Operating Instructions

Weigh Cells

Models
WZB25-NC | WZB254-ND | WZB254-N | WZB254-NC | WZB653-N | WZB1403-N | WZB1403-NC |
WZB8202-N | WZB8202-NC

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Contents

1 About these Instructions

1.1 Validity

These instructions are part of the device; they must be read in full and stored. These instructions apply to the following versions of the device:

Device	Model
Weigh Cells WZB	WZB25-NC|WZB254-ND| WZB254-N|WZB254-NC| WZB653-N|WZB1403-N| WZB1403-NC|WZB8202-N| WZB8202-NC

1.2 Related Documents

▶ In addition to these instructions, please observe the following documents: Instructions for the associated devices, e.g., display unit, printer.

1.3 Target Groups

These instructions are addressed to the following target groups. The target groups must possess the knowledge specified below.

Target group	Knowledge and Qualifications
Operator	The operator is familiar with the device and the associated work processes. The operator understands the hazards which may arise when working with the device, and knows how to prevent them.*

* If a person in the target group operates the software interface of the device, they are also the "user".

1.4 Symbols Used

1.4.1 Warnings in Operation Descriptions

⚠ WARNING
Denotes a hazard that may result in death or severe injury if it is **not** avoided.

⚠ CAUTION
Denotes a hazard that may result in moderate or minor injury if it is **not** avoided.

NOTICE
Denotes a hazard that may result in property damage if it is **not** avoided.

1.4.2 Other Symbols Used

▶   Required action: Describes activities that must be carried out. The activities in the sequence must be carried out in succession.

▷   Result: Describes the result of the activities carried out.

[ ]   Refers to operating and display elements. Indicates status, warning, and error messages.

2 Safety Instructions

2.1 Intended Use

The weigh cell is intended to be used to weigh under difficult space conditions and for exact weight determination during ongoing production.

The weigh cell must be installed in a device or system, such as a measuring device or a production machine. The weigh cell must be secured to the device or system.

Weigh cells are additional devices for installation in other devices or systems. An EU Declaration of Conformity must be issued for the final device or system.

The optional display unit YRD01 can be connected to the weigh cell.

The device is intended exclusively for use in accordance with these instructions. Any other use is considered **improper**.

If the device and the accessories are not used properly: the protective systems of the device may be impaired. This can lead to unforeseeable personal injury or property damage.

2.1.1 Operating Conditions for the Device

The user of the weigh cell should take into account at least the following points with regards to the complete product with the installed weigh cell:

— Compliance with directives and standards for electrical equipment
— Electromagnetic compatibility of the complete device
— Compliance with mandatory safety regulations.
— Do **not** use this equipment in hazardous areas, zones exposed to explosive gases or dusts, nor areas exposed to potentially explosive materials.
— Do **not** unnecessarily expose the device to aggressive chemical vapors or to extreme temperatures, moisture, shocks, or vibration.

2.1.2 Modifications to the Device

The operator shall be responsible for any modifications to the equipment and for any connections of cables or equipment not supplied by Sartorius and must check and, if necessary, correct these modifications and connections.

Any improper handling, modifications or installation work will result in forfeiture of all claims under the warranty.

The device may only be opened by service technicians who have been trained by Sartorius and who follow Sartorius' standard operating procedures for maintenance and repair work.

2.2 Qualifications of Personnel

Persons who do **not** possess adequate knowledge about how to use the device safely may injure themselves and other persons.

If a particular qualification is required for an activity: The target group will be specified. If **no** qualification is specified: The activity may be carried out by the "operator" target group.

2.3 Functionality of the Device Parts

Non-functioning device parts, e.g., as a result of damage or wear, can cause malfunctions. There is a risk of injury to persons.

▶ If device parts are **not** functional: Do **not** use the device.

3   Device Description

NOTICE

Improper modification of the device may result in damage to property.

▶   The user may only change screws in relation to the load receptor and the below–balance weighing!

3.1   Device Overview

3.1.1   Weigh Cells
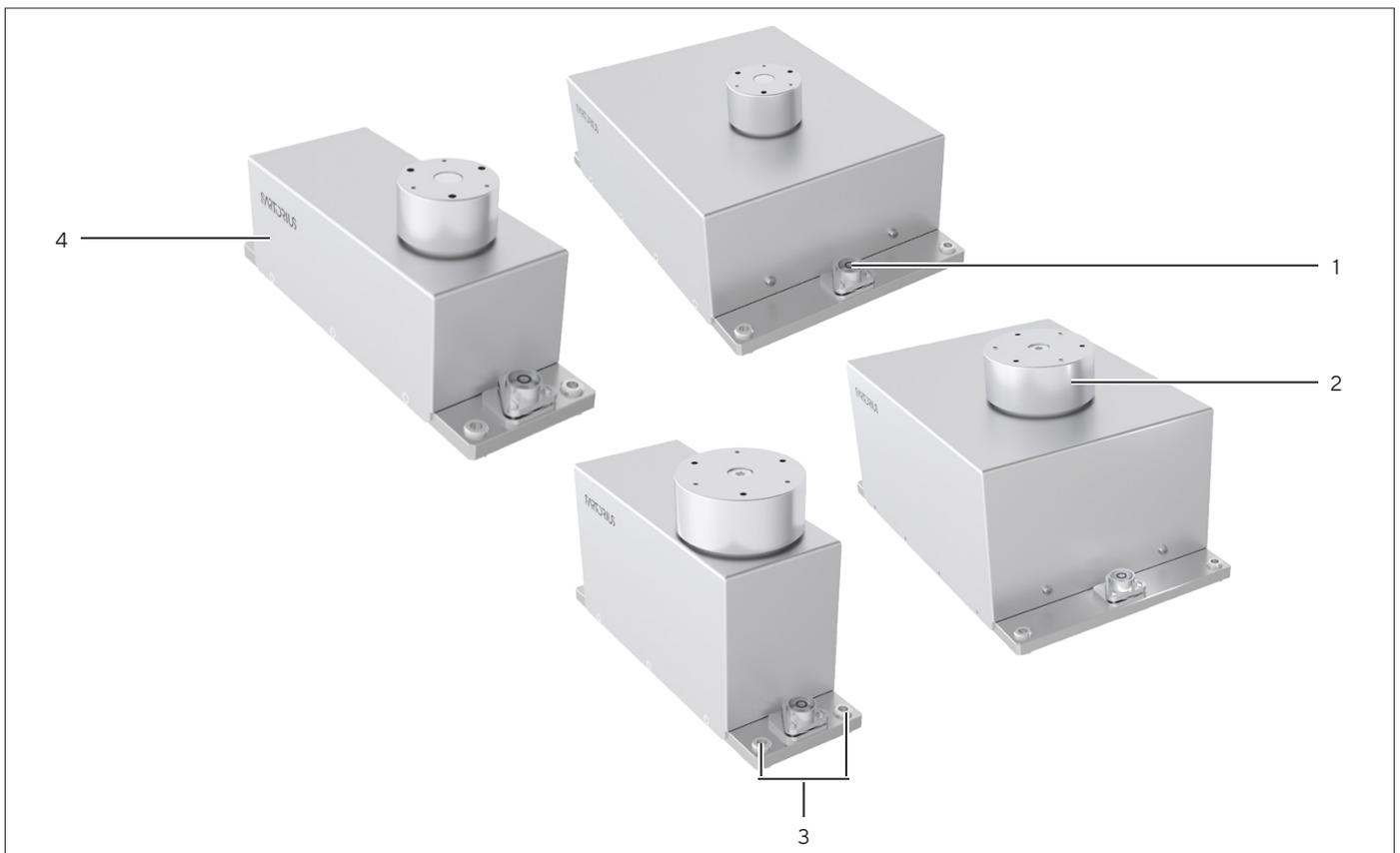
Fig. 1: Front view of WZB254-ND|-N | WZB653-N | 1403-N (top left), WZB254-NC | 1403-NC (top right), WZB8202-NC (bottom right), and WZB8202-N (bottom left)

Pos.	Name	Description
1	Level indicator	Displays the correct position of the weigh cell.
2	Load receptor	Intended to attach the sample holder or a weighing pan.
3	Screw	— Thread M6 — For securing and leveling the weigh cell
4	Weigh cell	
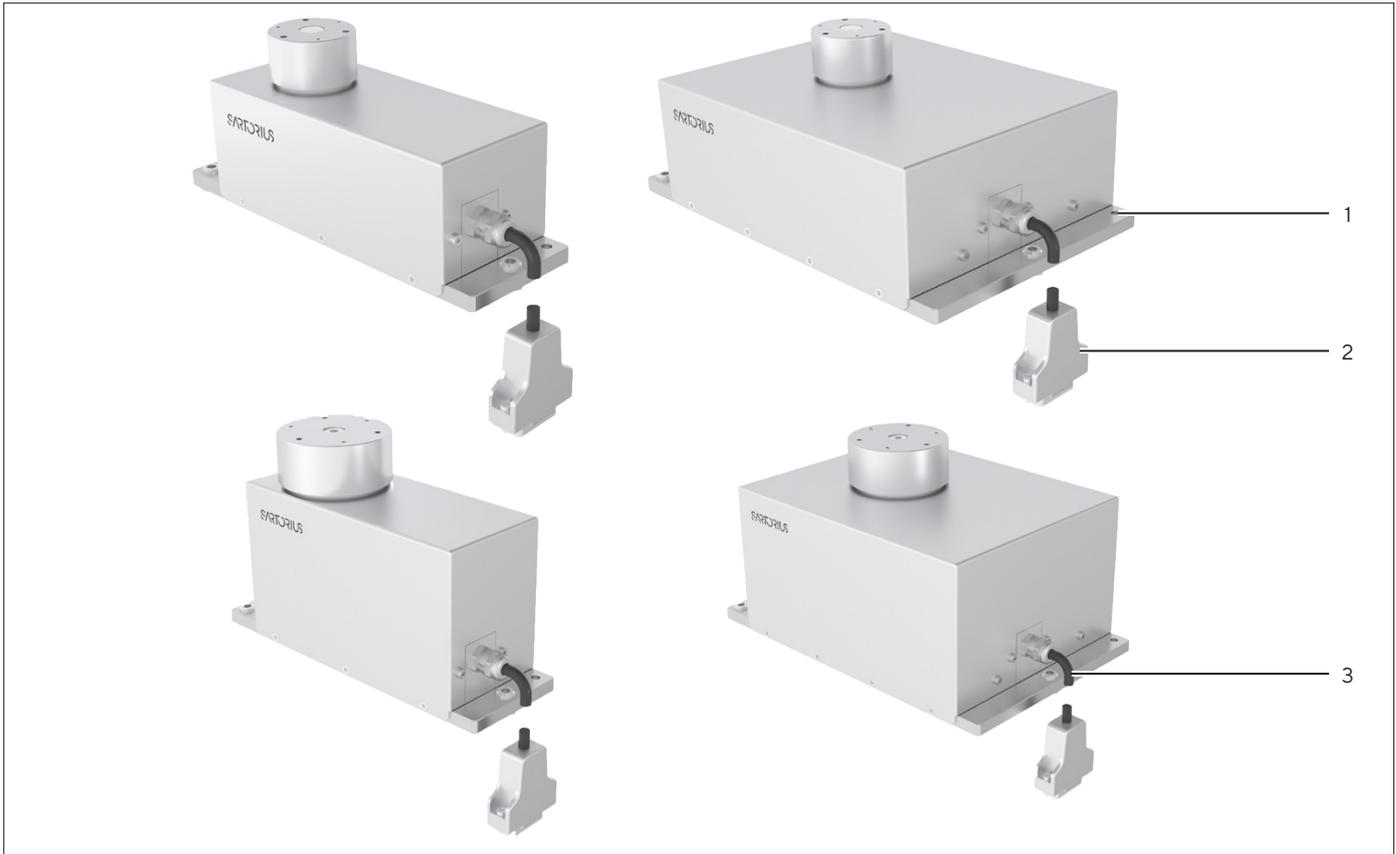
Fig. 2: Rear view of WZB254-ND|-N, | WZB653-N | WZB1403-N (top left), WZB254-NC | WZB1403-NC (top right), WZB8202-NC (bottom right), and WZB8202-N (bottom left)

Pos.	Name	Description
1	Thread for potential equalization conductor	
2	Electronics unit connector	
3	Connection cable	3 m long.
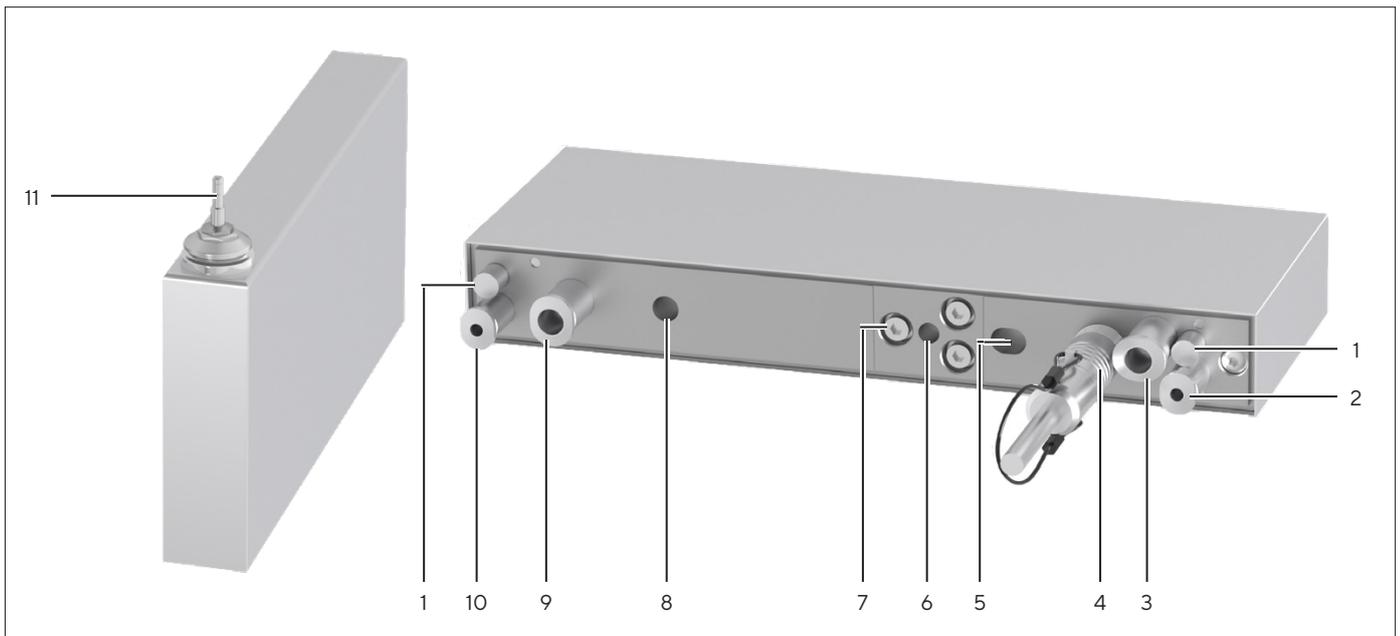
Fig. 3: WZB25-NC—View from the front (left) and rear (right)

Pos.	Name	Description
1	Pressure outlet	For pressure inlet 1 and pressure inlet 2
2	Rinsing run air outlet	— Rinsing run air outlet < 50 mbar — D = 6 mm
3	Pressure inlet 1	— For closing mechanism — 6 bar — D = 3 mm
4	Electrical connection	To the electronics unit
5	Positioning hole 1	Is the anti-twist mechanism for the weigh cell.
6	Fixing thread	
7	Mounting surface	
8	Positioning hole 2	Is the anti-twist mechanism for the weigh cell.
9	Rinsing run air inlet	— Rinsing run air inlet < 50 mbar — D = 6 mm
10	Pressure inlet 2	— For internal motor weight unit — 6 bar — D = 3 mm
11	Retainer pin	For customer-specific weighing pan

3.1.2 Electronics Unit
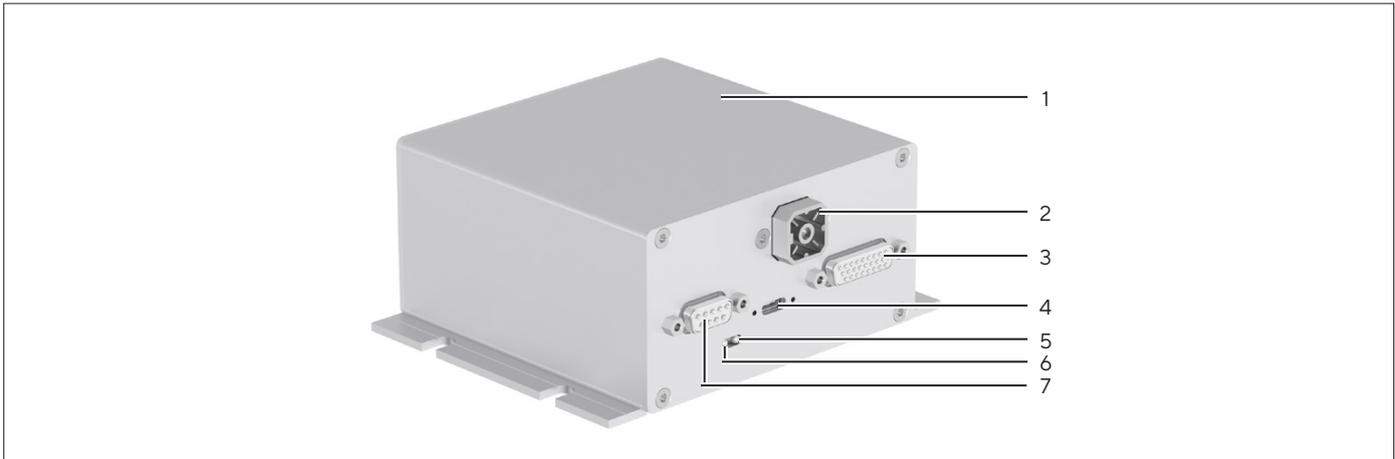
Fig. 4: Electronics unit

Pos.	Name	Description
1	Electronics Unit	
2	DC jack	
3	Female connector, weigh cell	
4	USB-C connection	— Is screw-on. — For the YRD01 display unit
5	Indicator light TxD and RxD	Flashes yellow during data transfer.
6	Power indicator light	— Illuminates in green when there is a power supply. — Illuminates in red if there is no weighing system.
7	RS232 interface	

3.2 System Description

The products are made up of two parts:

— Compact weigh cell, which can be secured on a level surface.
— Electronics unit

With the integrated adjustment weight, all NC-type models can be adjusted at any time on command or by pressing a button when using the optional YRD01 display unit or using the CAS Suite software.

4   Operating Design

4.1   CAS Suite User Interface

Fig. 5: CAS Suite menu view

Pos.	Designation	Description
1	Code number	− There is a code number for each parameter. − If the number illuminates in green: This parameter is selected.
2	[+ | −] button	To open (+) or close (−) a level.
3	Level 4	
4	Level 3	
5	Level 2	
6	Level 1	
7	Menu	

4.2   Menu Structure, Main Menu with CAS Suite

▶ Navigating in menus with the mouse button.

Level 1	Level 2	Description
Active setup menu	BALANCE	Set the functions of the device.
	General settings	Menu reset
Active device menu	Interface_1 (RS-232)	Define the parameters for the COM interface.
	Interface_2 (PC-USB)	Define the parameters for the USB interface.
	Additional functions	Define the functions of the operating display.
Active print menu	Communication parameter (SBI)	Configure the automatic data output.
	Print parameters	Perform the settings for the printout.
	PC direct parameter	Define the output format for the data exchange between the weigh cell and the PC
Active appl. menu	Weighing only	Determine the weight value of a sample. Activate the functions for all applications.
	Counting	Determine the number of parts that have approximately equal weight.
	Percent	Determine the percentage share of a sample based on a reference weight.
	Net total	Carry out the weighing of components for a mixture.
	Totalizing	Add weight values of independent weighing processes in a memory.
	Animal balance	Weigh unstable samples, e.g. animals. This program calculates the average of several measurement cycles.
	Calculation	Calculate the weight value using a multiplier or divisor, e.g. for determining the weight per unit area of paper.
	Density determination	Determine the density of solid samples based on the buoyancy method.

5 Installation

The weigh cells can be supplied in various designs. If options (special equipment) have been ordered, the desired options will be added to the cells in the plant.

NOTICE

Once the weigh cells have been removed from the packaging, they may lose accuracy and the safety of the device may be impaired if subjected to strong vibration.

▶ Do not expose the device to unnecessarily extreme temperatures, moisture, shocks, blows or vibration.

▶ It is a good idea to save the box and all parts of the packaging until you have successfully installed your equipment. Only the original packaging provides the best protection for shipment.

5.1 Incoming Inspection

The customer shall inspect the product/service and packaging immediately upon delivery for proper functioning, completeness, and absence of defects. This is to be performed in an incoming inspection within 10 days of delivery of the product or service. The incoming inspection must take place before installation into the equipment. Any obvious defects, errors, or incorrect delivery must be reported in writing. Defects detected at a later date must be reported in writing immediately upon detection.

Please consider subsequent commissioning carefully during the incoming inspection:

— We recommend performing a reproducibility test using an auxiliary draft shield to make sure there was no damage to the cells during transport. The YRD01 display unit or the CAS Suite PC configuration software can be used for assistance.

5.2 Scope of Delivery

Article	Quantity
Weigh cell	1
Electronics unit	1
Operating instructions (this document)	1
Power supply unit with country-specific power cord	1
If necessary, special accessories as listed on the bill of delivery or in accordance with any customer-specific agreement	

5.3 Unpacking

NOTICE

Additional equipment installed on the load receptor may impair the function.

The series approval and the specifications achieved for the entire system are the user's responsibility.

▶ Compare the specifications with the information from the "Technical Data" (see Chapter "13 Technical Data", page 50) section.

▶ The weigh cell must be adjusted after transport.
— WZB...-N, WZB254ND: External adjustment
— WZB...-NC: Internal adjustment

The weigh cell is delivered in antistatic packaging along with its associated electronics unit.

The other electronic components are packaged separately on a base plate in an antistatic bag.

Procedure

▶ Unpack the device.

▶ Save all parts of the packaging in case they are needed for shipment. Only the original packaging will ensure safe transport.

5.3.1 Installation Instructions

During use, always ensure that the serial numbers of the weigh cell and electronics match!

The corresponding cable must be securely inserted into the electronics and screwed into place before initial startup.

The device is designed to deliver reliable weighing results when installed properly.

The device works precisely and quickly if the following points in particular are observed during system development and installation:

— Avoid exposure to extreme heat, e.g., from electronic components, heaters or sunlight.
— Protect the device from direct drafts.
— Avoid shocks and vibrations, e.g., from motors or valves, during weighing.
— Protect the device from aggressive chemical vapors.
— Do not expose to extreme moisture.
— Do not expose to magnetic influences.

5.4 Acclimatization

When a cold device is brought into a warm environment: The temperature difference can lead to condensation from humidity in the device (moisture formation). Moisture in the device can lead to malfunctions.

Procedure

▶ Allow the device to acclimatize at the installation site (for the acclimatization duration see Chapter "13.5 Acclimatization Before Power Supply", page 52). The device must be disconnected from the power supply during that time.

5.5 Warm-up Time
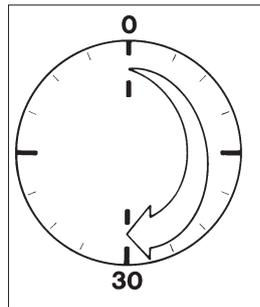
After connection to the power supply, the warm-up time must be observed in order to comply with the information from the specifications. This will be influenced by the system used. The guide values for the weigh cells are specified in the "Technical Data" (see 13.6, 52) section.

However, this guide value must be verified by the user in the respective system/use situation.

5.6 Leveling the Load Receptor for User-specific Load Holder (Except for WZB25-NC)

Procedure
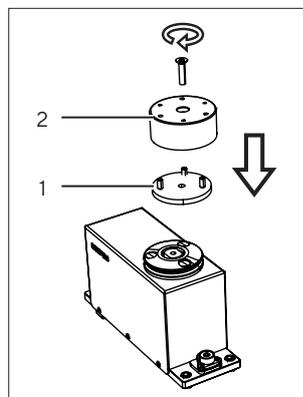
▶ Apply the spacer ring (1) and load receptor (2).
▶ Secure the load receptor with the enclosed screw (for torques, see Chapter "5.11 Maximum Load on the Pan Support", page 16).
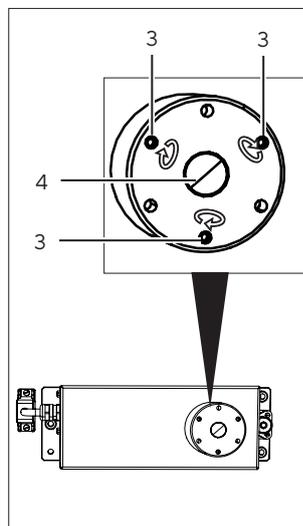
▶ Remove the screw (4).
▶ Use the screws (3) to radially align and level the load receptor (limited height adjustment).
▶ Secure the load receptor again with the screw (4) (for torques, see Chapter "5.11 Maximum Load on the Pan Support", page 16).
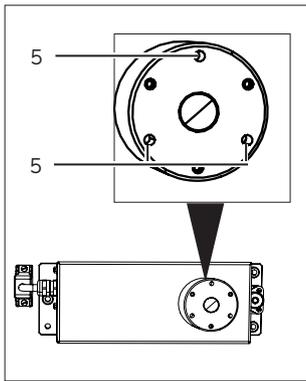
▶ If required: Screw the user-specific load holder onto the thread (5) of the load receptor (for torques, see Chapter "5.11 Maximum Load on the Pan Support", page 16).

▶ The user-specific load holder must be rigid and be securely screwed to the load receptor.

5.7 Leveling Weigh Cells (Leveling Feet Optional)

Purpose

— To compensate for uneven areas at the place of installation.
— To ensure that the weigh cell is placed in a perfectly horizontal position for consistently reproducible weighing results.
— Always level the weigh cell again whenever it has been moved to a different location.
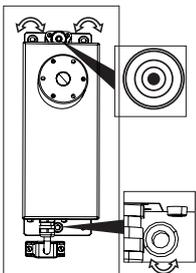
Procedure

▶ Level the weigh cell using the foot screws. Turn the foot screws until the air bubble is centered in the level indicator.

5.8 Securely Installing Weigh Cells

Requirement

The installation of the weigh cell is complete.

Procedure
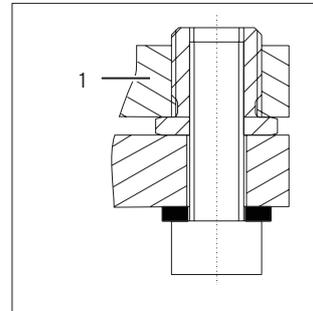
▶ Adjust the weigh cell horizontally in the system at the fixed location.
▶ Fasten M6 screws to the base plate of the weigh cell (1): Torque 2.5 Nm.
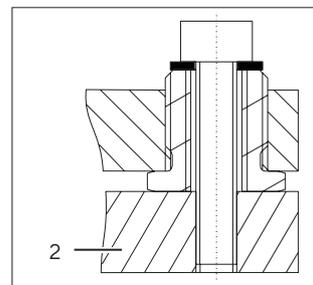
▶ Secure M4 screws to the threads of a user-specific fastening frame from the system (2).
▶ **NOTICE** Do **not** remove the sleeve.

5.9 Establishing the Weigh Cell – Electronics Unit Connection

NOTICE

Mixing up the weigh cell and electronics unit may result in malfunctions:

▶ Ensure that the serial numbers are the same.
▶ Only connect device parts that belong together.

▶ Insert the plug of the connection cable into the socket of the electronics unit.

5.10 Connecting the Optional Display Unit

The YRD01 control unit can be connected while operation is ongoing (hot plug-in).

▶ Insert the connection plug into the USB-C connection of the electronics unit.

5.11   Maximum Load on the Pan Support
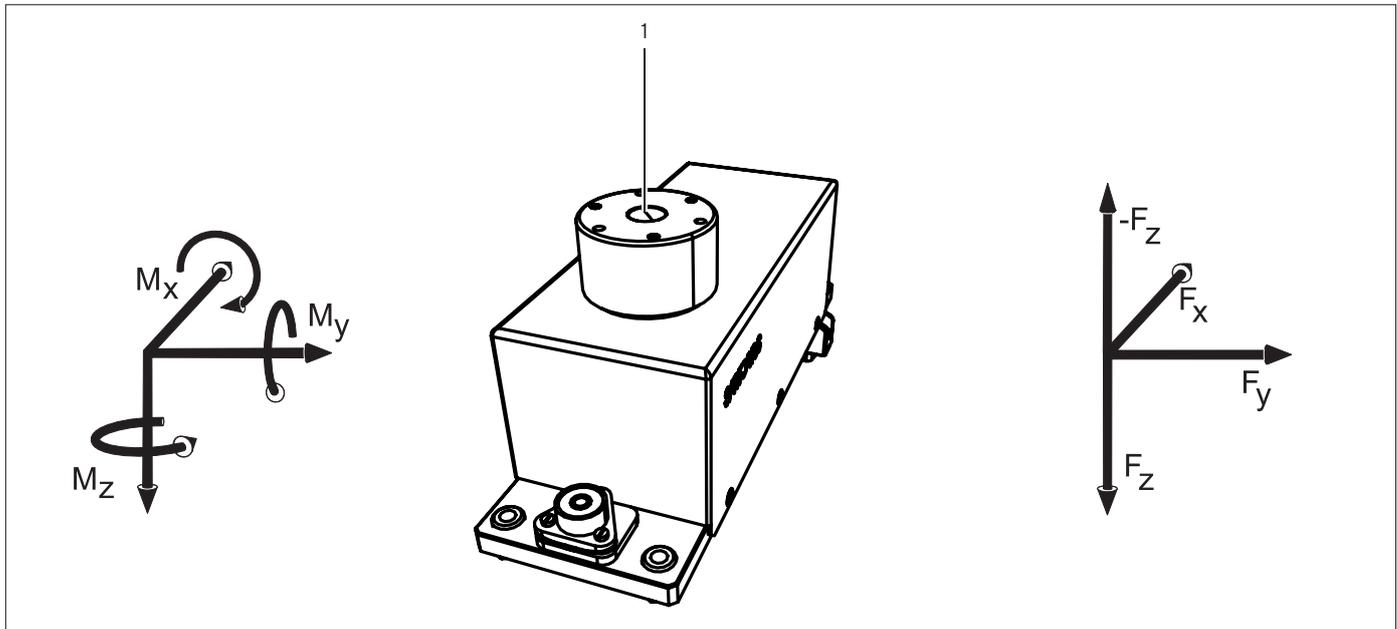
Fig. 6: Maximum load on the pan support

Pos.	Name	Description
1	Force holding point	

Model	Unit	WZB25-NC	WZB254-N WZB254-ND WZB254-NC	WZB653-N	WZB1403-N WZB1403-NC	WZB8202-N WZB8202-NC
		Value	Value	Value	Value	Value
Maximum torques (Mx. My, Mz)	Nm	0.1	2	2.5	4	8
Torque forces	Nm	0.5	1	1	2	4
Maximum force opposite to direction of load ($-F_z$)	N	2	3	6	15	100
Maximum forces on the force holding point (F_x, F_y, F_z)	N	2	20	25	40	80 F_z 200

Either the maximum forces or torques may be present. If forces and torques occur at the same time, the sum of the percentage loads must not exceed 100%.
Higher loads may destroy the weigh cell.

Example

Weigh cell with load holder protruding to the front.

The torque My is the sum of the torque of the weight force MLoad, the torque of any possible excess weight that may be applied MEx and the torque from the net weight MCant of the load holder.
The force Fz is made up of the weight force FLoad, the weight force of the cantilever FCant, and the overload force FOver.

How large can the maximum eccentric overload force FOver be for a WZB254-M, with a load of MLoad = 100 g and a cantilever length L of 100 mm with a net weight of MCant = 60 g?

The percentage utilization of forces and torques that occur may not exceed a total of 100%.

$1 = F_z/F_{ZMAX} + M_y/M_{MAX}$
$F_Z = F_{Load} + F_{Cant} + F_{Over}$
$F_Z = 1.57 \, N + F_{Over}$

$M_y = M_{Load} + M_{Cant} + M_{Ex}$
$M_y = 0.127 \, Nm + F_{Over} \times 0.1 \, m$

$1 = (1.57 \, N + F_{Over} / 20 \, N + (0.127 \, Nm + F_{Over} \times 0.1 \, m / 2 \, Nm))$
FOver = 8.58 N

However, the overload protection may be triggered even with smaller forces.

Load holders must generally be rigid and torsion-resistant. A test is recommended because there may be unwanted reactions on the control loop. The influences of drafts and the instructions for analytical weighing must be considered.

6 Getting Started

6.1 Installing the Power Supply Unit

⚠ WARNING

Fatal electric shocks can be caused by using incorrect power plug adapters or improper use of the power plug adapters!

▶ Attach the country-specific power plug adapter to the power supply unit.

▶ Do **not** insert the power plug adapter into the socket without a power supply unit.

Item number on packaging	Power supply unit YEPS01-15VOH with connection cable and country-specific power plug adapters (packed in PE bag with printed country code, e.g., EU)
YEPS01-PS1	USA, Japan and Canada (US, JP+CAN), Europe and Russia (EU+RU), Great Britain (UK)
YEPS01-PS2	Argentina (AR), Brazil (BR), India (IN), South Africa (ZA)
YEPS01-PS3	China (CN), Australia (AU), Korea (KR)

Procedure
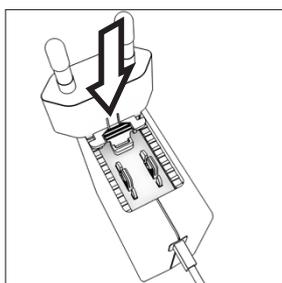
▶ Select the country-specific power plug adapter. The power plug adapter must be suitable for use with the wall outlet at the installation site.

▶ Insert the power plug adapter into the power supply unit. The grooved button must be facing forwards.

▶ Push the power plug adapter as far as you can until it clicks into place.

▶ Check whether the power plug adapter is securely locked in place by pulling it gently.

▷ If the power plug adapter does **not** move: It is locked in place.

6.1.1 Dismantling the Power Plug Adapter

Procedure
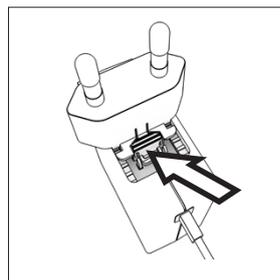
▶ Press the grooved button from above and pull back on the power plug adapter.

▶ Push the power plug adapter out of the power supply unit and remove it.

6.2 Connecting the Power Supply

Procedure

▶ ⚠ **WARNING** Serious injuries caused by using defective power supply cables! Check the power supply cable for damage, e.g., cracks in the insulation.
  ▶ If required: Contact Sartorius Service.

▶ Check whether the country-specific power plug matches the power supplies at the installation site.
  ▶ If required: Replace the country-specific power plug adapter.
  ▶ If required: Contact Sartorius Service.

▶ **NOTICE** Damage to the device due to excessive input voltage! Check whether the voltage specifications on the manufacturer's ID label match those of the power supply at the installation site.
  ▶ If the input voltage is too high: Do **not** connect the device to the power supply.
  ▶ Contact Sartorius Service.
  ▶ Only use original Sartorius power supply units.

▶ Insert the right-angle plug of the power supply unit into the electronics module and tighten the screw.

▶ Connect the mains plug to the wall outlet (supply voltage) at the installation site.

▷ After connecting the power supply: "Power" LED illuminates in green.

▷ The power supply is provided via the DC jack (Hirschmann plug).

▶ If the supply voltage specified or the plug design of the AC adapter do not match the local rating or standard, please contact your Sartorius office or dealer.

Optional Power Supply

If the power supply is established with anything other than the supplied power supply unit:
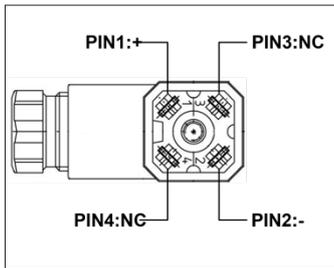
▶ **NOTICE** Risk of damage to the device due to the use of an unsuitable power supply unit. The power supply must be connected in accordance with the regulations applicable in your country.

▶ The device can be operated with a DC voltage of 12 V to max. 26 V.

7   System Settings

7.1   Performing System Settings

The weigh cell is supplied with default settings made in the factory. During the setup process, adjustments can be made based on the special requirements for use.

The following functions for the operating menu can be made using the Sartorius configuration software CAS Suite installed on a computer or with the optional YRD01 control unit:

— Read
— Modify
— Print
— Save

7.2   Synchronization

During data communication between weigh cell and computer, messages consisting of ASCII characters are transmitted via the interface. For error-free data exchange, parameters for baud rate, parity, handshake mode, and character format must be identical for both units.

Settings can be changed in the menu to customize the weigh cell.

7.3   Handshake

The weigh cell interface SBI (Sartorius Balance Interface) has transmit and receive buffers. Different handshake modes can be set in the weigh cell menu:

— Hardware handshake (CTS/RTS)
— Software handshake (XON, XOFF)
— No handshake

7.3.1   Hardware Handshake

When hardware handshake is configured on a 4-wire interface, one more character can be transmitted after CTS.

7.3.2   Software Handshake

The software handshake is controlled via XON and XOFF. When a device is switched on, XON must be transmitted to enable any connected device to communicate.

7.4   Data Output by Print Command

The print command can be triggered by pressing a key (YRD01) or via a software command (Esc P).

7.5 Data Output Rates – Values per Second

Ambient Conditions (Filter adaptation)	WZB...N | -NC		WZB254-ND	
	XBPI	SBI	XBPI	SBI
	"Autoprint"			
Very stable (1.1.1.1)	20	20	150	150
Stable (1.1.1.2)	10	10	150	150
Unstable (1.1.1.3)	5	5	150	150
Very unstable (1.1.1.4)	2.5	2.5	18.75	18.75

7.6 Automatic Data Output

In "Automatic Printout" mode, data is output to the data interface without an extra print command.

You can have synchronized data output automatically at defined display update intervals, with or without weigh cell stability. The time for an interval depends on the setting under "Ambient conditions" (code 1. 1. 1. x) and "Auto output cycle" (code 3. 1. 3. x).

If the automatic data output is activated in the menu, it starts immediately after the balance is turned on. In the setup, you can also specify whether the automatic data output can be stopped and started with a "Print command" (key or via interface).

7.7 Adjustment

Procedure

▶ Perform adjustment functions:
  — Via control commands with Sartorius configuration software CAS Suite installed on a computer (see Chapter "8.6 "Calibration, Adjustment" Function via Interface RS232 (Examples)", page 38)
  — With the optional YRD01 display unit

7.8 Below-balance Weighing

There is a below-balance weighing unit for weighing processes below the weigh cell (**not** for model WZB25-NC).

Overload protection is available in the following models as standard:

— WZB254-N | -ND
— WZB1403-N | -NC
— WZB653-N
— WZB8202-N |-NC

Procedure
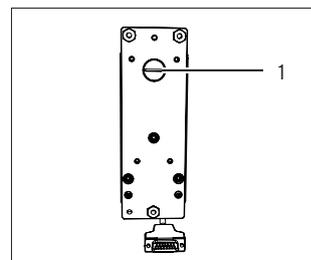
▶ Remove the screw plug (1).

For the models WZB254-N | -ND | -NC, WZB653-N | WZB1402-N | -NC
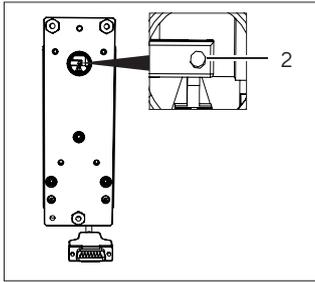
▶ Carefully screw in the customer-supplied load holder on the M3 thread (2): Observe the maximum screw-in torque of 0.8 Nm.

▶ **NOTICE** The screw-in depth may **not** exceed 5 mm

▶ If required, install a draft protection shield.

For the model WZB8202-NC
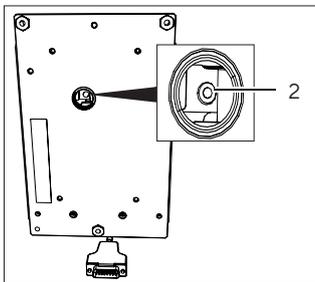
▶ Carefully screw in the customer-supplied load holder on the M4 thread (2): Observe the maximum screw-in torque of 0.8 Nm.

▶ **NOTICE** The screw-in depth may **not** exceed 5 mm.

▶ If required, install a draft protection shield.

For the model WZB8202-N
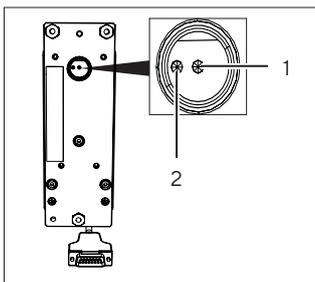
▶ Carefully screw in the customer-supplied load holder on the M4 thread (1).

▶ If necessary, insert an anti-twist mechanism into the adjacent hole (2): Diameter 3.3 mm and depth 11 mm.

▶ Install a draft shield if necessary

7.9 Parameter List

7.9.1 "Active Setup Menu" Menu

Level 1	Level 2	Level 3	Level 4	Codes
Active setup menu	Balance	Installation site/ambient conditions	Very stable conditions	1. 1. 1. 1
			O Stable conditions	1. 1. 1. 2
			Unstable conditions	1. 1. 1. 3
			Very unstable conditions	1. 1. 1. 4
		Application filter	O Final readout	1. 1. 2. 1
			Dosing	1. 1. 2. 2
			Reduced filter	1. 1. 2. 3
			Filter off	1. 1. 2. 4
		Stability range/stability	1/4 scale interval/maximum accuracy	1. 1. 3. 1
			1/2 scale interval/very accurate	1. 1. 3. 2
			1 scale interval/accurate	1. 1. 3. 3
			O 2 scale interval/quick	1. 1. 3. 4
			4 scale interval/very quick	1. 1. 3. 5
			8 scale interval/very low	1. 1. 3. 6
		Stability delay	Very short	1. 1. 4. 1
			O Short	1. 1. 4. 2
			Moderate	1. 1. 4. 3
			Long	1. 1. 4. 4
		Taring	Without stability	1. 1. 5. 1
			O After stability	1. 1. 5. 2
		Autozero	O ON	1. 1. 6. 1
			OFF	1. 1. 6. 2.

O = Factory setting

Level 1	Level 2	Level 3	Level 4		Codes
Active setup menu	Balance	Weight unit		Available unit	1. 1. 7. 1
			O	g, grams	1. 1. 7. 2
				Units: Kilogram to Newton	1. 1. 7. 3
					up to
					1. 1. 7. 23
		Accuracy	O	All digits on	1. 1. 8. 1
				Last digit on/off during load change	1. 1. 8. 2
				Scale interval index +1	1. 1. 8. 3
				Scale interval index +2	1. 1. 8. 4
				Scale interval index +3	1. 1. 8. 5
				Last digit scale interval 1	1. 1. 8. 6
				Last digit off	1. 1. 8. 7
				10x resolution	1. 1. 8. 14
		Cal./adjust. function	O	Ext. adjustment with default weight	1. 1. 9. 1.
				Ext. adjustment with user-defined weight	1. 1. 9. 3.
				Internal adjustment*	1. 1. 9. 4.
				Ext. linearization with default weights	1. 1. 9. 6.
				Ext. linearization with user-defined weights	1. 1. 9. 7.
				Set the preload	1. 1. 9. 8.
				Delete the preload	1. 1. 9. 9.
				Cal. key/command blocked	1. 1. 9. 10.
				Selection list	2. 1. 9. 12
				Define internal weight (is blocked)	3. 1. 9. 18
		Adjustment process	O	Adjust immediately	1. 1. 10. 1.
				Calibration before adjustment	1. 1. 10. 2.
		Zero range	O	2% of max load	1. 1. 11. 2.
				10% of max load	1. 1. 11. 4.
		Zero at power on	O	10% of max load	1. 1. 12. 4.
				100% of max load	1. 1. 12. 7.

* Only for NC models

O = Factory setting

Level 1	Level 2	Level 3	Level 4		Codes
Active setup menu	Balance	Tare/zero at power on	O	On	1. 1. 13. 1.
				Off	1. 1. 13. 2.
		Output rate	O	Normal	1. 1. 14. 1.
				Fast	1. 1. 14. 2.
				Slow, typ. 10 Hz	1. 1. 14. 3.
				Moderate, typ. 20 Hz	1. 1. 14. 4.
				Quick, typ. 25 Hz	1. 1. 14. 5.
				Very quick, typ. 50 Hz	1. 1. 14. 6.
				Maximum, typ. 100 Hz	1. 1. 14. 7.
		Auto. calibration/ ISOCAL	O	Off	1. 1. 15. 1.
				Note	1. 1. 15. 2.
	General settings	Menu reset		Yes, load factory setting	1. 9. 1. 1
			O	No, stand-by	1. 9. 1. 2

O = Factory setting

7.9.2 "Active Print Menu" Menu

Level 1	Level 2	Level 3	Level 4	Codes
Active print menu	Communication parameters	Data output	O Individual value without stability	3. 1. 1. 1
			Individual value after stability	3. 1. 1. 2
			Automatic, without stability	3. 1. 1. 4
			Automatic, after stability	3. 1. 1. 5
		Cancel auto. output	O Cancel not possible	3. 1. 2. 1
			Cancel via print command	3. 1. 2. 2
		Cycle automatic output	O Every value	3. 1. 3. 1
			Every 2nd value	3. 1. 3. 2
		Output format	O 16 characters raw data	3. 1. 4. 1
			22 characters with identification	3. 1. 4. 2
	Print parameters	Printout	Manual, without stability	3. 2. 1. 1
			O Manual, after stability	3. 2. 1. 2
			Automatic, after load change	3. 2. 1. 6
		Printout format	O Application, with identification	3. 2. 2. 2
		Printout appl. parameters	Off	3. 2. 3. 1
			O All parameters	3. 2. 3. 2
			Only main parameters	3. 2. 3. 3
		Printout GLP protocol	O Off	3. 2. 4. 1
			Only after cal./adjustment	3. 2. 4. 2
			Always on, with every manual print	3. 2. 4. 3
	PC direct parameter	Decimal separator	O Point	3. 3. 1. 1
			Comma	3. 3. 1. 2
		Output format	O Text and numerical value	3. 3. 2. 1
			Numerical value only	3. 3. 2. 2

O = Factory setting

7.9.3 "Active Device Menu" Menu

Level 1	Level 2	Level 3	Level 4		Codes
Active device menu	Interface_1 (RS232)	Data protocol	O	SBI	2. 1. 1. 1
				XBPI	2. 1. 1. 2
				SBI 2nd display	2. 1. 1. 4
				Universal printer (YDP20)	2. 1. 1. 7
				Lab printer (YDP30)	2. 1. 1. 8
		Baud rate		600 baud	2. 1. 2. 3
				1200 baud	2. 1. 2. 4
				2400 baud	2. 1. 2. 5
				4800 baud	2. 1. 2. 6
			O	9600 baud	2. 1. 2. 7
				19200 baud	2. 1. 2. 8
				38400 baud	2. 1. 2. 9
				576000 baud	2. 1. 2. 10
				115200 baud	2. 1. 2. 11
		Parity	O	Odd	2. 1. 3. 3
				Even	2. 1. 3. 4
				No parity	2. 1. 3. 5
		Number of stop bits	O	1 stop bit	2. 1. 4. 1
				2 stop bits	2. 1. 4. 2
		Handshake		Software Handshake	2. 1. 5. 1.
			O	Hardware Handshake	2. 1. 5. 2.
				No handshake	2. 1. 5. 3
		Number of data bits	O	7 data bits	2. 1. 6. 1
				8 data bits	2. 1. 6. 2

O = Factory setting

Level 1	Level 2	Level 3	Level 4		Codes
Active device menu	Interface_ 2 (USB)	Data protocol	O	SBI	2. 2. 1. 1
				XBPI	2. 2. 1. 2
				SBI 2nd display	2. 2. 1. 4
				PC spreadsheet format	2. 2. 1. 6
				Universal printer (YDP20)	2. 2. 1. 7
				Lab printer (YDP30)	2. 2. 1. 8
				PC text format	2. 2. 1. 9
				Off	2. 2. 1. 10
		Baud rate		600 baud	2. 2. 2. 3
				1200 baud	2. 2. 2. 4
				2400 baud	2. 2. 2. 5
				4800 baud	2. 2. 2. 6
			O	9600 baud	2. 2. 2. 7
				19200 baud	2. 2. 2. 8
				38400 baud	2. 2. 2. 9
				576000 baud	2. 2. 2. 10
				115200 baud	2. 2. 2. 11
		Parity	O	Odd	2. 2. 3. 3
				Even	2. 2. 3. 4
				No parity	2. 2. 3. 5
		Number of stop bits	O	1 stop bit	2. 2. 4. 1
				2 stop bits	2. 2. 4. 2
		Handshake		Hardware Handshake	2. 2. 5. 2.
			O	No handshake	2. 2. 5. 3
		Number of data bits		7 data bits	2. 2. 6. 1
			O	8 data bits	2. 2. 6. 2

O = Factory setting

Level 1	Level 2	Level 3		Level 4	Codes
Active device menu	Interface_2 (USB)	Detected*	O	None/printer/virt com. /PC host/input device	2. 2. 7. 0.
	Additional function	Menu	O	Menu can be edited	2. 9. 1. 1
				Menu read only	2. 9. 1. 2
		Keypad	O	Keys available	2. 9. 3. 1
				Keys blocked	2. 9. 3. 2
		Start-up behavior		On/standby (without time)	2. 9. 6. 3
			O	Automatic on	2. 9. 6. 4
		Display backlight		Off	2. 9. 8. 1
			O	On	2. 9. 8. 2

* Indicates which device connection is detected at the USB port. Only with YRD01.

O = Factory setting

7.9.4 "Active Appl. Menu" Menu

Level 1	Level 2	Level 3	Level 4	Codes
Active appl. menu	Weighing only	Unit Toggle	Off	4. 1. 1. 1
			O On	4. 1. 1. 2
	Counting	Resolution	O Display accuracy	4. 3. 1. 1
			10x	4. 3. 1. 2
		Reference updating	O Off	4. 3. 2. 1
			Automatic	4. 3. 2. 2
	Percent	Decimal places	Without decimal place	4. 4. 1. 1
			O 1 decimal place	4. 4. 1. 2
			2 decimal places	4. 4. 1. 3
			3 decimal places	4. 4. 1. 4
	Net total	Print-out component	Off	4. 5. 1. 1
			O On	4. 5. 1. 2
	Totalizing	Print-out component	Off	4. 6. 1. 1
			O On	4. 6. 1. 2
	Animal balance	Animal activity	Low	4. 7. 1. 1
			O Moderate	4. 7. 1. 2
			High	4. 7. 1. 3
		Start	Manual	4. 7. 2. 1
			O Automatic	4. 7. 2. 2

O = Factory setting

Level 1	Level 2	Level 3	Level 4		Codes
Active appl. menu	Calculation	Method	O	Multiplication	4. 8. 1. 1
				Division	4. 8. 1. 2
		Decimal places		Without decimal place	4. 8. 1. 1
			O	1 decimal place	4. 8. 1. 2
				2 decimal places	4. 8. 1. 3
				3 decimal places	4. 8. 1. 4
	Density determination	Decimal places		Without decimal place	4. 9. 1. 1
			O	1 decimal place	4. 9. 1. 2

0 = Factory setting

8 Operation

8.1 Notes on "Analytical Weighing" with Weigh Cells

8.1.1 Handling of Samples and Vessels

The sample should be acclimatized to the temperature of the weigh cell.

This is the only way to avoid measurement errors caused by air buoyancy and fluctuations resulting from convection currents across the surface of the sample.

These negative effects increase as the volume and/or surface area of the sample increases. For this reason, the size of the tare container should be appropriate for the sample.

Samples and vessels for weighing should **not** be touched by the operator's hands. since the hygroscopic effect of fingerprints and the effect of the hand's temperature can influence the measurement results.

The sample must be applied carefully, e.g., manually using tweezers or automatically via a robot or a filling system.

When designing a draft shield device, steps must be taken to keep the increase in temperature within the weighing chamber to a minimum (e.g., using a bypass).

8.1.2 Weighing Electrostatically Charged Samples and Vessels

Significant measurement errors may occur when weighing electrostatically charged objects. This problem particularly involves samples that have extremely poor conductivity (glass, plastic, filters) since they can only discharge electrostatic—i.e., friction-induced—charges through the weighing pan over a relatively long period of time.

The result is a force acting between the charge on the sample and the permanently installed parts of the weigh cell. This causes the displayed weight value to fluctuate constantly.

Ionization can be applied to make the air around the sample conductive. This enables the charge to be compensated through the air, or discharged through the ground (grounded).

Aside from purely mechanical solutions (e.g., using a special weighing pan to shield the sample), bombarding the sample with ions of opposing polarity to neutralize the surface charge is one of the most effective methods for eliminating static electricity. We also supply corresponding components for installation in systems.

The area around the weigh cell (e.g., plastic parts) can also contain charges that negatively affect the accuracy of weighing results. Take appropriate steps (grounding) when designing draft shield devices.
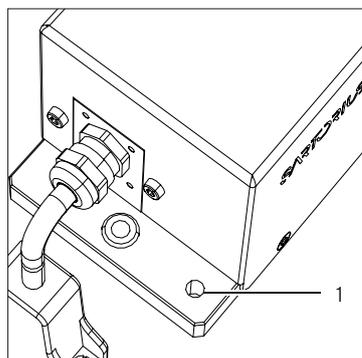
On the reverse of the weigh cell mounting plate, thread M6 (1) is available for a potential equalization conductor (e.g., for a spatula).

▶ It must be ensured that the frame is grounded.

8.1.3 Weighing Magnetic or Magnetizable Samples

It is technically **impossible** to avoid using magnetizable materials for the production of weigh cells. This is primarily because the operating principle of high-resolution weigh cells is based on compensation of the load through magnetic forces.

When weighing magnetic or magnetizable samples or vessels, interaction between the sample or vessel and the above-mentioned parts inside the weigh cell may have a distorting effect on the weighing results.

To keep such effects to a minimum, we recommend increasing the distance between the sample/container and the weighing system using a non-magnetic material. The force is reduced quadratically with the increase in distance.

Magnetizable/magnetized samples and the weigh cell interact with magnetic fields and with magnetizable or magnetized parts in the environment. The system can be shielded from external magnetic fields to some extent using (soft magnetic) plates.

8.1.4 Influence of Drafts

Depending on the size of the load holder and the sample, there may be an influence from drafts.
Use an appropriate draft shield to reduce the influence.

Protect the weigh cell from drafts.

8.2 Operation with a Computer

The weigh cells are equipped with two data interfaces (RS232 and USB-C), to which a computer or another peripheral device can be connected.

You can use a computer to change, start, and monitor weigh cell functions.

Features

▶ See Chapter "13.3 Data Interfaces", page 51.

Parameter Factory Settings

Transmission rate:	9600 baud (RS232 = 2. 1. 2. 7 | USB-C = 2. 2. 2. 7)
Parity	Odd (RS232 = 2. 1. 3. 3 | USB-C = 2. 2. 3. 3)
Stop bits	1 stop bit (RS232 = 2. 1. 4. 1)
Handshake	Hardware handshake (RS232 = 2. 1. 5. 2) | No handshake (USB-C = 2.2.5.3)
Communication mode	Individual value without stability (3. 1. 1. 1)

Preparation

▶ See Chapter "13.3 Data Interfaces", page 51 and Chapter "13.4 Cabling Diagram (Cable)", page 51.

8.3 Output Format with 16 Characters (Compatibility with Current Weigh Cells)

Characters that are not visible in the display are output as spaces.

The type of character that can be output depends on the character's position

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	+			A	A	A	A	A	A	A	*	E	E	E	CR	LF
or	–			.	.	.	.	.	..	.		*	*	*		
or	*		*	*	*	*	*	*	*	*						

* Space   CR: Carriage return

A: Displayed characters   LF: Line feed

E: Measurement unit characters   .: Decimal point

Special Outputs

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR	LF
or	-					H	i	g	h							
or						L	o	w								
or			C	a	l	.	E	x	t	.						

* Space   High: Overload

Cal.Ext.: Adjustment, external   Low: Underweight

Error Message

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				E	r	r	*	#	#	#	*	*	*	*	CR	LF
				A	P	P	.	E	R	R**	*	*	*	*	CR	LF
				D	I	S	.	E	R	R**	*	*	*	*	CR	LF
				P	R	T	.	E	R	R**	*	*	*	*	CR	LF

* Space   ###: Error number

** For cause and solution, please refer to the "Error Codes" section

Example: Output of the weight value + 123.56 g

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	+	*	*	*	1	2	3	.	5	6	*	g	*	*	CR	LF
	+	*	*	1	2	3	.	5	[	6	]**	g	*	*	CR	LF

Position 1:	"+" sign or space
Position 2:	Space
Position 3 – 10:	Weight value with decimal point; leading zeros are output as spaces
Position 11:	Space
Position 12 – 14:	Measurement unit characters or space
Position 15:	Carriage return
Position 16:	Line feed

** For cause and solution, please refer to the "Error Codes" section

8.4 Output Format with 22 Characters (Compatibility with Current Weigh Cells)

In this case, a 6-character code precedes the 16-character output format.
These six characters identify the subsequent value.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
K	K	K	K	K	K	+	*	A	A	A	A	A	A	A	A	*	E	E	E	CR	LF
	*	*	*	*	*	–			.	.	.	.	.	.	.		*	*	*		
						*		*	*	*	*	*	*	*	*						

K: ID code character

E: Measurement unit characters

* Space

CR: Carriage return

A: Displayed characters

LF: Line feed

Example

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
N						+				1	2	3	.	5	6	*	g	*	*	CR	LF

Special Operation:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
S	t	a	t	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR	LF
											H	i	g	h							
											L	o	w								
									C	a	l	.	E	x	t	.					

* Space

High: Overload

Cal.Ext.: Adjustment, external

Low: Underweight

Error Message

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
S	t	a	t	*	*	*	*	*	E	R	R	*	#	#	#	*	*	*	*	CR	LF
S	t	a	t	*	*	*	*	*	A	P	P	.	E	R	R**	*	*	*	*	CR	LF
S	t	a	t	*	*	*	*	*	D	I	S	.	E	R	R**	*	*	*	*	CR	LF
S	t	a	t	*	*	*	*	*	P	R	T	.	E	R	R**	*	*	*	*	CR	LF

* Space

error number

** For cause and solution, please refer to the "Error Codes" section

8.4.1 Compatibility with Older WZ/WZA Weigh Cells

After the command "ESC s9_" is sent, the data input and output behaves as for older Sartorius WZ/WZA weigh cells (previous models).

Data Output Format

During output, in "SBI" operating mode 16 characters are output.

Example: + 253 pcs

Data Output Format with 16 Characters

Display segments that are dark are output as spaces. Display values without a decimal point are output without a decimal point.

The type of character that can be output depends on the character's position:

Normal Operation

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	+	A	A	A	A	A	A	A	A	A	*	E	E	E	CR	LF
or	–	.	.	.	.	.	.	.	.	.		*	*	*		
or	*	*	*	*	*	*	*	*	*	*						

* Space

A: Figures of the added value

E: Measurement unit characters

CR: Carriage return

LF: Line feed

Special Outputs

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	*	*	*	*	*	*	–	–	*	*	*	*	*	*	CR	LF
or							H	H								
or							L	L								
or							C									

*	Space
– –:	Final readout
H:	Overload
H H:	Overload in checkweighing (Function is only available during operation with the following peripheral devices: optional display unit or YAD01IS software)
L:	Underweight
L L:	Underweight in checkweighing
C:	Adjustment

Error Message

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	*	*	*	E	r	r	*	#	#	#	*	*	*	*	CR	LF

*	Space
###	Error number

Example: Output of the Weight Value + 255.7 g

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	+	*	*	*		2	5	5	.	7	*	g	*	*	CR	LF

Position 1:	"+" sign, "–" sign, or space
Position 2:	Space
Position 3 - 10:	Weight value with decimal point; leading zeros are output as spaces
Position 11:	Space
Position 12 - 14:	Measurement unit characters or space
Position 15:	Carriage return
Position 16:	Line feed

Data Input Format

A computer connected via the data interface can send commands to the device to control device functions.
These commands are control commands and may have various formats. Control commands have up to 26 characters.
Each of these characters must be sent based on the setup configuration for data transmission.

Formats for Control Commands

Format 1	Esc	!	CR	LF		
Format 2	Esc	!	#	_	CR	LF

Esc:	Escape
!:	Command character
_:	Underline (ASCII:95)
CR:	Carriage return
LF:	Line feed
max:	Depends on command character, i.e. parameters: entry is truncated after the max. length and not rejected as when entered via the keyboard

8.5 Commands (Data Input Format with Compatibility with the Current Weigh Cells)

The computer connected via the data interface can send commands to the weigh cell to trigger functions. These commands are control commands and may have various formats. Control commands consist of up to 13 characters. Each of these characters must be sent based on the menu settings for data transmission.

Formats for Control Commands

Format 1	Esc	!	CR	LF		
Format 2	Esc	!	#	_	CR	LF

Esc: Escape (optional) CR: Carriage return

!: Command character LF: Line feed

_: Underline

Command character	Format 1
!	Meaning
?	Applying the internal adjustment weight [1]
@	Lifting off the internal adjustment weight [1]
K	Ambient conditions: Very stable
L	Ambient conditions: Stable
M	Ambient conditions: Unstable
N	Ambient conditions: Very unstable
O	Lock keypad
P	Print, trigger, and block autoprint
R	Unlock keypad
S	Restart	self-test
T	Zero	tare command
U	Key **TARE**
V	Key **ZERO**
W	Adjustment (depending on menu presetting)
Z	Carry out internal adjustment[1]

[1] = Only for balances with internal motor weight unit

Command character	Format 2
!#	Meaning
f1_	Function key **CAL**
f2_	Function key **ENTER**
f3_	Key **ZERO**
f4_	Key **TARE**
s3_	Key **CANCEL FUNCTION**
x0_	Internal calibration [1]
x1_	Print model type
x2_	Output serial no.
x3_	Output BAC software version (old notation)
x20_	Output BAC software version (new notation)

[1] = Only for balances with internal motor weight unit

8.6 "Calibration, Adjustment" Function via Interface RS232 (Examples)

Purpose

Adjustment is the correction of the difference between the measured value displayed and the true weight (mass), or its reduction to an allowable level within maximum permissible error limits.

Characteristic

The adjustment process should only be started when

— the weigh cell is unloaded,
— the weigh cell is tared, and
— the weighing signal is stable.

The sensitivity of the balance can be corrected a max. of 2%.

If these requirements are not met, the "Err 02" error message appears (see Chapter "9.1 Error Codes (YRD01 and SBI)", page 47).

The WZB25-NC weigh cell has an integrated adjustment weight of approx. 10 g. This can be used to check the proper function and readjust the sensitivity of the weigh cell. The calibration weight is calibrated at the factory and is entered in the data set as "user-defined weight". The user-defined weight may only be overwritten in the event of recalibration.

8.6.1 Internal Calibration/Adjustment

Models WZB254-NC | WZB1403-NC | WZB 8202-NC

Requirement:

— The application SETUP - Bal.Scal - CAL./ADJ. - Cal.Int. is set up.
— The weigh cell housing has a built-in motorized calibration/adjustment weight.

Procedure

▶ Select calibration: ESC Z command
▷ The internal calibration weight is automatically loaded
▷ The balance is calibrated
▷ When the setup is configured to "Calibration and adjustment in one," the balance will then be adjusted automatically.
▷ The internal weight is removed from the weigh cell.

Performing Calibration and Adjustment Routines

The following settings can be configured:

— Calibration and adjustment are always one process (factory setting)
— After calibration, the user has the option to quit the process without correction or to make an adjustment.

If no deviations are found during calibration, the calibration/adjustment process can be exited after the calibration is completed.

Two keys are now active:

— Starting the adjustment: ESC f1_ command
— Exiting the process: ESC s3_ command

Procedure

▶ To tare the balance: Select [ESC T] interface.
▷ The display shows 0.0000 g.
▶ To start the adjustment process: Select [ESC Z] interface.
▷ The display shows Cal.INT.
▷ The internal weight is applied automatically.
▷ The display shows CALRUN.
▷ Adjustment is executed.
▷ The display shows CAL.END.
▷ The internal weight is removed from the balance
▷ The display shows 0.0000 g.

Model WZB25-NC

Requirement

— The application SETUP - Balance - CAL./ADJ. – Ext. adjustment with user-defined weight is set up.
— The application SETUP - Balance - Adjustment process - Adjust immediately is set up.
— The weigh cell is unloaded.

Procedure

▶ To start the adjustment process:
   ▶ If the compatibility with older weigh cells is active: Select the ESC s1_ interface.
   ▶ If the compatibility with older weigh cells is **not** active: Select ESC f1_ interface.
▷ The prompt to apply the adjustment weight appears.
▶ Apply pressure to the pressure inlet of the internal motor weight unit until 6 bar is reached.
▶ Wait until the weight value is adopted.
▶ Switch off the pressure.

8.6.2   External Adjustment

Requirement

— The application SETUP - Bal.Scal - CAL./ADJ. - Cal.EXT. is set up.
— A weight value is preset at the factory (see Chapter "13 Technical Data", page 50).

Procedure

▶ To tare the balance: Select [ESC T] interface.
▷ The display shows 0.0000 g.
▶ To start the adjustment process: Select [ESC W] interface.
▷ The display shows Cal.EXT.
▷ Once you store the zero point, there is a flashing display prompt for the adjustment weight to be applied:
  - 50.0000 g.
▶ Apply the displayed adjustment weight (in this example: 50 g).
▷ If the "–" sign is displayed: The weight is too small.
▷ If the "+" sign is displayed: The weight is too big.
▷ If the adjustment weight is within the specified limits: The flashing stops.
▷ If the adjustment has been carried out:
   ▷ The display shows Cal.END.
   ▷ The adjustment weight appears: +50.0000 g.
▶ Remove the adjustment weight.
▷ The display shows 0.0000 g.

8.7 Operating Design of the Optional YRD01 Display Unit

8.7.1 Operating Display in Weighing Mode
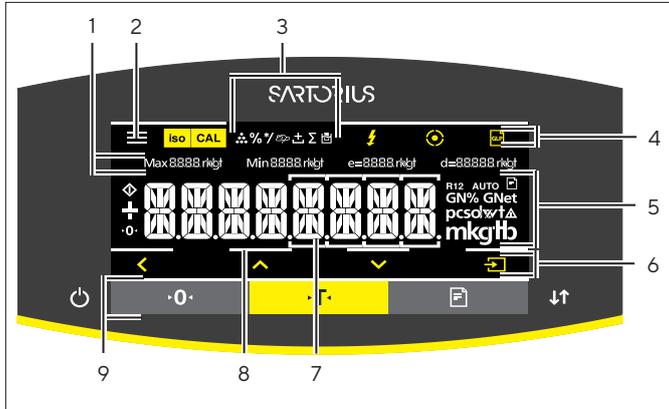
Fig. 7: Operating display in weighing mode (example)

Pos.	Designation	Description
1	Metrological data	
2	Menu	
3	Application overview	Displays the selected application program during operation.
4	Toolbar	
5	Weighing unit	Displays the selected unit, e.g., grams, [g].
6	Navigation bar	For navigation in the menu and system settings
7	Measurement display	
8	Visual touch feedback	
9	Toolbar	

8.7.2 Menu and System Settings Display
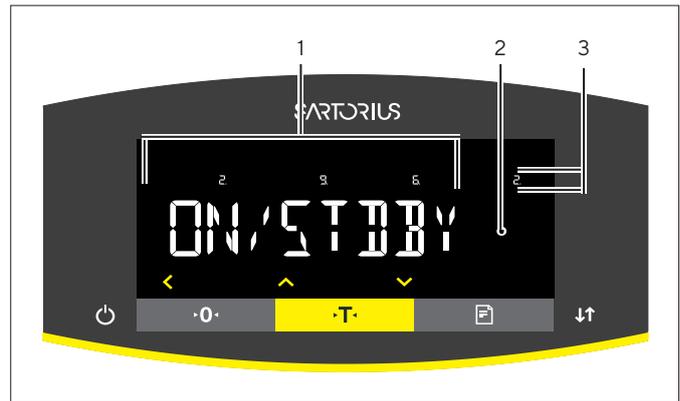
Fig. 8: Menu and system settings display (example)

Pos.	Designation	Description
1	Menu or parameter entry	
2	Display [Selection]	
3	Menu level	Shows the position of the displayed menu or parameter in up to 4 levels.

8.7.3 Buttons

Symbol	Designation	Description
⏻	[On/Off] button	— When the button is pressed: Switches the operating display on. — If the button is held down: Switches the operating display off.
☰	[Menu] button	— When the button is pressed: The settings menu opens. — If the button is held down: It switches to version display.
›0‹	[Zero] button	Zeroes the device.
›T‹	[Tare] button	Starts taring.
📄	[Print] button	Exports the readouts to the integrated data interfaces.
↓↑	[Change] key	— If the key is briefly pressed: Sets the preload. — If the key is held down: Deletes the preload.
iso CAL	[isoCAL] button	If the button is flashing: Starts the isoCAL function. If the button is not flashing: Starts the set calibration and adjustment function.
CAL	[Adjust] button	Starts the set calibration and adjustment function.
GLP	[GLP] button	Exits the GLP printout and starts printing the GLP footer.
pcsd̅wt△ mkgtb	[Unit Toggle] button	If the "Unit Toggle" function is active: — If the button is held down: Accesses the "Unit Toggle" function menu. — When the button is pressed: Switches between the basic unit display and up to 4 other units.

‹	[Back] button	— In the menu:
		  — When the button is pressed: Returns to the previous display.
		  — If the button is held down: Saves the menu settings.
		— When entering digits: Selects the previous digit position.
		— For an active application: Exits the application and deletes the set reference value.

⌃	[Up] button	— In the menu: Scrolls through the menu levels or the available parameters. — When entering digits: Increases the displayed value. — In the main display of an active application: Switches to the display of the current weight value/parameter.
⌄	[Down] button	— In the menu: Scrolls through the menu levels or the available parameters. — When entering digits: Decreases the displayed value. — In the main display of an application that is **not** active: Accesses the display to set the reference values. — In the main display of an active application: Switches to the display of the current weight value/parameter.
⇥	[Confirm] button	— In the menu: Accesses the displayed menu level or confirms the displayed parameter. — When entering digits: Selects the next digit position. — In the main display of an application that is **not** active: Starts the application process and saves the set reference value. — In the main display of an active application: Adopts the next component or the next parameter.

8.7.4   Displays in the Operating Display

Symbol	Designation	Description
	[Counting] display	Indicates that the "Counting" application is selected.
	[Percent weighing] display	Indicates that the "Percent weighing" application is selected.
	[Calculation] display	Indicates that the "Calculation" application is selected.
	[Animal weighing] display	Indicates that the "Animal weighing" application is selected.
	[Net total] display	Indicates that the "Net total" application is selected.
	[Totalizing] display	Indicates that the "Totalizing" application is selected.
	[Density determination] display	Indicates that the "Density determination" application is selected.
	[Busy] display	Indicates that the device is processing a command.
	[Sign] display	Indicates whether the value being displayed is positive or negative.
	[Zero] display	For some conformity-assessed devices: Indicates that the device has been zeroed.
	[AUTO] display	Indicates that the "Animal weighing" application starts automatically.
	[R12] display	Indicates the active range for multi-range balances.
	[Percent] display	Indicates that a percentage value is being displayed.
	[Net] display	Indicates that a net value is being displayed.
	[Gross] display	Indicates that a gross value is being displayed.
	[Selection] display	— In the menu: Identifies the selected parameter. — If the "Density determination" application is active: Indicates that a calculated value is being displayed.
	[Unit symbol] display	Indicates the set weight unit, e.g., [g] for "grams".
	[Quantity] display	Indicates that a quantity is being displayed.
	Display [**Invalid** weight value]	— Indicates that the display does **not** contain a weight value, but is instead the calculated result of an application, e.g., for the "Animal weighing" application. — For conformity-assessed devices: Indicates a fault. The cause of this fault is displayed after pressing the [Unit Toggle] key.

8.7.5   Menu Structure, Main Menu with the YRD01 Display Unit

▶ Navigating the menus (see Chapter "8.7.6 Menu Navigation with YRD01 Display Unit", page 44).

Level 1	Level 2	Description
SETUP	BALANCE	Set the functions of the device.
	GEN.SERV. "General services"	Reset the menu to factory settings.
DEVICE	RS-232 "RS232, 9-pin"	Define the parameters for the COM interface.
	USB "USB-C"	Define the parameters for the USB interface.
	Extras	Define the functions of the operating display.
DATA OUTP. "Data output"	COM. SBI "SBI communication"	Configure the automatic data output.
	PRNT.PAR. "Settings for the printout"	Perform the settings for the printout.
	PC.DIREC. "Direct transfer of data (PC)"	Define the output format for the data exchange between the weigh cell and the PC
APPLIC. "Applications"	WEIGH	Determine the weight value of a sample. Activate the functions for all applications.
	COUNT	Determine the number of parts that have approximately equal weight.
	PERCENT "Percent weighing"	Determine the percentage share of a sample based on a reference weight.
	NET.TOT. "Net total"	Carry out the weighing of components for a mixture.
	TOTAL "Totalizing"	Add weight values of independent weighing processes in a memory.
	ANIMALW. "Animal weighing"	Weigh unstable samples, e.g., animals. This program calculates the average of several measurement cycles.
	CALC. "Calculation"	Calculate the weight value using a multiplier or divisor, e.g., for determining the weight per unit area of paper.
	DENSITY "Density determination"	Determine the density of solid samples based on the buoyancy method.
INFO "Device information"	VERSION "Version number"	Display the software version number.
	SER. NO. "Serial number"	Display the device's serial number.
	Model	Display the device's model designation.
LANGUAGE		Set the menu language of the operating display.

8.7.6   Menu Navigation with YRD01 Display Unit

Procedure

▶ To open the main menu: Press the [Menu] button.

▶ To display menu items or parameters of a level: Press the [Up] or [Down] button.

▶ To return to the next higher menu level or exit the menu: Press the [Back] button.

▶ To open a displayed menu level or a displayed parameter: Press the [Confirm] button.

8.8   Operation with Optional YRD01 Display Unit

Procedure:

▶ Connect display unit to the weigh cell electronics using the supplied cable.

8.8.1 Switching YRD01 On and Off

Procedure

▶ ⚠ **CAUTION** Pointed or sharp-edged objects may damage the operating display!

▶ Only touch the operating display with your fingertips.

▶ To switch the device on: Press the [On/Off] button.

▶ To switch the device off: Press and hold the [On/Off] button.

8.8.2 Calibrating and Adjusting Device with isoCAL Function

Triggers for the information on the isoCAL function are:

— The ambient temperature has changed since the last adjustment process.

— The interval time has been exceeded.

Requirements

— The information on the isoCAL function is set in the menu.

— The device is **not** located in the menu settings.

Procedure

▶ If the [isoCAL] button is flashing in the operating display: Press the [isoCAL] button.

▷ The isoCAL function starts.

8.8.3 Internally Calibrating and Adjusting the Device

Requirements

— The weighing pan is unloaded.

— The operating display shows a stable weight value.

— The internal calibration and adjustment function is set up.

Procedure

▶ Press the [Zero] button.

▶ Press the [Adjust] button.

▷ The current calibration | adjustment function is displayed.

▶ If the calibration with subsequent automatic adjustment function is selected:

▷ The "CAL.RUN." display appears in the operating display during the process.

▷ The "CAL.END" display indicates the end of the adjustment process.

▶ If the calibration without subsequent automatic adjustment function is selected:

▷ The calibration process is started.

▷ The "CAL.RUN." display appears in the operating display during the process.

▷ The calibration error is displayed.

▶ Press the [Confirm] button

▷ The adjustment process is performed.

▷ The "CAL.END" display indicates the end of the adjustment process.

8.8.4 Externally Calibrating and Adjusting the Device

Material　　　Calibration and adjustment weight

Requirements

— The weighing pan is unloaded.

— The operating display shows a stable weight value.

— The external calibration and adjustment function is set.

— The preset weight value for the adjustment weight or the user-defined weight value for the adjustment weight is selected.

Procedure

▶ Press the [Zero] button.

▶ Press the [Adjust] button.

▶ Place the indicated calibration and adjustment weight on the balance.

▷ The weight value is displayed.

▶ If the calibration with subsequent automatic adjustment function is selected and the adjustment weight placed on the device is within the specified limits:

▷ The calibration | adjustment process starts.

▷ If the "+" sign is displayed: The applied weight is too big.

▷ If the "-" sign is displayed: The applied weight is too small.

▷ The "CAL.END" message indicates the end of the adjustment process.

▶ Remove the adjustment weight.

▶ If the calibration without subsequent automatic adjustment function is selected and the adjustment weight placed on the device is within the specified limits:

   ▷ The calibration process will start.

   ▷ If the "+" sign is displayed: The applied weight is too big.

   ▷ If the "–" sign is displayed: The applied weight is too small.

   ▷ The calibration process is performed.

   ▶ Press the [Confirm] button.

   ▷ The adjustment process is performed.

▷ The "CAL.END" message indicates the end of the adjustment process.

▶ Remove the adjustment weight.

8.8.5 Weighing

Procedure

▶ Zero the device. To do this, press the [Zero] button.

▶ If a vessel is being used for the sample:

   ▶ Tare the device. To do this, press the [Tare] button.

   ▶ Place the sample in the vessel.

▶ If **no** vessel is used for the sample: Place the sample on the weighing pan.

▷ The weight value is displayed depending on the selected application program.

8.9 Basic Weighing Function

Features

— Tare weigh cell

— Output weight value

8.9.1 Activating the Weigh Cell

Procedure

▶ To activate the weigh cell:

   — Connect the weigh cells to the power supply.

   — Switch on via the optional YRD01 display unit.

8.9.2 Deactivating the Weigh Cell

Procedure

To deactivate the weigh cell:

   — For weigh cells with internal adjustment weight: Remove the internal weight.

   — Disconnect the weigh cells from the power supply.

   — If the "On/Standby" (2.9.6.3) switch-on procedure is selected in the device menu: Switch off via the optional YRD01 display unit.

8.10 Running Application (Example)

8.10.1 Determining the Weight Value

Procedure

▶ Switch on the weigh cell.

▷ The self-test is performed.

▷ The weigh cell carries out initial taring.

▶ Apply the sample vessel.

▷ The display shows a value.

▶ Tare the weigh cell.

▷ The display shows 0.0 g.

▶ Place the sample in the vessel.

▷ The display shows the value.

▶ Output weight value.

9 Malfunctions

9.1 Error Codes (YRD01 and SBI)

Error codes are displayed on the main display for approx. 2 seconds. The program then returns automatically to the previous mode.

Warning Message	Fault	Cause	Solution
APP.ERR.	The device has measured an invalid weight value.	The applied weight is too low.	Increase the applied weight to more than the minimum load.
		The weight value is negative.	
		No sample has been placed on the balance.	Place the sample on the balance.
DIS.ERR.	The value to be output **cannot** be shown in the operating display.	The data to be displayed is **not** compatible with the set display format.	Adjust the display settings in the menu, e.g. resolution, unit, decimal places.
HIGH or ERR 55	The device is overloaded.	The device's maximum weighing capacity has been exceeded.	Reduce the applied weight to below the device's maximum weighing capacity.
LOW or ERR 54	The modulation of the weighing converter inside the device is too low.	**No** weighing pan has been placed on the balance.	Insert the weighing pan into the device and switch the device off and on again.
		A previously forgotten weight was removed after starting the device.	
		An error exists in the weighing system or in the device electronics.	Contact Sartorius Service.
COMM.ERR.	The device is **not** receiving any weight values.	**No** communication exists between the display unit and the weigh cell.	Wait until the display unit restores the communication with the weigh cell.
			If the problem occurs again: Contact Sartorius Service.
PRT.ERR.	The [Print] key is locked.	The data interface for printout is set to xBPI mode.	Reset the menu to the factory settings.
			If the problem occurs again: Contact Sartorius Service.
SYS.ERR.	The system data is faulty.	A memory error exists in the display unit.	Switch the device off and on again.
			If the problem occurs again: Contact Sartorius Service.
ERR 02	The device **cannot** be adjusted when starting the adjustment function due to a zero point error.	The device was **not** zeroed before the adjustment process.	Zero the device. Check the preload and set if necessary.
		The device is loaded.	Remove the sample from the weighing pan.

Warning Message	Fault	Cause	Solution
ERR 03		Zero point error at the end of calibration	Check assembly conditions, observe warm-up time Repeat calibration
ERR 06		Int. adjustment weight defective or not available	Service
ERR 07		External adjustment is blocked. The access switch is closed.	Open the access switch and perform the adjustment.
ERR 08 <> zero range		Zeroing error (value outside of 2%)	Change work process
ERR 09 = 0 not permitted		Taring error (tare value = 0).	Change work process
ERR 10	Taring is **not** possible.	The device **cannot** be manually tared because an application program has the tare memory reserved.	To release the tare memory: Exit the application program with the [Back] button.
ERR 11	The weight value **cannot** be saved in the tare memory.	The weight value is negative or "zero".	Check the sample being weighed. Zero the device before placing the sample on the balance if necessary.
ERR 19 preload too heavy		Preload to be used is too big	Change preload value
ERR 30		Balance is in BPI mode.	Perform with service tool and the integrated "Close" function
ERR 32		The SBI buffer is overfull (there are more than 20 SBI commands waiting to be processed).	Only send an SBI command when the previous one has been processed.
ERR 50 or 53		Failure TC converter	Service
ERR 241		Checksum error	Service
ERR 243		Checksum error	Perform menu reset
ERR 245 or 247		Checksum error	Adjust the balance
ERR 249		Checksum error	Service
Weight value changes constantly		Unstable installation site (excessive vibration or draft)	Change installation site Changing Setup Configurations
		Foreign object is caught between weighing pan and housing	Remove the foreign object
The weight readout is obviously wrong		Balance not adjusted	Adjustment
		Not tared before weighing	Tare
Other error			Contact Sartorius Service: http://www.sartorius.com

10 Transport

10.1 Dismantling

Requirement

The device is switched off.

Procedure

▶ Remove the weigh cell from the system or the device.
▶ Disconnect all connected cables.

11 Storage and Shipping

11.1 Returning the Device and Parts

NOTICE

Unpacked weigh cells can lose their precision if subjected to extreme vibrations.

Excessive vibrations may compromise the safety of the device.

▶ **Do not** expose the device to unnecessarily extreme temperatures, moisture, shocks, blows or vibration.
▶ **Do not** expose the unpacked weigh cell to gravitational acceleration in excess of 300 m/s^2 (unless additional equipment is installed on the load receptor)

Defective devices or parts can be returned to Sartorius. Returned devices must be clean, decontaminated, and packed in their original packaging. Transport damage as well as measures for subsequent cleaning and disinfection of the device or parts by Sartorius are charged to the sender.

Requirement

The device is dismantled.

Procedure

▶ Contact Sartorius Service for instructions on how to return devices or parts (please refer to our website at www.sartorius.com for return instructions).
▶ Pack the device and its parts in their original packaging for return.
▶ **Do not** expose the equipment to gravitational acceleration in excess of 0 300 m/s^2 (unless additional equipment is installed on the load receptor).

12 Disposal

12.1 Information on Decontamination

The device does **not** contain any hazardous materials that necessitate special disposal measures. If the device has come into contact with hazardous substances: Steps must be taken to ensure proper decontamination and declaration.

Contaminated samples used during the process are potentially hazardous substances that could cause biological or chemical hazards.

If the device has come into contact with hazardous substances: Steps must be taken to ensure proper decontamination and declaration. The operating company is responsible for adhering to local government regulations on the proper declarations for transport and disposal and for the proper disposal of the device.

12.2 Dismantling

Procedure

▶ Remove the weigh cell from the system.

12.3 Disposing of the Device and Parts

The device and the device accessories must be disposed of properly by disposal facilities.

The packaging is made of environmentally friendly materials that can be used as secondary raw materials.

Procedure

▶ Dispose of the device. Follow the disposal instructions on our website (www.sartorius.com).
▶ Dispose of the packaging in accordance with local government regulations.

13 Technical Data

13.1 Ambient Conditions

	Unit	Value
Installation site: For indoor use only, max. height above sea level (SL)	m	3000
Temperature		
Environment (metrological data)	°C	+10 – +30
Environment	°C	+5 – +40
Storage and transport	°C	-10 – +60

13.2 Electrical Data

13.2.1 Weigh Cell Power Supply

	Unit	Value
Input voltage	V_{DC}	12–26
Power consumption, max.	W	2

13.2.2 Power Supply Unit

	Unit	Value
Type: Sartorius power supply unit YEPS01-15V0H		
Primary		
Voltage	V_{AC}	100–240 (±10%)
Frequency	Hz	50–60
Current consumption, maximum	A	0.2
Secondary		
Voltage	V_{DC}	15 (± 5%)
Current, maximum	A	0.53
Short-circuit protection		Electronic
Protection class according to IEC 60950-1		II
Pollution level according to IEC 61010-1		2
Overvoltage category according to IEC 60664-1		II
Other data: See label on the power supply unit		

13.3 Data Interfaces

13.3.1 Specification of the RS232 Interface

Type of interface: Serial interface	Interface operation: Full duplex
Level: RS 232	Transmission rate: 600...115200 baud
Parity: odd, even, none	Number of data bits: 7 or 8 bits

Character transmission: Start bit, 7-bit ASCII, parity, 1 or 2 stop bits

Handshake
- For 2-wire interface: Software (XON | XOFF) or none
- For 4-wire interface: Hardware (CTS | RTS) or none

Data output of balance: 16 or 22 characters

Female interface connector: 9-pin D-Sub DB9S with screw connection

Maximum cable length: 15 m

Pin assignment
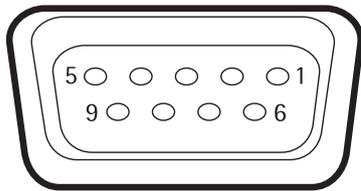
Pin 1: VDC IN 12–26 V
Pin 2: Data output (TxD)
Pin 3: Data input (RxD)
Pin 4: Not assigned
Pin 5: Internal ground
Pin 6: Not assigned
Pin 7: Clear to Send (CTS)
Pin 8: Request to Send (RTS)
Pin 9: Not assigned

13.3.2 Specification for the USB-C Interface

Communication: USB OTG

Connectable devices: YRD01 operating and display unit or PC

13.4 Cabling Diagram (Cable)

For connecting a computer or other peripheral device to the weigh cell according to the RS-232C/V24 standard

Do **not** assign any other pins on the balance!
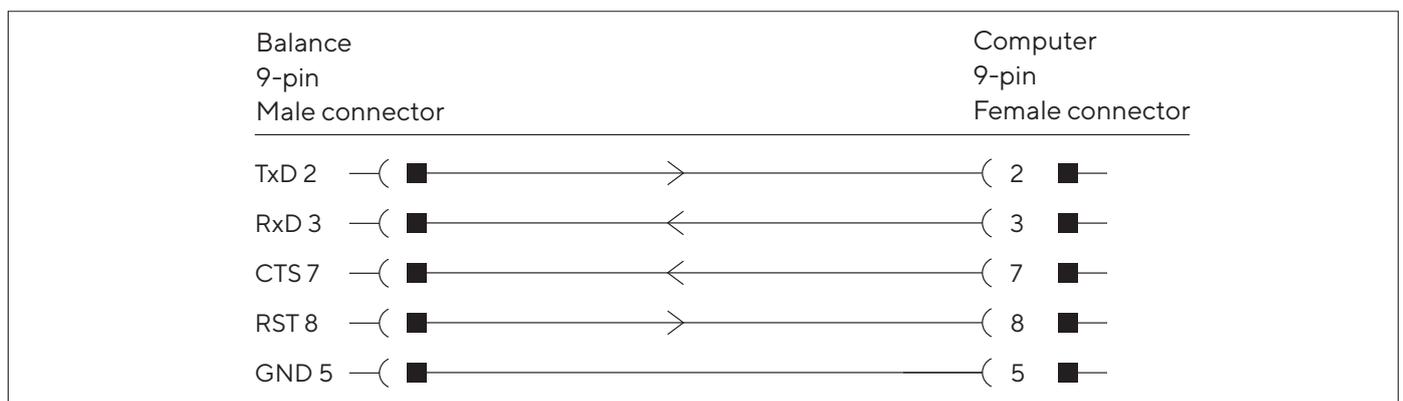
Fig. 9: Cable type: AWG 24 specification

13.5   Acclimatization Before Power Supply

	Unit	Value
Acclimatization duration	h	2

13.6   Warm-up Time After Switching on the Device

	Unit	Value
Warm-up Time		
For models WZB254-N | -ND	min	45
For models WZB25-NC | WZB254-NC |WZB653-N | WZB1403-N | NC | WZB8202-N | WZB8202-NC	min	30

13.7   Materials

	Unit	Value
Weigh cell		
Model WZB25-NC		VA (14404, AISI 316L)
Pan retainer		Titanium
Models WZB254-N | -ND | -NC | WZB653-N | WZB1403-N | -NC | WZB8202-N | -NC		VA (load receptor: AL chem. nickel-plated)
Electronics Unit		
Models WZB25-NC | WZB254-N | -ND | -NC | WZB653-N | WZB1403-N | -NC | WZB8202-N | -NC		Aluminum transp. passivated

13.8   Dimensions (Scale Drawings)
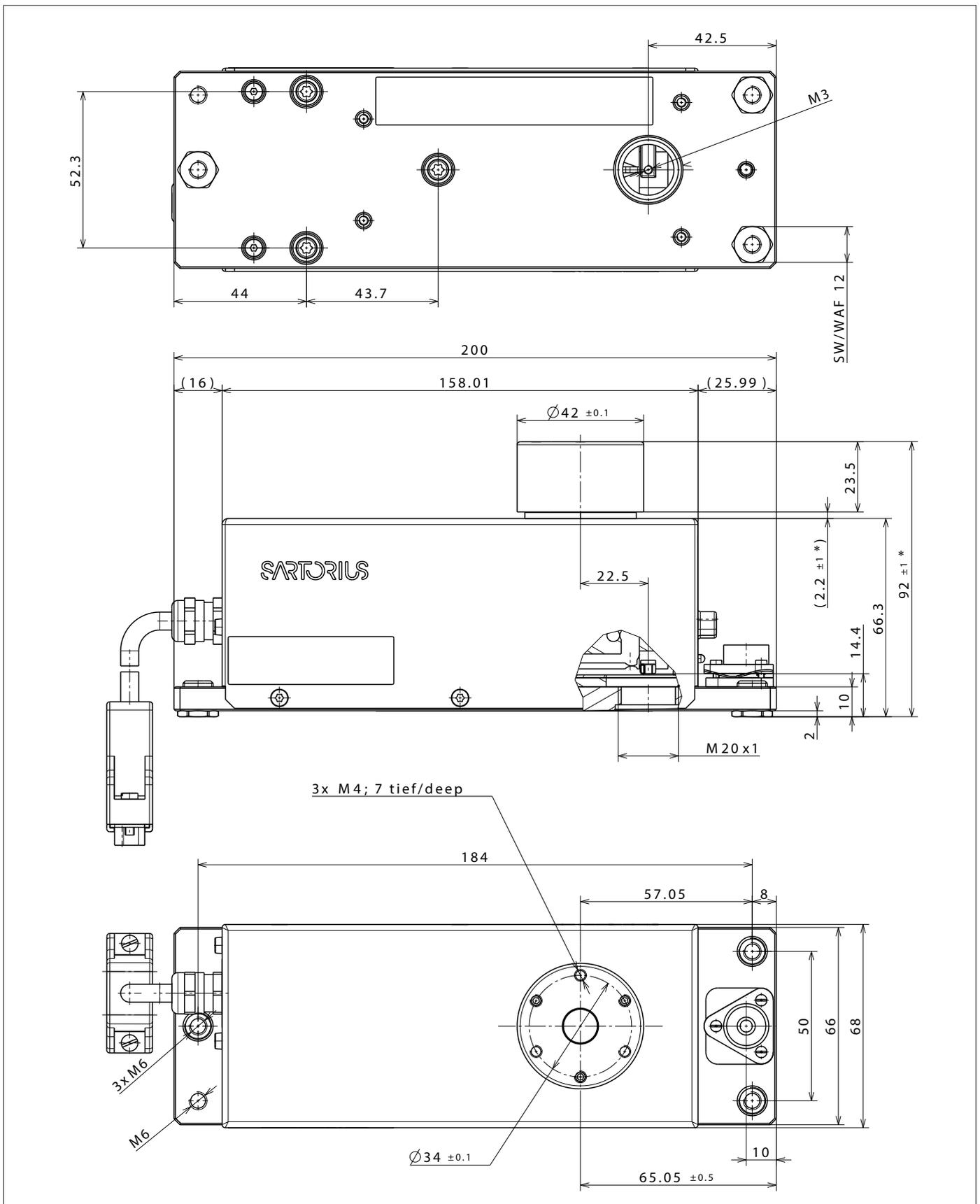
Fig. 10: Dimensions for models WZB254-N |-ND, WZB653-N and WZB1403-N (in mm)

Fig. 11: Dimensions for model WZB8202-N (in mm)
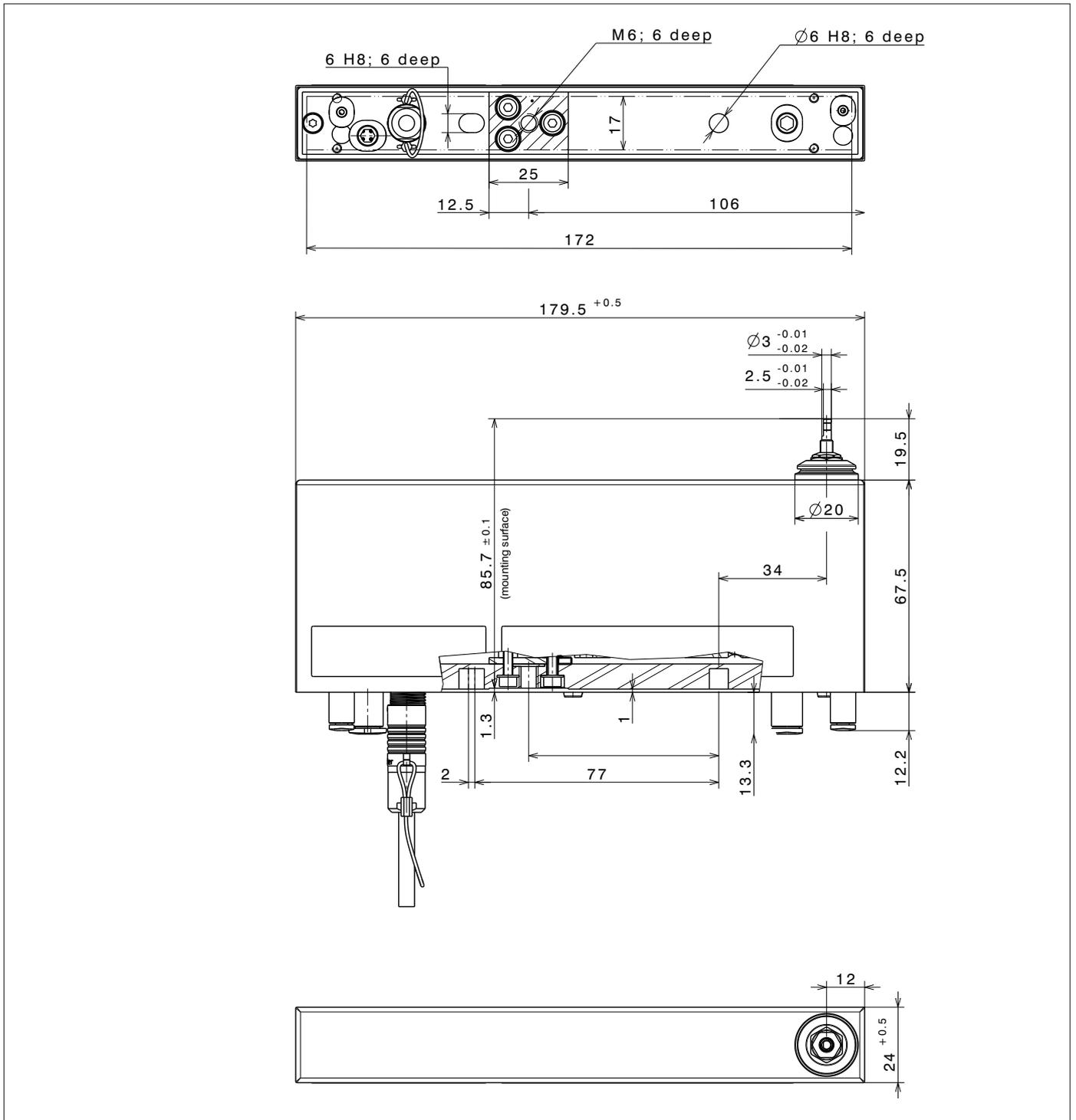
Fig. 12: Dimensions for model WZB25-NC (in mm)
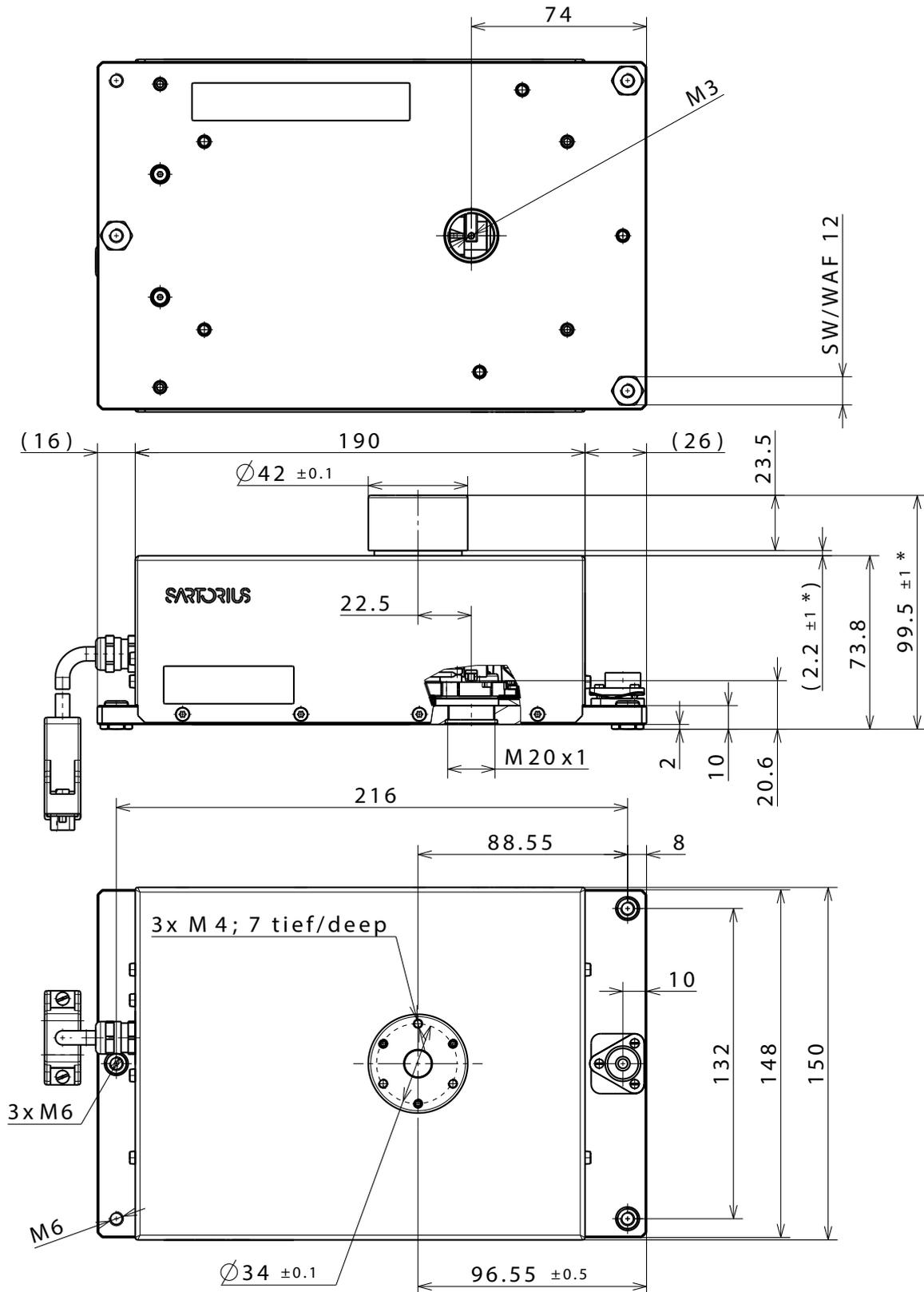
Fig. 13: Dimensions for models WZB254-NC | WZB1403-NC (in mm)
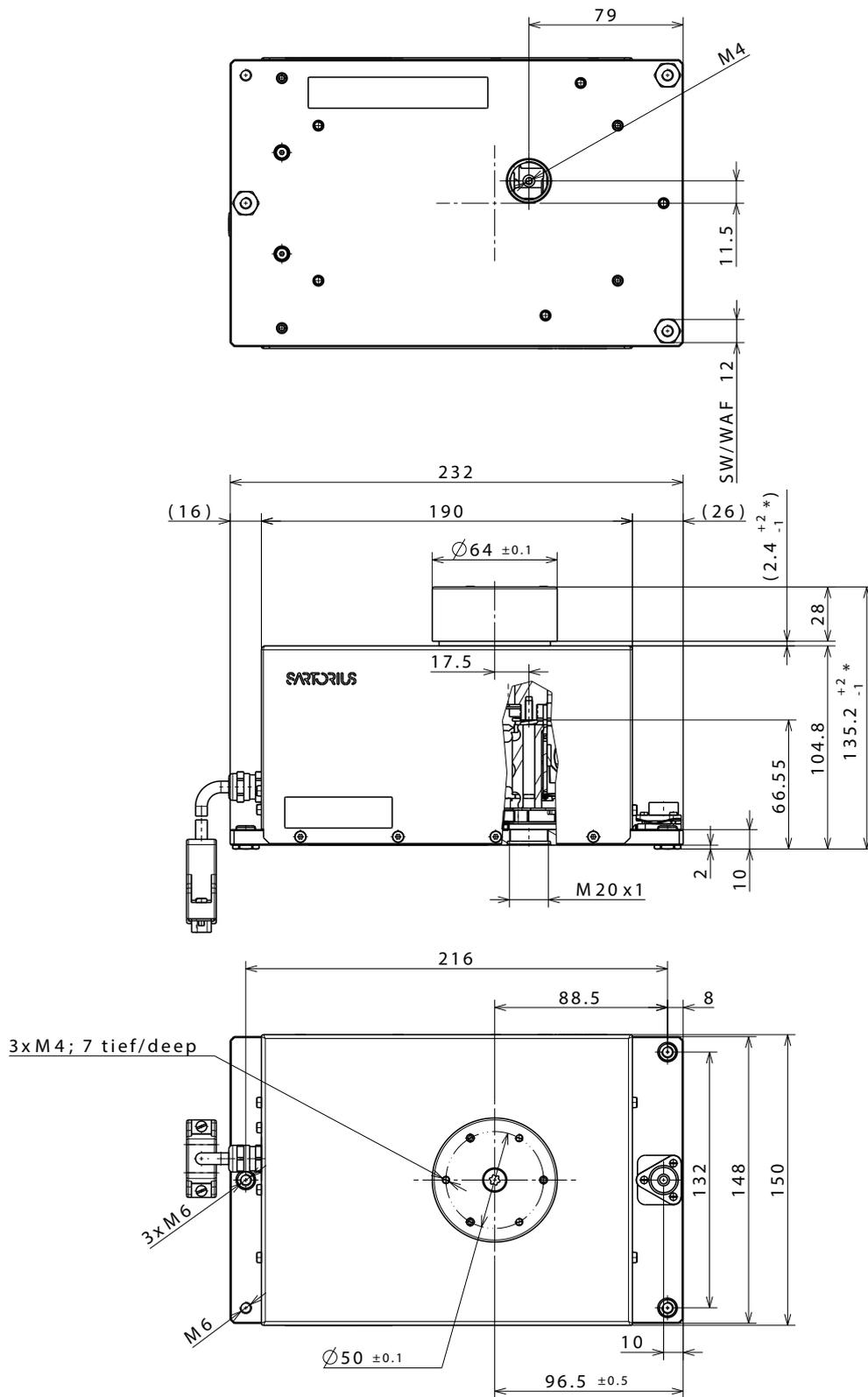
Fig. 14: Dimensions for model WZB8202-NC (in mm)
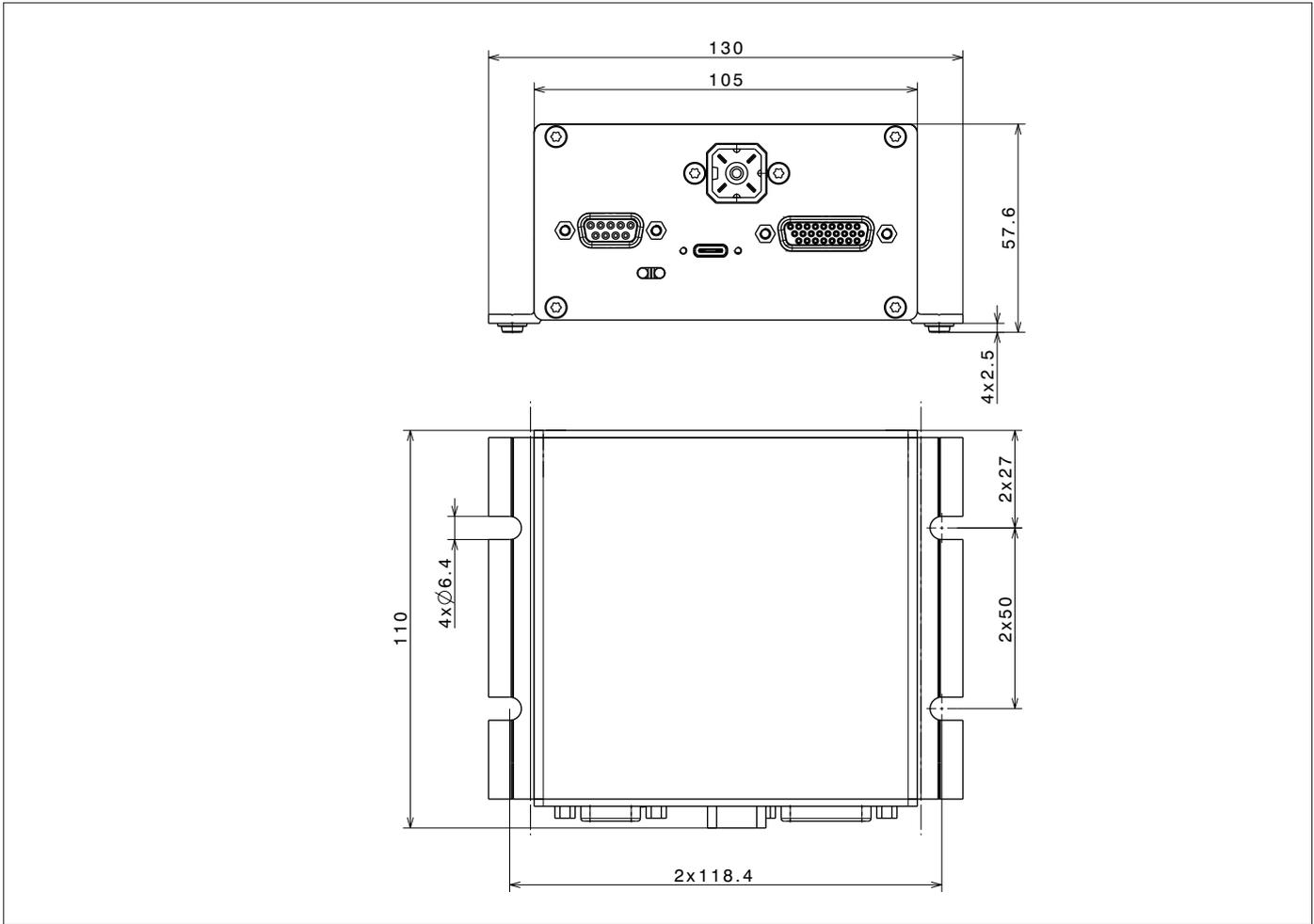
Fig. 15: Dimensions for electronics unit (mm)
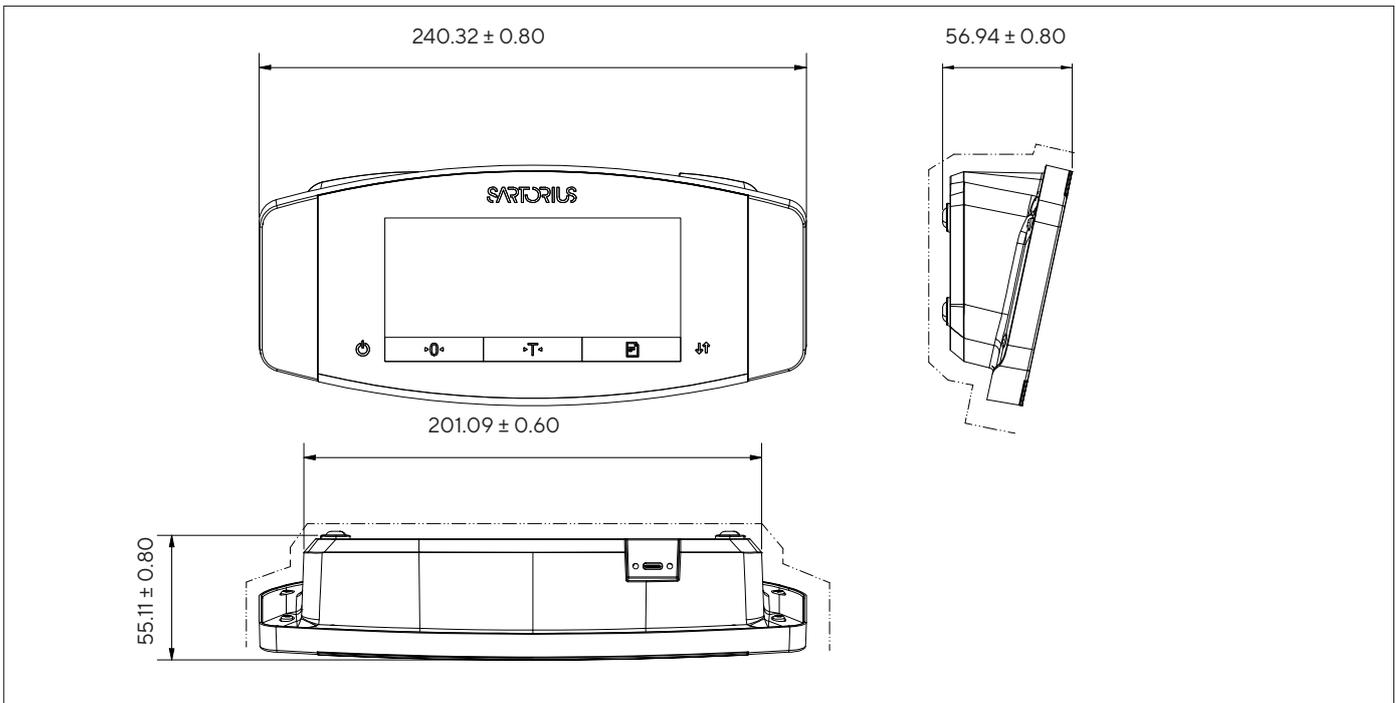
Fig. 16: Dimensions for optional YRD01 display unit (in mm)

13.9 Metrological Data

Model	Unit	WZB25-NC	WZB254-N | NC	WZB254-ND	WZB1403-N | NC	WZB653-N	WZB8202-N | NC
		Value	Value	Value	Value	Value	Value
Technology		EMK	EMK	EMK	EMK	EMK	EMK
Weighing range	g	20	250	250	1,400	650	8,200
Readability	g	0.00001	0.0001	0.0001	0.001	0.001	0.01
Preload on load receptor	g	min. 5	0–50	0–50	0–100	0–100	0–1300
Tare range (subtractive)	g	Over entire weighing range					
Reproducibility (standard deviation)*	<±g	0.00002	0.0001	0.0001	0.001	0.001	0.01
Linearity deviation	<±g	0.00005	0.0002	0.0002	0.002	0.002	0.02
Measurement time**	s | mg	0.8 | 0.01	0.6 | 0.1	0.25 | 1	0.6 | 0.1	0.6 | 0.1	0.6 | 0.1
Adaptation to operating and setup conditions		4 optimized filter levels					
Operating temperature range	°C	+10 – +30°C					
Permitted operating ambient temperature	°C	+5 – +40°C					
Sensitivity drift within +10 to +30°C	<±ppm/K	1×10^{-6}	1×10^{-6}	1×10^{-6}	2×10^{-6}	2×10^{-6}	2×10^{-6}
External adjustment weight (of at least accuracy class...)	g	10 (E2)	50 (E2)	50 (E2)	500 (E2)	200 (F1)	2000 (F1)
Net weight, approx.	kg	1.7	2.9 | 5.8	2.9	2.9 | 5.8	2.9 | 5.8	3.8 | 6.5
Power supply Ripple 50/60 Hz Power consumption	V_{DC}	min. 12–26 max., optimum 15 V (+15% to –10%) 0.5 Vss (peak-peak) Typical 2 W (VDC 15 V)					
Standard interface		RS232/USB-C; 7-/8-bit; -even, -mark, -odd, -space; Transmission rate 600–11520 baud, 1 or 2 stop bits, software/hardware handshake					

* Depends on the system design

** The weighing time is the time period in which the measured value oscillates within a range of ±3x the standard deviation of the static end value. Test weight approx. 25% of max.

14 Accessories

14.1 Accessories

This table contains an excerpt of the accessories that can be ordered. For information on other products, contact Sartorius.

Artikel	Quantity	Order number
Display and display unit with cable (0.9 m) for connection to enclosed electronics module	1	YRD01
Free configuration software for settings, calibration/adjustment and setting the preload	1	CAS-Suite Public
Data cable RS232 (9-pin) > USB-A (> PC)	1.5 m	YCC-D09M-USB-A
Data cable RS232 25-pin (m)/9-pin (f), (>PC)	2.0 m	7357314
Data cable RS232 (9-pin) connector > RS232 (9-polig) connector	1.5 m	YCC-D09MF
Data cable USB-C > USB-A (> PC)	1.5 m	YCC-USB-C-A
AC adapter IP40 protection in accordance with VDE* 0470/529*	1	YEPS01-15VOH
Additional options and accessories available on request		

* VDE = Verband der Elektrotechnik, Elektronik, Informationstechnik
(Association for Electrical, Electronic & Information Technologies)

15 Sartorius Service

Sartorius Service is available should there be any queries regarding the device. Please visit the Sartorius website (www. sartorius.com) for information about the service addresses, services provided, or to contact a local representative.

When contacting Sartorius Service with questions about the system or in the event of malfunctions, be sure to have the device information, e.g., serial number, close at hand. This information can be found on the manufacturer's ID label.

16   Conformity Documents

Original

EG-/EU-Konformitätserklärung
EC / EU Declaration of Conformity

SARTORIUS

Hersteller *Manufacturer*	**Sartorius Lab Instruments GmbH & Co. KG** **37070 Goettingen, Germany**

erklärt in alleiniger Verantwortung, dass das Betriebsmittel
declares under sole responsibility that the equipment

Geräteart *Device type*	**Wägezelle + Anzeigeeinheit** *Weighing cell + display unit*

Baureihe
Type series

WZBa-N; WZBb-NC; WZBc-ND; + YRD01 + YEPS01
a= 254, 653, 1403, 8202   b= 25, 254, 1403, 8202   c=254

in der von uns in Verkehr gebrachten Ausführung allen einschlägigen Bestimmungen der folgenden Europäischen Richtlinien entspricht und die anwendbaren Anforderungen folgender harmonisierter Europäischer Normen einschließlich deren zum Zeitpunkt der Erklärung geltenden Änderungen erfüllt:

in the form as delivered fulfils all the relevant provisions of the following European Directives and meets the applicable requirements of the harmonized European Standards including any amendments valid at the time this declaration was signed listed below:

	EMV	EMC	RoHS	LVD
Richtlinie *Directive*	2014/30/EU	2011/65/EU	2014/35/EU
Norm(en) *Standard(s)*	EN 61326-1:2013	EN IEC 63000:2018	EN 61010-1:2010+A1:2019 +AC:2019

Die Person, die bevollmächtigt ist, die technischen Unterlagen zusammenzustellen:
The person authorised to compile the technical file:

Sartorius Lab Instruments GmbH & Co. KG
Electronics & Product Compliance
37070 Goettingen, Germany

Sartorius Lab Instruments GmbH & Co. KG
Goettingen, **2022-12-07**

Mario Hespe
Managing Director

Halil Yildirim
Product Compliance Manager (SLI)

UK CA

Original

UK Declaration of Conformity

SARTORIUS

Manufacturer   Sartorius Lab Instruments GmbH & Co. KG
37070 Goettingen, Germany

declares under sole responsibility that the equipment

Device type   Weighing cell + display unit
Type series   **WZB**

Model   **WZBa-N; WZBb-NC; WZBc-ND; + YRD01 + YEPS01**

a = 254, 653, 1403, 8202   **b** = 25, 254, 1403, 8202   **c** = 254
in the form as delivered fulfils all the relevant provisions of the following British
Regulations and meets the applicable requirements of the British Designated Standards
including any amendments valid at the time this declaration was signed listed below:

The Electromagnetic Compatibility Regulations 2016
UK Statutory Instruments 2016 No. 1091

BS EN 61326-1:2013

The Restriction of the Use of Certain Hazardous Substances in Electrical and
Electronic Equipment Regulations 2012; UK Statutory Instruments 2012 No. 3032

BS EN IEC 63000:2018

The Electrical Equipment (Safety) Regulations 2016
UK Statutory Instruments 2008 No. 1101

BS EN 61010-1:2010+A1:2019

The person authorised to compile the technical file:

Sartorius UK Ltd.
Longmead Business Centre, Blenheim Road
KT19 9 QQ Epsom, Surrey, UK

Sartorius Lab Instruments GmbH & Co. KG

Goettingen, 2022-10-28

Mario Hespe
Managing Director

Halil Yildirim
Product Compliance Manager (SLI)

Last updated:

10 | 2022