↓	↓
	Address 9	9 9
t Time-out	No time-out	t 0
	Time-out nach 2 s*	t 2
	↓	↓
	Time-out nach 128 s	t 128
A Decimal point	No decimal point*	A 0
	Decimal point digit C1	A 1
	↓	↓
	Decimal point digit C5	A 5
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
U Save	Save parameters* (Set)	U SEt
	Not saving parameters (Escape)	U ESC
	Restore to factory settings (Default)	U dEF

Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

Menu table S302-xx/xx/xx-xxx/xx-xM (Siemens)

Menu item	Settings	Menu display
1	Serial interface	
	RS232	1 232
	RS485	1 485
	RS485 4-wire bus (do not use)	1 4854
	RS485 2-wire bus (do not use)	1 4852
	TTY 20mA	1 444
2	Data format	
	7 bit with even or odd parity	2 7b 1E
	8 bit with or without parity*	2 8b 1E
3	Parity	
	No parity	3 nonE
	Odd parity	3 odd
	Even parity*	3 EuEn
4	Baud rate	
	1200	4 1200
	2400	4 2400
	4800	4 4800
	9600*	4 9600
	19200	4 192
5	Protocol	
	Siwarex M	5 M
	Siwarex A	5 A
	Siwarex U	5 U
	Siwarex FTA	5 FEA
	Siwarex FTC	5 FEI
	Siwarex CS	5 CS
6	Protocol reply	
	No protocol reply	6 nonE
	ACK/NAK	6 ACKNAK
	Echo*	6 ECHO
9	Address	
	Address 01* (Gross)	9 01
	Address 02 (Net)	9 02
	Address 04 (Reference value)	9 04
	Address 05 (Default value 1)	9 05
	Address 06 (Default value 2)	9 06
	Address 21 (Gross Channel 2)	9 21
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
C	Leading zeros	
	Leading zeros not displayed*	C 00
	Leading zeros displayed	C 0000
U	Save	
	Save parameters* (Set)	U SEI
	Not saving parameters (Escape)	U ESC
	Restore to factory settings (Default)	U dEF

Individual menu items or settings can be suppressed in another menu item, depending on the unit version or setting.

7 Menu items

Interface format

In menu item 1 you select between the interface formats which are available in the unit:

RS485 or RS232 (S302-xx/xx/xx-xxx/xx-Sx)
TTY 20mA or RS232 (S302-xx/xx/xx-xxx/xx-Tx)

The settings RS485 4-wire bus and RS485 2-wire bus in menu item 1 may not be used.

The configuration information in Chapter 8 has to be observed.

Preferably, the interfaces RS485 or TTY 20 mA are to be used for activation unless otherwise defined by the weighing computer. They are galvanically isolated from all other electric circuits and provide the best preconditions for a reliable and safe operation of the devices due to its physical characteristics.

In the interface format RS232, the RTS/CTS handshake is always active.

Data format, Parity, Baud rate

The interface parameters: data format, parity and baud rate, are set in menu items 2 to 4.

Protocol, Protocol reply

The protocol is selected in menu item 5.

The protocol reply is selected in menu item 6.

If setting 'Echo' is selected in menu item 6, the unit transmits the received data telegrams via the serial interface.

Character setting data telegram

If the characters to be represented in the display do not start on the first data telegram position, in menu item 7 you can set how many preceding characters have to be ignored.

Address

The weight type to be displayed (gross, net etc.) is selected in menu item 9 by setting the address.

Dimension symbols

In menu item d, a dimension symbol can be set (only for units with LED dimension symbols).

Weighing point

The weighing point to which the display is assigned can be selected in menu item P.

Time-out

In menu item t you can determine whether a time-out is effected and after which time. Time-out means that a minus sign appears on the display if the unit has not received a data telegram after a defined time.

Decimal point

You can set a decimal point in menu item A. Units with a LRD[®] display have no decimal points.

Leading zeros suppression

In menu item C you can set if leading zeros are to be displayed or suppressed. If leading zeros should be suppressed for units with LRD[®] display and fixed decimal point (e.g. self-adhesive foil), the corresponding position must be set in menu item A.

Display test

In menu item F, you can set whether a short-time display test is automatically carried out after power on.

If the setting *PLAY* is selected in menu item F, random characters are displayed. Then the control of the device is not possible.

Save settings

In menu item U the menu is quit (see Chapter 6). The settings made are either saved (set), or not saved (escape) or the factory settings are reset, depending on the setting selected in menu item U.

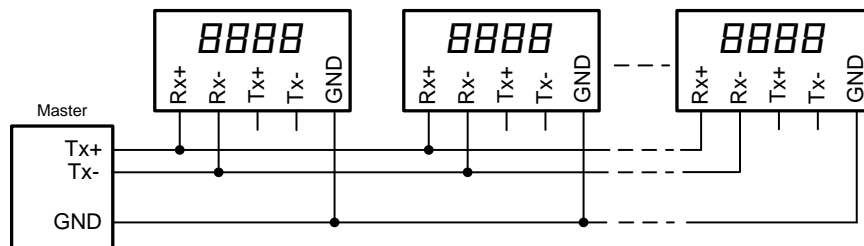
8 Notes on RS485 interface configuration

Interface RS485

The following settings have to be selected in the menu (see Chapter 6):

Menu item 1: RS485

Menu item 6: No protocol reply



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.

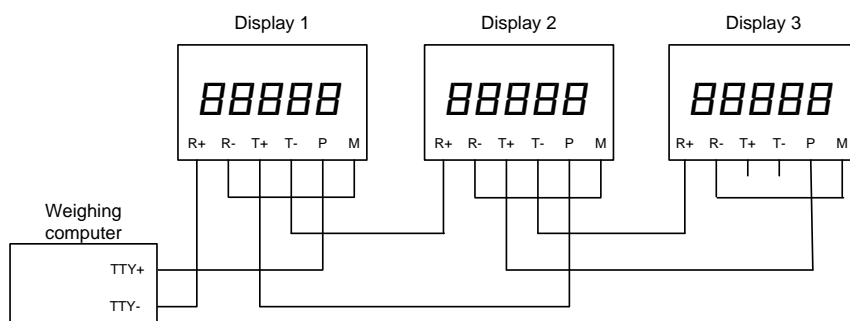
Improperly terminated data lines cause faults during data transfer.

Interface TTY 20mA

An auxiliary voltage for supply of the current loop ($24\text{ V} \pm 20\%$, max. 50 mA, M = reference potential), which is galvanically separated from the operating voltage, is supplied by the units on terminal P.

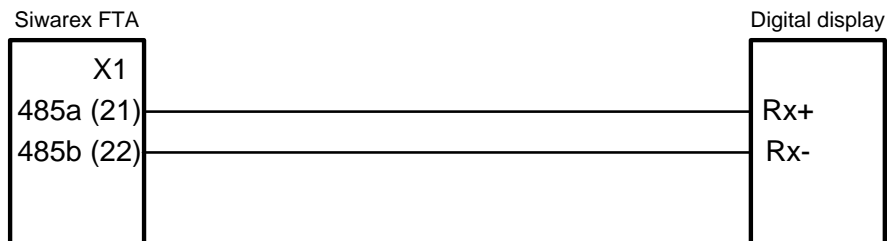
Moreover, the units send the received data telegrams via the serial interface (T+/T-). If the menu item 6 (protocol reply) is included in the menu, the setting 'Echo' has to be selected.

These properties allow the technically correct activation of several display panels as shown below:



Configuration using Siemens Siwarex

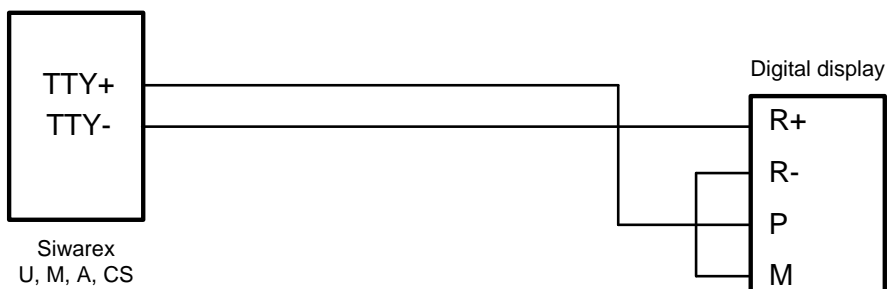
For Siwarex FTA, the unit version S302-xx/xx/xx-xxx/xx-SM is to be used. Activation is effected via the RS485 interface of the Siwarex:



In menu item 1 setting RS485 is to be selected.

The units send the received data telegrams via interface (Tx+/Tx-).

For Siwarex U, M, A and CS, the unit version S302-xx/xx/xx-xxx/xx-TM is to be used. Activation is effected via the TTY interface of the Siwarex:



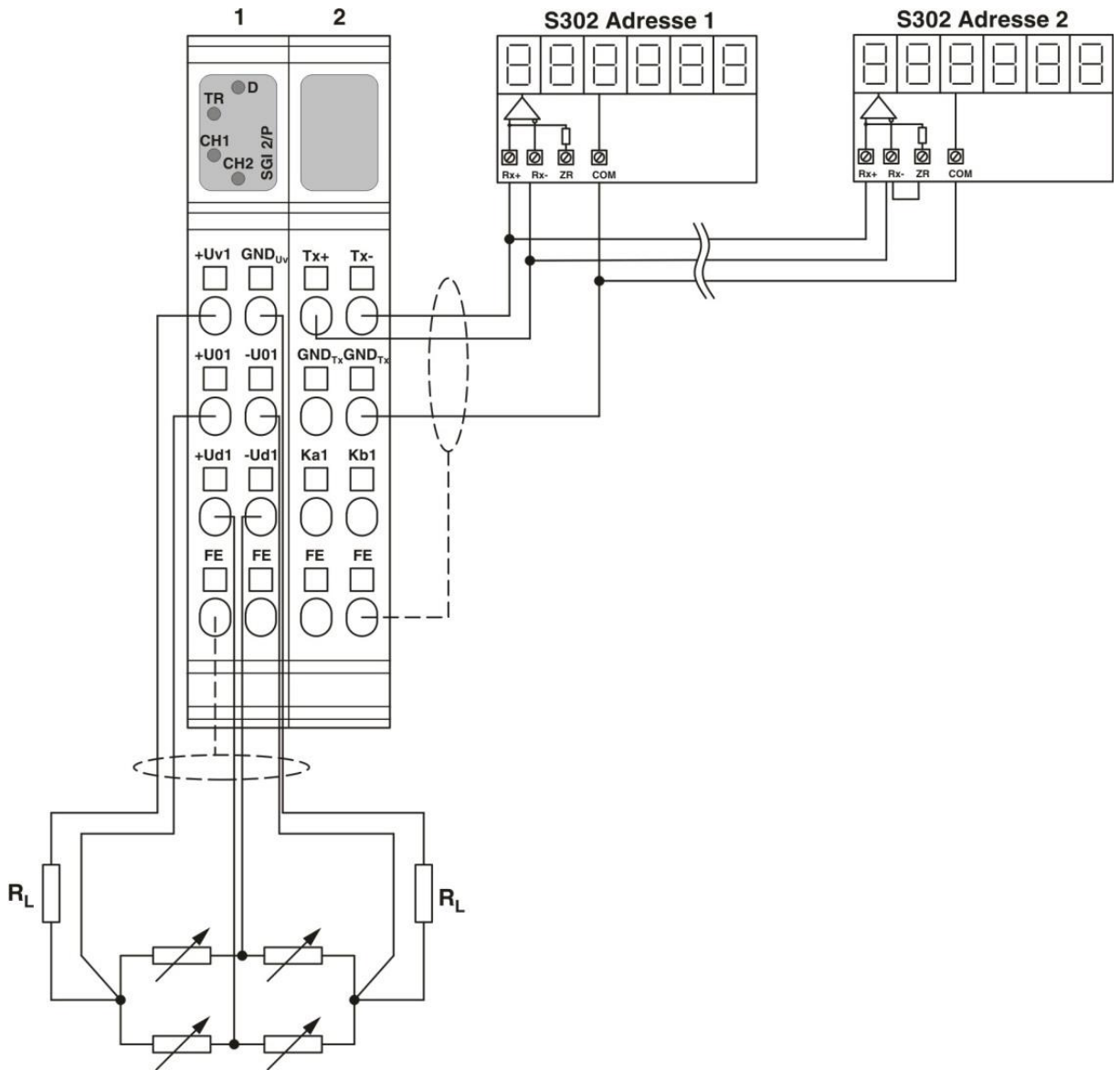
In menu item 1 setting TTY 20mA is to be selected.

The TTY interface of the Siwarex has the following terminal connections:

	Siwarex U	Siwarex M	Siwarex A	Siwarex CS
TTY+	TxD2+ (6)	TxD+ (6)	TxD+ (6)	TTY+ (10)
TTY-	TxD2- (7)	TxD- (7)	TxD- (7)	TTY- (14)

Configuration using Phoenix Contact IB IL SGI 2/P

For Phoenix Contact IB IL SGI 2/P (-PAC), the unit version S302-xx/xx/xx-xxx/xx-TL is to be used. Activation is effected via the RS485 interface:



Adresse = address

9 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"/>
	:	:	:	:	:	:	:	:	:	:	:	:
No dimension		0										
Dimension (foil)		F										
Dimension		K	:	:	:	:	:	:	:	:	:	:
Dimension, -0-/NET		W	:	:	:	:	:	:	:	:	:	:
4 Digits		1	:	:	:	:	:	:	:	:	:	:
5 Digits		2	:	:	:	:	:	:	:	:	:	:
			:	:	:	:	:	:	:	:	:	:
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 for outdoor use		2										
LRD [®]		4										
				:	:	:	:	:	:	:	:	:
Character color red			R	:	:	:	:	:	:	:	:	:
Character color green			G	:	:	:	:	:	:	:	:	:
Character color white			W	:	:	:	:	:	:	:	:	:
				:	:	:	:	:	:	:	:	:
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	:	:	:	:	:	:	:	:	:
				:	:	:	:	:	:	:	:	:
Serial interface RS485 and RS232			S	0								
Serial interface TTY 20mA and RS232			T	0								

Protocol evaluation

The protocol evaluation is coded in the type designation as follows:

S302 - / / - / -

	:
Protocol evaluation Precia-Molen	E
Protocol evaluation Schenck	C
Protocol evaluation Phoenix Contact	L
Protocol evaluation Siemens	M
Protocol evaluation Sartorius (GWT, Philips)	P
Protocol evaluation Arpège	R
Protocol evaluation Mettler-Toledo	T
Protocol evaluation Bizerba	Z

Max. power consumption

Units without dimension symbol

4 digits, one-sided display

S302-04/06/0x-1xx/xx-xx	approx. 14 VA
S302-04/10/0x-1xx/xx-xx	approx. 21 VA
S302-04/10/4x-1xx/xx-xx	approx. 50 VA
S302-04/16/0x-1xx/xx-xx	approx. 64 VA
S302-04/16/4x-1xx/xx-xx	approx. 50 VA
S302-04/25/0x-1xx/xx-xx	approx. 79 VA
S302-04/25/4x-1xx/xx-xx	approx. 85 VA

5 digits, one-sided display

S302-05/06/0x-1xx/xx-xx	approx. 15 VA
S302-05/10/0x-1xx/xx-xx	approx. 23 VA
S302-05/10/4x-1xx/xx-xx	approx. 50 VA
S302-05/16/0x-1xx/xx-xx	approx. 77 VA
S302-05/16/4x-1xx/xx-xx	approx. 50 VA
S302-05/25/0x-1xx/xx-xx	approx. 96 VA
S302-05/25/4x-1xx/xx-xx	approx. 85 VA

Units with dimension symbol made of self-adhesive foil

4 digits, one-sided display

S302-F4/06/0x-1xx/xx-xx	approx. 14 VA
S302-F4/10/0x-1xx/xx-xx	approx. 21 VA
S302-F4/10/4x-1xx/xx-xx	approx. 50 VA
S302-F4/16/0x-1xx/xx-xx	approx. 64 VA
S302-F4/16/4x-1xx/xx-xx	approx. 50 VA
S302-F4/25/0x-1xx/xx-xx	approx. 79 VA
S302-F4/25/4x-1xx/xx-xx	approx. 85 VA

5 digits, one-sided display

S302-F5/06/0x-1xx/xx-xx	approx. 15 VA
S302-F5/10/0x-1xx/xx-xx	approx. 23 VA
S302-F5/10/4x-1xx/xx-xx	approx. 50 VA
S302-F5/16/0x-1xx/xx-xx	approx. 77 VA
S302-F5/16/4x-1xx/xx-xx	approx. 50 VA
S302-F5/25/0x-1xx/xx-xx	approx. 96 VA
S302-F5/25/4x-1xx/xx-xx	approx. 85 VA

Units with LED dimension symbol

4 digits, one-sided display

S302-K4/06/0x-1xx/xx-xx	approx. 14 VA
S302-K4/10/0x-1xx/xx-xx	approx. 21 VA
S302-K4/16/0x-1xx/xx-xx	approx. 64 VA
S302-K4/25/0x-1xx/xx-xx	approx. 79 VA

5 digits, one-sided display

S302-K5/06/0x-1xx/xx-xx	approx. 15 VA
S302-K5/10/0x-1xx/xx-xx	approx. 23 VA
S302-K5/16/0x-1xx/xx-xx	approx. 77 VA
S302-K5/25/0x-1xx/xx-xx	approx. 96 VA

4 digits, double-sided display

S302-04/06/0x-2xx/xx-xx	approx. 19 VA
S302-04/10/0x-2xx/xx-xx	approx. 33 VA
S302-04/10/4x-2xx/xx-xx	approx. 91 VA
S302-04/16/0x-2xx/xx-xx	approx. 119 VA
S302-04/16/4x-2xx/xx-xx	approx. 91 VA
S302-04/25/0x-2xx/xx-xx	approx. 150 VA
S302-04/25/4x-2xx/xx-xx	approx. 164 VA

5 digits, double-sided display

S302-05/06/0x-2xx/xx-xx	approx. 21 VA
S302-05/10/0x-2xx/xx-xx	approx. 38 VA
S302-05/10/4x-2xx/xx-xx	approx. 91 VA
S302-05/16/0x-2xx/xx-xx	approx. 146 VA
S302-05/16/4x-2xx/xx-xx	approx. 91 VA
S302-05/25/0x-2xx/xx-xx	approx. 184 VA
S302-05/25/4x-2xx/xx-xx	approx. 164 VA

4 digits, double-sided display

S302-F4/06/0x-2xx/xx-xx	approx. 19 VA
S302-F4/10/0x-2xx/xx-xx	approx. 33 VA
S302-F4/10/4x-2xx/xx-xx	approx. 91 VA
S302-F4/16/0x-2xx/xx-xx	approx. 119 VA
S302-F4/16/4x-2xx/xx-xx	approx. 91 VA
S302-F4/25/0x-2xx/xx-xx	approx. 150 VA
S302-F4/25/4x-2xx/xx-xx	approx. 164 VA

5 digits, double-sided display

S302-F5/06/0x-2xx/xx-xx	approx. 21 VA
S302-F5/10/0x-2xx/xx-xx	approx. 38 VA
S302-F5/10/4x-2xx/xx-xx	approx. 91 VA
S302-F5/16/0x-2xx/xx-xx	approx. 146 VA
S302-F5/16/4x-2xx/xx-xx	approx. 91 VA
S302-F5/25/0x-2xx/xx-xx	approx. 184 VA
S302-F5/25/4x-2xx/xx-xx	approx. 164 VA

4 digits, double-sided display

S302-K4/06/0x-2xx/xx-xx	approx. 19 VA
S302-K4/10/0x-2xx/xx-xx	approx. 33 VA
S302-K4/16/0x-2xx/xx-xx	approx. 119 VA
S302-K4/25/0x-2xx/xx-xx	approx. 150 VA

5 digits, double-sided display

S302-K5/06/0x-2xx/xx-xx	approx. 21 VA
S302-K5/10/0x-2xx/xx-xx	approx. 38 VA
S302-K5/16/0x-2xx/xx-xx	approx. 146 VA
S302-K5/25/0x-2xx/xx-xx	approx. 184 VA

Units with LED dimension symbol and LED symbol - 0-/NET

5 digits, one-sided display

S302-W5/06/0x-1xx/xx-xx	approx. 17 VA
S302-W5/10/0x-1xx/xx-xx	approx. 30 VA
S302-W5/16/0x-1xx/xx-xx	approx. 104 VA
S302-W5/25/0x-1xx/xx-xx	approx. 130 VA

5 digits, double-sided display

S302-W5/06/0x-2xx/xx-xx	approx. 25 VA
S302-W5/10/0x-2xx/xx-xx	approx. 51 VA
S302-W5/16/0x-2xx/xx-xx	approx. 200 VA
S302-W5/25/0x-2xx/xx-xx	approx. 250 VA

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

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.

Screw-type terminals

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

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

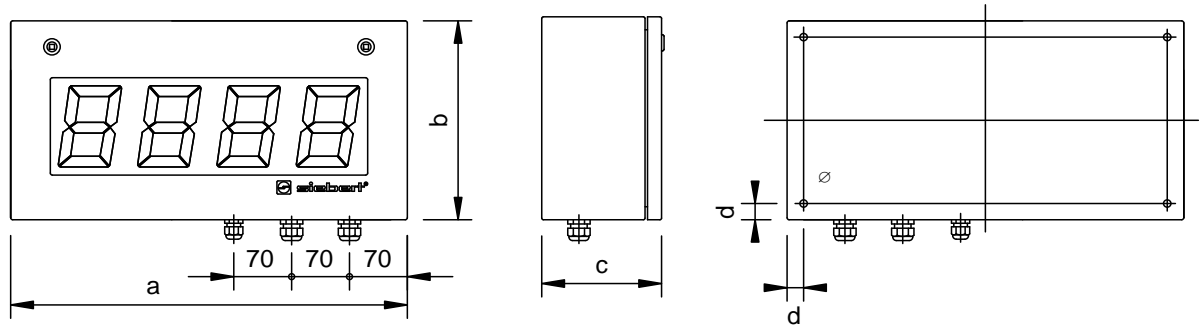
Ambient conditions

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

Measurements and weights

Units with one-sided display

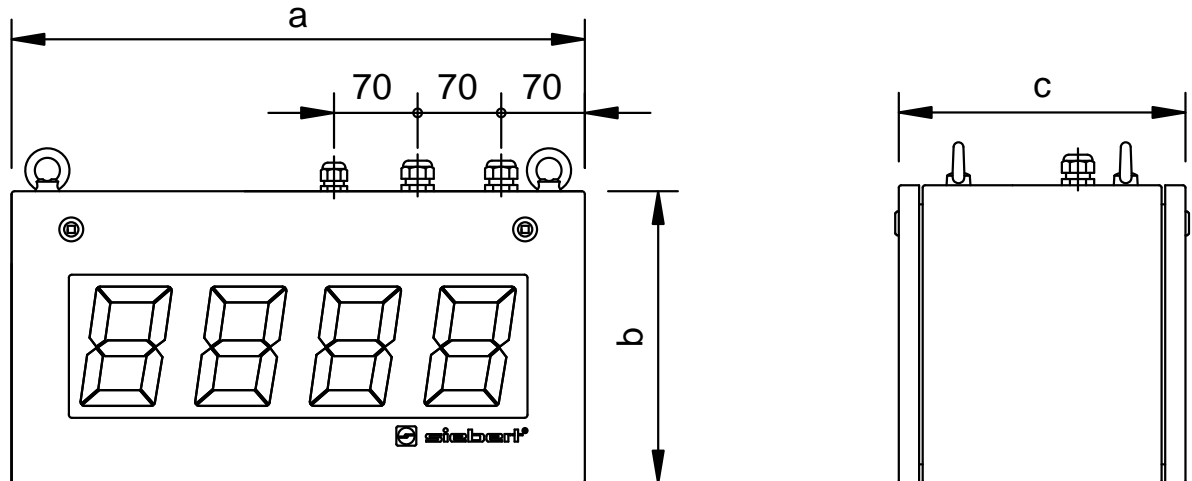
The following figure shows unit version S302-04/10/4x-1xx/xx-xx, representing the other unit versions listed in the following table.



	a	b	c	d	Ø	Weight
4 digits						
S302-04/06/xx-1xx/xx-xx	300 mm	185 mm	110 mm	16 mm	7 mm	approx. 5 kg
S302-04/10/xx-1xx/xx-xx	480 mm	245 mm	145 mm	16 mm	7 mm	approx. 9 kg
S302-04/16/xx-1xx/xx-xx	670 mm	300 mm	145 mm	20 mm	9 mm	approx. 13 kg
S302-04/25/xx-1xx/xx-xx	1030 mm	400 mm	165 mm	20 mm	9 mm	approx. 23 kg
5 digits						
S302-05/06/xx-1xx/xx-xx	400 mm	185 mm	110 mm	16 mm	7 mm	approx. 6 kg
S302-05/10/xx-1xx/xx-xx	680 mm	245 mm	145 mm	16 mm	7 mm	approx. 12 kg
S302-05/16/xx-1xx/xx-xx	960 mm	300 mm	145 mm	20 mm	9 mm	approx. 17 kg
S302-05/25/xx-1xx/xx-xx	1500 mm	400 mm	165 mm	20 mm	9 mm	approx. 32 kg

Units with double-sided display

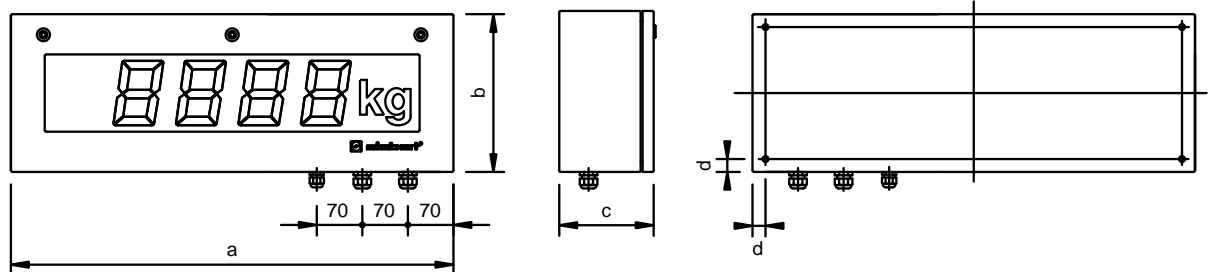
The following figure shows unit version S302-04/10/4x-2xx/xx-xx representing the other unit versions listed in the following table.



4 digits	a	b	c	Weight
S302-04/06/xx-2xx/xx-xx	300 mm	185 mm	150 mm	approx. 9 kg
S302-04/10/xx-2xx/xx-xx	480 mm	245 mm	240 mm	approx. 15 kg
S302-04/16/xx-2xx/xx-xx	670 mm	300 mm	240 mm	approx. 20 kg
S302-04/25/xx-2xx/xx-xx	1030 mm	400 mm	270 mm	approx. 34 kg
5 digits				
S302-05/06/xx-2xx/xx-xx	400 mm	185 mm	150 mm	approx. 9 kg
S302-05/10/xx-2xx/xx-xx	680 mm	245 mm	240 mm	approx. 19 kg
S302-05/16/xx-2xx/xx-xx	960 mm	300 mm	240 mm	approx. 26 kg
S302-05/25/xx-2xx/xx-xx	1500 mm	400 mm	270 mm	approx. 45 kg

Units with one-sided display and additional symbols

The following figure shows unit version S302-F4/10/4x-1xx/xx-xx, representing the other unit versions listed in the following table.



Units with dimension symbol made of self-adhesive foil

4 digits	a	b	c	d	Ø	Weight
S302-F4/06/xx-1xx/xx-xx	400 mm	185 mm	110 mm	16 mm	7 mm	approx. 6 kg
S302-F4/10/xx-1xx/xx-xx	680 mm	245 mm	145 mm	16 mm	7 mm	approx. 12 kg
S302-F4/16/xx-1xx/xx-xx	960 mm	300 mm	145 mm	20 mm	9 mm	approx. 17 kg
S302-F4/25/xx-1xx/xx-xx	1500 mm	400 mm	165 mm	20 mm	9 mm	approx. 32 kg

5 digits

S302-F5/06/xx-1xx/xx-xx	400 mm	185 mm	110 mm	16 mm	7 mm	approx. 6 kg
S302-F5/10/xx-1xx/xx-xx	680 mm	245 mm	145 mm	16 mm	7 mm	approx. 12 kg
S302-F5/16/xx-1xx/xx-xx	960 mm	300 mm	145 mm	20 mm	9 mm	approx. 17 kg
S302-F5/25/xx-1xx/xx-xx	1500 mm	400 mm	165 mm	20 mm	9 mm	approx. 32 kg

Units with LED dimension symbol

4 digits	a	b	c	d	Ø	Weight
S302-K4/06/xx-1xx/xx-xx	400 mm	185 mm	110 mm	16 mm	7 mm	approx. 6 kg
S302-K4/10/xx-1xx/xx-xx	680 mm	245 mm	145 mm	16 mm	7 mm	approx. 12 kg
S302-K4/16/xx-1xx/xx-xx	960 mm	300 mm	145 mm	20 mm	9 mm	approx. 17 kg
S302-K4/25/xx-1xx/xx-xx	1500 mm	400 mm	165 mm	20 mm	9 mm	approx. 32 kg

5 digits

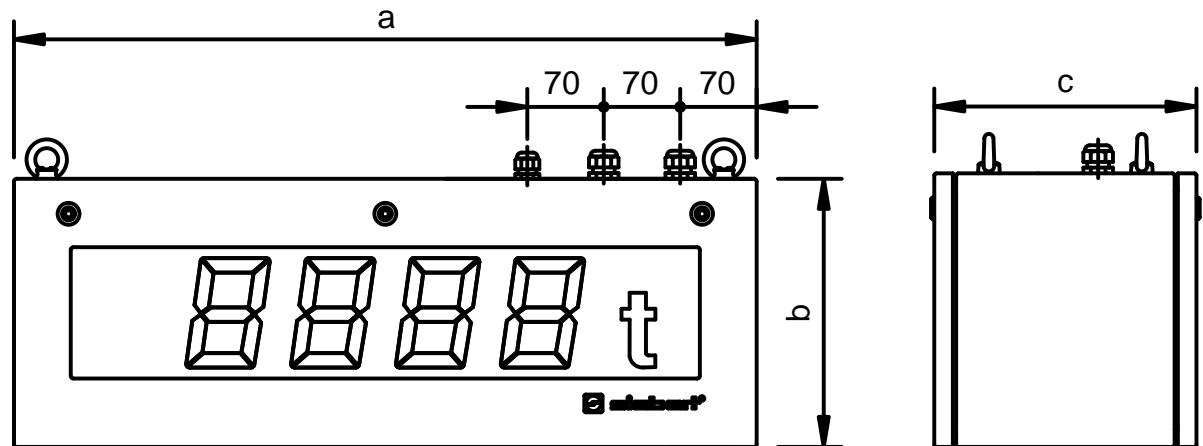
S302-K5/06/xx-1xx/xx-xx	400 mm	185 mm	110 mm	16 mm	7 mm	approx. 6 kg
S302-K5/10/xx-1xx/xx-xx	680 mm	245 mm	145 mm	16 mm	7 mm	approx. 12 kg
S302-K5/16/xx-1xx/xx-xx	960 mm	300 mm	145 mm	20 mm	9 mm	approx. 17 kg
S302-K5/25/xx-1xx/xx-xx	1500 mm	400 mm	165 mm	20 mm	9 mm	approx. 32 kg

Units with LED dimension symbol and LED symbol -0-/NET

5 Stellen	a	b	c	d	Ø	Weight
S302-W5/06/xx-1xx/xx-xx	510 mm	185 mm	110 mm	16 mm	7 mm	approx. 7 kg
S302-W5/10/xx-1xx/xx-xx	870 mm	245 mm	145 mm	16 mm	7 mm	approx. 14 kg
S302-W5/16/xx-1xx/xx-xx	1100 mm	300 mm	145 mm	20 mm	9 mm	approx. 20 kg
S302-W5/25/xx-1xx/xx-xx	1730 mm	400 mm	165 mm	20 mm	9 mm	approx. 37 kg

Units with double-sided display and additional symbols

The following figure shows unit version S302-F4/10/4x-2xx/xx-xx representing the other unit versions listed in the following table.



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

Units with dimension symbol made of self-adhesive foil

4 digits	a	b	c	Weight
S302-F4/06/xx-2xx/xx-xx	400 mm	185 mm	150 mm	approx. 9 kg
S302-F4/10/xx-2xx/xx-xx	680 mm	245 mm	240 mm	approx. 19 kg
S302-F4/16/xx-2xx/xx-xx	960 mm	300 mm	240 mm	approx. 25 kg
S302-F4/25/xx-2xx/xx-xx	1500 mm	400 mm	270 mm	approx. 44 kg

5 digits

S302-F5/06/xx-2xx/xx-xx	400 mm	185 mm	150 mm	approx. 9 kg
S302-F5/10/xx-2xx/xx-xx	680 mm	245 mm	240 mm	approx. 19 kg
S302-F5/16/xx-2xx/xx-xx	960 mm	300 mm	240 mm	approx. 26 kg
S302-F5/25/xx-2xx/xx-xx	1500 mm	400 mm	270 mm	approx. 45 kg

Units with LED dimension symbol

4 digits	a	b	c	Weight
S302-K4/06/xx-2xx/xx-xx	400 mm	185 mm	150 mm	approx. 9 kg
S302-K4/10/xx-2xx/xx-xx	680 mm	245 mm	240 mm	approx. 19 kg
S302-K4/16/xx-2xx/xx-xx	960 mm	300 mm	240 mm	approx. 26 kg
S302-K4/25/xx-2xx/xx-xx	1500 mm	400 mm	270 mm	approx. 45 kg

5 digits

S302-K5/06/xx-2xx/xx-xx	400 mm	185 mm	150 mm	approx. 9 kg
S302-K5/10/xx-2xx/xx-xx	680 mm	245 mm	240 mm	approx. 19 kg
S302-K5/16/xx-2xx/xx-xx	960 mm	300 mm	240 mm	approx. 27 kg
S302-K5/25/xx-2xx/xx-xx	1500 mm	400 mm	270 mm	approx. 46 kg

Units with LED dimension symbol and LED symbol -0-/NET

5 digits	a	b	c	Weight
S302-W5/06/xx-2xx/xx-xx	510 mm	185 mm	150 mm	approx. 11 kg
S302-W5/10/xx-2xx/xx-xx	870 mm	245 mm	240 mm	approx. 23 kg
S302-W5/16/xx-2xx/xx-xx	1100 mm	300 mm	240 mm	approx. 29 kg
S302-W5/25/xx-2xx/xx-xx	1730 mm	400 mm	270 mm	approx. 52 kg