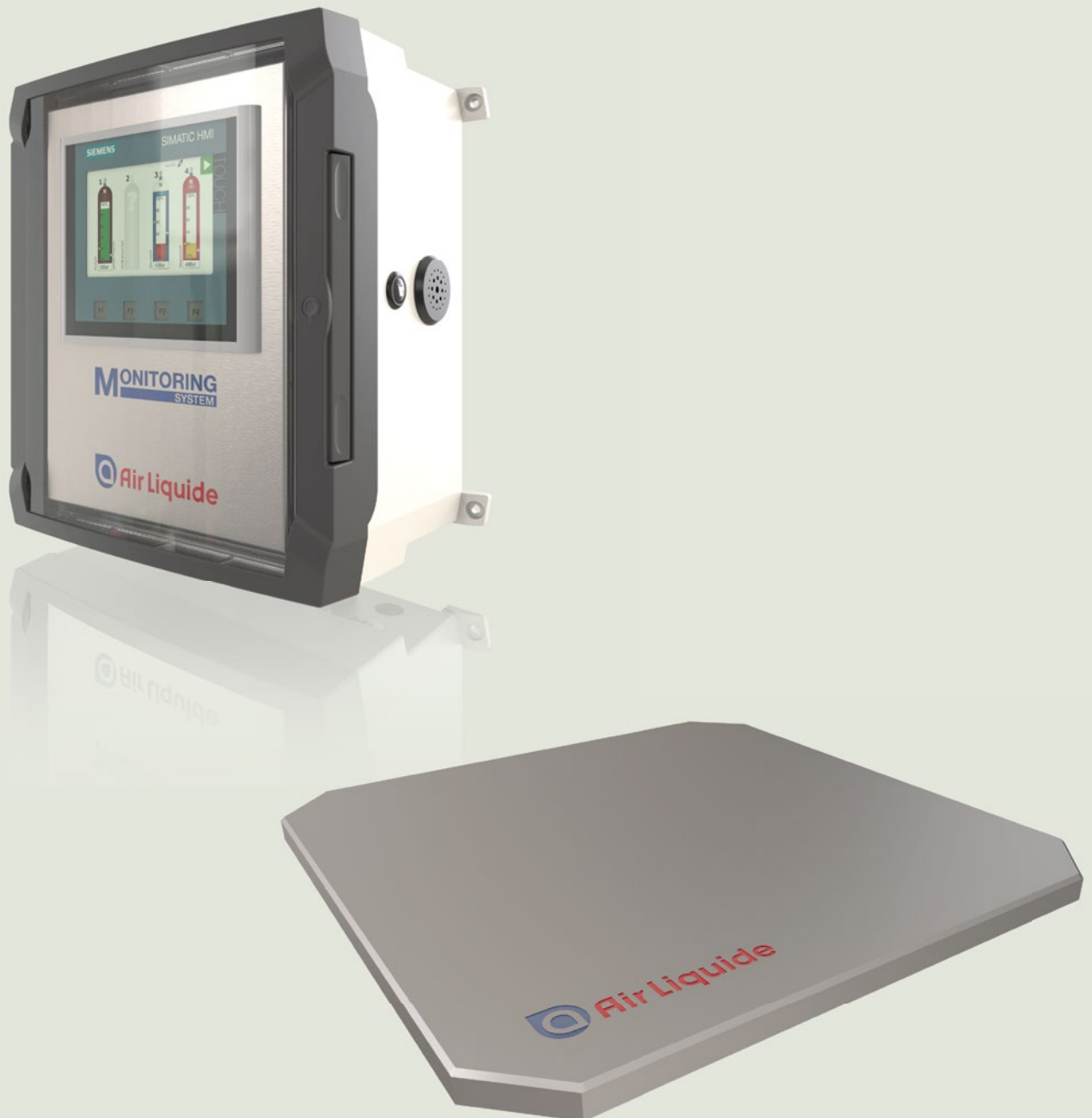


# Monitoring System ALMS LIBRA

Instructions for use



# Monitoring System ALMS LIBRA

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# 1 Information for use

This manual contains all the information you need for the commissioning and operation of the Air Liquide monitoring system LIBRA. In the following instructions, the weighing system is called ALMS LIBRA.

## 1.1 Warning signs / Danger symbols



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.



Indicates a hazard with a high level of risk which, if not avoided, would be likely to result in death or serious injury.



Indicates a potential risk of damage to property.



Refers to the particular use in potentially explosive atmospheres.



Information

## 1.2 Key

The following symbols are used in this manual: Carry out the tasks in a specific order:

1. First action
2. Second action
3. ....
4. • comes before a bullet point

## 2 General

### 2.1 Guidelines and general instructions

- The ALMS LIBRA series satisfies the requirements of the EU Directives and the standards for electrical safety and electromagnetic compatibility.



However, improper use may result in damage to the health of people or damage to property.

Improper use, incorrect installation or operation will invalidate any warranties.

- The stipulations and regulations of your country must be observed when the device is used in systems and environmental conditions with higher safety requirements.
- The operator is responsible for all modifications to the device and the connection of additional devices. He must check them accordingly and correct them if necessary.
- Accessories and options have been adapted to best suit the device. So do not use your own solutions. The operator is responsible for all modifications to the device and the connection of additional devices, and he must check them accordingly.
- The device must not be exposed to extreme temperatures, shocks and vibrations when in storage or being transported.
- Instructions and information on the quality of the operation are provided on request.

### 2.2 Warranty and liability

Our “General terms and conditions of sale” apply in principle. These can be accessed by the operator from the signing of the contract at the latest. Warranty and liability claims for personal injury and property damage are excluded if they fall within one or more of the following causes:

- Unintended use of the device.
- Incorrect installation, commissioning, operation and maintenance of the ALMS LIBRA.
- Failure to observe the operating instructions covering transport, storage, assembly, commissioning, operation and maintenance.
- Unauthorised modifications of the product.
- Inadequate monitoring of equipment parts subject to wear and tear.
- Repairs that were carried out incorrectly.
- Exceeding or falling below the temperature range specified in the data sheet when in use or in storage.
- Disasters caused by the effects of foreign objects or a force majeure.



The design may not be changed. If it is, the warranty will be void.

## 3 Safety-related information



The ALMS LIBRA must not be used in potentially explosive atmospheres.



The scale may only be used in potentially explosive atmospheres if the specifications indicated on the nameplate are met.



The connection cable must remain unchanged.



The voltage value stamped on the nameplate must be observed.



Only open the device when it is de-energised.



The ALMS LIBRA may only be connected and commissioned by qualified personnel with the relevant expertise.



Check the electrical equipment of the installation on a regular basis. Immediately remove loose connections and damaged cables.



If work needs to be carried out on live parts, a second person must be present to switch off the main switch if necessary.



Only operate the ALMS LIBRA if its enclosure, including all the connections, is not damaged. Disconnect damaged devices immediately.



Lay loose cables in such a way that they are protected against effects from outside and do not pose a trip hazard.



Clean with a soapy solution and slightly damp cloth.

### 3.1 Obligations of the operator and the personnel

The operator undertakes to only let persons work on the ALMS LIBRA if they

- are familiar with the basic regulations on occupational safety and accident prevention and have constant access to these regulations.
- have read and understood the safety chapter and the warnings in this operational manual. These employees are trained and instructed to work on warning systems for gas shortages.

- The personnel's safety-conscious work is checked on a regular basis.
- The personnel's responsibilities for the tasks involved in assembly, commissioning and operation must be clearly defined.
- Safety signs and warning messages must always be clearly legible.

## 4 Marking

### 4.1 Name plates

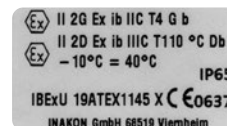
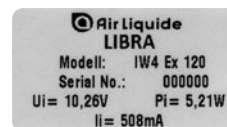
#### 4.1.1 ALMS Monitoring System



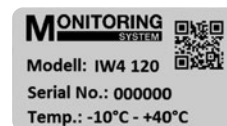
The name plate is on the right side of the display device.

#### 4.1.2 ALMS LIBRA

##### 1. Ex version

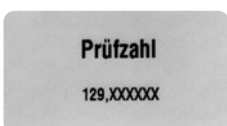


##### 2. Non Ex version



The name plates are on the underside of the scales.

#### 4.1.3 LIBRA check number



Label



For the ALMS LIBRA monitoring system to operate correctly, the check number must be entered.



The LIBRA check number is on the underside of the scales.

# 5 Use

## 5.1 Function

The ALMS LIBRA is a stationary control unit for pressure transmitters and scales that constantly monitors the content of compressed gas cylinders. Up to 4 channels (8 channels) can be displayed when used in conjunction with pressure transmitters mounted on manifold systems or bottle scales with a signal output of 4-20mA. Alarms are triggered via two preset thresholds, which display a change in colour on the respective channel: from green to yellow at threshold 1 and from yellow to flashing red at threshold 2. There is also an acoustic signal from the built-in horn at threshold 2.

There is an alarm contact output for use as a connection of further signaling elements such as flash lamps, sirens or for alarm messages to systems at a higher level. The contact signals when an alarm limit is exceeded or there is a cable break in the sensors.

Floating changeover contact: contact load max. 240 V / 2 A.

## 5.2 Libra scale

The platform scale is a robust, high-quality stainless steel construction. The load cells used are hermetically sealed and comply with protection class IP65.

The scales were designed to be connected to the ALMS LIBRA monitoring system and is used to monitor the content of compressed gas cylinders.

## 5.3 Use of the ALMS LIBRA in hazardous areas



The permissible zone of use can be found on the name plate and in the EU declaration of conformity and must be checked in each individual case.



The ALMS LIBRA itself must always be assembled outside the Ex zone.

## 6 Installation

### 6.1 General

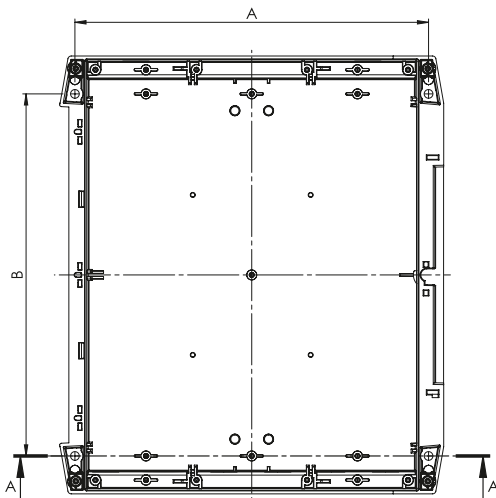
Immediately after unpacking, check the devices for external damage. In the event of damage, please contact the supplier.

When assembling, avoid areas with the following conditions that will have an adverse impact:

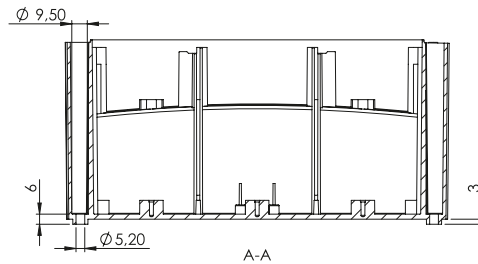
- heat (heating, solar radiation)
- wind and drafts
- rigid connecting lines in the pipelines
- uneven floor

### 6.2 Wall mounting

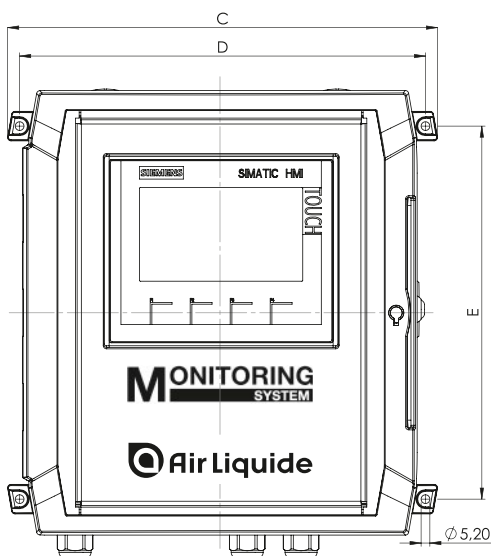
#### 6.2.1 Wall-mounted without a strap



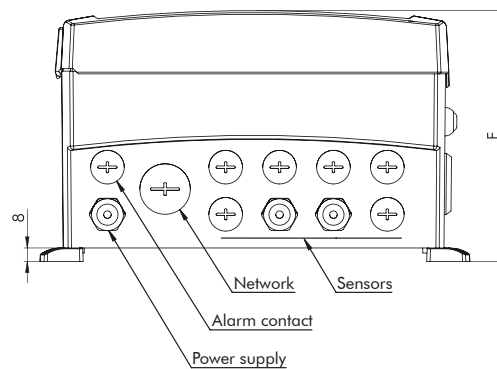
Device type	A	B	C	D
BCD 310	265	275	294	324



#### 6.2.2 Wall-mounted with a strap



Device type	C	D	E	F
BCD 310	306	291	282	152



### 6.3 Installation of the LIBRA scale



Check the location of the scale, level out any uneven areas on the floor where it is to be installed.



A loading ramp is available as an optional accessory for securing and safely rolling heavy compressed gas cylinders.



With Ex equipment, the permissible zone of use can be found on the name plate and in the EU declaration of conformity and must be checked in each individual case.



The connection cable permanently attached to the scale must not be changed.



The requirements defined in DIN EN 60079-14 must be observed for Ex equipment when installing and connecting the connection cables.

#### 6.3.1 Installing on the floor

Position the floor fixing plate where the device is to be installed, mark the position of the holes, drill the holes and secure with the wall anchors supplied. Insert and connect the scale.



Install the connection cable in such a way that no forces are transferred to the scales.

#### 6.3.2 Installation in the cylinder cabinet

To secure the floor fixing plate in place use a suitable fixing tape or adhesive, position and glue the fixing plate, insert and connect the scale.



Install the connection cable in such a way that no tension or pressure is transferred to the scale.



For connection diagrams, please refer to the electrical diagrams in the appendix.



The LIBRA scales must be adjusted if the connecting cable is extended or shortened.

### 6.4 Connection to the mains



The power supply is connected to the designated terminals.



The voltage value stamped on the nameplate must correspond to the local voltage.



Only qualified personnel with the appropriate specialist knowledge may connect it to the mains.



The protective conductor shall never be interrupted. It is important to ensure that only cables with protective conductors that comply with the standards are used.

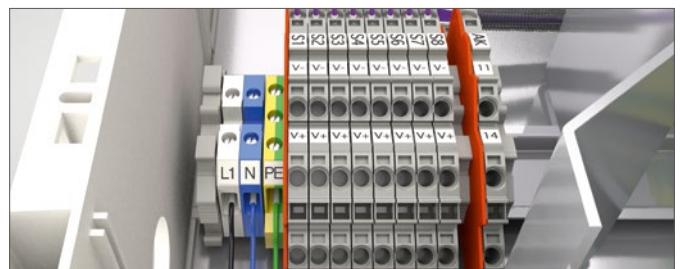
### 6.5 Sensor connection – Non Ex version

The pressure transmitters are connected directly on terminal blocks that are labelled according to the gas cylinders [S1–S4 (S8)].



Turn the power off (disconnect the supply) before connecting the device.

To connect to the electrical supply, use a shielded cable with a cross section of 0.2mm<sup>2</sup> to 2.5mm<sup>2</sup>. Note the maximum cross section of the connection for the pressure transmitters to be connected. The cable feed from a Non-Ex zone must be installed through the grey cable glands.



Wiring layout: V+ Sensor+, V- Sensor-, Shield



Only qualified personnel with the relevant expertise may connect the pressure transmitters. The installation instructions for the pressure transmitters must be observed.



With the selection of suitable connection cables, the local conditions must be taken into consideration. General recommendation for cables: LiYCY 2x0,5mm<sup>2</sup> per sensor.



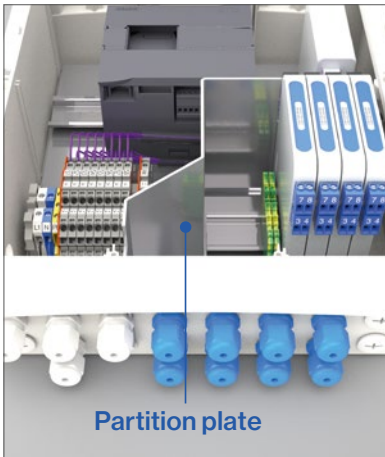
## 6.6 Sensor connection – Ex version



The ALMS LIBRA monitoring system may only be installed in non-hazardous areas!



The pressure transmitters are connected directly to the Zener barriers. The connections are marked with sensors 1-4 (8) and assigned to the corresponding gas cylinders 1-4 (8).



To comply with the ATEX standard and the safety requirements, the cables from the Ex zone must be installed in the blue cable glands provided.



Only qualified personnel with the relevant expertise may connect the pressure transmitters. The installation instructions for the pressure transmitters must be observed.



When using electrical equipment in systems and environmental conditions with increased safety requirements, the stipulations of the applicable laws and regulations must be observed.



Turn the power off (disconnect the supply) before connecting the device.



The maximum permissible cable length is 410m. The cross-section of the cable must not be smaller than 0.5mm<sup>2</sup> when the cable is 410m long.

Connection:  
Incorrect handling (not connecting or starting up in accordance with the instructions) will invalidate the Ex certification and any warranty.



The conditions on site and external influences must be taken into consideration. Recommendation for cables: LiYCY 2x0,5mm<sup>2</sup> per sensor. Max. 410m

## 6.7 Alarm contact output



Alarm contact output for use as a connection of further signaling elements such as flash lamps, sirens or for alarm messages to systems at a higher level. The contact reports a violation of the alarm limit or a cable break in the sensors.

Floating changeover contact:  
contact load max. 240V/2AAC;  
24V/1ADC

## 6.8 Scale connection

The ALMS LIBRA is connected to the designated terminals in the monitoring system.

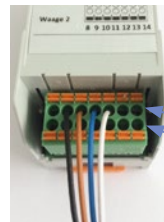


It may only be connected by qualified personnel with the relevant expertise.



The earthing must never be interrupted. It must be ensured that only standard cables are used.

## 6.9 Scale connection – Non Ex version



The scales are connected directly to the marked connections on the transmitter.



Turn the power off (disconnect the supply) before connecting the device.



If the length of the cable is changed, the scales will no longer be calibrated.



If the length of the cable is changed, the scales must be adjusted again. Only use calibrated weights.

## 6.10 Connection of the scale 1 (3)

- 2 EXC- Power supply scale black
- 3 EXC+ Power supply scale brown
- 4 Sig+ Signal+ scale blue
- 5 Sig- Signal- scale white

Connect the screen to the PE terminal.

### 6.11 Connection of the scale 2(4)

- 9 EXC- Power supply scale black
- 10 EXC+ Power supply scale brown
- 11 Sig+ Signal+ scale blue
- 12 Sig- Signal- scale white

Connect the screen to the PE terminal.



Only qualified personnel with the relevant expertise may connect the scale(s).



When using electrical equipment in systems and environmental conditions with increased safety requirements, the stipulations of the applicable laws and regulations must be observed.

### 6.12 Scale connection – Ex version



The ALMS LIBRA monitoring system may only be installed in non-hazardous areas!



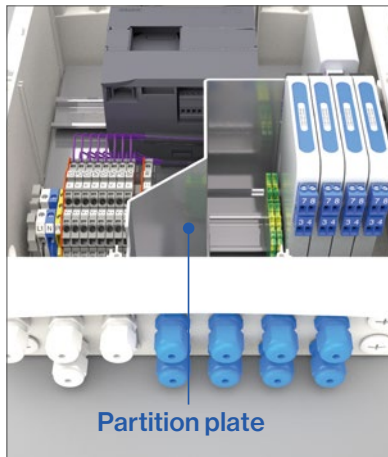
Turn the power off (disconnect the supply) before connecting the device.



The scale(s) are connected directly to the Zener barriers. The connections are marked on scale 1 and scale 2.



The connection cable that is permanently attached to the scales must not be shortened.



To comply with the ATEX standard and the safety requirements, the cables from the Ex zone must be installed in the blue cable glands provided.



The connection cable may be extended with a distribution box that has been approved for intrinsically safe operation.



Incorrect handling (not connecting or starting up in accordance with the instructions) will invalidate the Ex certification and any warranty.

**Two Zener barriers with the following connection are provided for each scale:**

**BZG761+**

- 3 EXC+ Power supply+ scale brown
- 4 EXC- Power supply- scale black

**BZG764+**

- 3 Sig+ Signal+ scale blue
- 4 Sig- Signal- scale white

Connect the screen to the PE terminal.

### 6.13 Connection assignment of Zener barriers



**Screen to PE terminal**

**BZG761+**

- 3 EX+ Power supply+
- 4 Ex- Power supply-

**BZG764+**

- 3 Sig+ Signal+
- 4 Sig- Signal-

### 6.14 Shield connection

The braid of the connecting cable must be connected to the PE terminal.

## 7 Setup/Basic settings

### 7.1 Language selection and Contact information

#### 7.1.1 Starting image

After the supply voltage is hooked up, the device boots up. Once the start screen is displayed, the device has finished booting. The device is now ready for use.

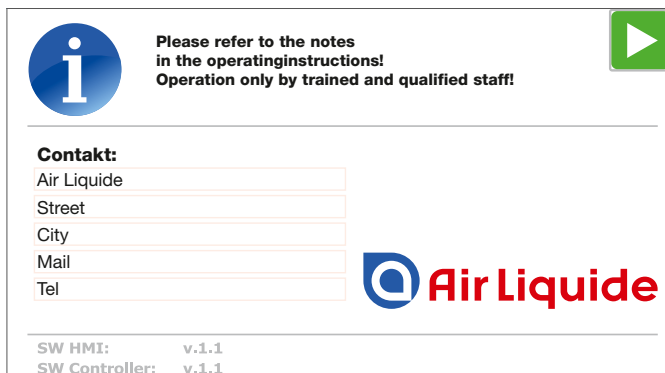


Clicking on a country's flag will set the respective language and this will change in the info image.

#### 7.1.2 Info image

5 lines can be inserted under the "Contact:" heading, e.g. contact information for the service department. The lines can be edited by the normal operator. These lines are empty in the default setting.

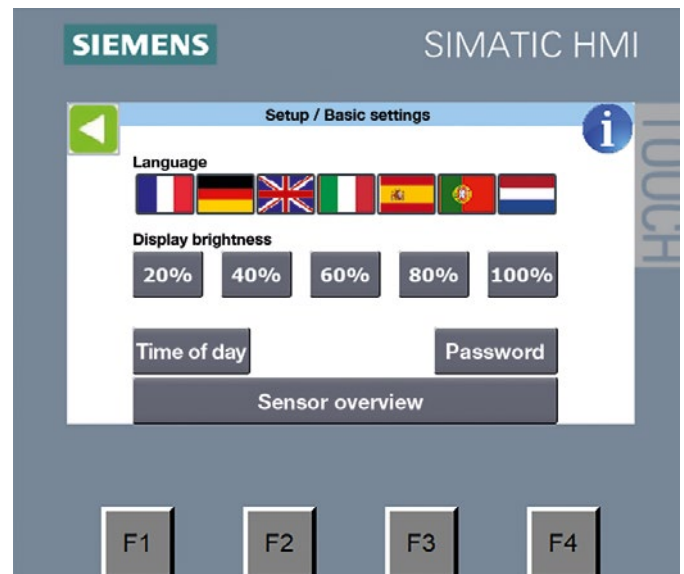
The version of the software is displayed at the bottom of the screen.



Clicking the arrow at the top right, changes the display to the home screen which shows cylinders 1...4.


### 7.2 Language

7.2.1 Pressing the F1 key in any screen takes you to the "Setup / Basic Settings" window.



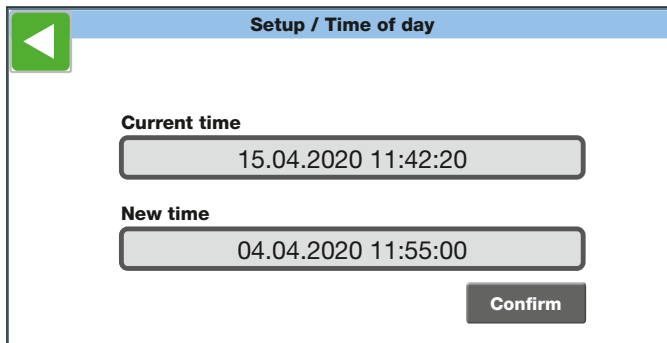
7.2.2 The language can be set here by clicking on the corresponding flag. The display lighting can also be dimmed.

### 7.3 Info

7.3.1  Clicking "i" opens the info image, which is also displayed when the device is started.

## 7.4 Time of day

7.4.1 Pressing “Time of day” opens the “Setup/Time of day” window.

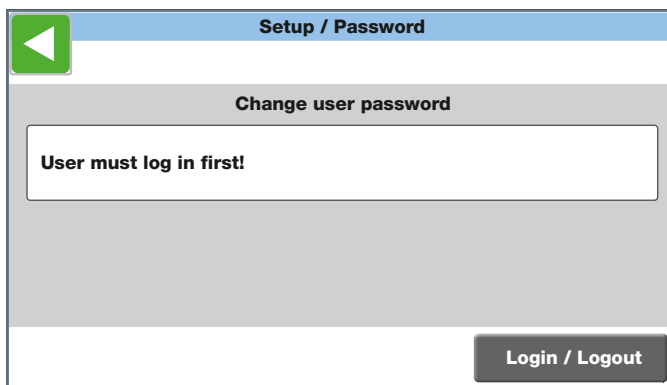


7.4.2 The system’s clock can be set here. To do this, the date and time must be entered in the specified format in the “New time” field and then confirmed by pressing “Set”.

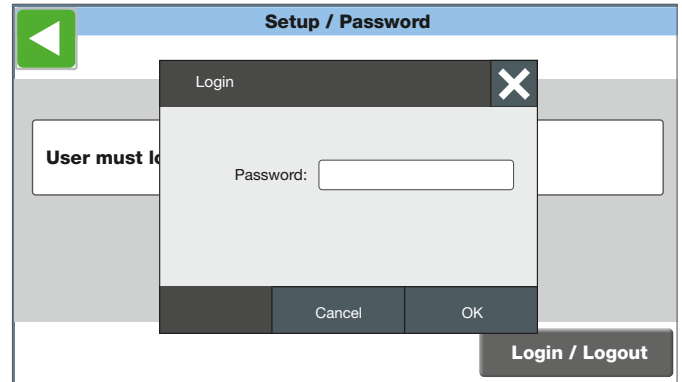
7.4.3 The current time is shown in the field above it. The time/clock is used to save the reset time of the consumption meter.

## 7.5 Password

7.5.1 Click the “Password” button to open the screen to change the password. The user password, which is “0000” by default, can be changed here.

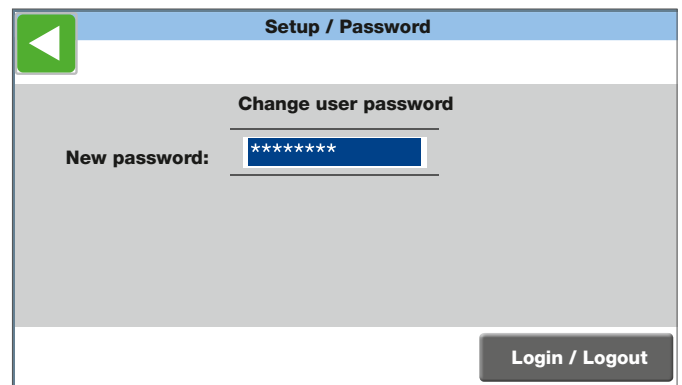


7.5.2 If the user is not logged in yet, the image above appears. Click on “Login/Logout” and enter the current password first in order to change it. Enter the password (keyboard window) and confirm with OK.

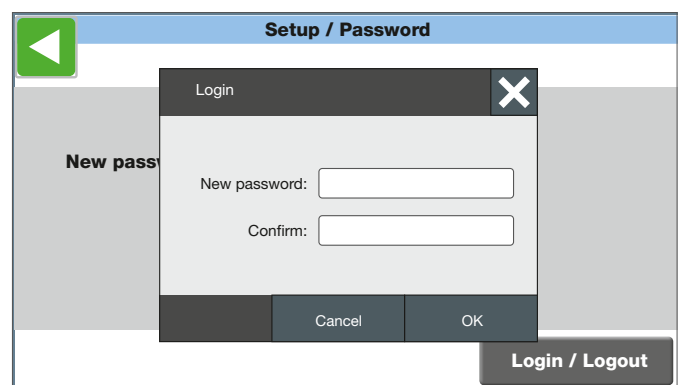


7.5.3 If the correct password is entered, the “Change user password” screen appears. The new password can now be entered in the “New password” field.

7.5.4 After clicking on the blue field, another window opens, in which the password must be entered twice and then confirmed with OK. The password is now changed with immediate effect. Test the new password with the login/logout button.



7.5.5 If the user has lost his password, you can temporarily log in using 9999 and then enter a new password for the user as described above.



7.5.6 Passwords:

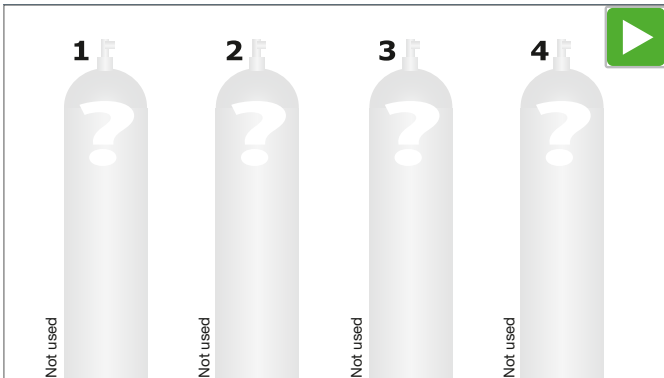
User – 0000 – (only to operate)


Advanced user – 0401

(to operate and modify the parameters)

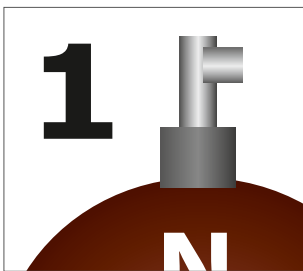
## 7.6 Home screen

7.6.1 The first channels are displayed here.

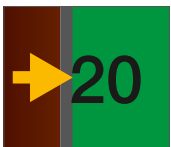


If this symbol  is displayed on the home screen, the device version can support more than 4 cylinders. The green arrow is used to move to the screen with the next cylinders.

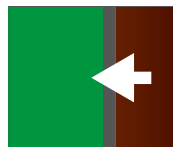
7.6.2 Display of channel, here channel 1



7.6.3 Warning and alarm limit



Left arrow shows the warning limit



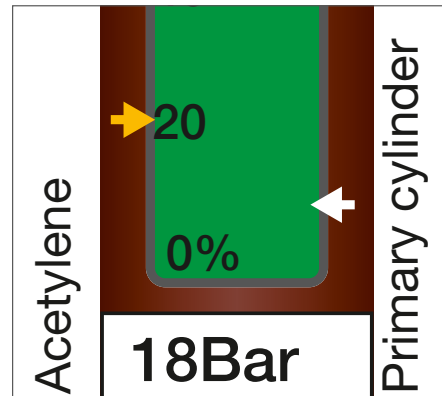
Right arrow shows the alarm limit

7.6.4 The absolute cylinder pressure or weight is shown on the bottom of the cylinder.

18 bar

120.0 kg

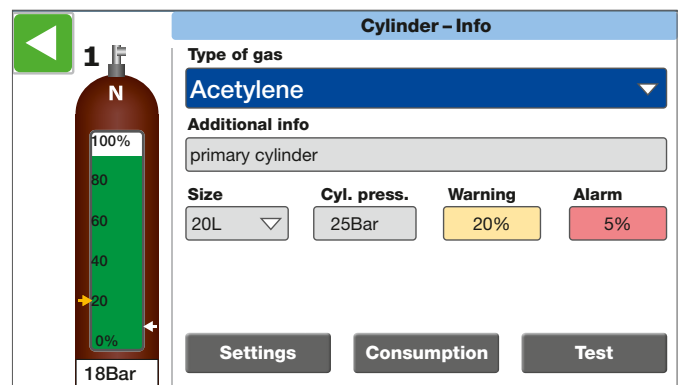
7.6.5 The name of the gas is on the left, space for informative text on the right of the cylinder.



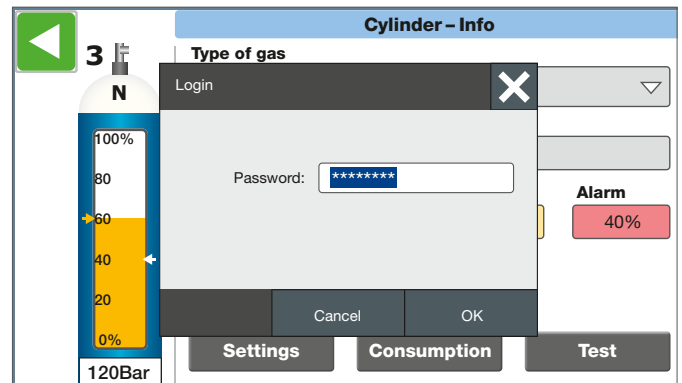
## 7.7 Enter base values

7.7.1 Clicking on the desired cylinder (channel) in the home screen takes the user to the detail screen of the channel.

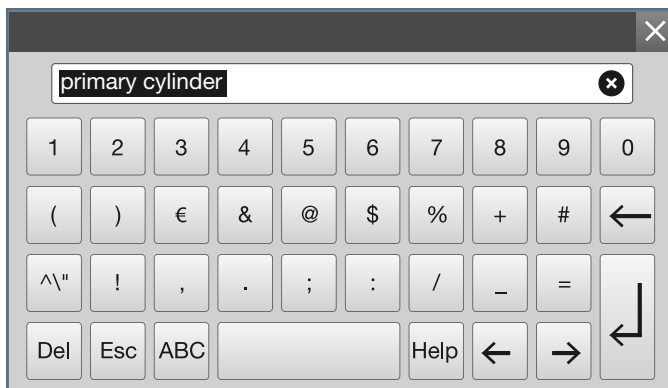
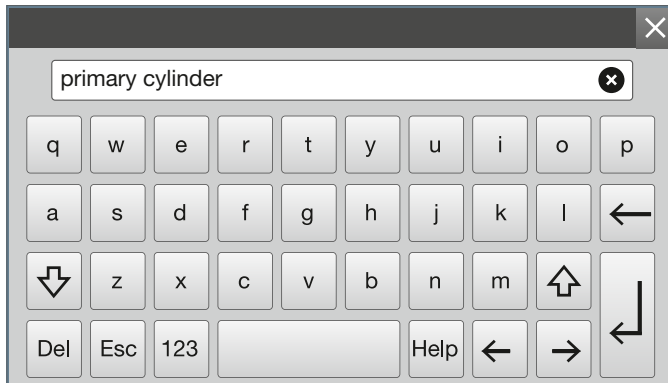
The base values can be entered here.



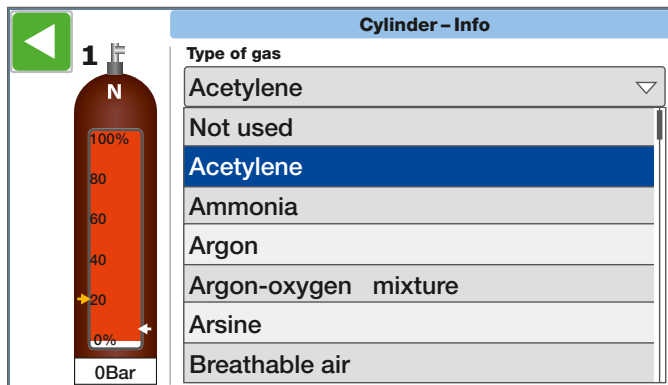
7.7.2 The base values can only be entered or changed after entering the password. The user is automatically logged out after 15 minutes of inactivity.



7.7.3 The alphanumeric keyboard appears when text is entered. The “123” and/or “ABC” key switches to the numbers/special characters view and back.



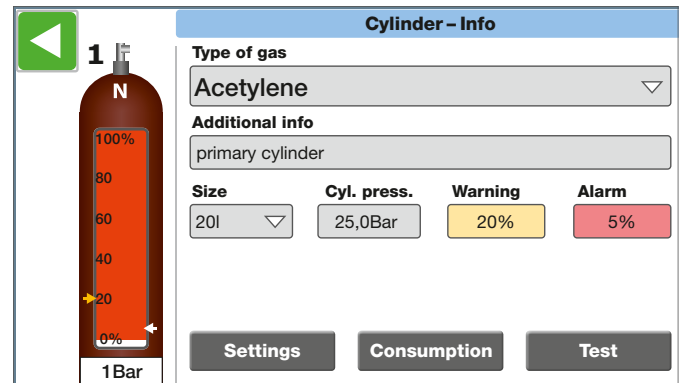
7.7.4 After the correct password has been entered, all the base values can be set. The “gas type” is selected in a dropdown menu. You can search for the desired gas type by moving the list up or down with your finger or using the right scroll bar. You select the type by clicking on it. A standard stylus can be used to make this easier to do.



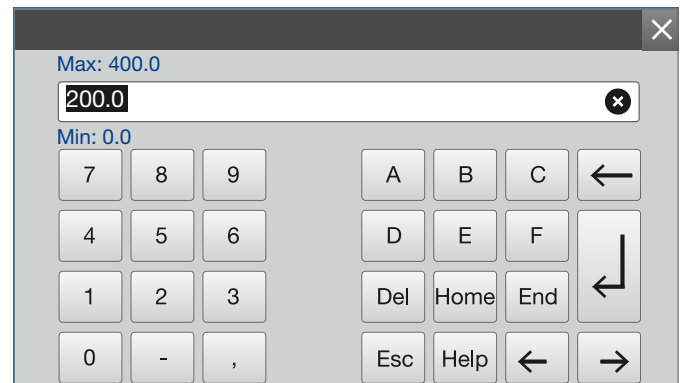
If the term “not used” is entered under “gas type”, this means the channel is not used. No further values can be entered and the cylinder is shown in grey on the screen. The designation for the gas type will be “not used”.

7.7.6 Additional text can be entered in the “Additional info” line using the alphanumeric keyboard.

7.7.7 The volume of the connected cylinders/bundles is entered in the “Size” field (e.g. 50 l), which is important for the calculations of the consumption meter for compressed gases. The gas supplier can provide the volume of the connected containers.



7.7.8 “Cylinder pressure” is for the entry of the actual filling pressure or the weight of the gas cylinders (e.g. 200 or 300 bar) used in this channel (important for the calculations of the consumption meter for compressed gases). It is also the basis for the scaling of the “Warning” and “Alarm”. The values are entered using the numeric keyboard, which appears if only numbers are to be entered in an input field.

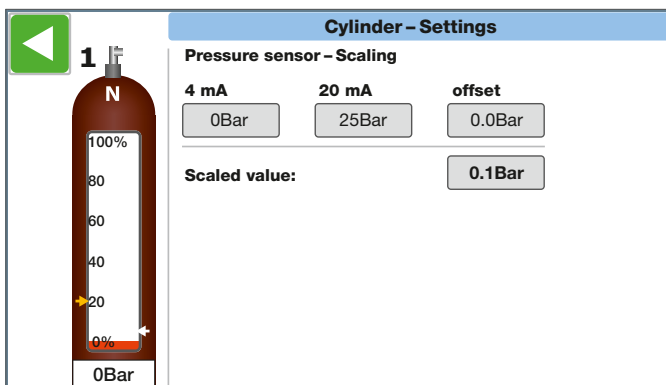


Note, if the value entered in the “Cylinder pressure” field is higher than the value in the “20 mA” field in the window for scaling the pressure sensor, then the value in the “Cylinder pressure” will not be accepted because the pressure of the cylinder would exceed the maximum pressure of the pressure sensor. If this is the case, the pressure sensor must be replaced.

7.7.9 The desired alarm setpoints 1+2 are entered in the “Warning” and “Alarm” fields. These are also shown as arrows on the cylinder (see point 8.6.3). Important, the percentages refer to the value entered in “Cylinder pressure”.

7.7.10 Use the “Settings”, “Consumption” and “Test” keys to switch to the corresponding submenus (consumption and tests are covered in a separate chapter).


When the “Settings” button is activated, the window for the cylinder settings opens with the pressure sensor scaling.



The pressure corresponding to 4 mA for the sensor is entered in the field “4 mA” which is usually 0 bar (lower value).

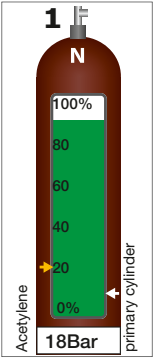
The upper value, which corresponds to 20 mA for the sensor, is entered in the “20 mA” field. This value is entered on the transmitter (e. g. 250 or 400 bar).

Depending on the accuracy/setting of the transmitter, e.g. the “4 mA” value is not 0 bar. The “scaled value” is the current cylinder pressure resulting from the scaling parameters. The scaled value is added to the value entered in the “Offset” field so that, for example, the minimum or maximum value can be corrected.

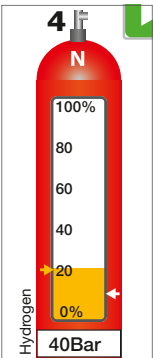
7.7.11  Return to the home screen by clicking the green arrow on the top left.

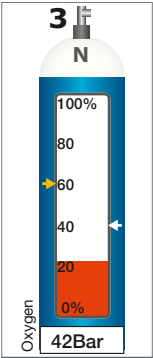
# 8 Operation

## 8.1 Level indicator and alarms

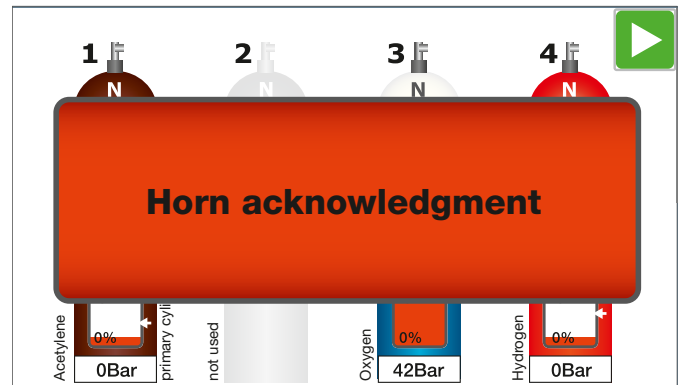
8.1.1  The fill level of the cylinder is displayed as the actual pressure value (in bar or kg) at the base of the cylinder symbol.

8.1.2 The coloured bar shows the content of the gas cylinder as a percentage; in normal condition the colour of the bar is green.

8.1.3  If the fill level falls below the set warning value of the 1st threshold, the colour changes from green to yellow.

8.1.4  If the fill level falls below the set alarm value of the 2nd threshold, the colour changes from yellow to red and flashes. The built-in horn generates a continuous signal.

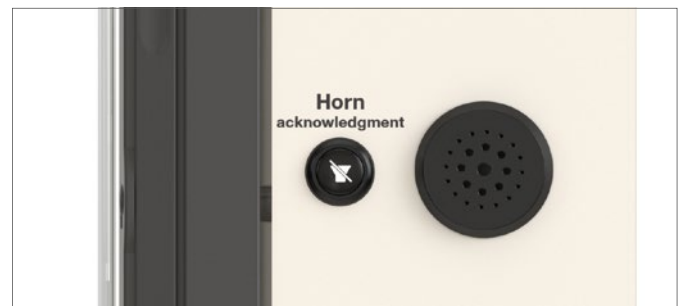
## 8.2 Alarm acknowledgement



8.2.1 After the level falls below the set alarm value, the message “Acknowledge the horn” is displayed. The horn contact is also activated (1Hz to control an external horn).

8.2.2 Clicking on the message switches off the horn contact and the message disappears.

Or the horn can be acknowledged using the button mounted on the right side of the housing.



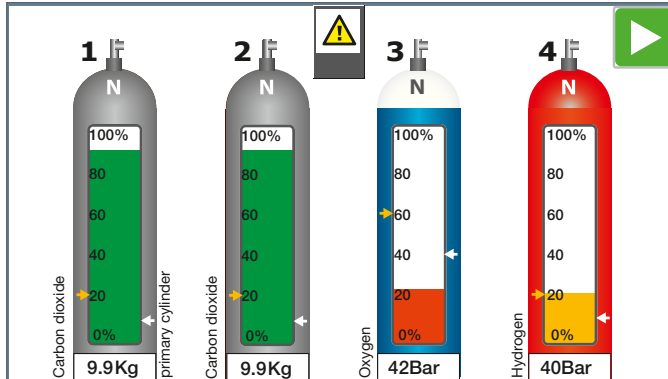
8.2.3 The signal contact remains activated as long as the fill level of a cylinder is below the alarm limit or there is a fault that has not been resolved. The red flashing bar in the cylinder remains on the screen until the fill level has been replenished.

8.2.4 After a new cylinder is connected, the colour bar changes to yellow and then green. When the pressure has been equalised, the current pressure of the cylinder appears again at the base of the cylinder symbol.



### 8.3 Message indicator/Message window

8.3.1 If the device is faulty, a message window with a corresponding message indicator pops up in the foreground. This displays the number of standing alarms and the alarm state.

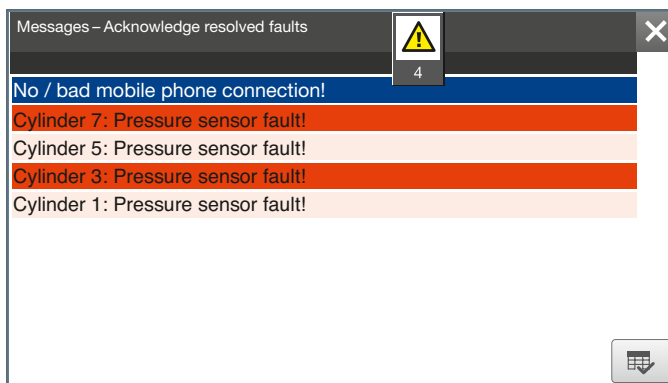


8.3.2 Alarm state:

1. Warning triangle flashes white yellow: unacknowledged alarm.
2. White warning triangle: The alarm has been acknowledged, but the alarm condition still exists.




8.3.3 Clicking on the warning symbol opens the message window.




8.3.4 Device faults are displayed in the message window.

- Red: Fault not resolved, unacknowledged
- White: Fault not resolved, acknowledged
- Light red: Fault resolved, unacknowledged
- Blue: Highlighted message

8.3.5  All the faults that arise must be acknowledged. Click on the corresponding message and acknowledge by pressing the key.

8.3.6 Resolved and acknowledged faults no longer appear on the list.

8.3.7  The message window closes again by clicking the message indicator or the close symbol.

### 8.4 Decommissioning

If the main power supply is interrupted, the system shuts down. The operating instructions for the connected transmitter must be observed.

## 9 Commissioning the scales

### 9.1 General

The procedure for connecting the scales depends on the version of the ALMS LIBRA monitoring system. It starts with channel 1 (cylinder 1) for scale 1, channel 2 (cylinder 2) for scale 2, etc.

### 9.2 Check number

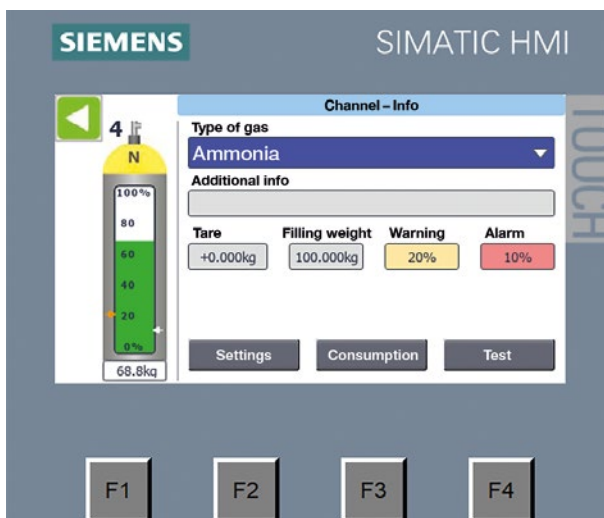
When the scales are made, a check number is generated, which must be entered when the scales are commissioned in order to securely register the LIBRA scales with the system and to ensure its accuracy.



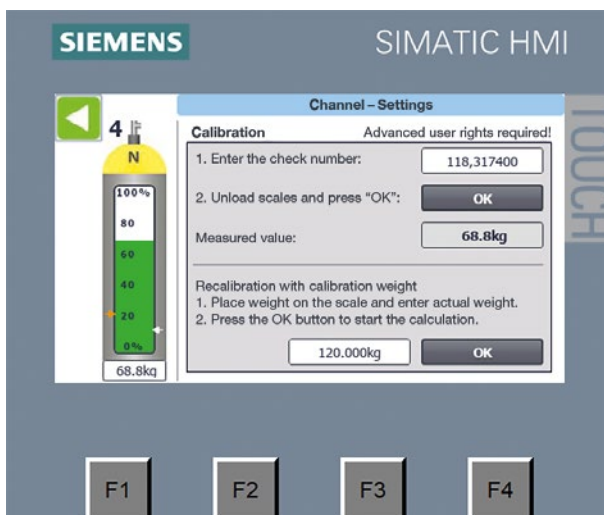
The LIBRA check number is on the underside of the scales.

### 9.3 Enter the check number

- Switch to the “Channel Info” screen by tapping the desired scale (channel) on the main screen.



- Select “Settings”



- Tap the field with the check number to prompt the password request display.



- Enter the password for the advanced user and confirm with OK.
- Now tap the check number field again, enter the check number and confirm with OK.
- You can end the entry with the green arrow key.



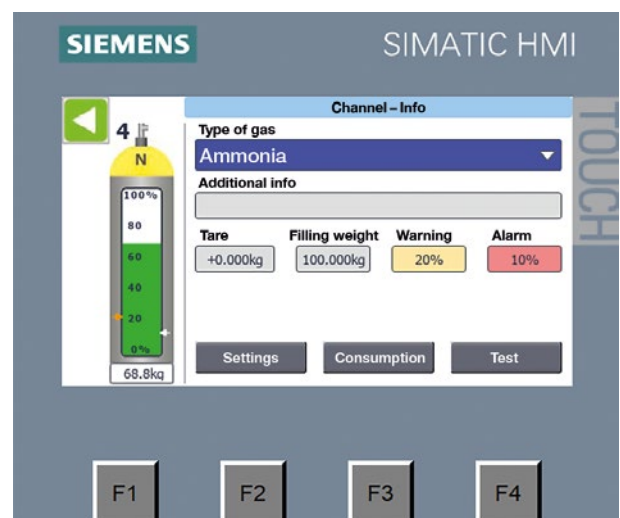
Before pressing the “OK” button, the platform scale must be emptied (no cylinder or other structures).

### 9.4 Preset tare / fixed tare value

If the tare value is constant, a fixed tare can be saved. The weight displayed under the cylinder is the net weight (filling weight).



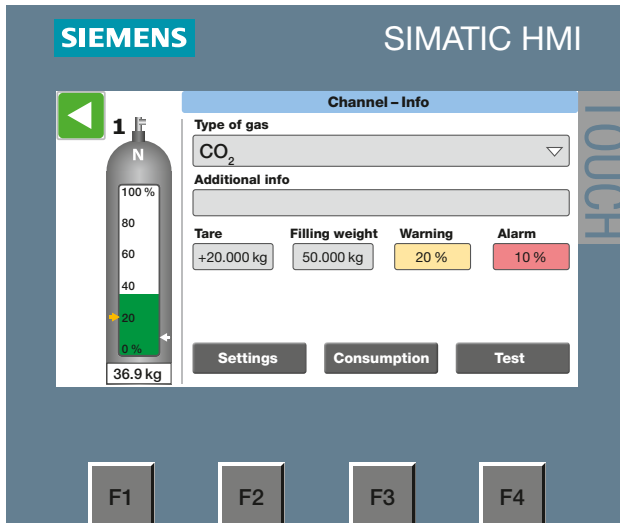
The warning and alarm limits are calculated based on the net weight.



- After tapping on the field below “Tare”, the password request appears.
- Enter the password for the advanced user and confirm with OK.



- Now tap the field again, enter the desired tare weight and confirm with OK.



! The values shown are non-binding sample values!

- The tare weight entered is now displayed and shown as a net filling quantity below the cylinder.



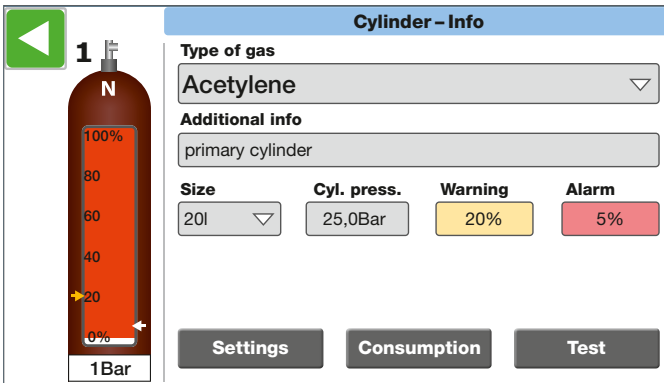
The tare weight is saved until it is replaced with a new one and can be deleted by entering 0000.

- You can end the entry with the green arrow key.

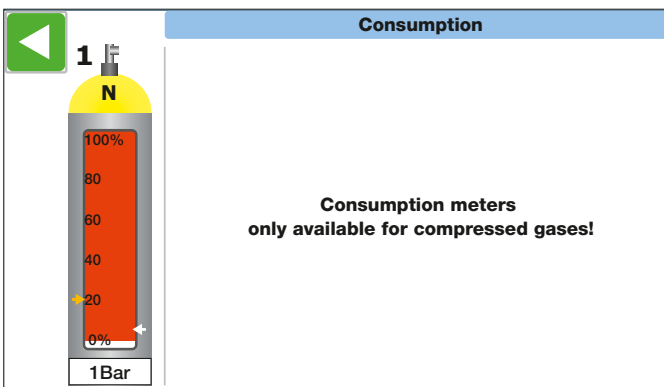
# 10 Additional functions

## 10.1 Measurement of consumption

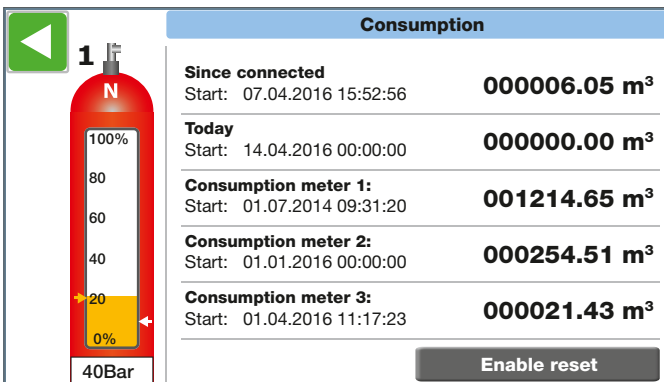
10.1.1 Pressing the “Consumption” button takes you to the corresponding submenu.



10.1.2 If the dial-in is performed for a channel in which a compressed gas has not been previously stored, a window will be displayed with the message “Consumption meters only available for compressed gases!”.



10.1.3 If a compressed gas is entered, the following window is displayed.



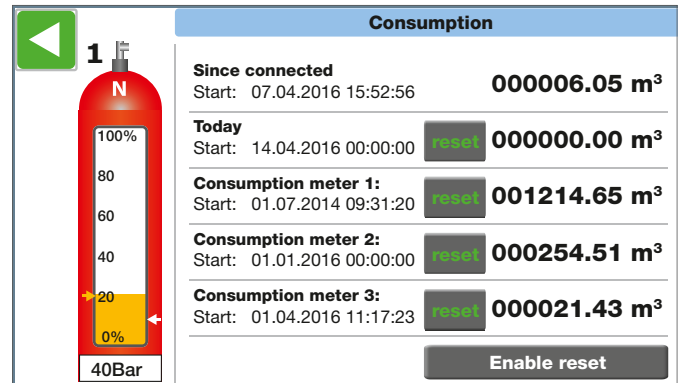
10.1.4 “Since connected” is automatically reset when a new cylinder is connected. The new connection of a gas cylinder is detected when the filling level or pressure of the cylinder is greater than the set warning limit for 2 minutes.


10.1.5 The display “Today” is always reset at 00:00:00.

10.1.6 All three “Consumption meters” are independent

meters that can be reset at any time. The display also shows since when the consumption meter has been activated.

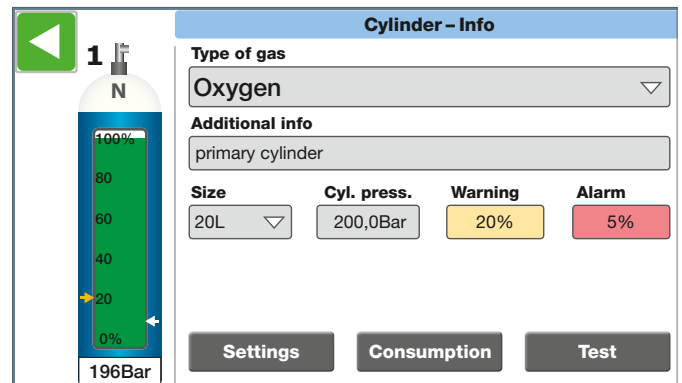
10.1.7 The “Today” and “Consumption meter” displays are reset with the “Enable reset” button. Clicking this button generates individual reset buttons on the screen for a few seconds. By clicking on these buttons, the manual reset function is activated.



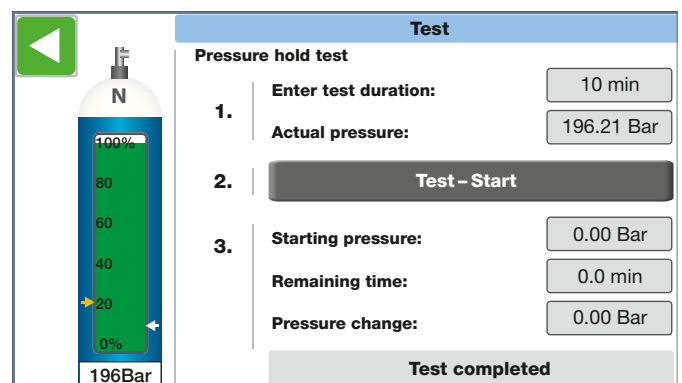
10.1.8  Clicking on the green arrow in the top left takes you back to the home screen.

## 10.2 Pressure test

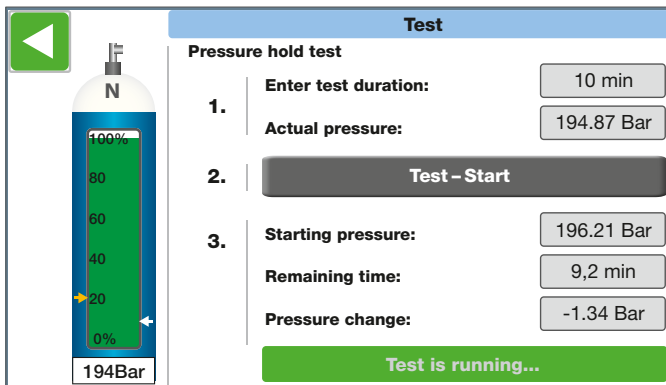
10.2.1 Pressing the “Test” button takes you to the corresponding submenu.



10.2.2 First, you must enter a time in the “Enter test duration” field. The test is activated by clicking the “Test – Start” button.



10.2.3 The fields displayed in the window have the following meaning:



- “ACTUAL pressure” shows the current cylinder pressure.
- “Starting pressure” is the pressure when the test was started.
- “Remaining time” shows the remaining duration of the test.
- “Pressure change” is the current difference between the ACTUAL pressure and the starting pressure. After the test has ended, the last difference is kept.

The test can also be restarted during the test run by selecting “Test - Start”.

# 11 Care and maintenance – Adjustment of the scale

## 11.1 General

If the scales need to be repaired or there are weight deviations, it may be necessary to adjust them.



Only use calibrated weights for adjusting the scales.

## 11.2 Adjusting

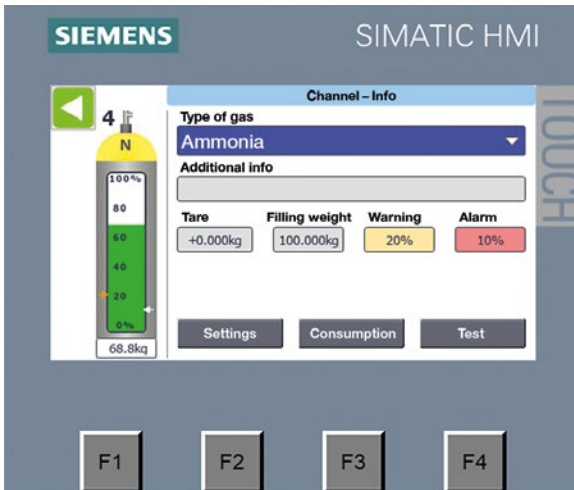


Only trained personnel may carry out the adjustments.

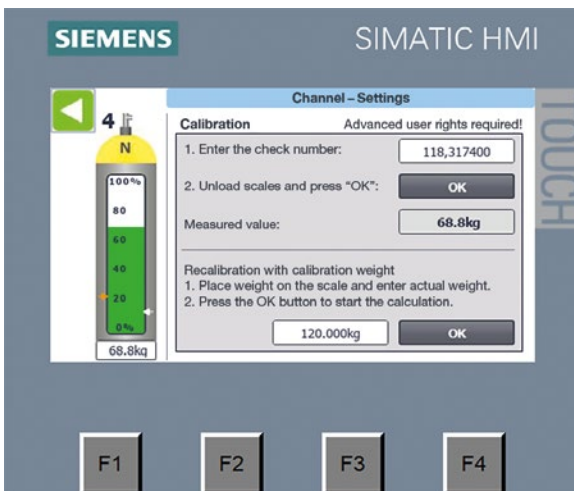


Free up the scales completely (remove all loads).

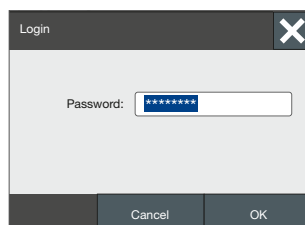
- Tap on the scale to be adjusted to switch to the “Channel – Info” screen.



- Select “Settings”.



- Tapping on the weight field in the “Recalibration” section will prompt the request for the password.



- By tapping the weight field again, you can enter the weight value of the weights placed on the scale.

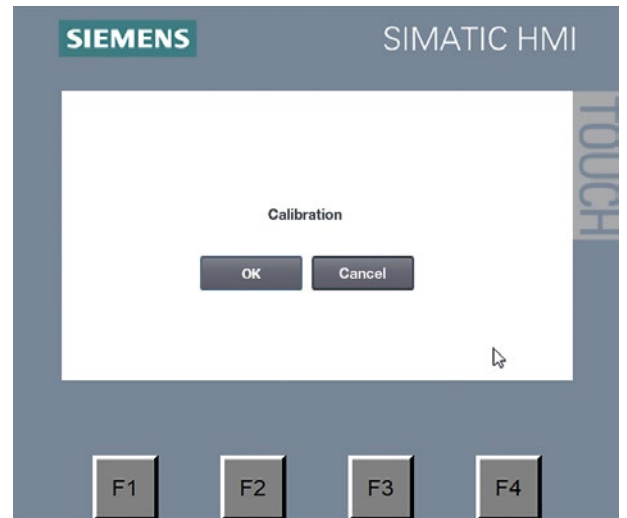


Only use weights that have been tested or calibrated.

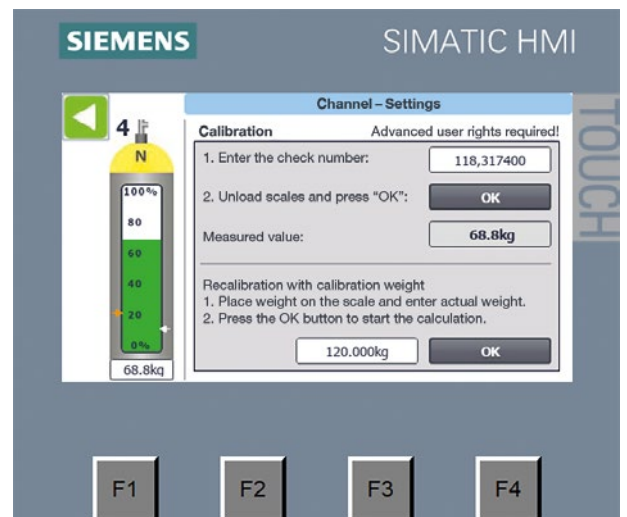


The scales should, if possible, be calibrated with the max. weight of the scales. Small weights result in inaccurate readings on the scales.

- Place the weight on the scale.
- Wait until the value on the weight display stops fluctuating and then press OK.



- Now confirm with OK or cancel



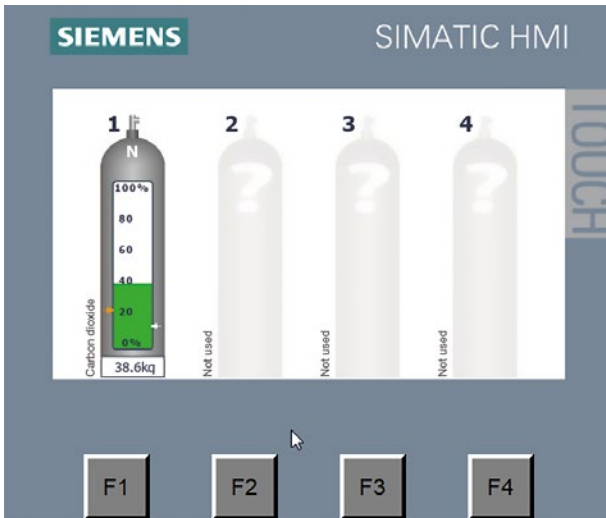
- The scales are now adjusted.
- The corrected weight value is now displayed immediately below the cylinder
- You can end the entry with the green arrow key.

# 12 Care and maintenance – Check sensor inputs

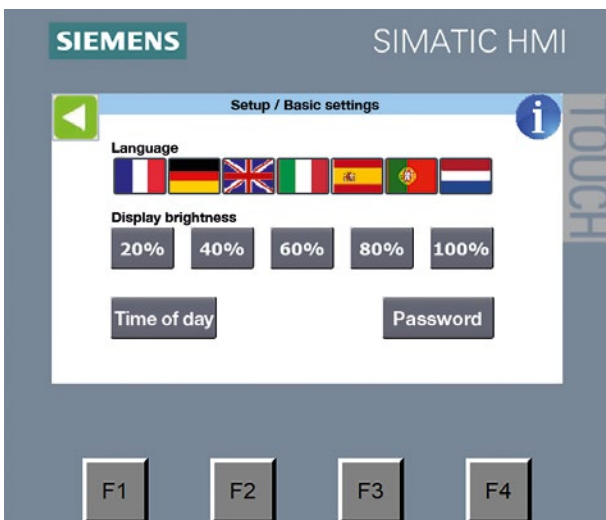
## 12.1 General

During the installation or other checks such as those for the cable or sensors, you can also check all the channel inputs in parallel via an overview.

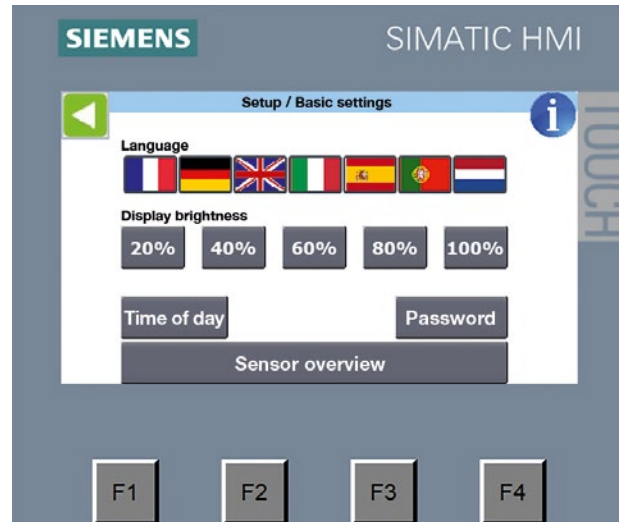
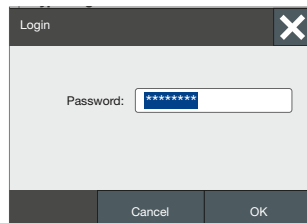
## 12.2 Call up the sensor test



- Press the F1 key below the display.



- Enter the password for the advanced user.



- Switch to the overview by selecting “Sensor overview”.



- This overview shows all the sensor inputs and the corresponding measured values.



The current value of the sensor channel is displayed in the “Uin” field. It is updated in the PLC control cycle.

## 12.3 Cleaning



The ALMS LIBRA must not be cleaned with acetone or other aggressive cleaning agents. Clean only with a cloth that has been slightly dampened in soapy water.

## 13 Disposal



The device and accessories may not be disposed of in household waste; they must be recycled in the same way as electrical and electronic devices.

## 14 Technical data

Technical documents on request

Voltage range	85 to 264V <sub>AC</sub> , 47 to 63Hz
Power input	180mA at 120V <sub>AC</sub> 90mA at 240V <sub>AC</sub>
Ambient temperature during operation	-10 °C to 60 °C
Degree of protection	IP65
Dimensions of plastic wall housing	324 × 289 × 145mm (height × width × depth)
Weight/basic enclosure with max. load	5.6 kg (Non-Ex version) to 6.0 kg (Ex version)
Number of sensors	4 (max. 8) Non-Ex version, 2 (max. 8) Ex version
Number of scales	max. 4
Power supply sensor	24V <sub>DC</sub>
Signal input for sensors and scales	4-20 mA or 0-10V <sub>DC</sub>
The accuracy	depends on the sensor used
Alarm contact	Floating changeover contact Contact load max. 240V <sub>AC</sub> /2A; 24V/1A <sub>DC</sub>
Enclosure material	ABS plastic RAL7035
Frame with transparent cover	Polycarbonate RAL7024
Signal generator	90 dB
LIBRA weighing range	5 kg to 120 kg
Readability	0.1kg
Rated load	600 kg
Temperature range LIBRA	-10 °C to +40 °C
Dimensions	320 × 320 × 30 mm (length × width × height)
Cable type LIBRA	LiYCY 4x 0,34mm <sup>2</sup>
Cable length	10m
Ex type approval	IBExU19ATEX1145X
LIBRA explosion protection according to 2014/34/EU	II 2G Ex ib IIC T4 Gb II 2D Ex ib IIIC T110 °C Db -10 °C ≤ Ta ≤ +40 °C
Floor fixing plate	330 × 330 × 3 mm (length × width × height)
Retractor ramp	330 × 330 × 32 mm (length × width × height)
<b>Applied standards</b>	
Electromagnetic compatibility	Directive 2014/30/EU
Low Voltage Directive	Directive 2014/35/EU
Potentially explosive atmospheres LIBRA	Directive 2014/34/EU EN 60079-0 EN 60079-11
Ex classification for the operation of sensors in hazardous areas	II (2)G [Ex ic Gc] IIC
Approved Ex pressure transmitters	Make BDS 17.600 Ex More on request



## 15 ATEX – Layout of the cables

Barrier									
No. 1	Manufacturer / Type	Certificate	U <sub>0</sub> [V]	I <sub>0</sub> [mA]	P <sub>0</sub> [mW]	L <sub>0</sub> [mH]	C <sub>0</sub> [nF]	Group	T-class
	<b>REG. GEORGIN/ BZG 789+</b>	<b>INERIS11ATEX0024 X</b>	<b>28</b>	<b>89.31</b>	<b>0.625 2</b>	<b>4.457 2</b>	<b>83</b>	<b>IIC</b>	<b>T6</b>

Sensors									
	Manufacturer / Type	Certificate	P <sub>i</sub> [mW]	L <sub>i</sub> [mH]	C <sub>i</sub> [nF]	L <sub>k</sub> [mH]m	C <sub>k</sub> [nF / m]	U <sub>i</sub> [V]	I <sub>i</sub> [mA]
	<b>Siemens AG/ SITRANS P220</b>	<b>SEV10ATEX0146</b>	<b>≤ 750</b>	<b>0</b>	<b>0</b>	<b>0.001</b>	<b>0.2</b>	<b>≤ 30</b>	<b>≤ 100</b>
	<b>BD SENSORS/ 17.600G Ex</b>	<b>IBExU10ATEX1068 X</b>	<b>660</b>	<b>0.01</b>	<b>1</b>	<b>0.001</b>	<b>0.2</b>	<b>28</b>	<b>93</b>

The maximum permitted cable length is 410 m. The cable cross-section must not be smaller than 0.5 mm<sup>2</sup> when the cable is 410 m long.

## 16 Product overview AIR LIQUIDE ALMS LIBRA

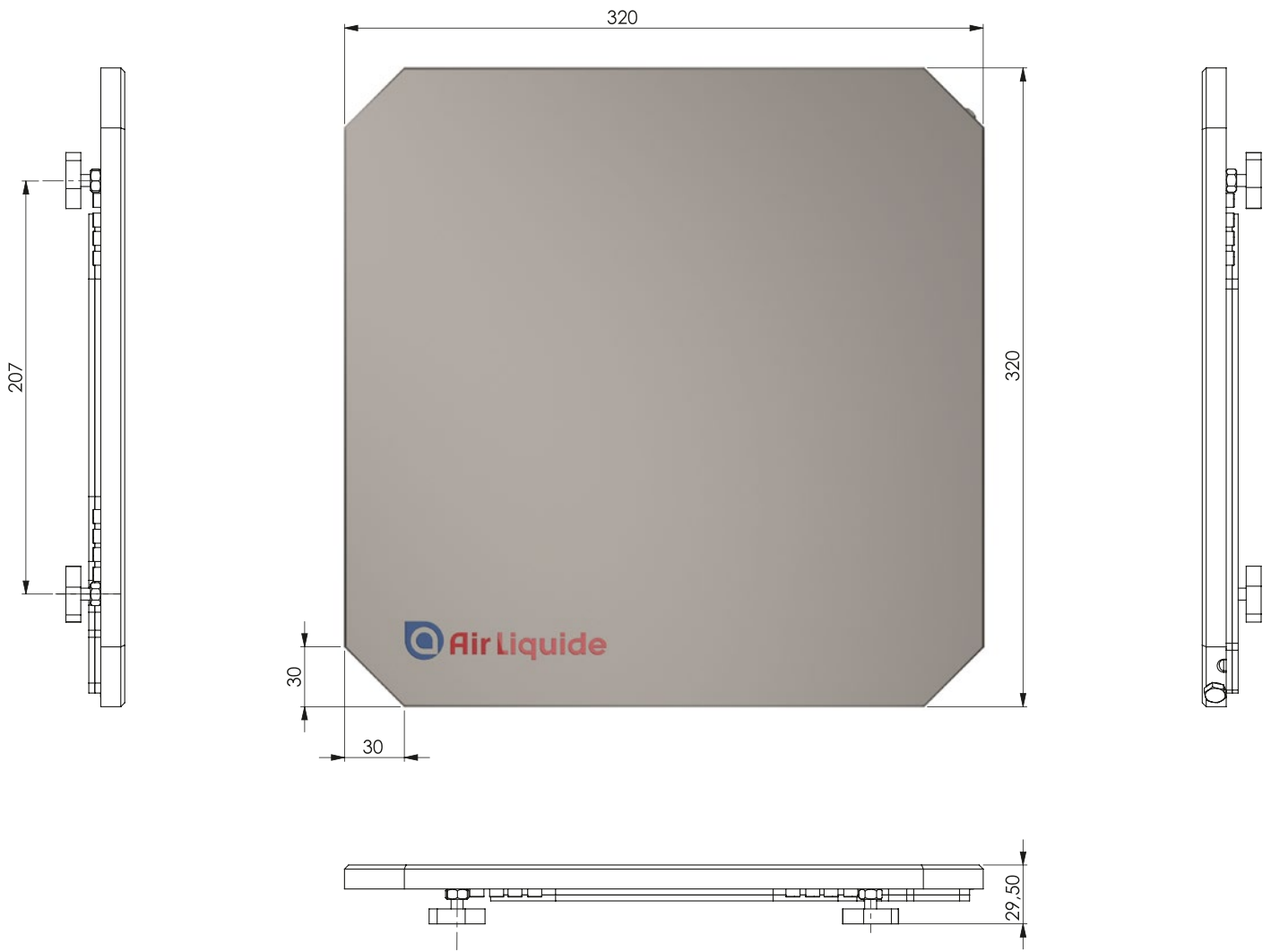
Device block / Device type	Part ID AL	Enclosure BCD310 294 × 324 × 144 mm without wall mounting	Alarm contact out- put	GPRS / GSM mod- ule (without antenna housing)	Zener barrier for 2 sensors	BF floor fixing plate
ALMS LIBRA 4W	<b>196138</b>	<b>1x</b>	<b>1x</b>			
ALMS LIBRA 4W GPRS	<b>196139</b>	<b>1x</b>	<b>1x</b>	<b>1x</b>		
ALMS LIBRA 4W Ex	<b>196140</b>	<b>1x</b>	<b>1x</b>		<b>8x</b>	
ALMS LIBRA 4W Ex GPRS	<b>196141</b>	<b>1x</b>	<b>1x</b>	<b>1x</b>	<b>8x</b>	
ALMS LIBRA 2W/2W Ex	<b>196142</b>	<b>1x</b>	<b>1x</b>		<b>4x</b>	
ALMS LIBRA 2W/2W Ex GPRS	<b>196143</b>	<b>1x</b>	<b>1x</b>	<b>1x</b>	<b>4x</b>	
ALMS LIBRA 2D/2W	<b>196144</b>	<b>1x</b>	<b>1x</b>			
ALMS LIBRA 2D/2W GPRS	<b>196145</b>	<b>1x</b>	<b>1x</b>	<b>1x</b>		
ALMS LIBRA 2D/2W Ex	<b>196146</b>	<b>1x</b>	<b>1x</b>		<b>4x</b>	
ALMS LIBRA 2D/2W Ex GPRS	<b>196147</b>	<b>1x</b>	<b>1x</b>	<b>1x</b>	<b>4x</b>	
ALMS LIBRA 2D Ex/2W	<b>196148</b>	<b>1x</b>	<b>1x</b>		<b>2x</b>	
ALMS LIBRA 2D Ex/2W GPRS	<b>196149</b>	<b>1x</b>	<b>1x</b>	<b>1x</b>	<b>2x</b>	
ALMS LIBRA 2D Ex/2W Ex	<b>196150</b>	<b>1x</b>	<b>1x</b>		<b>6x</b>	
ALMS LIBRA 2D Ex/2W Ex GPRS	<b>196151</b>	<b>1x</b>	<b>1x</b>	<b>1x</b>	<b>6x</b>	
Cylinder scale ALMS LIBRA	<b>196152</b>					<b>Included in the delivery</b>
Cylinder scale ALMS LIBRA Ex	<b>196153</b>					<b>Included in the delivery</b>

## 17 Spare parts and options for ALMS LIBRA

Pos.	Article number	Item	Description
1	78005141	Enclosure lower part size 310	Enclosure lower part for ALMS series size 310 in light grey, with processing as well as cable glands and blind cover
2	78005143	Hinged front cover, clear, size 310	Hinged front cover, clear for ALMS series in graphite grey, with vision panel, size 310
3	78005144	Mounting set	Wall bracket for ALMS series in light grey, for mounting the display terminals without opening the housing. Installation from the exterior on the back.
4	78005145	Signal generator / horn	Acoustic element with O-ring (without connection cable)
5	184369	Signal multiplexer SIM4 C	Signal multiplexer for connecting up to 4 pressure sensors or contact manometer (without connection cable)
6	184370	Signal multiplexer SIM8 C	Signal multiplexer for connecting up to 8 pressure sensors or contact manometer (without connection cable)
7	184368	HMI Display 4"	HMI KTP400 Basic suitable for ALMS with software
8	184371	Zener barrier for Ex pressure sensors	2-channel Zener barrier suitable for pressure sensors including Air Liquide connection cable.
9	78005151	Horn button	Push-button with text/symbol and connector
10	78005152	Alarm contact	Alarm contact output for use as a connection of further signaling elements such as flash lamps, sirens or for alarm messages to systems at a higher level.  The alarm signals when an alarm limit has been exceeded or there is a cable break in the sensors.
11	184372	Sensor connection for 2 pressure transmitters	Sensor connection for 2 pressure transmitters including terminals and wiring harness
12	184373	Cylinder lock for front cover with 2 keys	The lock can be fitted later in the designated mount. The existing filler plug / lock can be easily pushed out from the back. The key can only be removed when it is closed.
13	184374	GPRS module with antenna	Communication module for sending SMS or e-mail messages to the GSM / GPRS network and web server Access to data point projections. Observe the country's respective permissions.
14	78005156	GPRS antenna with 4.5 m cable	
15	184375	Antenna housing	Antenna housing for GPRS antenna
16	184376	Profibus DP slave module	Module for Profibus connection
17	184377	Profibus DP connector	for connecting the cable to the Profibus module
18	187925	Volume control	Volume control for the horn
19		Zener barrier LIBRA BZG761+	Zener barrier for the power supply
20		Zener barrier LIBRA BZG764+	Zener barrier for the measurement signal
21		WM2	Amplifier module for the scales
22	197299	AR retractor ramp	Retractor ramp with floor fixings
23	78005189	BF floor fixing plate	Floor fixing plate for attaching to the floor or in the gas cabinet

### Scope of delivery

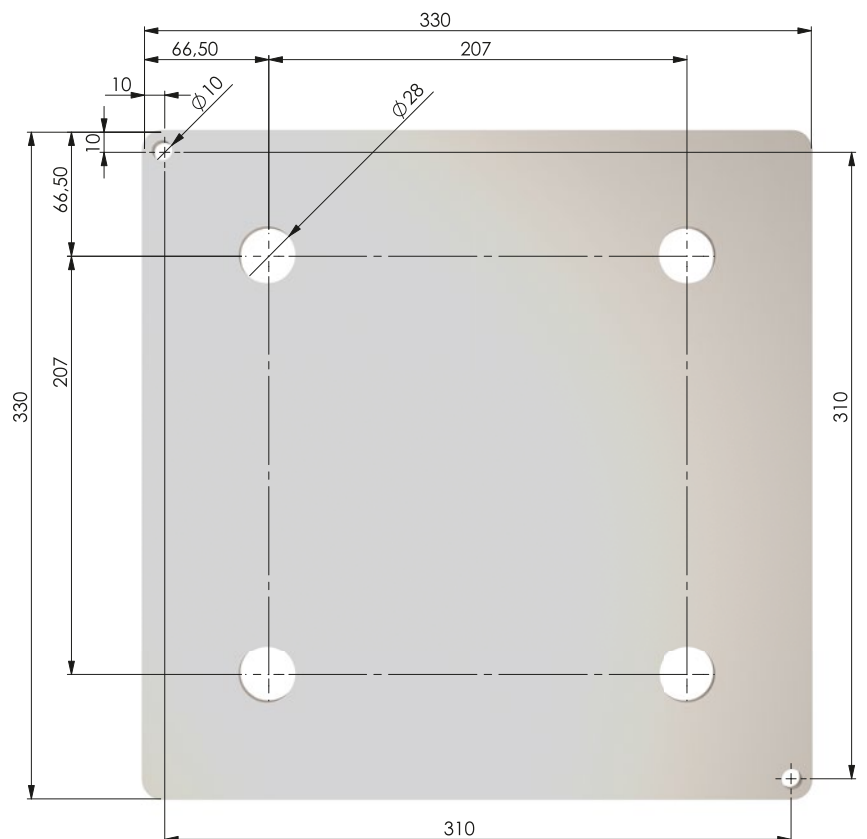
- ALMS Monitoring System LIBRA
- 4x wall brackets
- LIBRA scale
- BF floor fixing plate
- Instructions for use



AR retractor ramp  
(accessories where required!)



BF floor fixing plate  
(included in the scope of delivery of the platform scale)





## EU – Konformitätserklärung

Hiermit erklärt der Hersteller:

**INAKON GmbH**  
Werner-Heisenberg-Straße 28  
D-68519 Viernheim

für das Produkt:

Produktbezeichnung ALMS  
Produktreihe Monitoringsystem  
Kennzeichnung  II (2)G [Ex ic Gc] IIC

die Übereinstimmung mit den wesentlichen Anforderungen der nachfolgenden Richtlinie(n) und deren Änderungsrichtlinien.

Leistungsmerkmal	Erklärte Leistung
Elektromagnetische Verträglichkeit	Richtlinie 2014/30/EU
Niederspannungsrichtlinie	Richtlinie 2014/35/EU
Explosionsgefährdete Bereiche	Richtlinie 2014/34/EU

Diese Erklärung bescheinigt die Übereinstimmung mit den wesentlichen Anforderungen der genannten Richtlinie(n), enthält jedoch keine Zusicherung von Eigenschaften. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.

Ralf Findeisen, Geschäftsführer  
Viernheim, 08.02.2020



## EU – Konformitätserklärung

Hiermit erklärt der Hersteller:

**INAKON GmbH**  
Werner-Heisenberg-Straße 28  
D-68519 Viernheim

für das Produkt:

Produktbezeichnung ALMS LIBRA  
Produktreihe IW4 Ex...  
Kennzeichnung II 2G Ex ib IIC T4 Gb

die Übereinstimmung mit den wesentlichen Anforderungen der nachfolgenden Richtlinie(n) und deren Änderungsrichtlinien.

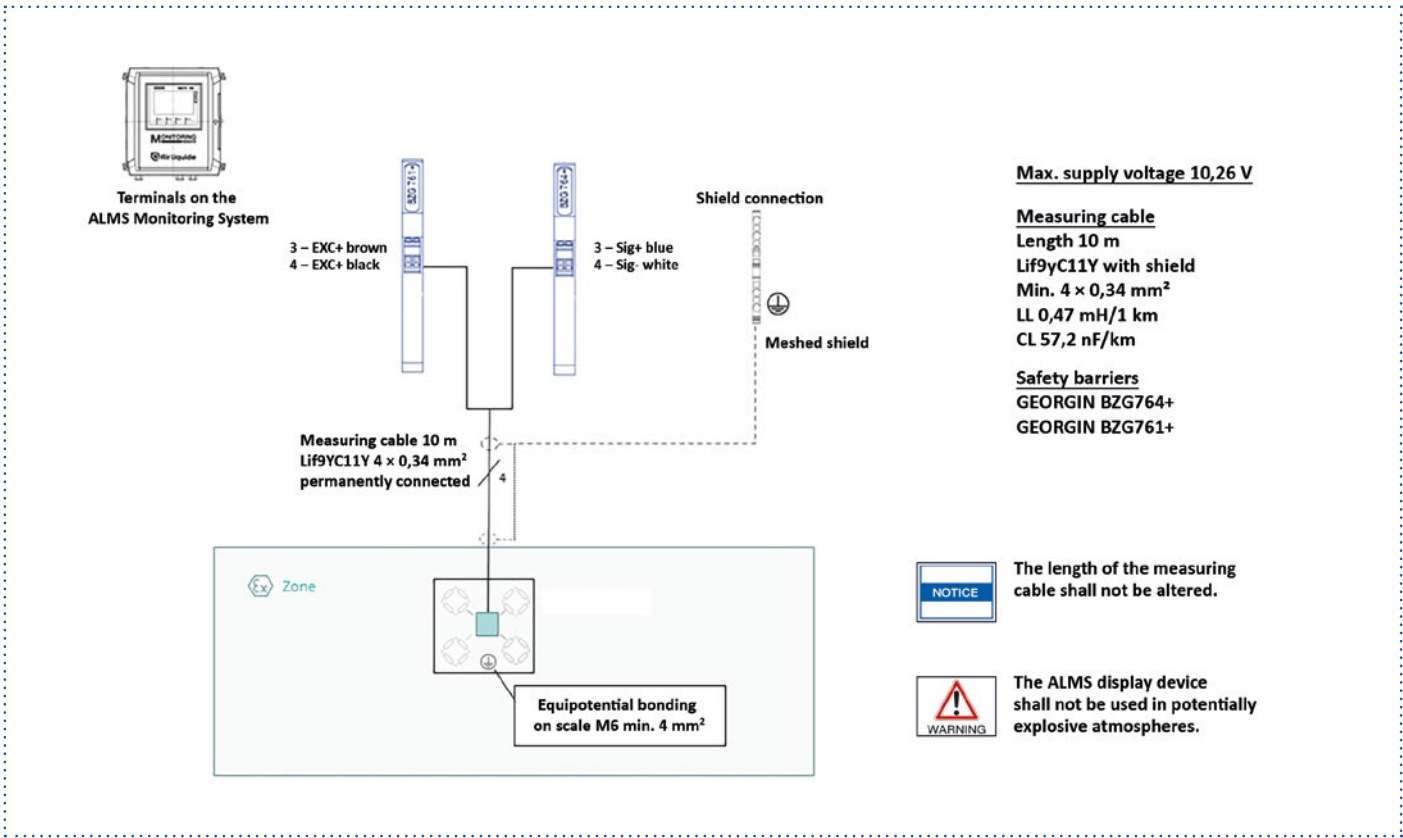
Leistungsmerkmal	Erklärte Leistung
Elektromagnetische Verträglichkeit	Richtlinie 2014/30/EU
Niederspannungsrichtlinie	Richtlinie 2014/35/EU
Explosionsgefährdete Bereiche	Richtlinie 2014/34/EU

Diese Erklärung bescheinigt die Übereinstimmung mit den Anforderungen der genannten Richtlinie(n), enthält jedoch keine Zusicherung von Eigenschaften. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.

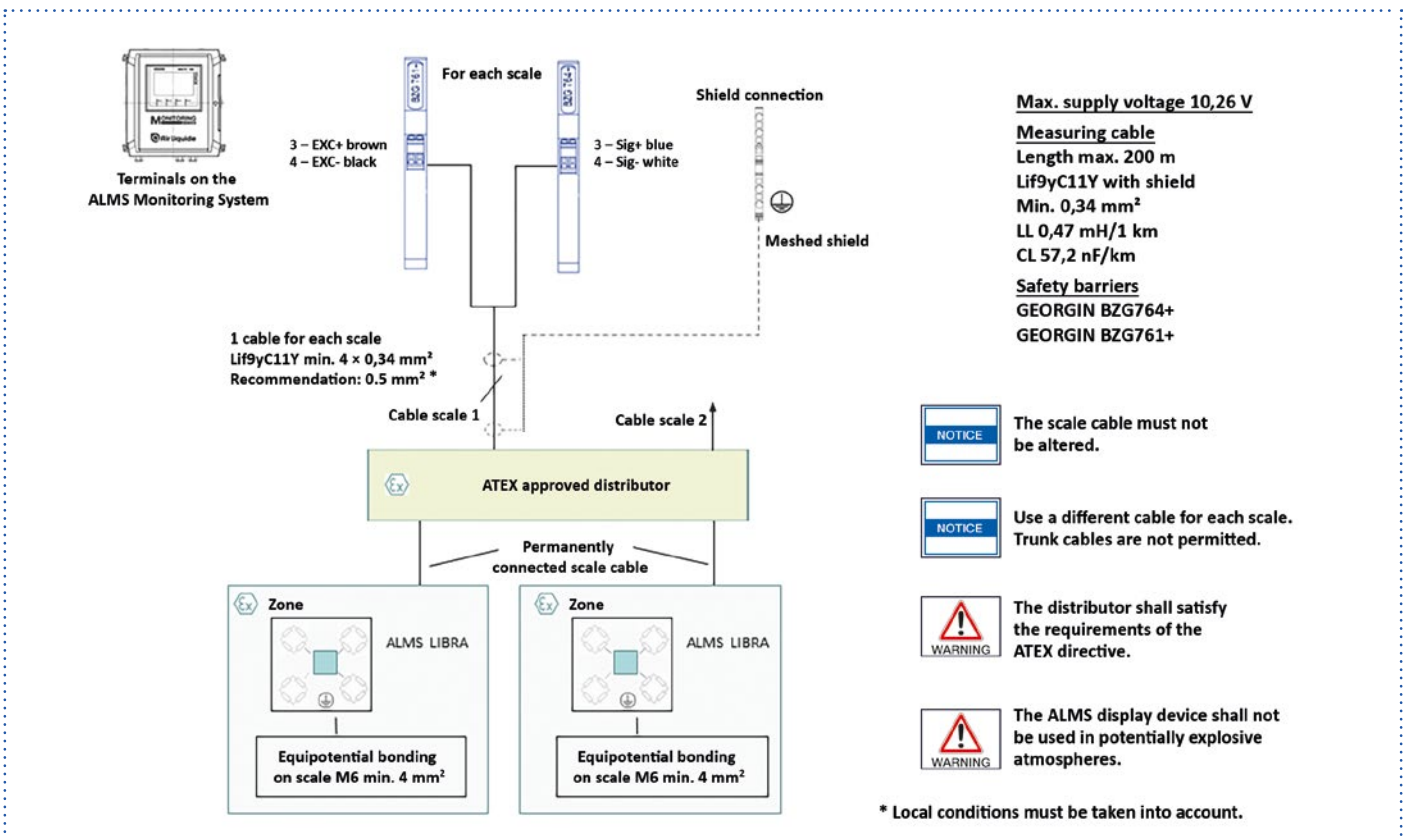
Ralf Findeisen, Geschäftsführer  
Viernheim, 14.01.2020

# 19 Circuit diagrams

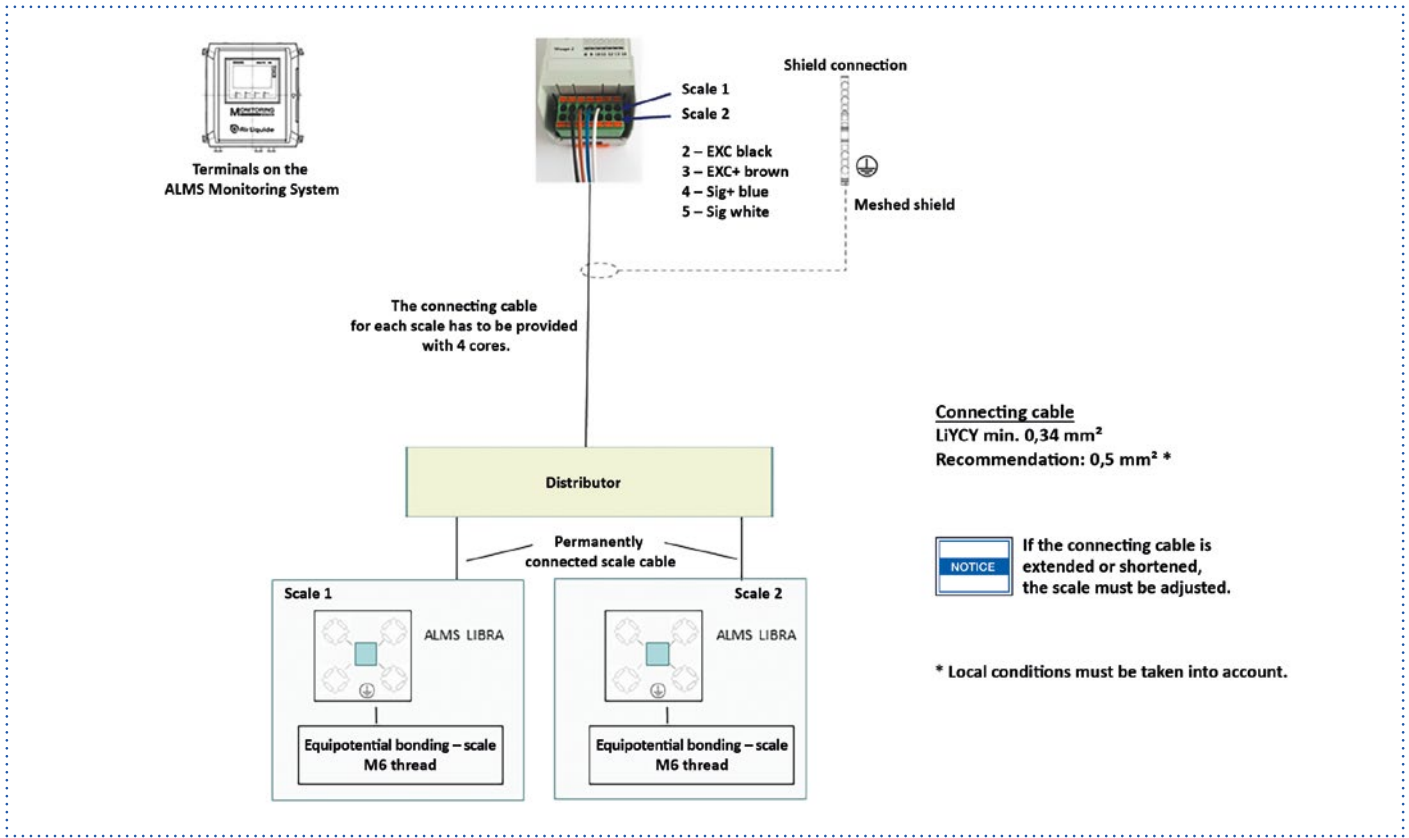
## 19.1 LIBRA Ex connection diagram directly on the ALMS



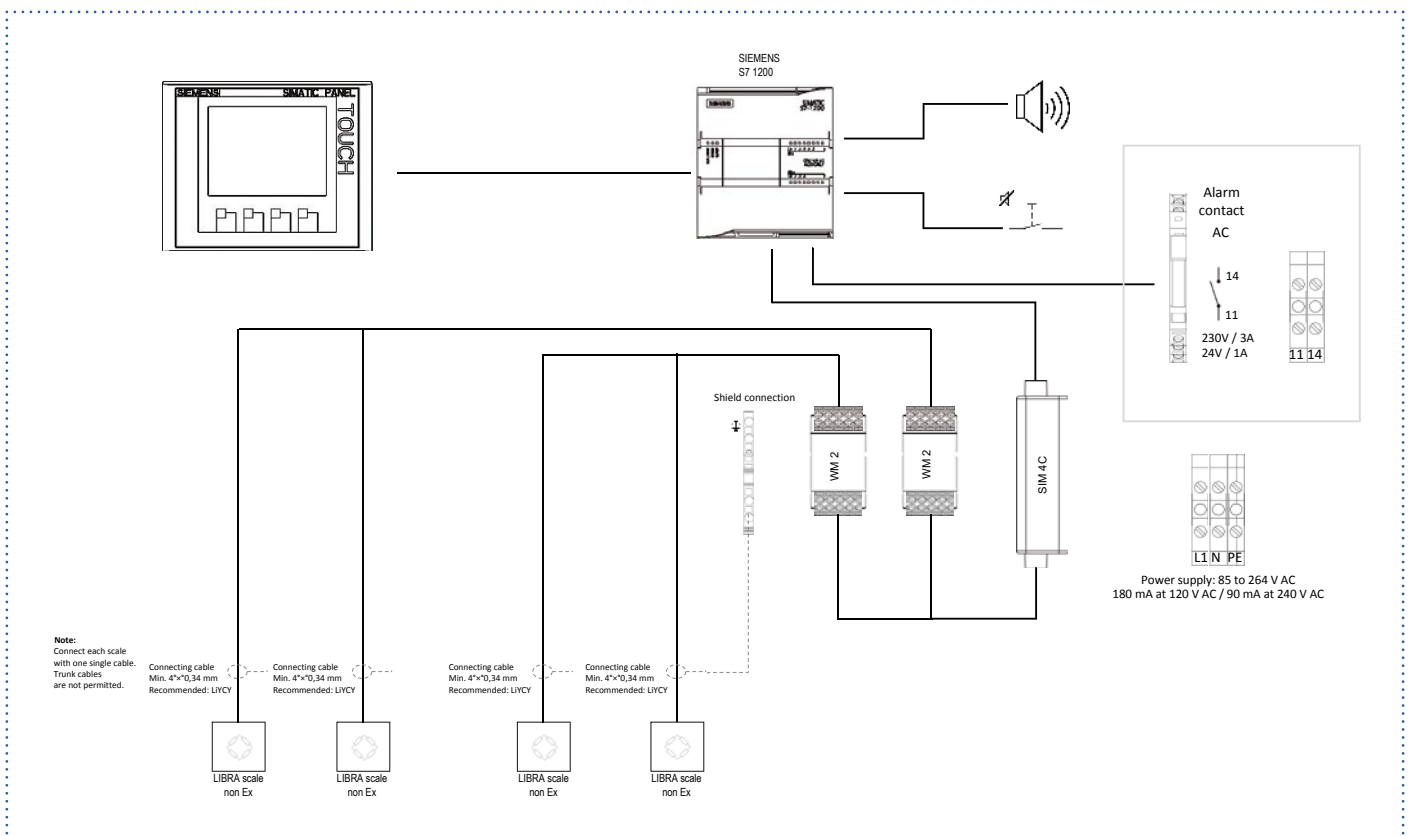
## 19.2 LIBRA Ex connection diagram with cable extension



### 19.3 LIBRA Non-Ex connection diagram

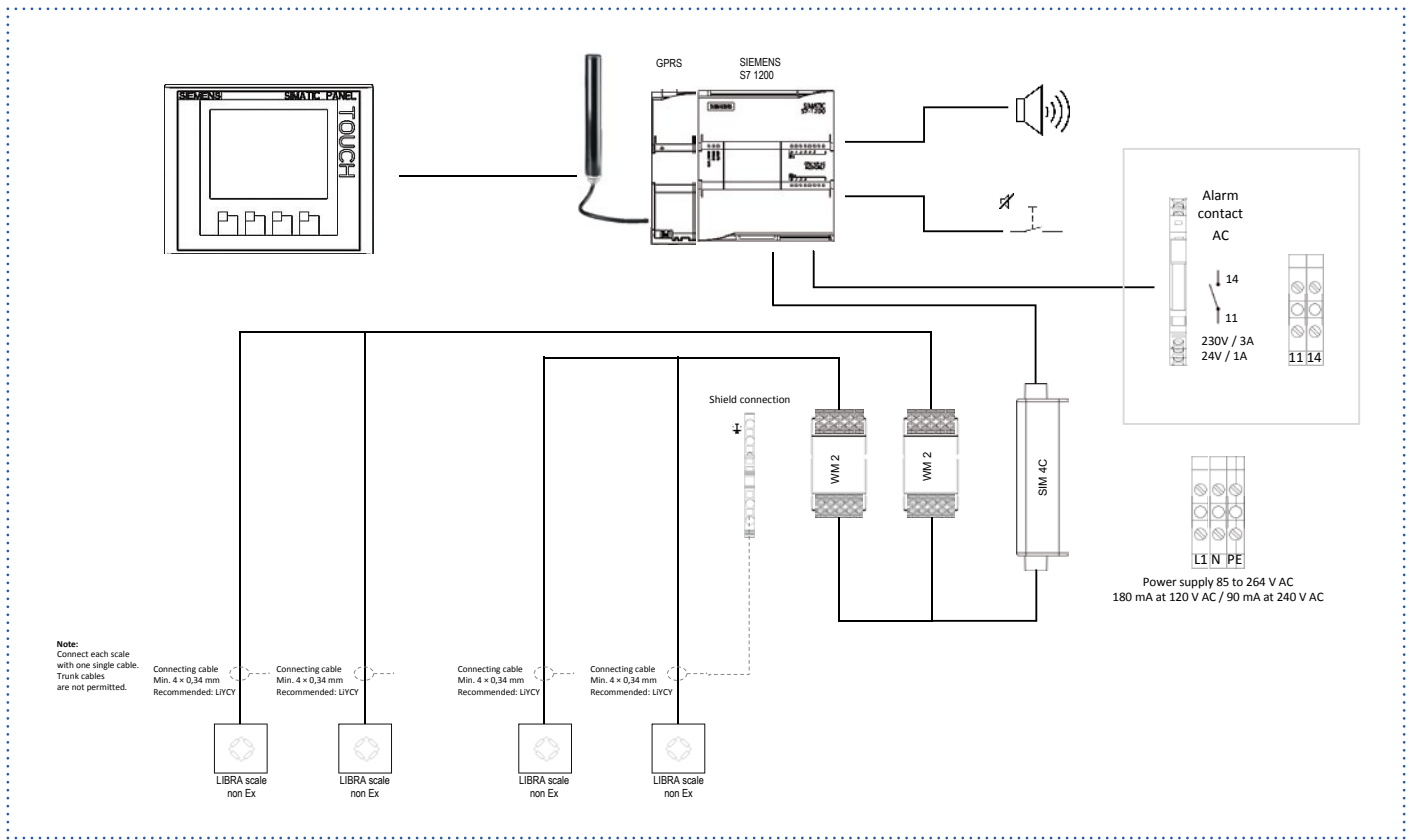


### 19.4 ALMS LIBRA 4W (AL part ID 196138)

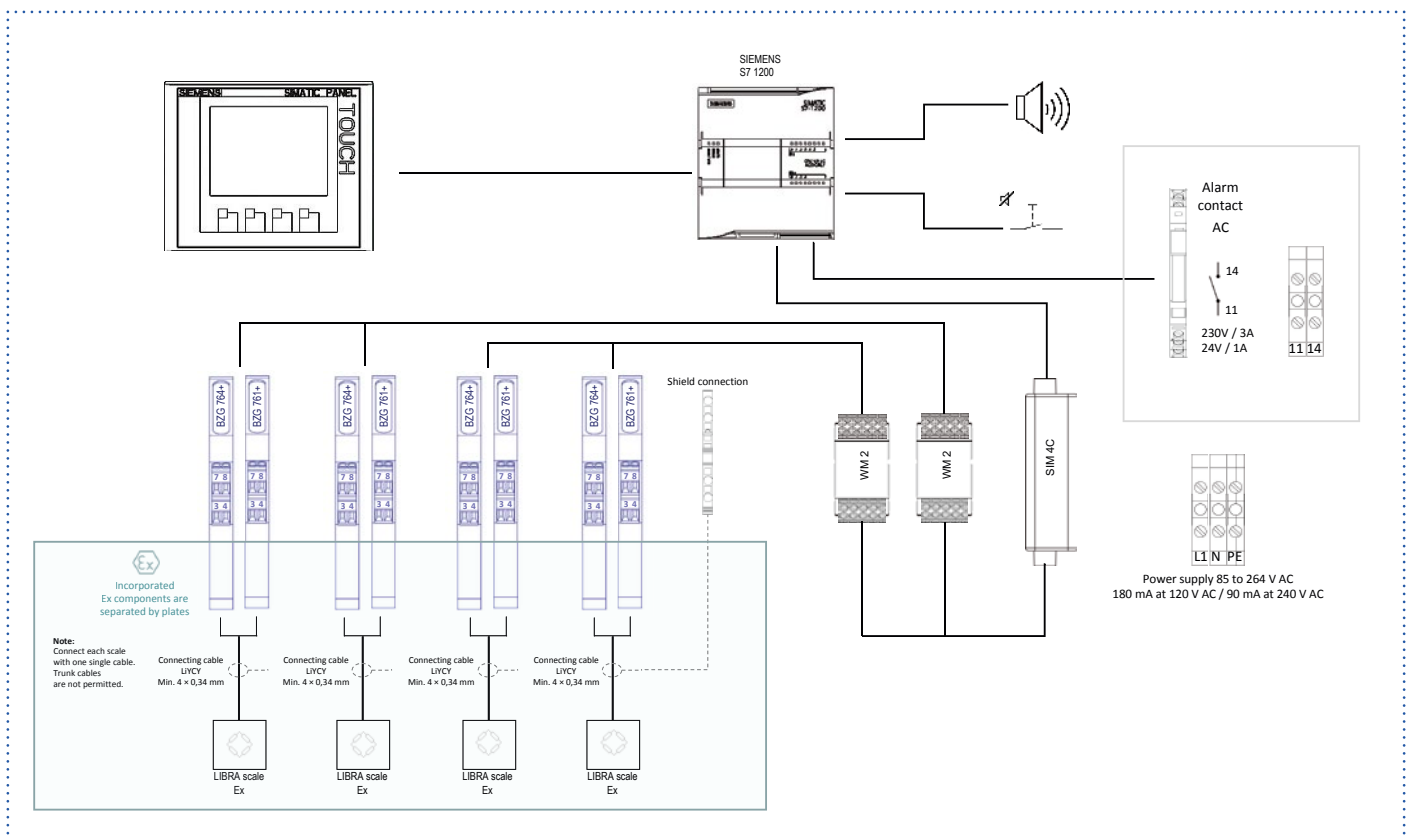




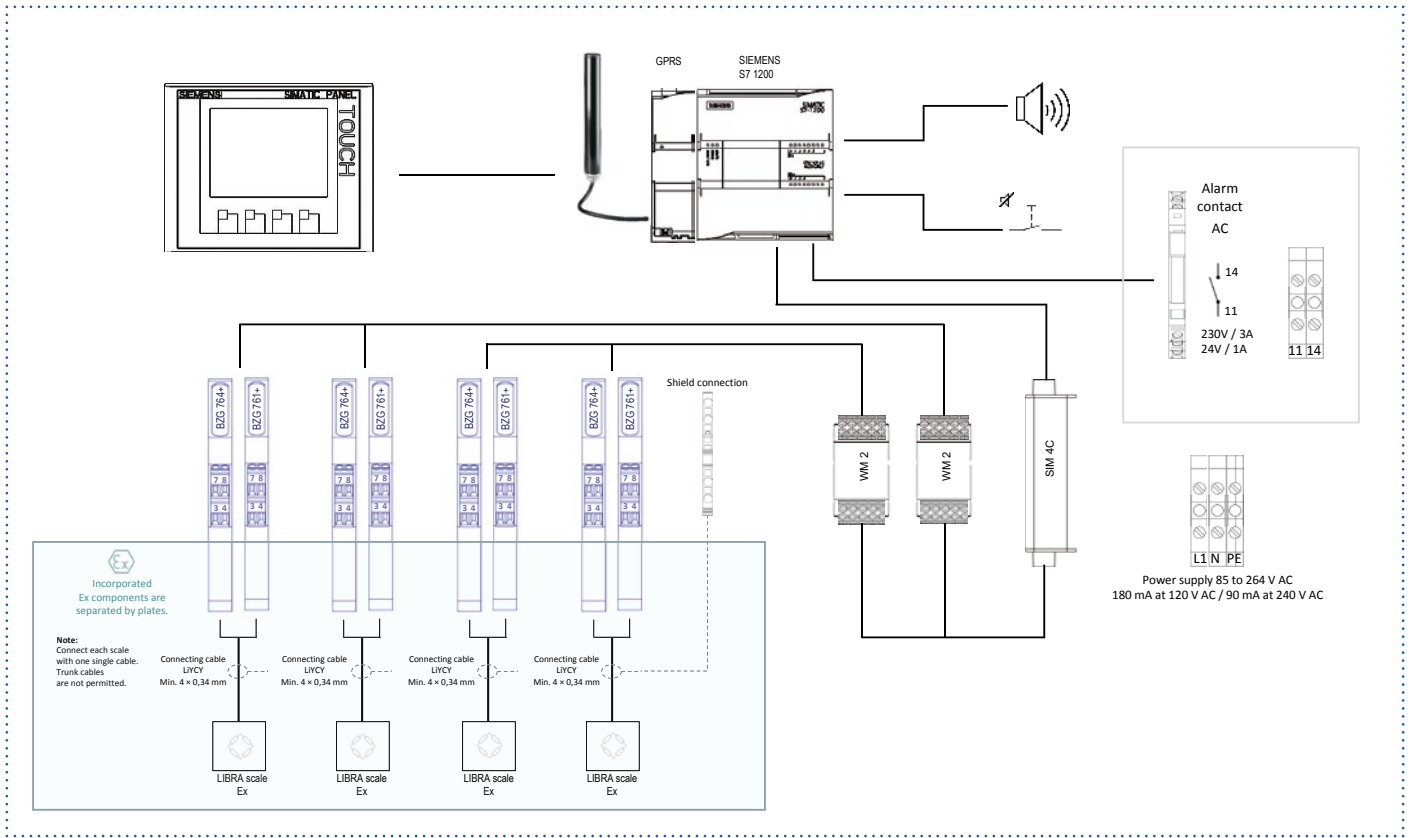
## 19.5 ALMS LIBRA 4W GPRS (AL part ID 196139)



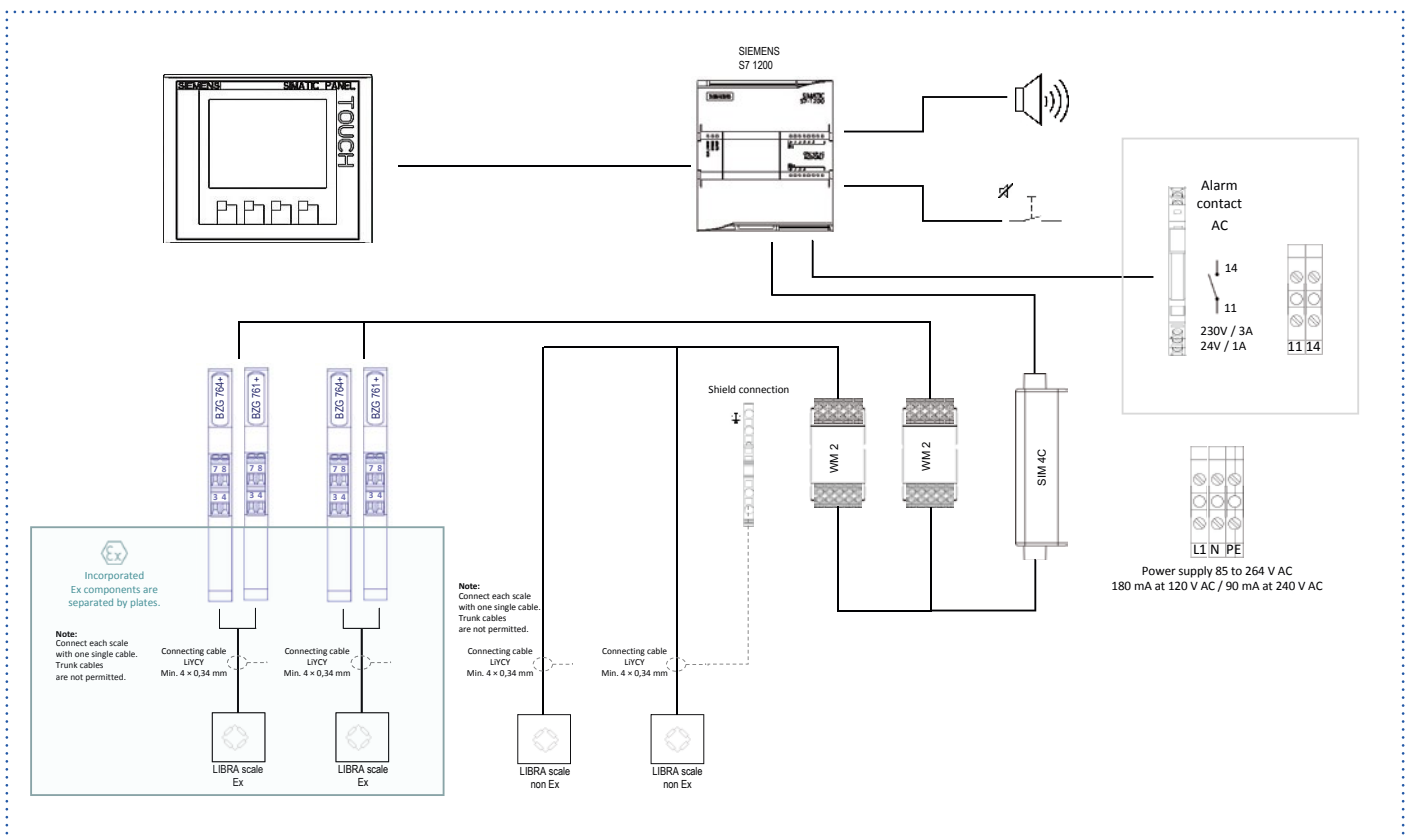
## 19.6 ALMS LIBRA 4W Ex (AL part ID 196140)



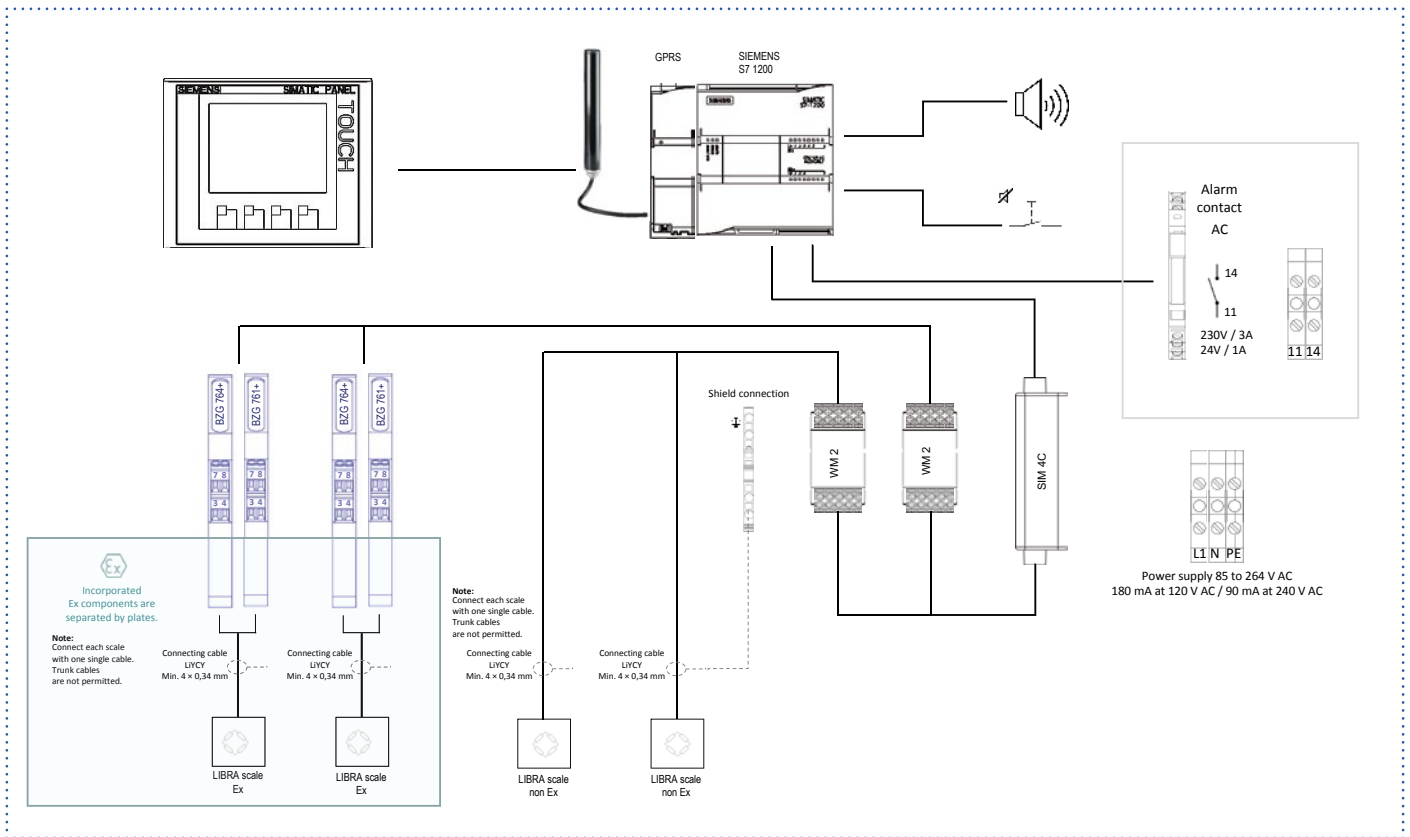
## 19.7 ALMS LIBRA 4W Ex GPRS (AL part ID 196141)



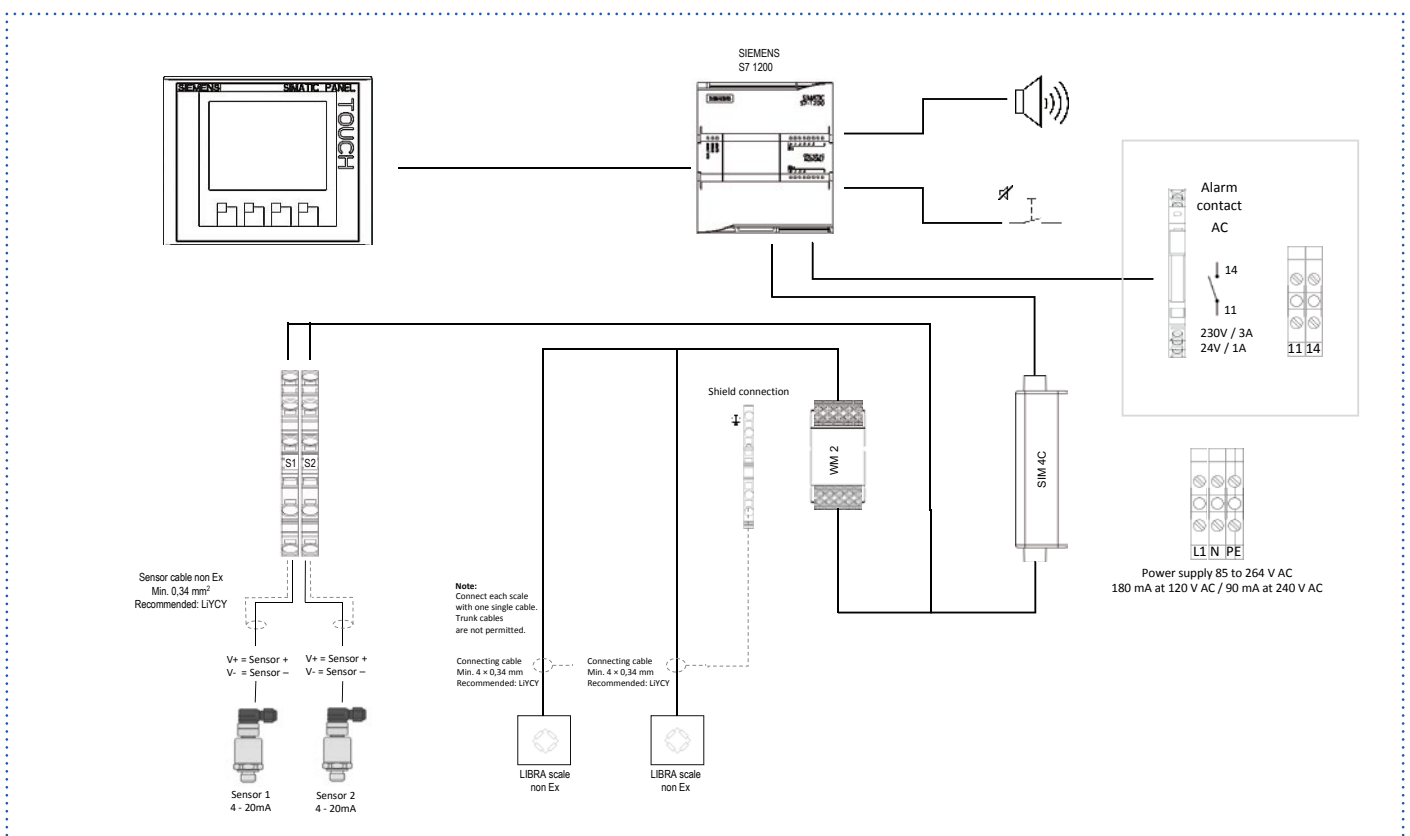
## 19.8 ALMS LIBRA 2W/2W Ex (AL part ID 196142)



## 19.9 ALMS LIBRA 2W/2W Ex GPRS (AL part ID 196143)

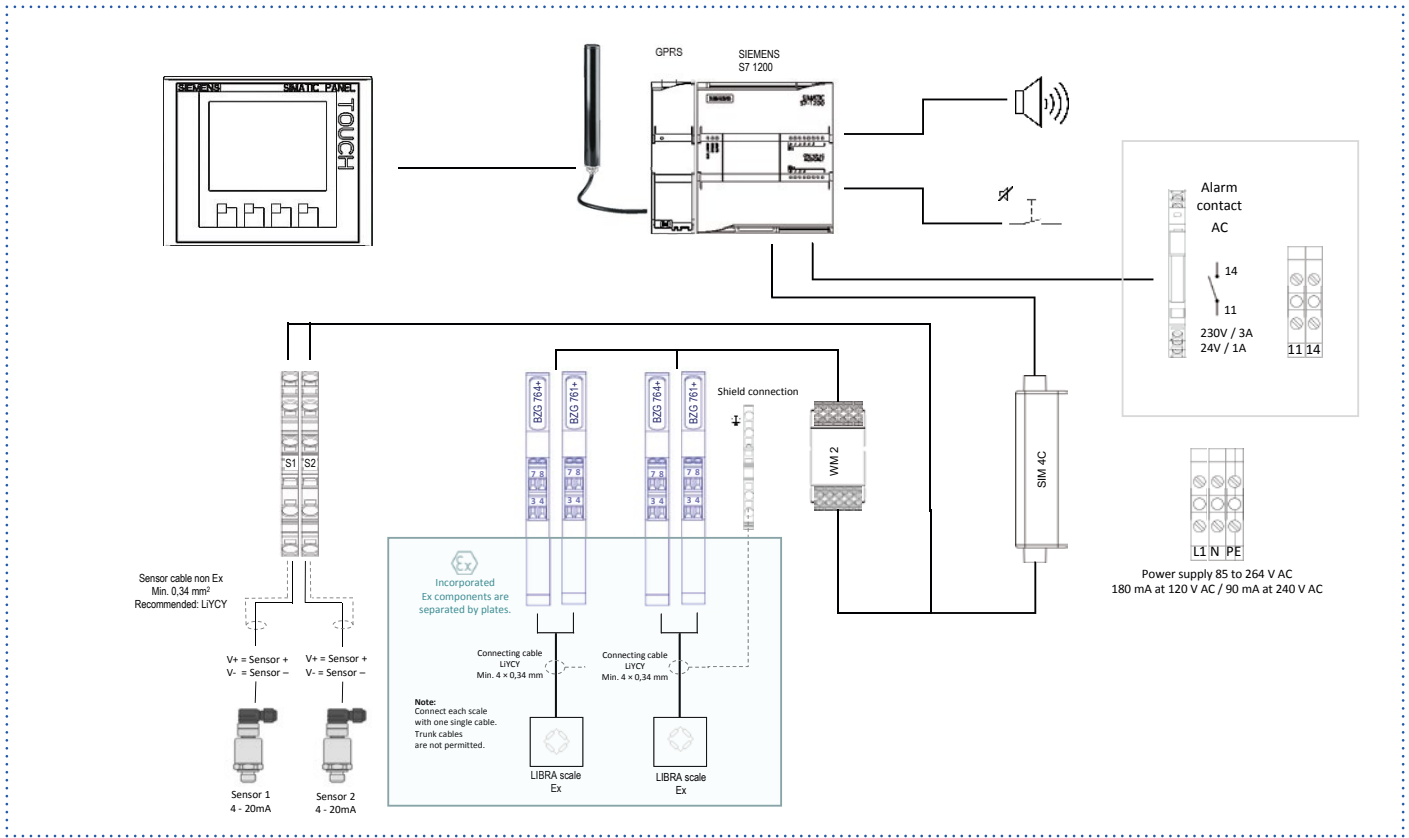


## 19.10 ALMS LIBRA 2D/2W (AL part ID 196144)

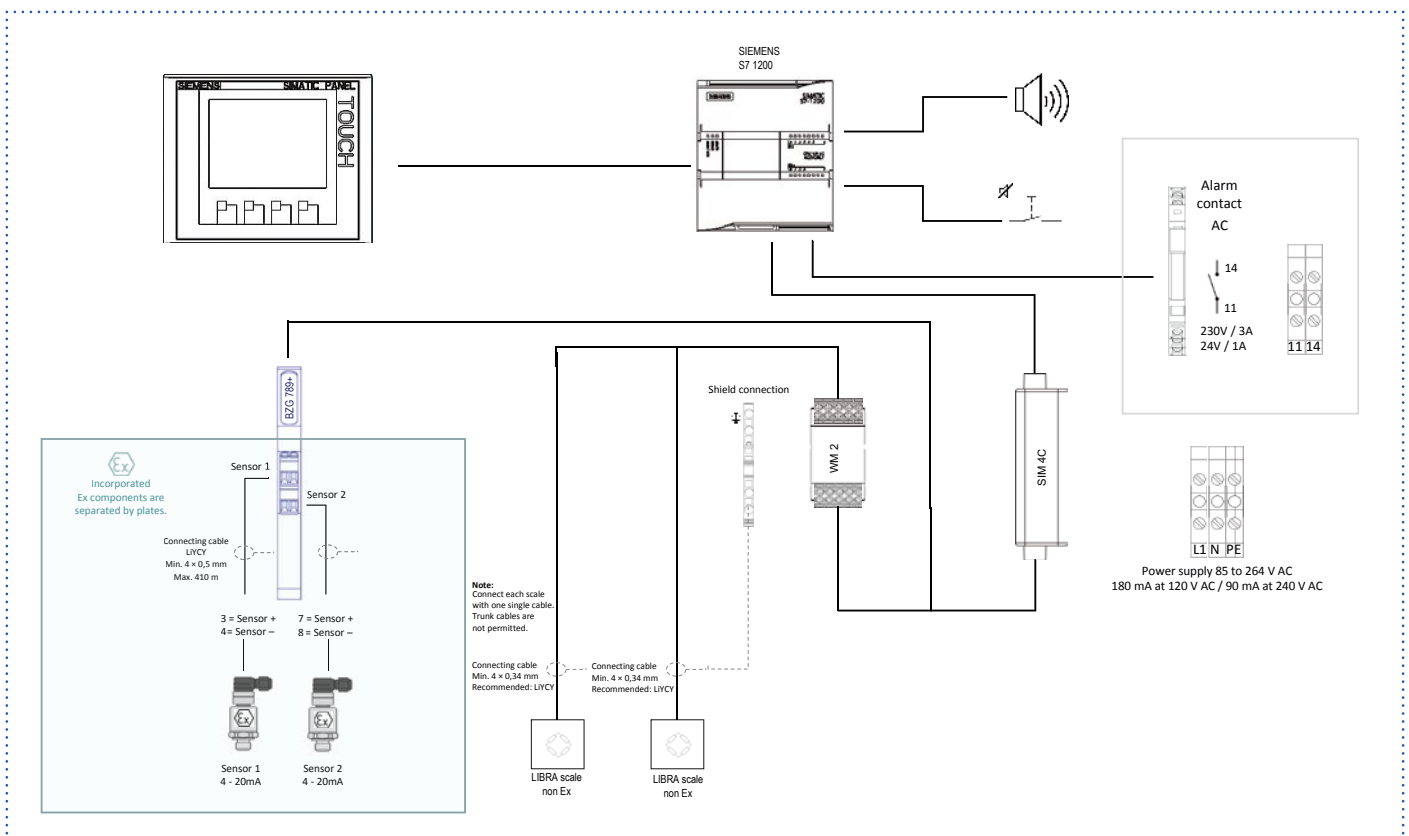




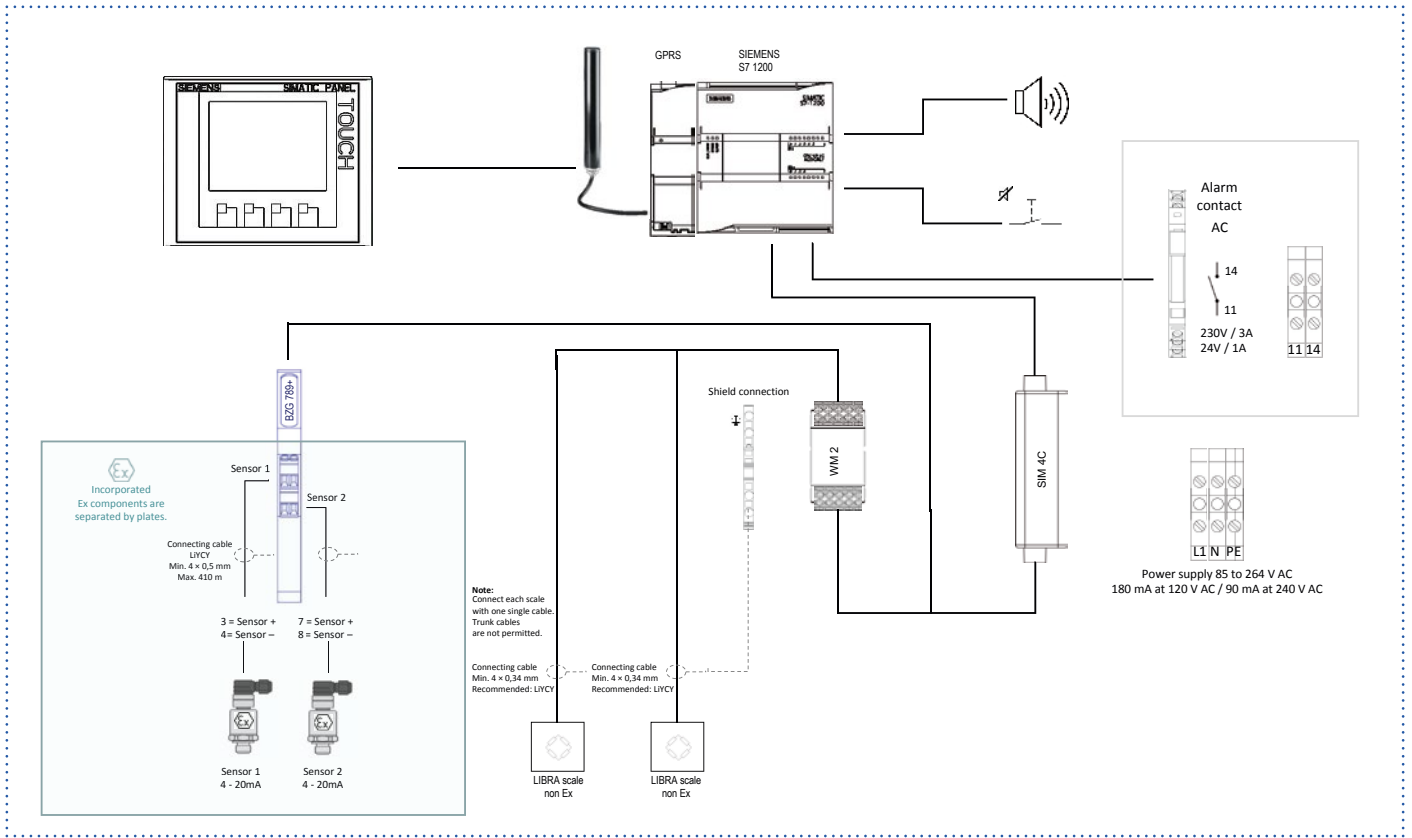
### 19.13 ALMS LIBRA 2D/2W Ex GPRS (AL part ID 196147)



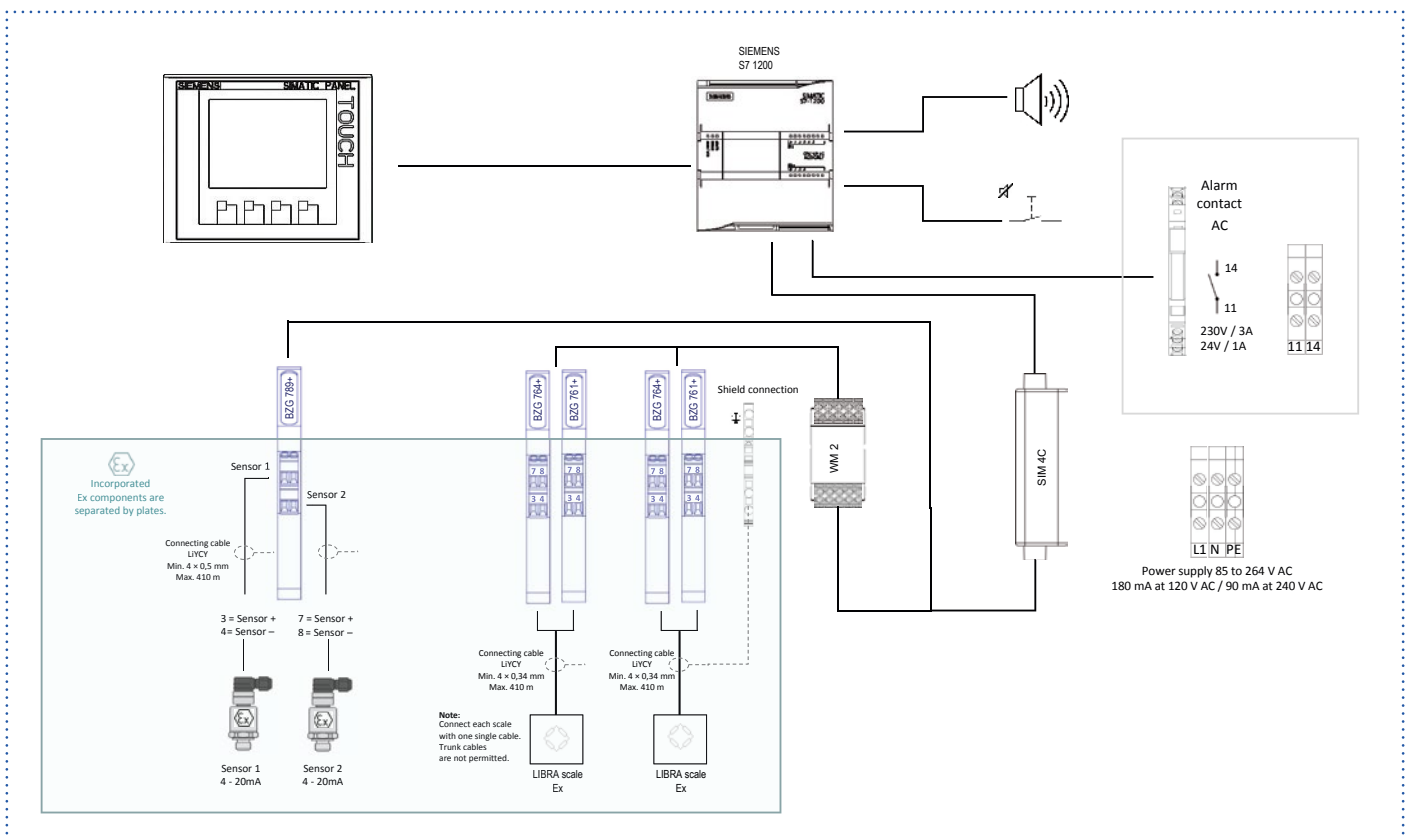
### 19.14 ALMS LIBRA 2D Ex/2W (AL part ID 196148)



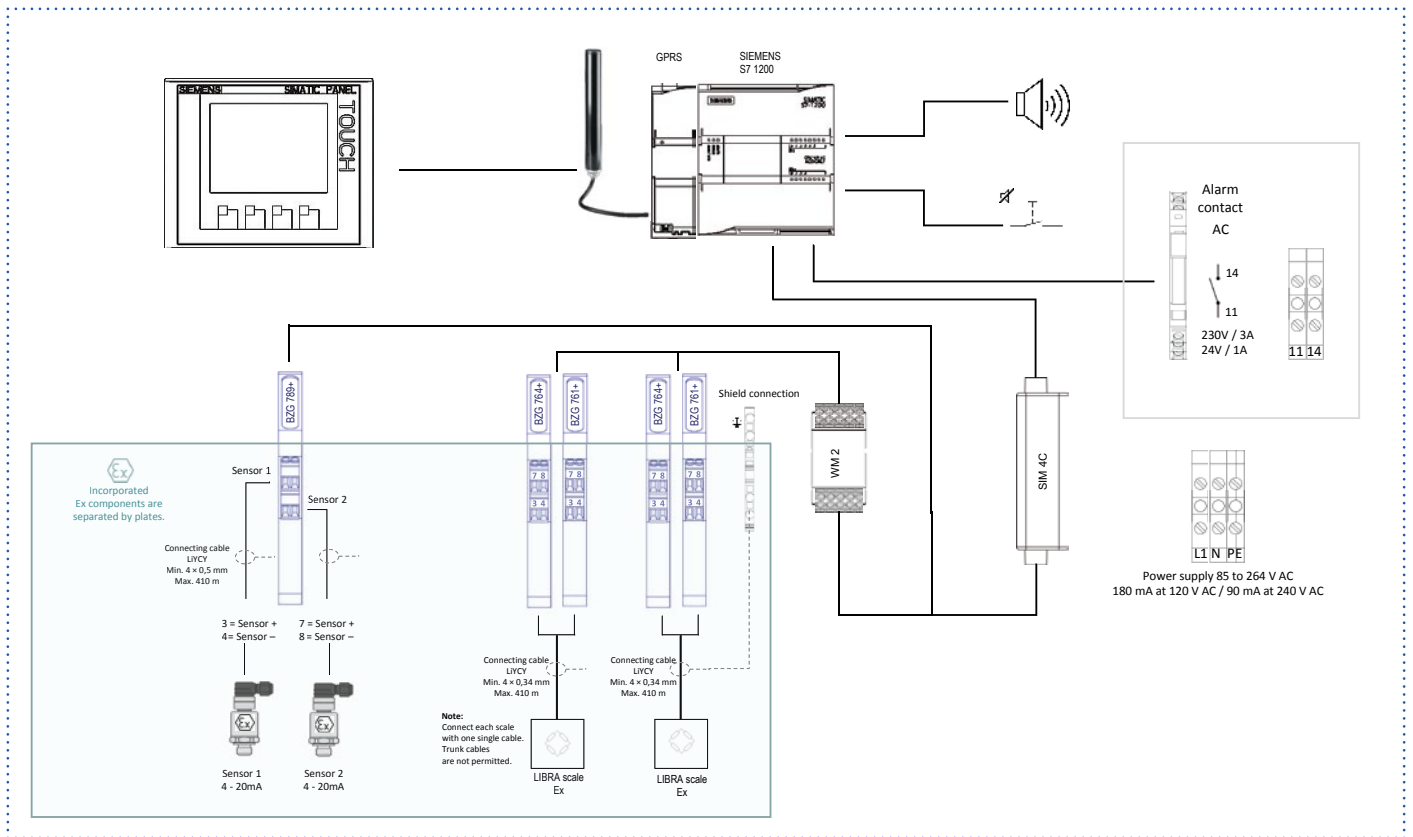
## 19.15 ALMS LIBRA 2D Ex/2W GPRS (AL part ID 196149)



## 19.16 ALMS LIBRA 2D Ex/2W Ex (AL part ID 196150)



# 19.17 ALMS LIBRA 2D Ex/2W Ex GPRS (AL part ID 196151)



## Contact

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