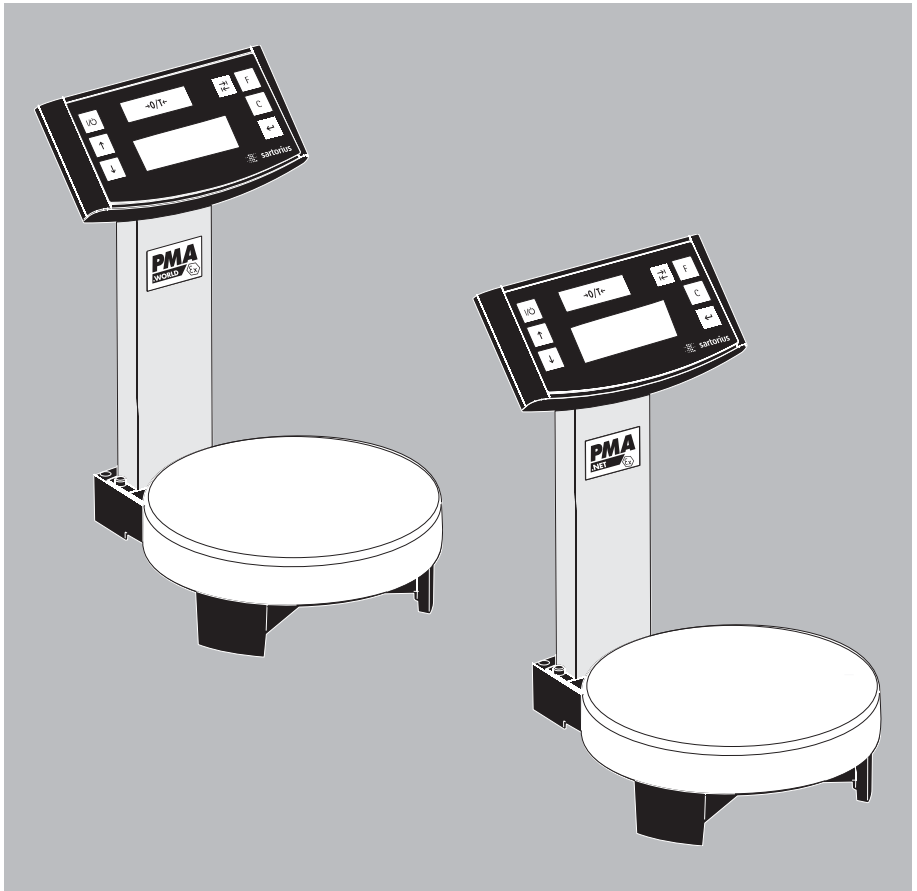


## Installation Instructions

# Sartorius PMA.World | PMA.Net Model PMA 7501-X00G | PMA 7501-X00GL

Electronic Paint-mixing Scales for Use in Zone 1 Hazardous Areas

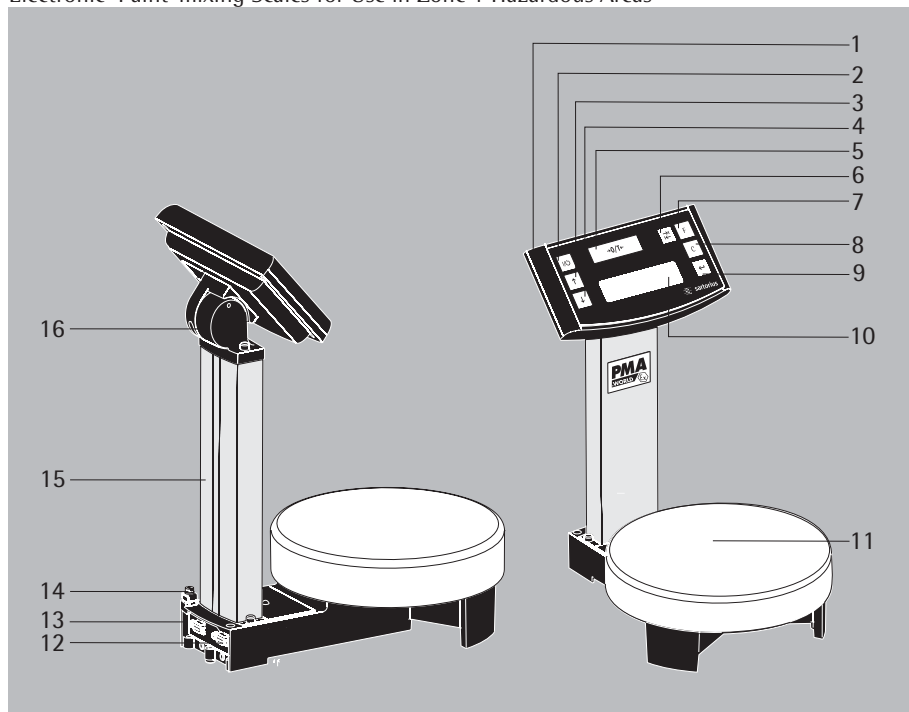


# General View of the Equipment

## PMA7501-X00G | PMA7501-X00GL

### (PMA.World | PMA.Net )

Electronic Paint-mixing Scales for Use in Zone 1 Hazardous Areas



- |   |  |    |   |
|---|--|----|---|
| 1 | Display and control unit   | 8  | [C] key (Clear) and [REC] key for paint-mixing applications |
| 2 | [ON] key (On/Standby)  | 9  | [ENTER] key and [MEM] key for paint-mixing applications     |
| 3 | [↑] key: Upwards   | 10 | Graphic display   |
| 4 | [↓] key: Downwards   | 11 | Weighing pan  |
| 5 | [0/T] key: Zero/Tare   | 12 | Interfaces (D-Sub connector, 9-contact)                     |
| 6 | [TOGGLE] key (TOGGLE)  | 13 | DC jack for connection to AC power                          |
|   | You can toggle to two decimal places – from 0.05 g to 999.95 g – or toggle between – “g” and “p” – parts per pound, depending on the menu settings | 14 | Grounding terminal  |
| 7 | [F] factor key (FORMULATION) for paint-mixing applications   | 15 | Column  |
|   |  | 16 | Joint   |

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## Contents

- 2 General View of the Equipment  
PMA7501-X00G | -X00GL
- 3 Intended Use
- 4 Warnings and Safety Precautions
- 6 Getting Started
- 10 Operation
- 12 Applications
- 15 Calibration/Adjustment
- 16 Menu Settings
- 21 Troubleshooting
- 22 Care and Maintenance
- 23 Recycling
- 24 Interface Description
- 25 Specifications
- 25 Accessories
- 26 CE Marking
- 27 Documents

### The following symbols are used in these instructions:

- Indicates required steps
- Indicates steps required only under certain conditions
- > Describes what happens after you have performed a particular step
- Indicates an item in a list
- ⚠ Indicates a hazard

## Intended Use

The PMA7501-X00G | -X00GL (Series: PMA.World | PMA.Net) scales feature a graphic display, and have been specially designed for use in the paint-mixing sector.

The PMA.Net is equipped with an Ethernet interface and can either be directly connected to the network interface of a PC, or via a 10BaseT/100BaseTX LAN.

This scale can be operated either using the keypad on the display and control unit (in “stand alone” mode) or using the application software (e.g., paint manufacturers’ paint-mixing applications) installed on your PC. Communication is carried out via the data interface.

If required, Sartorius can supply you with DOS- or WINDOWS®-based device drivers to generate application programs.

### Note:

Read the PMA7501-X.... (Series: PMA.World | PMA.Net) installation and operating instructions carefully before connecting the weighing platform and putting it into operation.

# Warnings and Safety Precautions

## Note:

Improper use or handling can result in property damage and/or personal injury. Only qualified personnel may install and operate the equipment. Make sure you observe the warnings and safety information in their entirety during installation and operation, as well as while performing maintenance and repair work on the equipment. The standards, regulations, occupational safety requirements and environmental protection laws valid in your country must be observed. It is important that all personnel using the equipment understand this warning and safety information, and have access to the relevant documents at all times. Furthermore, the warning and safety information supplied with any electrical equipment connected, such as peripheral devices, must be observed as well. The warnings and safety precautions may have to be supplemented by the equipment operator. All operating personnel must be informed of any additions to these instructions. Make sure the equipment is accessible at all times.

## General Provisions for Installing the PMA7501-X...

PMA7501-X00G | -X00GL (PMA.World | PMA.Net) models meet the requirements defined in EC Directive 94/9/EC for equipment group II, category 2G and are marked in accordance with the KEMA05 ATEX1247 X EC type-examination certificate (refer to the chapter on Documents). Furthermore, PMA7501-X... models meet the EC Directives for electromagnetic compatibility and electrical safety (please see the chapter on CE Marking).

- The area of use for the PMA7501-X... models is defined in the type-examination certificate. All restrictions listed in the type-examination certificate must be strictly observed. Operating the PMA7501-X... models beyond the restrictions indicated is not permitted, and is

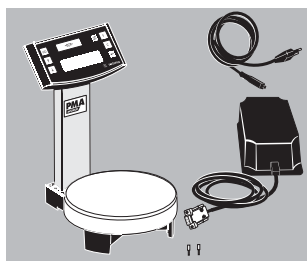
considered use of the equipment for other than its intended purpose.

- Any installation work that does not conform to the instructions in this manual will result in forfeiture of all claims under the manufacturer's warranty. If you use the equipment in a hazardous area outside Germany, you must comply with the national electrical code and safety regulations applicable in your country (e.g.: EN60079-14). Ask your supplier for information on the legal regulations applicable in your country.
- If the equipment housing is opened by anyone other than persons authorized by Sartorius, this will negate its conformity with regulations governing its use and result in forfeiture of all claims under the manufacturer's warranty.
- Installation of the PMA7501-X... in a potentially explosive atmosphere must be performed by a certified electrician who is familiar with the assembly, start-up and operation of both the system and the relevant guidelines and regulations, and has the required qualifications for performing the installation. If you need assistance, contact your Sartorius dealer or the Sartorius Service Center.
- Avoid static electricity. Connect an equipotential bonding conductor. Disconnecting equipotential bonding conductors is not permitted. The bore hole is marked by a "ground" symbol. The wire used for the grounding conductor should have a cross-sectional diameter of at least 4 mm<sup>2</sup>. Connect all equipment, including peripheral devices, to the equipotential bonding conductor.
- Do not expose the scale to extreme temperatures, aggressive chemical vapors, moisture, shocks and vibrations.

- 
- The displayed values can be affected when subjected to extreme electromagnetic influence. When the negative influence has subsided, the scale will again be fully operational.
  - The equipment must be used indoors only.
  - To ensure safety, disconnect the equipment from power before connecting or disconnecting the cables or electronic peripheral devices.
  - If you use cables purchased from another manufacturer, check the pin assignments in the cable against those specified by Sartorius before connecting the cable to Sartorius equipment, and disconnect any wires that are assigned differently. The operator shall be solely responsible for any damage or injuries that occur when using cables not supplied by Sartorius.
  - When connecting the scale to the power supply, the laws valid in your country must be observed. If you should have any questions, please contact your supplier or Sartorius Customer Service for information on the legal regulations applicable in your country. The scale must be installed by a certified technician to avoid forfeiture of all claims under the manufacturer's warranty.
  - Avoid generating static electricity when using the in-use dust cover, connect the equipotential bonding conductor.
  - Use only a moistened cloth to clean the dust cover.
- For the User**
- Always make sure the equipment is disconnected from AC power before performing any installation, cleaning, maintenance or repair work on the scale.
  - If you see any indication that the scale cannot be operated safely (for example, due to damage), turn it off and lock it in a secure place or otherwise prevent use of the equipment for the time being.
  - Chemicals (e.g., gases or liquids) that can corrode and damage the inside or outside of the device must be kept away from the equipment. Handle the equipment and any accessories in accordance with the IP rating (EN 60529).
  - The casing on all connecting cables, as well as the casing on wires inside the equipment housing, is made of PVC. The casing of the power cable is made of rubber.
  - The allowable operating temperature range during operation is 0°C to +40°C (+32°F to +104°F). Make sure the place of installation is adequately ventilated to prevent build-up of excessive heat.
  - Use original Sartorius spare parts, only!
  - Never use a hammer to close the lid of a paint can while it is still on the weighing pan. Otherwise, you will damage the weighing system!
  - According to Certificate No. 4420306 553419 issued by TÜV NORD CERT GmbH (German Inspection and Safety Authorities), PMA7501-X... electronic scales may be used in areas exposed to the risk of fire, provided that the room is not exposed to relatively large amounts of accumulated dust and fibers, and thus a fire risk. Paint-mixing rooms are free of such accumulated dust and fibers, and the equipment may be operated there. Their respective Zone 1 power supplies, models YPS05-Z.P, YC011Z must be installed outside the potentially explosive atmospheres and thus also beyond fire-risk areas.

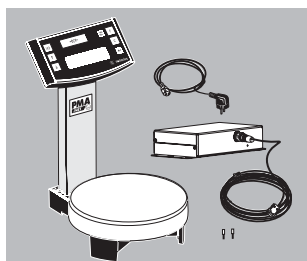
# Getting Started

- Remove the scale from its packaging.
- After unpacking the scale, check it immediately for any visible damage as a result of rough handling during shipment.



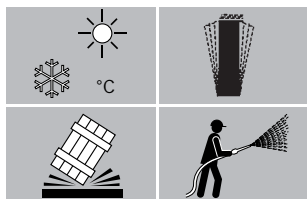
## Equipment Supplied for Model PMA7501-X00G

- Scale
- Weighing pan
- Power supply
- Cable
- 2× protective plugs (in the column)



## PMA7501-X00GL

- Scale
- Weighing pan
- EX-link converter YCO11-Z
- Data cable
- 2× protective plugs (in the column)



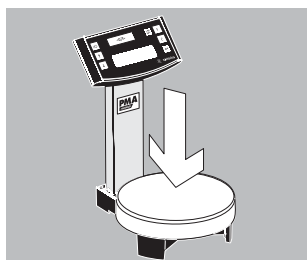
## Setting Up the Scale

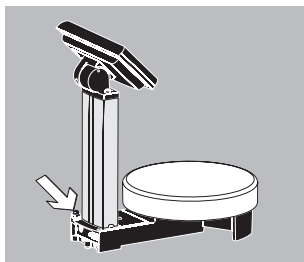
Choose a suitable place to set up the scale.

Avoid exposure to drafts, heat, moisture and vibration. Make sure to read the instructions carefully before connecting the scale to AC power.

- ⚠ Observe the safety precautions and warnings in this manual.

- Place the weighing pan on the scale.

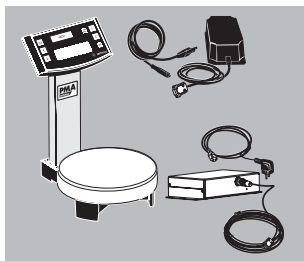




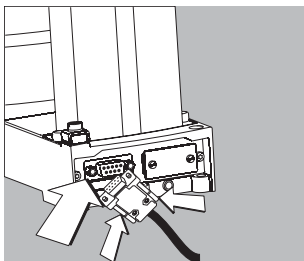
- Ground the scale. Connect the cable to the grounding terminal (14).

### Connecting the PMA7501-X00G | PMA7501-X00GL to AC Power

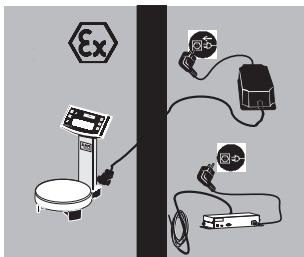
The equipment is energized by the power supply provided. Make sure that the voltage rating printed on the power supply is identical to your local AC power rating. When connecting the scale to the power supply, the laws valid in your country must be observed. If you should have any questions, please contact your supplier or Sartorius Customer Service for information on the legal regulations applicable in your country. Use only original Sartorius power supplies. The use of power supplies from other manufacturers, even if these units have a registered approval rating from a national testing laboratory, requires the approval of a certified technician.



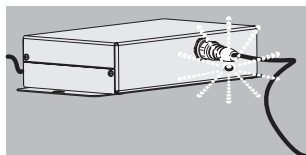
- △ Observe the safety instructions and warnings in this manual



- Insert the plug into the DC jack (13) on the scale
- Tighten the screws (see arrow)



- Connect the data cable to the power supply.
- Plug the power supply into an electrical AC power outlet. Ensure that the power supply is installed outside the potentially explosive atmosphere.



- > If the YC011-Z EX-link converter is connected, LED on the converter lights up to indicate that it is powered.

## Connecting Data Cables

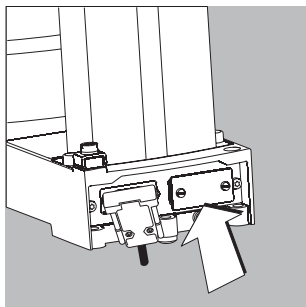
### ⚠ Important Note:

Connect/disconnect data cables to or from equipment used in the potentially explosive area Zone 1 only after the power supply has been disconnected.

- Disconnect the power cord from the wall outlet (mains).

**Connect the data cable to the scale**  
**PMA7501-X00G | -X00GL**  
**(internal RS-232 interface; D-Sub female connector, 9-contact)**

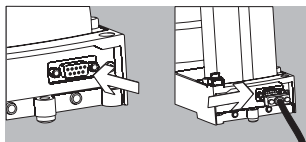
- ⚠ Only connect the data output port (D-Sub connector, 9-contact) to certified intrinsically safe circuits. Observe the parameters stipulated in the EU type-examination certificate.



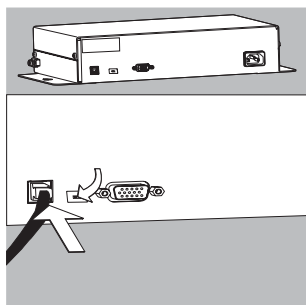
- Remove and retain the safety cover with the safety warning.
- Plug the data cable into the interface port (D-Sub connector, 9-contact). Securely tighten the data cable.

### Important Note:

- When the data output port is not in use, refasten the safety cover and safety warning.
- If the internal RS-232 interface of the PMA7501-X00GL is to be used, an additional menu item must be configured in Setup (refer to the chapter "Menu Settings").





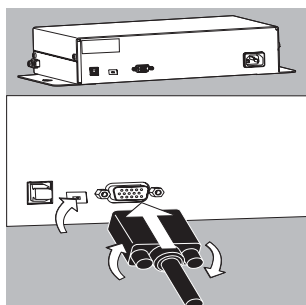


#### **Data cable connection only for PMA7501-X00GL (Ethernet interface RJ45)**

- Plug the data cable of the EX link converter YC011-Z into the Ethernet interface port RJ45.
- Check the switch position (16).  
The switch must be set to the left position (Ethernet interface).

#### **Note:**

The Ethernet interface has already been defined in Setup, prior to delivery.



#### **Data cable connection only for PMA7501-X00GL (External RS-232 interface, D-Sub connector, 9-contact to YC011-Z)**

If a data cable (D-Sub connector, 9-contact) is to be connected to the EX link converter YC011-Z, the following measures are necessary:

- Remove the protective cap and put it in a safe place.
- Plug in the data cable and securely tighten the screws.
- The switch must be set to the right-hand position.

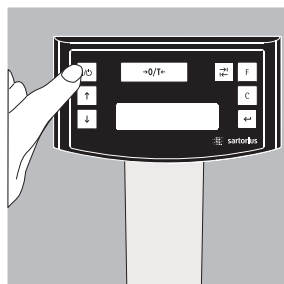
#### **Important Note:**


- An additional menu item must be configured in Setup (refer to the chapter "Menu Settings").
- If the data output port is not in use, please replace the protective cap.
- After connecting the data cable, plug it into the socket.

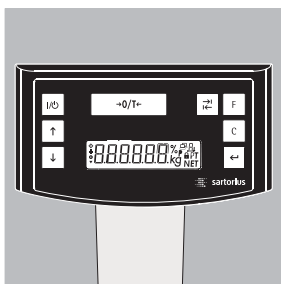
#### **Note:**

- △ You may only activate one data interface at a time.

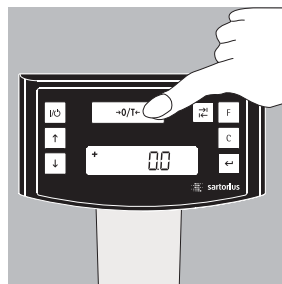
# Operation




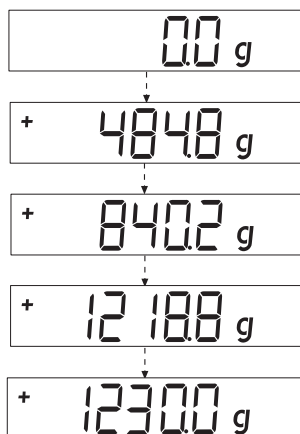
Turn on the scale using the  key (2).



After the scale has been turned on, it will automatically run a self-test. At the end of this test, 0.0 g is displayed.




If a different readout is displayed, zero or tare the scale using the  key (5).



## Weighing with One Decimal Place

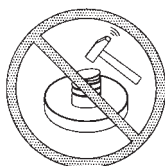
Place an empty paint can on the weighing pan.

Press the  key (5). The display shows "0.0 g."

Pour in the first component, and read off the weight as soon as the stability symbol appears; in this case, "g."

Pour in additional components until the desired weight of your formula is reached.

Remove the filled paint can from the weighing pan.




Never use a hammer to close the lid of a paint can while it is still on the weighing pan. Otherwise, you will damage the weighing system.

## Weighing with Two Decimal Places

Note:

To weigh using two decimal places, you must first adapt the settings (refer to the chapter entitled “Menu Settings”)

Press the  key (6). The display shows “0.00 g.”


Place an empty paint can on the weighing pan (11).

Press the  key (5). The display shows “0.00 g.”

Pour in the first component: 205.50 g.  
Read off the weight as soon as the stability symbol appears; in this case, “g.”

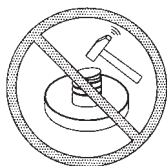
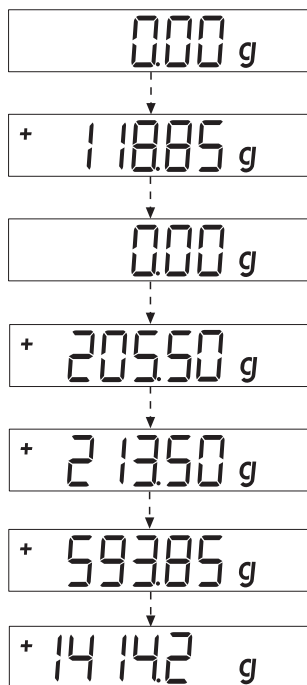
Pour in additional components until the desired weight of your formula is reached.  
Remove the filled paint can from the weighing pan.

### Important Note:

If you tare the scale, and then press the  key (6) to toggle to the second decimal place with a resolution of 0.05 g, you can continue weighing with two decimal places up to 999.95 g.

For weights exceeding 999.95 g, only one decimal place will be displayed.

Never use a hammer to close the lid of a paint can while it is still on the weighing pan.  
Otherwise, you will damage the weighing system



# Applications

## Formulation Mode (Calculation by a Factor)

This mode enables you to weigh in amounts that are smaller or larger than that of your basic formula for a specific paint color (e.g., 250 ml of a 1-l formula).

You can select various factors (amounts) by pressing the  $\boxed{F}$  formulation key (7):

0.25 0.5 0.75 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0.

By pressing the

or

you can alter the value  
or

$\boxed{\uparrow}$  key (3): upwards

$\boxed{\downarrow}$  key (4): downwards,

– in 0.1 increments, as of factor 1.0

– 0.01 increments, from factor 0.25 to 1.0.

## Important Note:

The flashing arrow  $\blacktriangledown$  on the display means that the weight value shown is not verified for use in legal metrology (not legal for trade).

## Example:

As you pour in the components of your formula, the weight is displayed in “g.”

Let's suppose you want to weigh only 250 ml of a basic formula that is for a total amount of 1 l. With the recalculation mode, you do not need to manually recalculate the individual components.

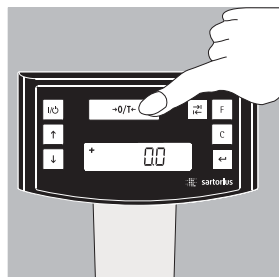
The basic formula for 1 liter is:

250 g 1<sup>st</sup> component

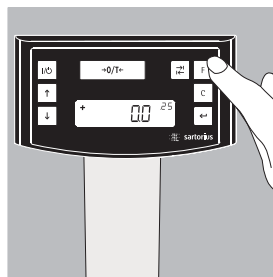
+ 250 g 2<sup>nd</sup> component

+ 500 g 3<sup>rd</sup> component

**Total: 1000 g**



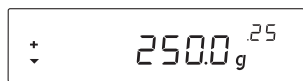
1. Place the empty paint can on the weighing pan and tare (zero the display).



2. Press the  $\boxed{F}$  formulation key (7) several times to select the conversion factor “0.25” used in this example.



3. “.25” is displayed next to the weight



4. Slowly pour in the first component, “250 g”, until the display shows “250 g.”



5. Pour in the second component, “250 g”, until the display shows “500 g.”



6. Pour in the last component, “500 g”, until “1000 g” is displayed.

We have come to the end of our example. According to the display, exactly 1,000 g was poured in, but the paint can actually contains only 250 g by weight according to the factor you selected, .25. Follow the same procedure for any other conversion factor or to convert a 1-gallon formula into quarts.

### Weighing Using the Recalculation Mode

Let's suppose that you poured in too much of one color component for a given formula (e.g., one consisting of 4 components).

In addition, let's assume that you previously poured in all of the other amounts exactly according to each of the values you entered and stored by pressing the  $\boxed{\leftarrow}$  key [MEM] (9). Press the  $\boxed{\downarrow}$  key (4) to start the recalculation program. “C” will begin flashing on the display. To correct the weight displayed to the same value you entered for the given formula, either scroll upwards using the  $\boxed{\uparrow}$  key (3), or downwards using the  $\boxed{\downarrow}$  key (4). When you then press the  $\boxed{\leftarrow}$  key [MEM] (9), the scale will automatically calculate and display the amounts of paint in “g” to add for each of the other components that you already poured in. This mode thus ensures that the total result of your formula for these components will be correct. After pouring in these amounts, you can continue to add the remaining components of your formula.

### Important Note:

You can correct an incorrect amount any number of times. However, the total (liter) quantity in the paint can will increase each time you correct a component. Therefore, press the  $\boxed{\square}$  key (8) to check how much the total quantity (in liters) will be. (“C” = correction factor)

The arrow  $\blacktriangledown$  in the display means that the weight shown is not verified for use in legal metrology (not legal for trade).

### Example (cumulative):

+ 118.0 g

1. Place an empty paint can on the weighing pan (11).  
+ 118.0 g

√ STO 01

4. Press the  $\leftarrow$  key [MEM] (9).  
STO 01

+ 203.0 g

7. Pour in the 3rd component.  
+ 203.0 g  
Oops!  
You poured in too much!  
The correct weight for the formula is 200.0 g.

√ COR 01

10. Press the  $\leftarrow$  key [MEM] (9).  
COR 01

√ COR 02

13. Press the  $\leftarrow$  key [MEM] (9).  
COR 02

√ STO 02

16. Press the  $\leftarrow$  key [MEM].  
The scale will automatically return to the formulation program. "C" disappears.  
+ 200.0 g.

00 g

2. Press the  $\rightarrow 0/\text{r}$  key (5)  
0.0 g

+ 110.0 g

5. Pour in the 2nd component.  
+ 110.0 g

+ 203.0 g

8. Press the  $\checkmark$  key (4) to start the recalculation mode.  
A "C" = correct flashes on the display = Correct will flash on the display.

- 1.7 g

11. 1. Add the first component.  
"C1" is displayed. -1.7 g

- 2.0 g

14. Add the second component. "C2" is displayed.  
-2.0 g

√ C 103

17. To check the total weight, press the  $\square$  key (8) [REC].  
"C" = Correction factor, in this example 1.03.  
(Total formulation weight  $\times$  correction factor)

+ 50.0 g

3. Pour in the first component.  
+ 50.0 g

√ STO 02

6. Press the  $\leftarrow$  key [MEM] (9).  
STO 02

+ 200.0 g

9. Press the  $\checkmark$  key (4) several times to correct the value to:  
+ 200.0 g

√ 00 g<sup>C1</sup>

12. Pour in paint until 0.0 g is displayed.  
0.0 g

√ 00 g<sup>C2</sup>

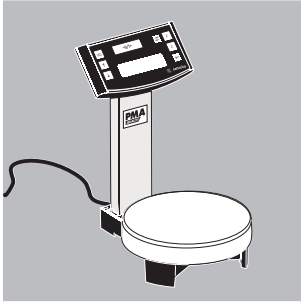
15. Pour in paint until the value 0.0 g is obtained.  
0.0 g

+ 1000.0 g

18. Add the fourth component  
+ 1000.0 g

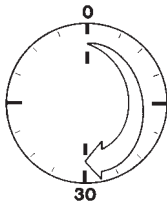
We have come to the end of our example.

# Calibration/Adjustment

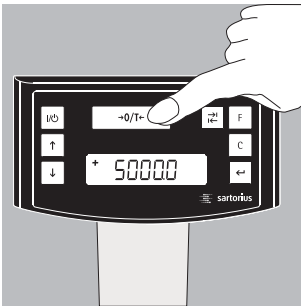


You can calibrate/adjust the scale by pressing the  $\boxed{+0/T\pm}$  key (5).

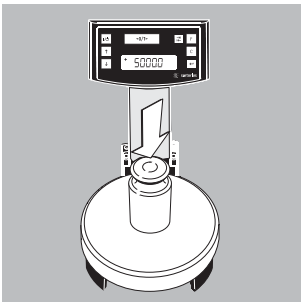
Calibration weight: 5,000 g; accuracy: + 0.075 g.



After connection to AC power and before each calibration/adjustment, allow the scale to warm up for approx. 30 min.



Hold down the  $\boxed{+0/T\pm}$  key (5) for 2 sec.  
When 5000 is displayed, release the key.



Center the calibration weight on the weighing pan (11).  
Calibration/adjustment is performed automatically.  
After calibration and adjustment, remove the weight.

# Menu Settings

## Navigating the SETUP Menu

### Example:














Menu Item: Adaptation to ambient conditions

```
Setup
Input
Info
Language
```


```
Setup
Scale
Application
Interface
SBI Settings
SBI Print
Extras
```

```
Setup-Scale
Ambient Conditions
Filter
Stability
AutoZero
Units
Decimals
```

```
Setup-Waase-Umgebung
Very Stable
o Stable
Unstab.
Very Unstabl.
```

- Hold down the  key [ENTER] for approx. 2 sec. "SETUP" will appear on the display (Level 1).
- Use the   keys to select the desired menu item in the first level.
- Press the  key [ENTER] to select the second level (Level 2).
- Use the   keys to select the desired menu item in the second level, here "SCALE."
- Press the  key [ENTER] to select the third level (Level 3).
- The menu items in the third level (Level 3) will be displayed. Use the   keys to select the desired menu item, here "Ambient Conditions."
- Press the  key [ENTER] to select the fourth level (Level 4).
- Call up the menu item desired in the fourth level. Use the   keys to select the desired menu item, here "STABLE."
- Press the  key [ENTER], "o" will appear; the desired setting is defined.

(We have come to the end of our example.)

- Press the  key (Clear) several times to exit the menu.


### Note:

To obtain a detailed list of the menu codes, please ask your nearest Sartorius office!

Please note that English screens are available for the scale even if they are shown in German.



## Important Menu Settings

- Hold down the  key [ENTER] for approx. 2 sec. "SETUP" will appear on the display (Level 1).  
Level 1






SETUP

### Language Settings

Level 1      Level 2      Level 3      Level 4

LANGUAGE

- o GERMAN
- ENGLISH
- FRENCH
- ITALIAN
- etc.

- Press the  key to select "LANGUAGE "
- Press the  key [ENTER]
- Press the  keys to select a language
- Press the  key [ENTER]: "o" will appear; the desired setting is defined.
- Press the  key (Clear) several times to exit the menu.

### Standard Basic Setting (0.1g)/PolyRange (0.05g/0.1g) and grams/PT./LB.

When you turn on the scale, the active basic setting is found under:

"SETUP- SCALE – UNIT" and "SETUP- SCALE – DECIMALS":

Level 1      Level 2      Level 3      Level 4

SETUP

SCALE

UNIT








GRAMS

- o PT./LB.


DECIMALS

- o STANDARD

POLYRANGE

- Press the  key [ENTER]
- Press the  key [ENTER]
- Press the  keys to select "DECIMALS"
- Press the  key [ENTER]
- Press the  keys to select "STANDARD"
- Press the  key [ENTER], "o" appears, the desired setting is defined.
- Press the  key (Clear) several times to exit the menu.

### Activating the Toggle Key; Configuring (Basic Setting)

After the toggle key, , has been activated, you can individually configure it with either 1 or 2 decimal places, as well as with grams or PT./LB. You can then toggle between the unit and the decimal places.

Level 1      Level 2      Level 3      Level 4









SETUP

APPLICATION

TOGGLE













OFF

- o ON

- Press the  key [ENTER]
- Press the  keys to select "APPLICATION"
- Press the  key [ENTER]
- Press the  keys to select "TOGGLE".
- Press the  key [ENTER]
- Press the  keys to select "ON".
- Press the  key [ENTER]; "o" appears, the desired setting is defined.
- Press the  key (Clear) several times to exit the menu.









### Assigning the Toggle Key (6)

By pressing the toggle key 1 (6), the scale toggles between the basic setting (see page 14) and the settings defined under “SETUP- APPLICATION – UNIT” and “SETUP- APPLICATION – DECIMALS”

Level 1	Level 2	Level 3	Level 4
SETUP			<ul style="list-style-type: none"> <li>● Press the  key [ENTER]</li> <li>● Press the  keys to select “APPLICATION”</li> </ul>
	APPLICATION		
		UNIT	<ul style="list-style-type: none"> <li>●  key [ENTER], select the  key “UNIT,” press  key [ENTER].</li> </ul>
		PT./L.B.	<ul style="list-style-type: none"> <li>● Press the  keys to select “GRAMS”</li> </ul>
		o GRAMS	<ul style="list-style-type: none"> <li>● Press the  key [ENTER], “o” appears; the desired setting is defined</li> </ul>
		DECIMALS	<ul style="list-style-type: none"> <li>● Press the  key (Clear)</li> <li>● Press the  keys to select “DECIMALS”</li> </ul>
		STANDARD	<ul style="list-style-type: none"> <li>● Press the  key; select setting</li> </ul>
		o POLYRANGE	<ul style="list-style-type: none"> <li>● Press the  key [ENTER]; “o” appears, Press the  key (Clear) to exit the menu.</li> </ul>

### Activating the “LOCK” Function


By activating the “LOCK” function, you can protect the scale from unauthorized use. When the scale is connected to a PC, the two devices are in constant communication. If the “LOCK” function is activated under “EXTRAS,” and data transmission to the PC is interrupted, the lock symbol will be displayed. The scale will automatically be locked, preventing other weighing operations.


Level 1	Level 2	Level 3	Level 4
SETUP			<ul style="list-style-type: none"> <li>● Press the  key [ENTER]</li> <li>● Press the  keys to select “EXTRAS”</li> </ul>
	EXTRAS		
		LOCK	<ul style="list-style-type: none"> <li>● Press the  key [ENTER]</li> <li>● Press the  keys to select “LOCK”</li> </ul>
		OFF	<ul style="list-style-type: none"> <li>● Press the  key [ENTER]</li> </ul>
		o ON	<ul style="list-style-type: none"> <li>● Select “ON” using the  keys Confirm with the  key</li> <li>● Press the  key (Clear) several times to exit the menu.</li> </ul>



### Entering a Password



In addition to activating the “LOCK” function, the user may also enter a password.

Should the user wish to deactivate the “LOCK” function by pressing the “OFF” key, the user must first enter the valid password. The password is comprised of a 6-character numeric code.

Use the  keys to call up numbers (0 to 9).

Six dashes (-----) will appear in the display (10). The first dash will “blink” in the display .

Select a number (0 to 9) using the  keys; press the  key [ENTER] to save the number.









The second dash will start to “blink.” Repeat the aforementioned process. Should you wish to assign a “blank space” to one of the six characters, simply press the  key [ENTER] when the dash begins to blink. Once you have entered all six characters, simply press the  key [ENTER] when the cursor flashes in order to save the code.

---


**Note:**

Keep the numeric code in a safe place!

The scale can only be accessed by entering the correct code!









Level 1	Level 2	Level 3	Level 4
INPUT	PASSWORD	PW.NEW	<ul style="list-style-type: none"><li>● Press the   keys to select "INPUT"</li><li>● Press the  key [ENTER]</li><li>● Press the  key [ENTER]</li><li>● Press the   keys to select "PW.NEW"</li><li>● Enter the numeric code; press the  key [ENTER].</li><li>● Press the  key (Clear) several times to exit the menu</li></ul>

**Changing the Password**

Should you wish to change the password, you must first correctly enter the old password under "Password." "PW.OLD" will be displayed. Following the correct input, "PW.NEW" will automatically appear. You can now enter a new password, or confirm each blinking dash by pressing the  key [ENTER]. Blank spaces are then displayed.

**Note:**

The old password can be deleted by entering 6 blank spaces. The scale is thus reset to its original state; i.e., the scale is not password-protected.












Level 1	Level 2	Level 3	Level 4
INPUT	PASSWORD	PW.OLD  PW.NEW 	<ul style="list-style-type: none"><li>● Press the   keys to select "INPUT"</li><li>● Press the  key [ENTER]</li><li>● Press the  key [ENTER]</li><li>● Enter the old password "PW.OLD"</li><li>● "PW.NEW" will appear when the old password is correctly entered</li><li>● Enter the numeric code; press the  key [ENTER]</li><li>● Press the  key (Clear) to reset the menu</li></ul>

### Resetting the Scale: "RESET"

If necessary, you can reset the scale to factory settings.







Note:

If a password was activated, the correct password must first be entered.

Level 1	Level 2	Level 3	Level 4	
SETUP				<ul style="list-style-type: none"> <li>● Press the  key [ENTER]</li> <li>● Press the   keys to select "RESET"</li> <li>● Press the  key [ENTER]</li> <li>● Press the   keys to select "MENU"</li> <li>● Press the  key [ENTER]</li> <li>● Use the   keys to select "YES"</li> <li>● Press the  key [ENTER]; "o" will appear: The factory settings are restored . "Menu" appears on the display.</li> <li>● Press the  key (Clear) several times to exit the menu</li> </ul>
	RESET			
		MENU		
			YES	
			o NO	

### Setting Codes

Under the setting "CODES," the menu items are displayed in code 1.1.1.1.









Level 1	Level 2	Level 3	Level 4	
LANGUAGE				<ul style="list-style-type: none"> <li>● Press the  key to select "LANGUAGE"</li> <li>● Press the  key [ENTER]</li> <li>● Press the   keys to select "CODES"</li> <li>● Press the  key [ENTER]; "o" will appear: the new code is set</li> <li>● Press the  key (Clear) several times to exit the menu</li> </ul>
	GERMAN			
	etc.			
			o CODES	

### Selecting an Interface (PMA7501-X00GL, only)

You must configure an additional menu item in the PMA7501-X00GL Setup to select an interface.

⚠ You may only activate one data interface!

#### "SETUP-INTERFACE-CONNECT"


Level 1	Level 2	Level 3	Level 4	
SETUP				<ul style="list-style-type: none"> <li>● Press the  key [ENTER]</li> <li>● Press the [ENTER] key</li> <li>● Press the   keys to select "CONNECT"</li> <li>● Press the  key [ENTER]</li> <li>● Press the   keys to select the interface desired.</li> <li>● Press the  key [ENTER], "o" will appear, indicating that the desired interface is activated</li> <li>● Press the  key (Clear) several times to exit the menu</li> </ul>
	INTERFACE			
		ANSCHLUSS		
			ETHERNET	
			o RS232 EXT.	
			RS232 INT.	

### Note:

To obtain a detailed list of the menu codes, please ask your nearest Sartorius office.

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# Troubleshooting

<b>Guide Problem</b>	<b>Cause</b>	<b>Solution</b>
No segments appear on the weight display	<ul style="list-style-type: none"><li>– No AC power available</li></ul>	<ul style="list-style-type: none"><li>– Check the AC power supply</li></ul>
Weight display shows “Low”	<ul style="list-style-type: none"><li>– The weighing pan is not in place</li></ul>	<ul style="list-style-type: none"><li>– Position the weighing pan</li></ul>
Weight display shows “High”	<ul style="list-style-type: none"><li>– The load on the pan exceeds the scale's capacity</li></ul>	<ul style="list-style-type: none"><li>– Unload the scale</li></ul>
The weight readout changes constantly	<ul style="list-style-type: none"><li>– Unstable ambient conditions</li><li>– Too much vibration or the scale is exposed to draft</li></ul>	<ul style="list-style-type: none"><li>– Set up the scale in another area</li><li>– Access the menu to select the appropriate code to adapt the scale to the particular weighing environment (refer to “Menu Settings”)</li></ul>
The weight readout is obviously wrong	<ul style="list-style-type: none"><li>– The paint component does not have a stable weight</li><li>– The scale was not tared before weighing</li></ul>	<ul style="list-style-type: none"><li>– Tare prior to weighing</li></ul>
No weight value is shown and the lock symbol is active 	<ul style="list-style-type: none"><li>– Data communication between scale and PC has been interrupted and the “Lock” function is active</li></ul>	<ul style="list-style-type: none"><li>– Access the menu settings to de-active the “Lock” function</li><li>– Check the connection</li></ul>
When switched on, the scale display continuously displays “Test 10%”	<ul style="list-style-type: none"><li>– Either the interface configuration in the menu or on the YC011-Z (switch) is not set correctly</li></ul>	<ul style="list-style-type: none"><li>– Adjust the interface configuration in the menu or position the switch correctly</li></ul>

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# Care and Maintenance

## Cleaning

- ⚠ Do not use caustics, concentrated acids or pure alcohol.
- ⚠ Make sure that no liquid enters the scale housing
- Clean the scale using either a paint brush or a dry, soft and lint-free cloth.

## Storage and Shipping Conditions

- To ensure safe shipment, your scale has been packaged using environmentally-friendly materials. You should retain these materials in case you need to package your scale for storage or return shipment.
- Storage temperature:  $-20^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$
- Permissible moisture level for storage of the packaged scale: 90% max.
- Read and follow the instructions given in the section entitled "Safety Inspection."

## Safety Inspection

Safe operation is no longer ensured when:

- There is visible damage to the power supply
  - The equipment no longer functions properly
  - The equipment has been stored for a relatively long period under unfavorable conditions
  - The equipment has been exposed to rough handling during shipment
- Observe the Warning and Safety Information
- In this case, notify your nearest Sartorius Service Center or the International Technical Support Unit based in Goettingen, Germany. Maintenance and repair work may only be performed by service technicians who are authorized by Sartorius and who
- Have access to the required service and maintenance manuals, or
  - Have attended the relevant service training courses

- ⚠ The seals affixed to this equipment indicate that only authorized service technicians are allowed to open the equipment and perform maintenance work so that safe and trouble-free operation of the equipment is ensured and the warranty remains in effect.

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# Recycling

## Information and Instructions on Disposal and Repairs

In Germany and many other countries (see [www.sartorius.com](http://www.sartorius.com), Service Download area for details), Sartorius AG or the organization contracted by us takes care of the proper return and legally compliant disposal of its electrical and electronic equipment on its own. These products may not be placed with the household waste or brought to collection centers run by local public disposal operations – not even by small commercial operators.

For disposal in Germany and in the other Member States of the European Economic Area (EEA), please contact our service technicians on location or our Service Center in Goettingen, Germany:

Sartorius AG  
Service Center  
Weender Landstrasse 94-108  
37075 Goettingen, Germany

In countries that are not members of the European Economic Area (EEA) or where no Sartorius affiliates, subsidiaries, dealers or distributors are located, please contact your local authorities or a commercial disposal operator.

Prior to disposal and/or scrapping of the equipment, any batteries should be removed and disposed of in local collection boxes.

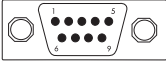
Sartorius AG, its affiliates, subsidiaries, dealers and distributors will not take back equipment contaminated with hazardous materials (ABC contamination) – either for repair or disposal. Please refer to the accompanying leaflet/manual or visit our Internet website ([www.sartorius.com](http://www.sartorius.com)) for comprehensive information that includes our service addresses to contact if you plan to send your equipment in for repairs or proper disposal.



If you no longer need the packaging after successful installation of the equipment, you should return it for recycling. The packaging is made from environmentally-friendly materials and is a valuable source of secondary raw material

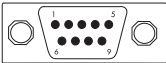
# Interface Description

## Internal data interface RS-232 (PMA.7501-X00G | PMA.7501-X00GL)



Pin assignment	
Data output	9-contact RS-232 data cable
Pin 2:	(RXD) Receive Data
Pin 3:	(TXD) Transmit Data
Pin 4:	(DTR) Data Terminal Ready
Pin 5:	(GND) Ground
Pin 6:	BPI bridge
Pin 8:	(CTS) Clear to Send
Format:	7-bit ASCII, 1 start bit, 1 or 2 stop bits
Parity:	Even, odd, no parity
Transmission rate:	1200 to 38400 bit/s
Handshake:	Software or hardware

## External data interface RS-232 (PMA.Net)



Pin assignment	
Data output	9-contact RS-232 data cable
Pin 2:	(RXD) Receive Data
Pin 3:	(TXD) Transmit Data
Pin 4:	(DTR) Data Terminal Ready
Pin 5:	(GND) Ground
Pin 6:	BPI bridge
Pin 8:	(CTS) Clear to Send
Format:	7-bit ASCII, 1 start bit, 1 or 2 stop bits
Parity:	Even, odd, no parity
Transmission rate:	1200 to 38400 bit/s
Handshake:	Software or hardware

Note:  
When using the data interface with SBI, please ensure that  
“Handshake” is set to either “Software” or “None.”

## Data Interface (PMA 7501-X00GL)



RJ-45 10Base-T/100Base-TX	
Factory settings:	
IP address:	192.168.140.016
Gateway:	192.168.140.001
Subnet mask:	255.255.255.000
Port:	21554



# Specifications

Model		PMA7501-X00G   -X00GL
Weighing range	g	999.95/7500
Readability	g	0.05/0.1
Tare range (subtractive)	g	-999.95/-7500
Max. linearity	g	<±0.2
Stabilization time (average)	digit	0.25 to 4
Moisture-proof rating	F	Non-condensing
Allowable ambient operating temperature range	°C	0...+40
Weighing pan	Ø mm	233
Scale housing (W × D × H)	mm	233 × 329 × 391
Net weight, approx.	kg	3.3
Calibration weight	kg	5, class F2 or better
Power consumption	VA	Average: 8; maximum: 16

## Accessories

In-use dust cover	YDC01PMA
EX power supplies (PMA7501-X00G)	
EU/UK	YPS05-ZDP
USA/CDN	YPS05-ZKP
+ country-specific power cord	
EX power supplies (PMA7501-X00GL)	
EX-link converter	YC011-Z
+country-specific power cord	

### Cables for connection to YC011-Z EX-link converter

△ May be used only outside the potentially explosive atmosphere.

RS-232 data cable (SBI)	(2 m)	YCC01-0027M2
RS-232 data cable (BPI)	(2 m)	YCC01-0028M2
RS-232 data cable (BPI)	(20 m)	YCC01-0028M20
USB/RS-232 data cable (SBI)	(1.80 m)	YC012
USB/RS-232 data cable (BPI)	(1.80 m)	YC013

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# CE Marking

The CE marking affixed to the scale indicates its compliance with the following Directives:

## **Council Directive 89/336/EEC "Electromagnetic compatibility (EMC)"**

Applicable European Standards:  
Limitation of emissions acc. to product standard

EN 61326-1 Class B (residential areas)  
Defined immunity acc. to product standard EN 61326-1 (minimum requirements, unmonitored operation)

### **Note:**

The operator shall be responsible for any modifications to Sartorius equipment and for any connections of cables or equipment not supplied by Sartorius. The operator must check and, if necessary, correct these modifications and cable connections. On request, Sartorius will provide information on the minimum operating specifications (in accordance with the Standards listed above).

## **Council Directive 73/23/EEC "Electrical equipment designed for use within certain voltage limits"**

Applicable European Standards:  
EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use.

If you use electrical equipment in installations and under ambient conditions requiring higher safety standards, you must comply with the provisions as specified in the applicable regulations for installation in your country.

# Documents



## (1) EC-TYPE EXAMINATION CERTIFICATE

- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC
- (3) EC-Type Examination Certificate Number: **KEMA 05ATEX1247 X**
- (4) Equipment: **PMA7501.-X..... series Weighing Unit and type YCO11-Z.. Ex-Link-Box**
- (5) Manufacturer: **Sartorius AG**
- (6) Address: **Weender Landstraße 94-108, 37075 Göttingen, Germany**
- (7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- (8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.
- The examination and test results are recorded in confidential test report no. 2085189.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN 50014 : 1997 + A1, A2 EN 50020 : 2002**
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:



**II 2 G EEx ib IIB T4 (for PMA7501.-X..... series Weighing Unit)**

**II (2) G [EEx ib] IIB (for type YCO11-Z.. Ex-Link-Box)**

Amherst 6 July 2006  
KEMA Quality B.V.

G.G. van Es  
Certification Manager

Page 1/4



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Experience you can trust.

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 05ATEX1247 X**

(15) **Description**

The PMA7501.-X..... series Weighing Units, with or without a display, provide digital data output and are intended to be connected to the associated Power Supply or type YCO11-Z... Ex-Link-Box.

The range of Weighing Units includes the following models

- PMA.Quality, Type PMA7501.-X..... (with display)
- PMA.Quality, Type PMA7501.-X..W... (without display)
- PMA.World, Type PMA7501.-X..G... (with display)
- PMA.Net, Type PMA7501.-X..GL... (with display)

**Electrical data**

Weighing Unit model PMA.Quality, Type PMA7501.-X..... and Type PMA7501.-X..W...

Supply circuit ..... in type of protection intrinsic safety EEx ib IIB,  
(ST6) only for connection to the applicable intrinsically safe  
circuits of the certified Power Supply Type 609308-1.  
Maximum length of interconnection cable is 100 m.

Foot switch circuit ..... in type of protection intrinsic safety EEx ib IIB,  
(BU1/6,9) only for connection to a passive switch.  
Maximum length of interconnection cable is 25 m.

RS232 circuits ..... in type of protection intrinsic safety EEx ib IIB,  
(BU1/1,2,3,4,5,7,8) only for connection to the applicable intrinsically safe  
circuits of the certified EcoMix Control Panel Type EM01-X.  
Maximum length of interconnection cable is 100 m.

Or:

in type of protection intrinsic safety EEx ib IIB,  
with the following maximum values:

$U_o = 12$ V (*)	$U_i = 12,6$ V (*)
$U_o = 24$ V (**)	$U_i = 25,2$ V (**)
$I_o = 125$ mA	$I_i = 330$ mA
$P_o = 373$ mW	$P_i = \text{any}$
$C_o = 9$ $\mu$ F (*)	$C_i = 1$ nF
$C_o = 0,93$ $\mu$ F (**)	$L_i = 0$ mH
$L_o = 8$ mH	

(\*) = to earth  
(\*\*) = between lines



(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 05ATEX1247 X**

Weighing Unit model PMA World, Type PMA7501.-X..G... and model PMA Net,  
Type PMA7501.-X..GL...

Supply and Data circuits ..... in type of protection intrinsic safety EEx ib IIB,  
(ST2) only for connection to the applicable intrinsically safe  
circuits of the certified Type YCO11-Z.. Ex-Link-Box.  
Maximum length of interconnection cable is 100 m.

Or:

Supply circuit ..... in type of protection intrinsic safety EEx ib IIB,  
(ST2) only for connection to the applicable intrinsically safe  
circuits of the certified Power Supply Type YPS05-Z.P.  
Maximum length of interconnection cable is 100 m.

Foot switch circuit ..... in type of protection intrinsic safety EEx ib IIB,  
(BU1/6,9) only for connection to a passive switch.  
Maximum length of interconnection cable is 25 m.

RS232 circuits ..... in type of protection intrinsic safety EEx ib IIB,  
(BU1/1,2,3,4,5,7,8) only for connection to the applicable intrinsically safe  
circuits of the certified EcoMix Control Panel Type EM01-X.  
Maximum length of interconnection cable is 100 m.

Or:

In type of protection intrinsic safety EEx ib IIB,  
with the following maximum values:

$U_o = 12$	V (*)	$U_i = 12,6$	V (*)
$U_o = 24$	V (**)	$U_i = 25,2$	V (**)
$I_o = 125$	mA	$I_i = 330$	mA
$P_o = 373$	mW	$P_i = \text{any}$	
$C_o = 9$	$\mu\text{F}$ (*)	$C_i = 1$	nF
$C_o = 0,93$	$\mu\text{F}$ (**)	$L_i = 0$	mH
$L_o = 8$	mH	(*) = to earth	
		(**) = between lines	

Type YCO11-Z.. Ex-Link-Box

Supply (ST1) ..... 100 ... 240 Vac, 15 VA,  $U_m = 250$  Vac  
Data circuits (BU2) .....  $U_m = 250$  Vac

Supply and Data circuits ..... in type of protection intrinsic safety EEx ib IIB,  
(ST2) only for connection to the applicable circuits of Weighing  
Unit Type PMA7501.-X..G... or Type PMA7501.-X..GL...  
Maximum length of interconnection cable is 100 m.

From the safety point of view the intrinsically safe circuits of all the above mentioned equipment  
shall be considered to be connected to earth.



(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 05ATEX1247 X**

**Installation instructions**

For the interconnecting cable between the Supply and Data circuits of Type YCO11-Z.. Ex-Link-Box and the PMA7501.-X..... series Weighing Units, the cable delivered with the equipment shall be used or when of a different type the cable shall be installed in such a way that it is avoided that the supply and data output circuits can become connected with each other.

Unused connections shall be protected as appropriate for the environment. Without additional protection the degree of protection is IP20.

The PMA7501.-X..... series Weighing Unit and Type YCO11-Z.. Ex-Link-Box shall be connected to the potential equalization network, using the earthing terminals.

(16) **Test Report**

KEMA No. 2085189.

(17) **Special conditions for safe use**

Ambient temperature range 0 °C ... +40 °C.

(18) **Essential Health and Safety Requirements**

Assured by compliance with the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 2085189.



Member of the FM Global Group

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P.O. Box 9102 Norwood, MA 02062 USA  
T: 781 762 4300 F: 781 762 9375 www.fmglobal.com

## CERTIFICATE OF COMPLIANCE

### HAZARDOUS LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

**PMA7501.-X.... Scales and Weighing Platforms**

IS/I/1/C,D/T4 – 35958-003-07-A4; Entity

I/1/ AEx ib IIB/T4 – 35958-000-07-A4; Entity

**YCO11-Z Ex-Link-Box**

AIS/I/1/CD – 35958-000-07-A4; Entity

AIS/I/1/ [AEx ib] IIB – 35958-000-07-A4; Entity

**Equipment Ratings:**

Intrinsically safe circuits or connections for Class I, Division 1, Groups C, D T4, Class I, Zone 1, AEx ib IIB T4 per control drawing 35958-000-07-A4; hazardous (classified) locations and will appear in the Approval Guide, a publication of FM Approvals, as listed above.

**FM Approved for:**

SARTORIUS AG  
WEENDER LANDSTRASSE 94-108  
D-37070 GÖTTINGEN  
GERMANY



This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	1998
Class 3810	2005
Class 3610	1999

Original Project ID: 3027168

Approval Granted: *SEPTEMBER 14, 2006*

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
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FM Approvals LLC

  
\_\_\_\_\_  
Roger L. Allard  
Assistant Vice President

*SEPTEMBER 14, 2006*  
Date





Member of the FM Global Group

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1151 Boston-Providence Turnpike  
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T: 781 762 4300 F: 781 762 9375 www.fmglobal.com

## CERTIFICATE OF COMPLIANCE

### HAZARDOUS LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

**YPS05-ZKP Power Supply**

AIS/I/1/CD – 35958-000-07-A4; Entity  
AIS/I/1/ [AEx ib] IIB – 35958-000-07-A4; Entity

**609308-61 Power Supply**

AIS/I/1/ABCD – 65530-001-07-A4; Entity  
AIS/I/1/ [AEx ib] IIB / IIC – 65530-001-07-A4; Entity

**Equipment Ratings:**

**YPS05-ZKP:** Intrinsically safe connections for Class I, Division 1, Groups C,D, Class I, Zone 1, [AEx ib] IIB per control drawing 35958-000-07-A4; hazardous (classified) locations and will appear in the Approval Guide, a publication of FM Approvals, as listed above.

**609308-61:** Intrinsically safe connections for Class I, Division 1, Groups A,B,C,D, Class I, Zone 1, [AEx ib] IIB/IIC per control drawing 65530-001-07-A4; hazardous (classified) locations and will appear in the Approval Guide, a publication of FM Approvals, as listed above.

**FM Approved for:**

SARTORIUS AG  
WEENDER LANDSTRASSE 94-108  
D-37070 GÖTTINGEN  
GERMANY



This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	1998
Class 3810	2005
Class 3610	1999
ANSI/ISA-12.16.01	2002
ANSI/ISA-12.23.01	2002

Original Project ID: 3027166

Approval Granted: *August 27, 2006*

Subsequent Revision Reports / Date Approval Amended

Report Number      Date

Report Number      Date

FM Approvals LLC

  
Robert L. Martell, Jr.  
Assistant Vice President

*August 27, 2006*  
Date



# Certificate of Compliance

Certificate: 1821536 (LR 56628-36)

Master Contract: 167555

Project: 1821541

Date Issued: 2006/10/12

Issued to: Sartorius AG

Weender Landstrasse 94-108  
Postfach 3243  
Goettingen, 37075  
Germany  
Attention: Dr. Dieter Klausgrete

*The products listed below are eligible to bear the CSA Mark shown*



Issued by: Peter Schimmoeller

Authorized by: David Schaefer, Manager of  
Certification Services

## PRODUCTS

CLASS 2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non -  
Incendive Systems - For Hazardous Locations

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For  
Hazardous Locations

2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-incendive Systems - For  
Hazardous Locations

## PRODUCTS



**Certificate:** 1821536 (LR 56628-36)

**Master Contract:** 167555

**Project:** 1821541

**Date Issued:** 2006/10/12

**Part A:**

Intrinsic Safety Associated Equipment, provides I.S. connections for:

Class I, Div. 1, Group A, B, C, and D

Class I, Zone 1: [Ex ib] IIC / IIB

Model 609308-61 Power Supply; rated 100-120Vac, 50/60Hz, 8VA; Intrinsic Safety Associated Equipment, provides I.S. connections for CL I, Div 1, Grp A,B,C,D and Class I, Zone 1, Grp IIC / IIB when connected to CSA Certified Sartorius Balances as per control drawing 35075-000-07-A4, 35233-000-07-A4 or 35958-000-07-A4 (as per 65530-001-07-A4).

**Part B:**

Class I, Div 1, Group B, C and D; T4

Associated Equipment [Exia], provides I.S. connections for Class I, Div. I, Group A, B, C, and D

Model YPS03-XKR, Power Supply; rated 100-120Vac, 50/60Hz, 8VA; Associated Equipment [Exia], provides I.S. connections for CL I, Div 1, Grp A,B,C,D when connected to CSA Certified Sartorius Balances as per control drawing 65528-000-07-A4.

**Part C:**

Intrinsic Safety Associated Equipment, provides I.S. connections for:

Class I, Div. 1, Group C and D

Class I, Zone 1: [Ex ib] IIB

Model YPS05-ZKP Power Supply; rated 115Vac, 50/60Hz, 10VA; Intrinsic Safety Associated Equipment, provides I.S. connections for CL I, Div 1, Grp C,D and Class I, Zone 1, Grp IIB when connected to CSA Certified Sartorius Balances as per control drawing 35958-000-07-A4.

**2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For Hazardous Locations**

**PRODUCTS**

**Part A:**

Intrinsic Safety Associated Equipment provides I.S. connections for:

Class I, Division 1, Group A, B, C, and D

Class I, Zone 1: [Ex ib] IIC / IIB



**Certificate:** 1821536 (LR 56628-36)

**Master Contract:** 167555

**Project:** 1821541

**Date Issued:** 2006/10/12

Model 609308-61 Power Supply; rated 100-120Vac, 50/60Hz, 8VA; Intrinsically Safe Associated Equipment , provides I.S. connections for CL I, Div I, Grp A,B,C,D and Class I, Zone 1, Groups IIC / IIB as per control drawing 35958-000-07-A4 (as per 65530-001-07-A4) ; and with Entity Parameters (non Linear):

- $U_o = 8.7 \text{ Vdc}$ ;  $I_o = 185 \text{ mA}$ ;  $P_o = 1.61 \text{ W}$ ;
- Group A., B and IIC:  $L_o = 5 \text{ uH}$  and  $C_o = 4.1 \text{ uF}$
- Group C, D and IIB:  $L_o = 5 \text{ uH}$  and  $C_o = 10 \text{ uF}$
- Group C, D and IIB:  $L_o = 200 \text{ uH}$  and  $C_o = 8.5 \text{ uF}$

**Part C:**

Intrinsic Safety Associated Equipment provides I.S. connections for:

Class I, Division 1, Group C, and D

Class I, Zone 1: [Ex ib] IIB

Model YPS05-ZKP Power Supply; rated 115Vac, 50/60Hz, 10VA; Intrinsically Safe Associated Equipment , provides I.S. connections for CL I, Div I, Grp C,D and Class I, Zone 1, Groups IIB as per control drawing 35958-000-07-A4 ; and with Entity Parameters (non Linear):

- $U_o = 12.6 \text{ Vdc}$ ;  $I_o = 230 \text{ mA}$ ;  $P_o = 2.9 \text{ W}$ ;
- Group C, D and IIB:  $L_o = 420 \text{ uH}$  and  $C_o = 575 \text{ nF}$

**Part D:**

Intrinsic Safety Associated Equipment provides I.S. connections for:

Class I, Division 1, Group C and D

Class I, Zone 1: [Ex ib] IIB

Model YCO11-Z Ex-Link-Box; rated 100 – 240 Vac, 50 -60Hz, 15VA; Intrinsically Safe Associated Equipment , provides I.S. connections for CL I, Div I, Grp C & D and Class I, Zone 1, Group IIB as per control drawing 35958-000-07-A4 ; and with:

DC Supply Entity Parameters (non Linear):

- $U_o = 12.6 \text{ Vdc}$ ;  $I_o = 230 \text{ mA}$ ;  $P_o = 2.9 \text{ W}$ ;  $L_o = 420 \text{ uH}$  and  $C_o = 575 \text{ nF}$

RS422 (Combined) Entity Parameters (Linear):

- $U_o = 6.8 \text{ Vdc}$ ;  $I_o = 100 \text{ mA}$ ;  $P_o = 127 \text{ mW}$ ;  $L_o = 5 \text{ mH}$  and  $C_o = 200 \text{ uF}$

**Part E:**

Intrinsic Safety Equipment for:

Class I, Division 1, Group C and D



**Certificate:** 1821536 (LR 56628-36)

**Master Contract:** 167555

**Project:** 1821541

**Date Issued:** 2006/10/12

Class I, Zone 1: Ex ib IIB

Weighing Unit PMA Quality Model PMA7501a-Xbcd; Intrinsically Safe Equipment for CL I, Div 1, Grp C & D and Class I, Zone 1, Group IIB as per control drawing 35958-000-07-A4 ; and with:

**DC Supply:**

Entity Parameters (non Linear):

- $U_i = 8.7 \text{ Vdc}$ ;  $I_i = 185 \text{ mA}$ ;  $P_i = 1.61 \text{ W}$ ;  $L_i = 0.0 \text{ mH}$  and  $C_i = 5.6 \text{ uF}$

or

I.S. System Connection to:

- Sartorius Power Supply: Model 609308-61

**RS232 (combined):**

Entity Parameters (Linear):

- $U_i = 12 \text{ Vdc}$ ;  $I_i = 330 \text{ mA}$ ;  $P_i = \text{any}$ ;  $L_i = 0.0 \text{ mH}$  and  $C_i = 0.0 \text{ uF}$

Entity Parameters (non Linear):

- $U_o = 12.0 \text{ Vdc}$ ;  $I_o = 125 \text{ mA}$ ;  $P_o = 373 \text{ mW}$ ;  $L_o = 8.0 \text{ mH}$  and  $C_o = 9.0 \text{ uF}$

or

I.S. System Connections to:

- Sartorius Interface Converter: YDI05-Z
- Sartorius Display Unit: Model TM01-X
- Sartorius Display Unit: Model EM01-X (for CL I, Div 1, Grp C&D only)

**Model PMA7501a-Xbcd**

Where:

- a = Blank or D, H, P or S
- bc = 00 or CE
- d = Blank or W

**Part E: Cont...**

Intrinsic Safety Equipment for:

Class I, Division 1, Group C and D

Class I, Zone 1: Ex ib IIB

Weighing Unit PMA World Model PMA7501a-XbcG and PMA.Net Model PMA7501a-XbcGL; Intrinsically Safe



**Certificate:** 1821536 (LR 56628-36)

**Master Contract:** 167555

**Project:** 1821541

**Date Issued:** 2006/10/12

Equipment for CL I, Div I, Grp C & D and Class I, Zone 1, Group IIB as per control drawing 35958-000-07-A4 ; and with:

**DC Supply:**

Entity Parameters (non Linear):

- $U_i = 12.6 \text{ Vdc}$ ;  $I_i = 230 \text{ mA}$ ;  $P_i = 2.9 \text{ W}$ ;  $L_i = 0.0 \text{ mH}$  and  $C_i = 200 \text{ nF}$

or

I.S. System Connection to:

- Sartorius Power Supply: Model YPS05-ZKP
- Sartorius Ex-Link-Box: Model YCO11-Z

**RS232 (combined):**

Entity Parameters (Linear):

- $U_i = 12 \text{ Vdc}$ ;  $I_i = 330 \text{ mA}$ ;  $P_i = \text{any}$ ;  $L_i = 0.0 \text{ mH}$  and  $C_i = 0.0 \text{ uF}$

Entity Parameters (non Linear):

- $U_o = 12.0 \text{ Vdc}$ ;  $I_o = 125 \text{ mA}$ ;  $P_o = 373 \text{ mW}$ ;  $L_o = 8.0 \text{ mH}$  and  $C_o = 9.0 \text{ uF}$

or

I.S. System Connections to:

- Sartorius Interface Converter: YDI05-Z
- Sartorius Display Unit: Model TM01-X
- Sartorius Display Unit: Model EM01-X (for CL I, Div I, Grp C&D only)

**RS422 (combined):**

Entity Parameters (Linear):

- $U_i = 6.8 \text{ Vdc}$ ;  $I_i = 100 \text{ mA}$ ;  $P_i = 127 \text{ mW}$ ;  $L_i = 0.0 \text{ mH}$  and  $C_i = 0.0 \text{ uF}$

or

I.S. System Connections to:

- Sartorius Ex-Link-Box: Model YCO11-Z

**Model PMA7501a-XbcGd**

Where:

- a = Blank or D, H, P or S
- bc = 00 or CE
- d = Blank or L



Certificate: 1821536 (LR 56628-36)

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Project: 1821541

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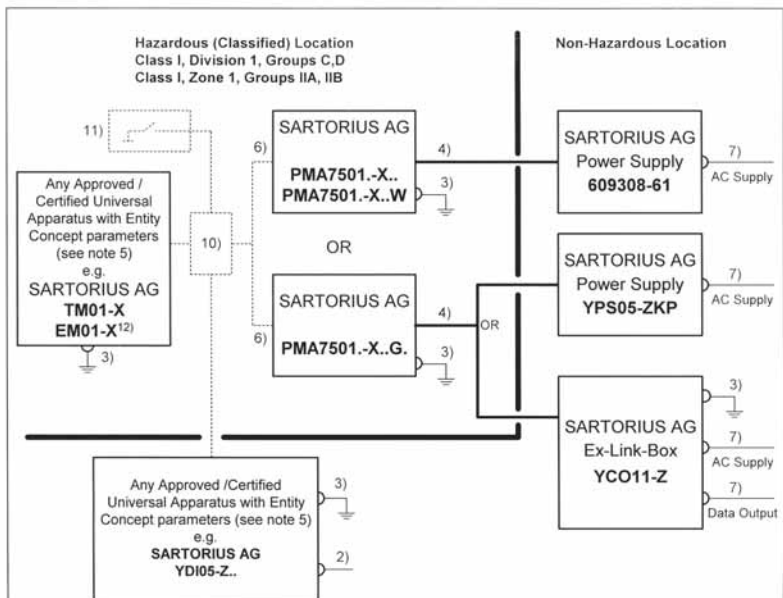
#### **APPLICABLE REQUIREMENTS**

- CSA C22.2 No 0 M1998 - General Requirements Canadian Electrical Code Part II.
- CSA C22.2 No 0.4-M1982 - Bonding and Grounding of Electrical Equipment (Protective Grounding).
- CSA C22.2 No 30-M1986 - Explosion-Proof Enclosures for Use in Class I Hazardous Locations
- CSA C22.2 No 142-M1987 - Process Control Equipment.
- CSA C22.2 No 157-M1992 - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations.
- CAN/CSA-E60079-0:02 - Electrical apparatus for explosive gas atmospheres – Part 0: General Requirements
- CAN/CSA-E60079-11:02 - Electrical apparatus for explosive gas atmospheres – Part 11: Intrinsic safety

#### **MARKINGS**

- CSA Monogram
- 2006.1821536X near CSA mark or CSA.2006.1821536X if not near mark.
- Company Name
- Model number
- Serial number
- Complete electrical rating (amps, hertz, and volts).
- Maximum ambient
- The symbol [Exia]; Associated Equipment
- Hazardous Location Designations
- WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY (Can be on I.S. Control Drawing)
- Model YPSO3-XKR: Reference to the I.S. Control Drawing: 65528-000-07-A4
- Model 609308-61: Reference to Control Drawing: 65530-001-07-A4; Which calls out the following I.S. Control Drawings: 35075-000-07-A4, 35233-000-07-A4 or 35958-000-07-A4.
- Model YPS05-ZKP: Reference to the I.S. Control Drawing: 35958-000-07-A4
- Model PMA7501.-X...: Reference to the I.S. Control Drawing: 35958-000-07-4A
- Model YCO11-Z: Reference to the I.S. Control Drawing: 35958-000-07-4A





- 1) The installation must be in the USA in accordance with the National Electrical Code<sup>®</sup>, NFPA 70, Article 504 or 505 and ANSI / ISA-RP 12.6 and in Canada with the Canadian Electrical Code<sup>®</sup>, Part 1, Section 18.
- 2) The apparatus must not be connected to any device that uses or generates in excess of 250Vrms or DC.
- 3) In the **USA** the Apparatus must be connected to a suitable ground electrode per National Electrical Code<sup>®</sup>, NFPA 70, Article 504 or 505. In **Canada** the Apparatus must be connected to a suitable ground electrode per Canadian Electrical Code<sup>®</sup>, Part 1. The resistance of the ground pad must be less than 1 ohm.
- 4) This non interchangeable cable needs not to be protected against damage. Max length: 50m (164 ft).
- 5) The Entity Concept allows interconnection of intrinsically safe apparatus with associated apparatus not specifically examined in combination as a system when the approved values of Voc, Isc and Pmax resp. Uo, Io, Po of the associated apparatus are less than or equal to Vmax, Imax and Pmax resp. Ui, Ii, Pi of the intrinsically safe apparatus and the approved values of Ca and La resp. Co and Lo of the associated apparatus are greater than Ci and Li of the intrinsically safe apparatus plus all cable parameters. See page 2.
- 6) Data output port (9pin female connector) connected by any cable to any approved/certified intrinsically safe circuit with entity parameters (see page 2).
- 7) The apparatus must not be connected to any device that uses or generates in excess of 132Vrms or DC.
- 8) Ambient temperature range: 0°C .... +40°C (+32°F .... + 104°F)
- 9) **WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.**
- 10) Option: Any junction box with passive internal wiring, only.
- 11) Option: Any (foot)/switch with passive internal wiring, only.
- 12) For Canada: Installation in Division 1, only.

	Date	Name		Title		sartorius	
Written by	08.09.2006	Klausgrete		Control Drawing			
Reviewed by	08.09.2006	Klausgrete		Drawing number		Revision	Sheet 1 of 2
Released by	08.09.2006	Klausgrete		35958-000-07-A4		01	

<b>609308-61</b>	<b>U<sub>o</sub></b>	<b>I<sub>o</sub></b>	<b>P<sub>o</sub></b>	<b>C<sub>o</sub></b>	<b>L<sub>o</sub></b>
	8.7 V	185 mA	1.61 W	10 $\mu$ F *	5 $\mu$ H *

<b>YPS05-ZKP</b>	<b>U<sub>o</sub></b>	<b>I<sub>o</sub></b>	<b>P<sub>o</sub></b>	<b>C<sub>o</sub></b>	<b>L<sub>o</sub></b>
	12.6 V	230 mA	2.9 W	575 nF *	420 $\mu$ H *

<b>YCO11-Z</b>	<b>U<sub>o</sub></b>	<b>I<sub>o</sub></b>	<b>P<sub>o</sub></b>	<b>C<sub>o</sub></b>	<b>L<sub>o</sub></b>
<b>DC Supply:</b>	12.6 V	230 mA	2.9 W	575 nF *	420 $\mu$ H *
<b>RS422 (combined)</b>	6.8 V	100 mA #	127 mW	200 $\mu$ F	5 mH



**PMA7501.-X../PMA7501.-X.W:**

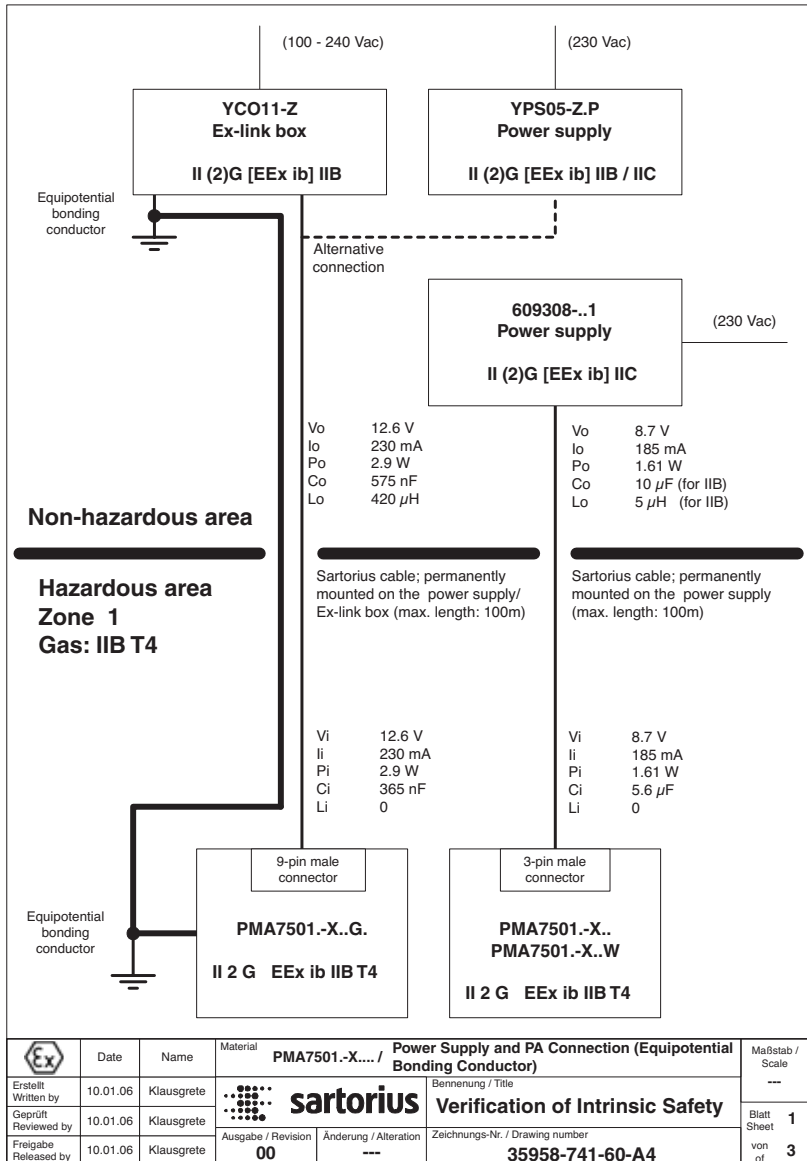
	<b>U<sub>i</sub></b>	<b>I<sub>i</sub></b>	<b>P<sub>i</sub></b>	<b>C<sub>i</sub></b>	<b>L<sub>i</sub></b>
<b>DC Supply</b>	8.7 V	185 mA	1.61 W	5.6 $\mu$ F	0
<b>RS232 (combined)</b>	12.6 V	330 mA #	any	0	0
<b>RS232 (combined)</b>	<b>U<sub>o</sub></b>	<b>I<sub>o</sub></b>	<b>P<sub>o</sub></b>	<b>C<sub>o</sub></b>	<b>L<sub>o</sub></b>
	12.0 V	125 mA	373 mW	9 $\mu$ F	8 mH

**PMA7501.-X..G:**

	<b>U<sub>i</sub></b>	<b>I<sub>i</sub></b>	<b>P<sub>i</sub></b>	<b>C<sub>i</sub></b>	<b>L<sub>i</sub></b>
<b>DC Supply</b>	12.6 V	230 mA	2.9 W	200 nF	0
<b>RS232 (combined)</b>	12.6 V	330 mA #	any	0	0
<b>RS422 (combined)</b>	6.8 V	100 mA #	127 mW	0	0
<b>RS232 (combined)</b>	<b>U<sub>o</sub></b>	<b>I<sub>o</sub></b>	<b>P<sub>o</sub></b>	<b>C<sub>o</sub></b>	<b>L<sub>o</sub></b>
	12.0 V	125 mA	373 mW	9 $\mu$ F	8 mH

\* : including 50m (164 ft) output cable to the scale  
# : linear

	Date	Name		Title	Control Drawing		sartorius		
Written by	08.09.2006	Klausgrete							
Reviewed by	08.09.2006	Klausgrete		Drawing number	35958-000-07-A4		Revision	01	Sheet 2 of 2
Released by	08.09.2006	Klausgrete							



### YDI05-Z..<sup>1</sup>

Vo	12.4 V <sup>2</sup>	Vi	12.6 V <sup>2</sup>
	24.8 V <sup>3</sup>		25.2 V <sup>3</sup>
Io	260 mA *	Ii	any
Po	800 mW *	Pi	any
Co	1.24 µF <sup>2</sup>	Ci	0
	112 nF <sup>3</sup>		
Lo	400 µH	Li	0
Lo/Ro	44 µH/ohm <sup>2</sup>		
	22 µH/ohm <sup>3</sup>		

### Z966<sup>1</sup> in YDI02-Z..

Vo	12 V <sup>2</sup>
	24 V <sup>3</sup>
Io	328 mA *
Po	0.96 W *
Co	1.41 µF <sup>2</sup>
	125 nF <sup>3</sup>
Lo	300 µH
Lo/Ro	36 µH/ohm <sup>2</sup>
	36 µH/ohm <sup>3</sup>

### YCO01-Y<sup>1</sup>

Vo	11.8 V <sup>2</sup>	Vi	12.6 V <sup>2</sup>
	23.6 V <sup>3</sup>		25.2 V <sup>3</sup>
Io	123 mA *	Ii	131 mA
Po	361 mW *	Pi	any
Co	1.5 µF <sup>2</sup>	Ci	0.5 nF
	129 nF <sup>3</sup>		
Lo	2 mH	Li	0.8 µH
Lo/Ro	98 µH/ohm <sup>2</sup>		
	98 µH/ohm <sup>3</sup>		

6-wire **standard cable** wire diameter up to 0.5≤ (minimum 34 ohm/km) with max. 250 nF/km and max. 750 µH/km, yielding max. 22 µH/ohm.

Cable length (flexible installation) is restricted, however, to **under 25 min** accordance with the RS-232 specifications.

### YDI05-Z.. Interface converter

II (2) GD [EEx ib] IIC or

### Z966 Zener barrier<sup>4</sup>

in YDI02-Z..: II (2) G [EEx ib] IIC or

### YCO01-Y Interface converter<sup>6</sup>

II (2) GD [EEx ib] IIC or

II 3 (2) GD EEx nR[ib] IIC T4

## Non-hazardous area

## Hazardous area

### Zone 1

### Gas: IIB T4

Foot actuated  
switch<sup>5</sup>

T-connector<sup>5</sup>

### RS-232 Data output port<sup>1</sup>

Vi	12.6 V <sup>2</sup>	Vo	12.0 V <sup>2</sup>
	25.2 V <sup>3</sup>		24.0 V <sup>3</sup>
Ii	330 mA*	Io	125 mA
Pi	any	Po	373 mW
Ci	1 nF	Co	9 µF <sup>2</sup>
			0.93 µF <sup>3</sup>
Li	0	Lo	8 mH

### Remarks:



- 1: Combined circuits
- 2: Measured against ground
- 3: Between signal lines
- 4: BAS01ATEX7005; II (1) GD [EEx ia] IIC; parameter(s) converted
- 5: Option; passive wiring only
- 6: Approved for Zones 2 and 22 hazardous areas with gas: IIC / IIB T4 and dust: T80°C; only when USB port is sealed and restricted breathing is maintained.

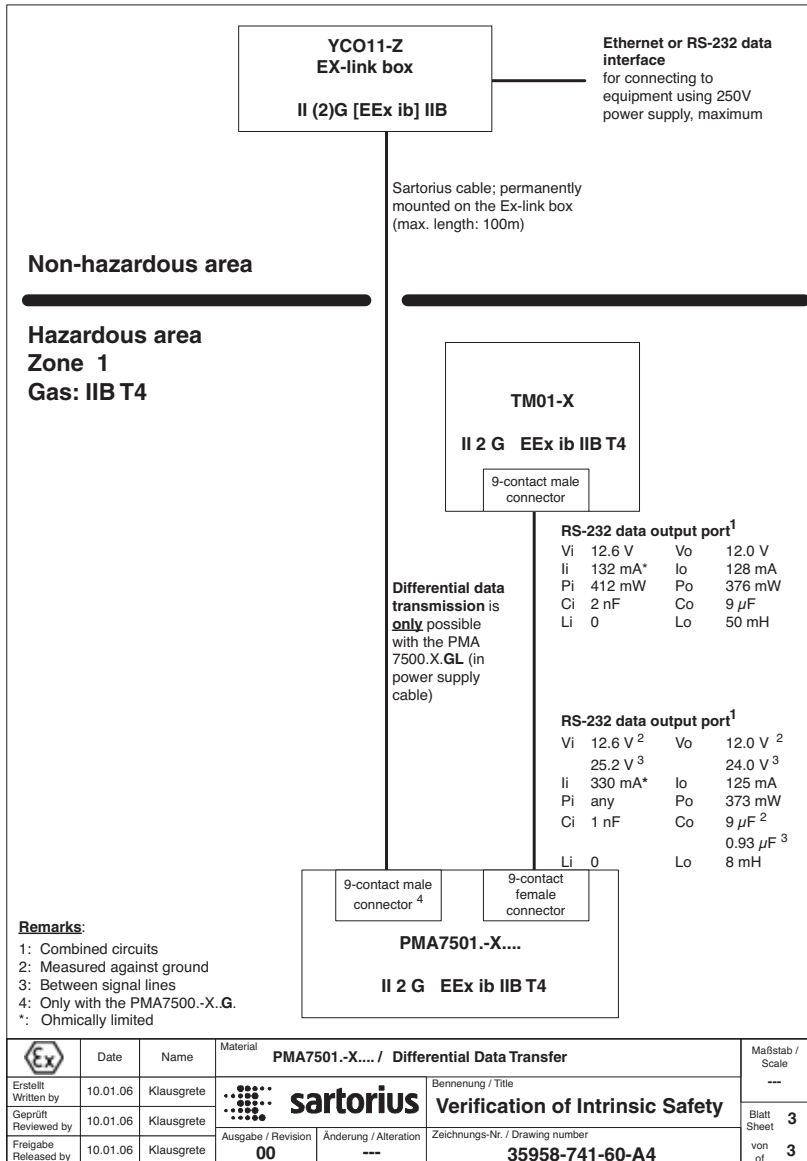
\*: Ohmically limited

9-contact female  
connector

**PMA7501-X....**  
**PMA7501-X..W**

**II 2 G EEx ib IIB T4**

	Date	Name	Material	PMA7501-X.... /	RS-232 Data Output Port	Maßstab / Scale
Erstellt Written by	10.01.06	Klausgrete	 <b>sartorius</b>	Benennung / Title	<b>Verification of Intrinsic Safety</b>	Blatt Sheet
Geprüft Reviewed by	10.01.06	Klausgrete				
Freigabe Released by	10.01.06	Klausgrete				
			Ausgabe / Revision	Änderung / Alteration	Zeichnungs-Nr. / Drawing number	von of
			<b>00</b>	<b>---</b>	<b>35958-741-60-A4</b>	<b>2</b> <b>3</b>



**Remarks:**

1: Combined circuits

2: Measured against ground

3: Between signal lines

4: Only with the PMA7500.-X.G.

\*: Ohmically limited

# Zertifikat

*Certificate*

**Registrier-Nr.**  
*Registered No.*

**44 203 06 553419**

**Zeichen des Auftraggebers**  
*Customer's reference*

**Auftragsdatum**  
*Date of order*  
**12.10.2006**

**Aktenzeichen**  
*File reference*  
**8000553419**

**Prüfbericht Nr.**  
*Test report no.*  
**06203553419**

**Name und Anschrift  
des Auftraggebers**

**Sartorius AG  
Weender Landstraße 94-108  
D-37075 Göttingen**

*Name and address of  
the customer*

**Geprüft nach:**

**DIN VDE 0100-482:2003**

*Tested in accordance with*

**Beschreibung des Produktes**

**Die elektronischen Waagen Typ PMA7501-.....  
dürfen in feuergefährdeten Bereichen eingesetzt  
werden.**

*Description of product*

*The electronic balances type PMA7501-..... may  
be used in areas exposed to the risk of fire.*

**Bemerkung**

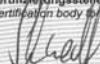
**Die besonderen Bedingungen aus der  
Betriebsanleitung müssen beachtet werden.**

*Remark*

*The special conditions from the operating instructions  
must be considered.*

Dieses Zertifikat bescheinigt das Ergebnis der Prüfung an dem vorgestellten Prüfgegenstand. Eine allgemein gültige Aussage über die Qualität der Produkte aus der laufenden Fertigung kann hieraus nicht abgeleitet werden.  
*This certifies the result of the examination of the product sample submitted by the manufacturer. A general statement concerning the quality of the products from the series manufacture cannot be derived there from.*

**TÜV NORD CERT GmbH**  
**Zertifizierungsstelle für Produktsicherheit**  
*Certification body for product safety*



**Hannover, 15.12.2006**

Geschäftsstelle Hannover, Am TÜV 1, 30519 Hannover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590

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January 2007, Sartorius AG,  
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