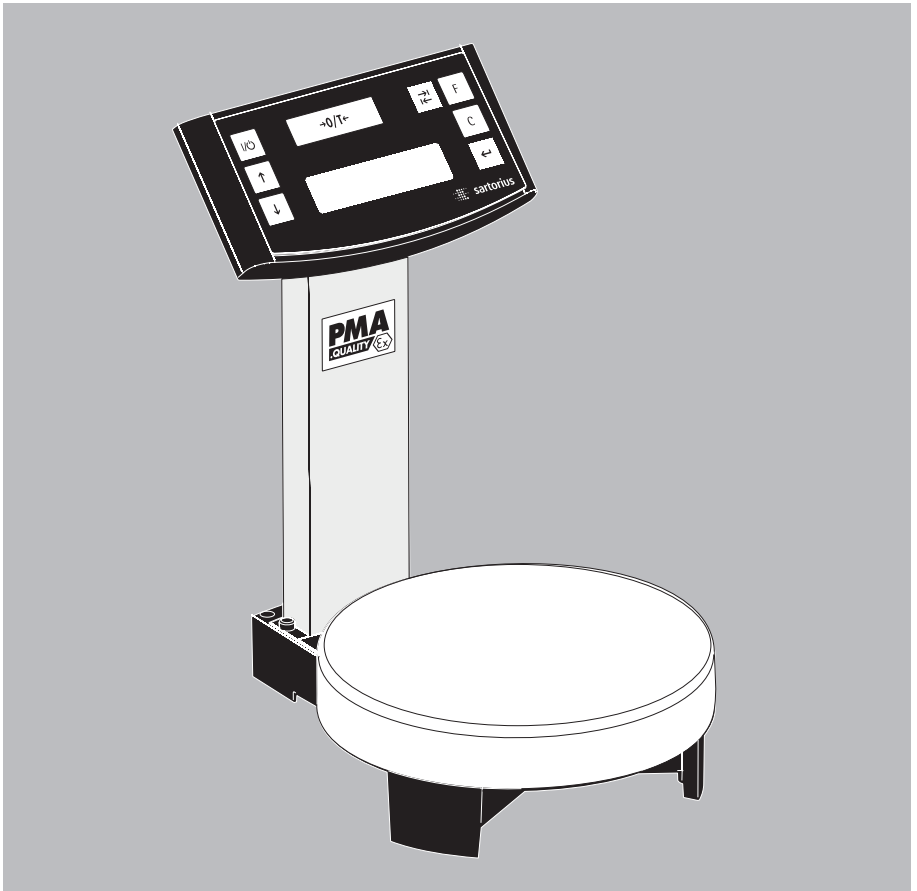


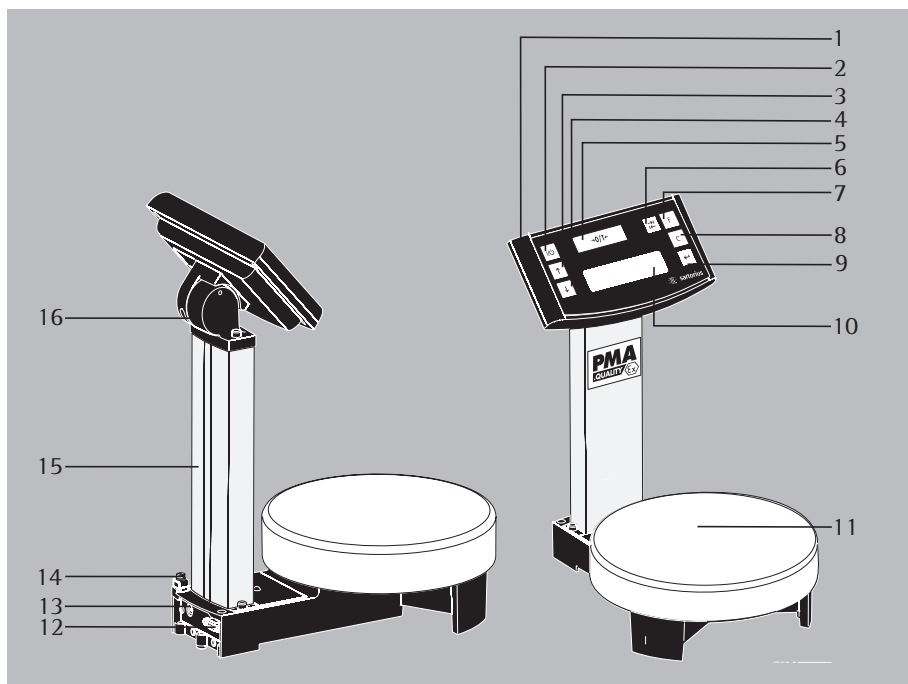
## Installation Instructions

# Sartorius PMA.Quality PMA 7501-X | PMA 7501-X00V1

Electronic Paint-mixing Scales for Zone 1



# General View of the PMA 7501-X



1 Display and control unit

2 key (On/Standby)

3 key: Upwards

4 key: Downwards

5 key: Zero/Tare

6 key (TOGGLE)

With the PMA 7501-X, 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

7 factor key (FORMULATION) for paint-mixing applications

8 key (Clear) and [REC] key for paint-mixing applications

9 key [ENTER] and [MEM] key for paint-mixing applications

10 Display

11 Weighing pan

12 Interfaces (D-Sub plug, 9-contact)

13 Connection to AC power

14 Grounding terminal

15 Column

16 Joint

## 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

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## Contents

- 2 General View of the Equipment
- 3 Intended Use
- 3 Warnings and Safety Precautions
- 6 Getting Started
- 8 Operating the Equipment
- 10 Applications
- 13 Calibration/Adjustment
- 14 Menu Settings
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- 22 Interface Port
- 23 Accessories
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## Intended Use

The PMA7501-X (Quality) has been specially designed for use in paint-mixing applications. This scale can be controlled by a computer connected to the interface port.

**Note:** Read the installation and operating instructions carefully before connecting the PMA7501-X 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 warning and safety information in its 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-X 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 ATEX1247X EC type-examination certificate. In addition, they are approved for hazardous (classified) location Class I, Division 1, Groups C,D, and Class I, Zone 1, Groups IIA and IIB, in the United States and in Canada, respectively. Furthermore, PMA7501-X models meet the EC Directives for electromagnetic compatibility and electrical safety (please see the Declaration of Conformity in these installation instructions.)

- 
- The area of use for the PMA7501-X model is defined in the type-examination certificate. All restrictions listed in the type-examination certificate must be strictly observed. Operating the PMA7501-X model 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. For the USA and Canada, please refer to Control Drawing 35958-000-07-A4.
  - 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 both 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. If a bore hole is provided, use a stainless steel screw and nut to connect the grounding conductor. The wire used for the grounding conductor should have a cross-sectional diameter of at least 4 mm<sup>2</sup> and have a suitable ring lug attached. Connect all equipment, including peripheral devices, to the equipotential bonding conductor.
  - Do not expose the scale to extreme temperatures, aggressive chemical vapors, moisture, shocks or vibrations. Exposure to excessive electromagnetic disturbance can cause the readout value to change. Once the disturbance has ceased, the instrument can be used again in accordance with its intended use.
  - The equipment must be used indoors.
  - 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.
  - To avoid generating static electricity (e.g., when using the in-use dust cover), connect the equipotential bonding conductor.
  - The equipment is protected against penetration by solid foreign objects.

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### **For the User**

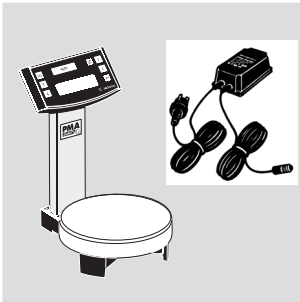
- Always make sure the equipment is disconnected from AC power before performing any installation, cleaning, maintenance or repair work on the scale.
- If you see any indication that the scale cannot be operated safely (for example, due to damage), turn it off and lock it in a secure place or otherwise prevent use of the equipment for the time being.
- Chemicals (e.g., gases or dusts) 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 (IP65 or higher) and 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.
- Do not expose the scale to aggressive chemical vapors or to extreme temperatures, moisture, shocks, or vibration. 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.

## **PMA7501-X Designed for Use in Zone 1 Hazardous Areas**

Please refer to the drawings unter “Verification of Intrinsic Safety” for details.

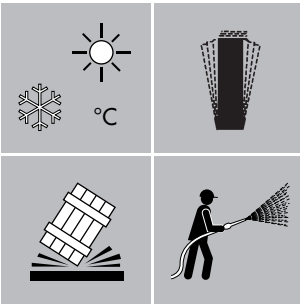
# Getting Started

- 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

- Scale
- Weighing pan
- Power supply

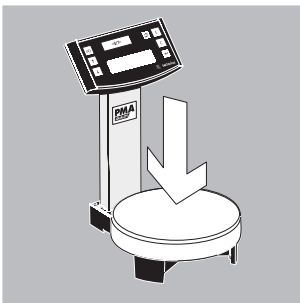


## Setting Up the Scale

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 instructions and warnings in this manual.

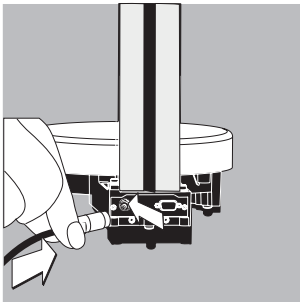
- Place the weighing pan on the scale.



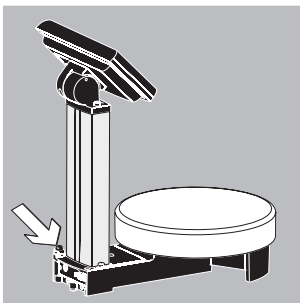


### Connection to AC Power

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 genuine 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.

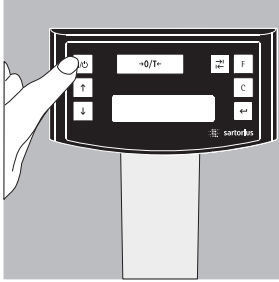



- Insert the right-angle plug into the IEC jack (13) on the scale
  - Plug the power supply into an electrical AC power outlet
- △ Observe the safety instructions and warnings in this manual

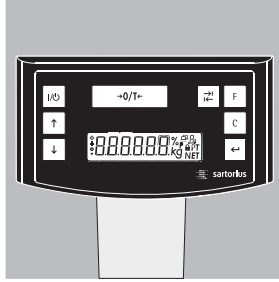


- Ground the scale.  
Connect the cable to the grounding terminal (14).

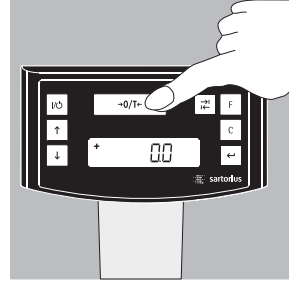
# Operating the Equipment




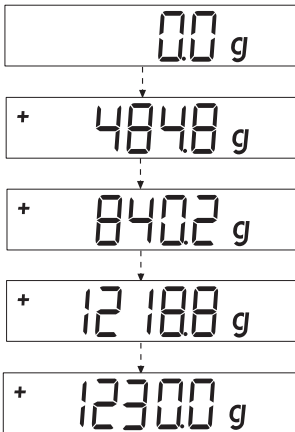
Turn on the scale using the  key (2).




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).



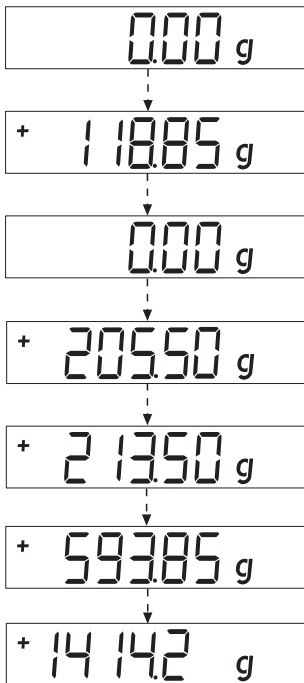
## Weighing with One Decimal Place

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 zero the display by pressing the tare key, and then press the  key (6) to toggle to the second decimal place with a resolution of 0.05 g, you can continue weighing 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 **[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 **[↑]** key (3): upwards  
or **[↓]** key (4): downwards,  
you can alter the value – in 0.1 increments, as of factor 1.0  
or – 0.01 increments, from factor 0.25 to 1.0.

### Important Note:

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

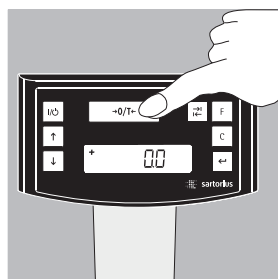
### Example:

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

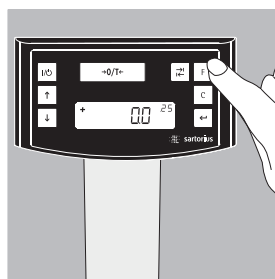
Let’s suppose you want to weigh only 250 ml of a basic formula that is for a total amount of 1 L. With the recalculation mode, you do not need to manually recalculate the individual components.

The basic formula for 1 liter is:

250 g green paint  
+ 250 g red paint  
+ 500 g blue paint  
**Total: 1000 g**



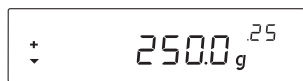
1. Place the empty paint can on the weighing pan and tare (zero the display).



2. Press the **[F]** formulation key (7) several times to select the conversion factor “.25” used in this example.



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



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



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



6. Pour in the last component, “500 g” of blue, 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  $\leftarrow$  key [MEM] (9). Press the  $\downarrow$  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  $\uparrow$  key (3), or downwards using the  $\downarrow$  key (4). When you then press the  $\leftarrow$  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  $\square$  key (8) to check how much the total quantity (in liters) will be. (“C” = correction factor)

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

**Example:**

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

2. Press the  $\leftarrow$  key (5)  
0.0 g

3. Pour in the first component.  
+ 50.0 g

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

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

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

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.

8. Press the  $\checkmark$  key (4) to start the recalculation mode.  
A "C" (= correct).

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

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

11. 1. Add the first component.  
"C1" is displayed. -1.5 g

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

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

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

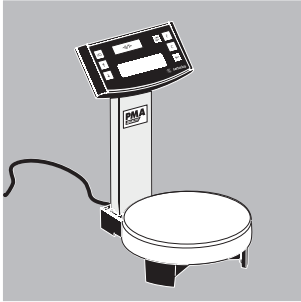
15. Pour in paint until the value 0.0 g is obtained.  
0.0 g

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

17. To check the prospective total weight, press the  $\square$  key (8) [REC].  
"C" = Correction factor; in this example, 1.02. (Total formula weight  $\times$  correction factor = total weight)

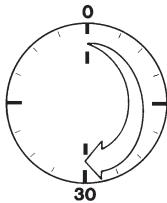
18. Add the fourth component  
+ 1000.0 g  
  
We have come to the end of our example.

# Calibration/Adjustment

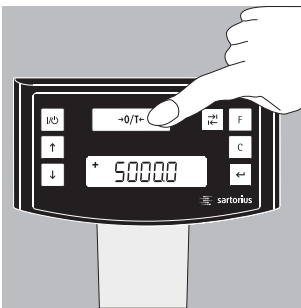


You can calibrate/adjust the scale by pressing the  $\boxed{+0/T\pm}$  key (5).

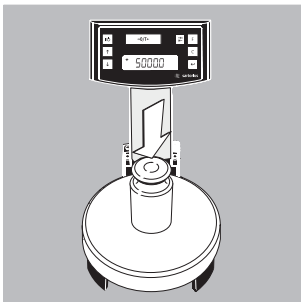
Calibration weight: 5,000 g; accuracy: + 0.075 g.



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.



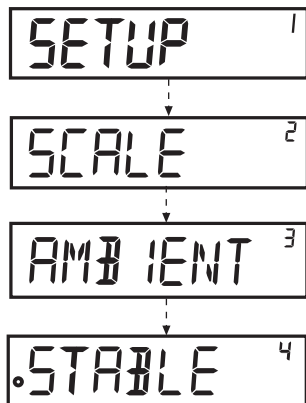
Center the calibration weight on the weighing pan (11). Calibration/adjustment is performed automatically. After calibration and adjustment, remove the weight.

# Menu Settings

## Navigating the SETUP Menu

### Example:

Menu Item: Adaptation to ambient conditions



- 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.
- 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.
- 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. (We have come to the end of our example.)
- Press the  key [ENTER]. “o” will appear. The new code is stored.
- 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.

## Important Menu Settings

- Hold down the  $\leftarrow$  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.

- $\uparrow$  key: select "LANGUAGE "
- $\leftarrow$  key: press [ENTER]
- $\uparrow$ / $\downarrow$  keys: select a language
- $\leftarrow$  key: [ENTER]: "o" will appear, the desired setting is defined.
- $\square$  key (Clear): press several times to exit the menu.

### $\square$ – Activating the Toggle Key; Configuring (Basic Setting)

After the toggle key, 1, has been activated, you can individually configure it with either 1 or 2 decimal places, as well as with grams or PT./PD.

Level 1      Level 2      Level 3      Level 4

SETUP

APPLICATION

PROGRAM

WIEIGH.

- o TOGGLE

- Press the  $\leftarrow$  key [ENTER]
- $\uparrow$ / $\downarrow$  keys: select "APPLICATION"
- $\leftarrow$  key: press [ENTER]
- $\uparrow$ / $\downarrow$  keys: select "PROGRAM"
- $\leftarrow$  key: [ENTER],  
 $\uparrow$ / $\downarrow$  keys: select "TOGGLE".
- Press the  $\leftarrow$  key [ENTER]; "o" appears: the desired setting is defined.
- Press the  $\square$  key (Clear) several times to exit the menu

### Assigning a Function to the $\square$ Toggle Key: 0.0 g / 0.00 g, or g / PT./PD.

Level 1      Level 2      Level 3      Level 4

SETUP

APPLICATION

UNIT

PT./PD.

- o GRAMS

DECIMALS

STANDARD

- o POLYRANGE

- Press the  $\leftarrow$  key: [ENTER]
- $\uparrow$ / $\downarrow$  keys: select "APPLICATION"
- $\leftarrow$  key [ENTER]: select the  $\downarrow$  key "UNIT," press  $\leftarrow$  key [ENTER].
- $\uparrow$ / $\downarrow$  keys: select "GRAMS"
- Press the  $\leftarrow$  key [ENTER]; "o" appears: the desired setting is defined.
- $\uparrow$ / $\downarrow$  keys, select "DECIMALS"
- Press the  $\leftarrow$  key, select setting
- Press the  $\leftarrow$  key [ENTER]; "o" appears  
Press the  $\square$  key (Clear) to exit the menu

**Toggleing Decimal Places** (Standard = 1 decimal place  
PolyRange = 2 decimal places)  
**Toggleing Units** (Grams or PT./PD.)

These settings are active when the scale is switched on.

Level 1	Level 2	Level 3	Level 4
SETUP			
	SCALE		
		DECIMALS	
		o STANDARD	
		POLYRANGE	
		UNIT	
		o GRAMS	
		PT./PD.	

- Press the  $\boxed{\leftarrow}$  key [ENTER]
- Press the  $\boxed{\leftarrow}$  key [ENTER]
- $\boxed{\uparrow}\boxed{\downarrow}$  keys: select "DECIMALS"
- Press the  $\boxed{\leftarrow}$  key [ENTER]
- $\boxed{\uparrow}\boxed{\downarrow}$  keys: select "STANDARD"
- Press the  $\boxed{\leftarrow}$  key [ENTER]; "o" appears: the new code has been set.
- Press the  $\boxed{C}$  key (Clear) several times to exit the menu

**Activating the "LOCK" Function "🔒"**

By activating the "LOCK" function, you can protect the scale from inappropriate use. When the "LOCK" function is activated, the scale shows weight values on the readout only when communication with the PC is active. If data transmission is interrupted, the lock symbol will be displayed. The scale will automatically be locked, preventing further weighing operations. The "LOCK" function is configured in the "EXTRAS" menu.

Level 1	Level 2	Level 3	Level 4
SETUP			
	EXTRAS		
		LOCK	
		OFF	
		o ON	

- Press the  $\boxed{\leftarrow}$  key [ENTER]
- $\boxed{\uparrow}\boxed{\downarrow}$  keys: select "EXTRAS"
- Press the  $\boxed{\leftarrow}$  key [ENTER]
- $\boxed{\uparrow}\boxed{\downarrow}$  keys: select "LOCK"
- Press the  $\boxed{\leftarrow}$  key [ENTER]
- Select "ON" using the  $\boxed{\uparrow}\boxed{\downarrow}$  keys  
Confirm with the  $\boxed{\leftarrow}$  key
- Press the  $\boxed{C}$  key (Clear) several times to exit the menu

**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, he must first enter the valid password. The password is comprised of a 6-character numeric code.

Use the  $\boxed{\uparrow}\boxed{\downarrow}$  keys to call up numbers (0 to 9).

Six dashes (-----) will appear in the display. The first dash will "blink" in the display.

Select a number (0 to 9) using the  $\boxed{\uparrow}\boxed{\downarrow}$  keys, press the  $\boxed{\leftarrow}$  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  $\boxed{\leftarrow}$  key [ENTER] when the dash begins to blink.



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

-----

- keys: select "INPUT"
- Press the  key [ENTER]
- Press the  key [ENTER]
- keys: select "PW.NEW"
- Enter the numeric code: press the  key [ENTER].
- Press the  key (Clear) several times to exit the menu

### 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.

Level 1      Level 2      Level 3      Level 4

---

INPUT

PASSWORD

PW.OLD

-----

PW.NEW

-----

- keys: select "INPUT"
- Press the  key [ENTER]
- Press the  key [ENTER]
- Enter the old password "PW.OLD"
- "PW.NEW" will appear when the old password is correctly entered
- Enter the numeric code: press the  key [ENTER]
- Press the  key (Clear): reset the menu

You can now deactivate the "LOCK" function.

SETUP

EXTRAS

LOCK

o OFF  
ON

- Press the  key [ENTER]
- keys: select "EXTRAS"
- Press the  key [ENTER]
- keys: select "LOCK"
- Press the  key [ENTER]
- keys: select "OFF", confirm with the  key [ENTER]
- Press the  key (Clear) several times to exit the menu

### Setting "TEXTS" in the Display, "LONG" or "SHORT"

Either short or long display prompts for operator guidance can be shown.

Level 1	Level 2	Level 3	Level 4
SETUP			
	EXTRAS		
		TEXTS	
			LONG
			o SHORT

- Press the  key [ENTER]
- keys: select "EXTRAS"
- Press the  key [ENTER]
- keys: select "TEXTS"
- Press the  key [ENTER]
- keys: select "SHORT", confirm by pressing the  key.
- Press the  key (Clear) several times to exit the menu

### 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			
	RESET		
		MENU	
			YES
			o NO

- Press the  key [ENTER]
- keys: select "RESET"
- Press the  key [ENTER]
- keys: select "MENU".
- Press the  key [ENTER]
- Use the   keys to select "YES"
- Press the  key [ENTER]; "o" will appear: the new code is set
- Press the  key (Clear) several times to exit the menu

### 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			
	GERMAN		
	etc.		
	o CODES		


- key: select "LANGUAGE"
- Press the  key [ENTER]
- keys: select "CODES"
- Press the  key [ENTER]; "o" will appear: the new code is set
- 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.

---

# Troubleshooting

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
No segments appear on the weight display	- No AC power available	- Check the AC power supply
Weight display shows "Low"	- The weighing pan is not in place	- Position the weighing pan
Weight display shows "High"	- The load on the pan exceeds the scale's capacity	- Unload the scale
The weight readout changes constantly	- Unstable ambient conditions - Too much vibration or the scale is exposed to draft	- Set up the scale in another area - Access the menu to select the appropriate code to adapt the scale to the particular weighing environment (refer to "Menu Settings")
The weight readout is obviously wrong	- The paint component does not have a stable weight - The scale was not tared before weighing	- Tare prior to weighing
No weight value is shown and the lock symbol is active 	- Data communication between scale and PC has been interrupted and the "Lock" function is active in the scale	- Access the menu settings to deactivate the "Lock" function - Check the connection

---

---

# Care and Maintenance

## Cleaning

- △ Do not use any aggressive cleaning agents (solvents or similar agents), concentrated acids or pure alcohol.
- Make sure that no liquid penetrates 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 and 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.

---

# 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.

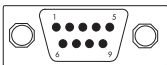


If you no longer need the packaging after successful installation of the equipment, you should return it for recycling. The packaging is made from environmentally-friendly materials and is a valuable source of secondary raw material

# Specifications

Model	PMA7501-X	
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 to +40
Weighing pan	∅ 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
Interface	RS-232C	
- Format	7-bit ASCII, 1 start bit, 1 or 2 stop bits	
- Parity	Even, odd or no parity	
- Transmission rates	1200 to 38,400 bit/s	
- Handshake mode	Software, hardware or none	

## Interface Port



### Pin Assignment

9-contact interface port

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

### Note:

Only for connection to a certified intrinsically safe circuit (see Verification of Intrinsic Safety).

---

# Accessories

	<b>Order no.:</b>
In-use dust cover	<b>YDC01PMA</b>
EX power supplies	
EC	<b>609308-011</b>
UK	<b>609308-211</b>
USA/CDN	<b>609308-61</b>



Declaration of Conformity  
to Council Directives 89/336/EEC and 73/23/EEC (amended by  
Directive 93/68/EEC) and 94/9/EG

**The electronic precision weighing instrument/weighing platform of the series  
PMA7501.-X...**

meets the applicable requirements of the test standards listed below, in conjunction with the associated power supplies, auxiliary peripheral devices and installation equipment listed in Annex A2 (see Annex A1 for a technical description and a list of the individual versions).

**1. Electromagnetic Compatibility**

1.1 Source for 89/336/EEC: Official Journal of the European Communities, No. 2005/C246/01

EN 61326 Electrical equipment for measurement, control and laboratory use  
EMC requirements

Limitation of emissions: Residential areas, Class B  
Defined immunity to interference: Industrial areas, continuous unmonitored operation

**2. Safety of Electrical Equipment**

2.1 Source for 73/23/EEC: Official Journal of the European Communities, No. 2005/C284/01

EN 61010 Safety requirements for electrical equipment for  
measurement, control and laboratory use  
Part 1: General requirements

**3. Equipment or protective systems or components intended for use in potentially explosive  
atmospheres**

3.1 Source for 94/9/ EEC: EC Official Journal, No. 2005/C300/06

EN50014 General requirements  
EN50020 Intrinsic safety "i"

3.2 Type Examination: KEMA/Arnhem (NL) (Notified Body, Reg. No. 0344)  
PMA7501.-X...: KEMA 05ATEX1247 X

3.3 Production Quality Assessment Notification:  
Certified by PTB/Braunschweig (Notified Body, Reg. No. 0102)

Notification No.: PTB 97ATEX Q021-1

Sartorius AG  
37070 Goettingen, Germany  
2006

C. Oldendorf  
Vice President, R&D  
Technological Operations & Innovations  
Mechatronics Division

Dr. D. Klausgrete  
Head of  
International Certification Management  
Mechatronics Division



## (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)**

Amherf 6 July 2006  
KEMA Quality B.V.

C.G. van Es  
Certification Manager

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\* Integral publication of this certificate and adjoining reports is allowed. This Certificate may only be reproduced in its entirety and without any change.

KEMA Quality B.V. Utrechtseweg 310, 6812 AR Arnhem P.O. Box 5185, 6802 ED Arnhem The Netherlands  
T +31 26 3 56 20 00 F +31 26 3 52 58 00 customer@kema.com www.kema.com Registered Arnhem 09085396

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	$P_i =$	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, 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, 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, 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, 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	$P_i =$	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

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, 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**

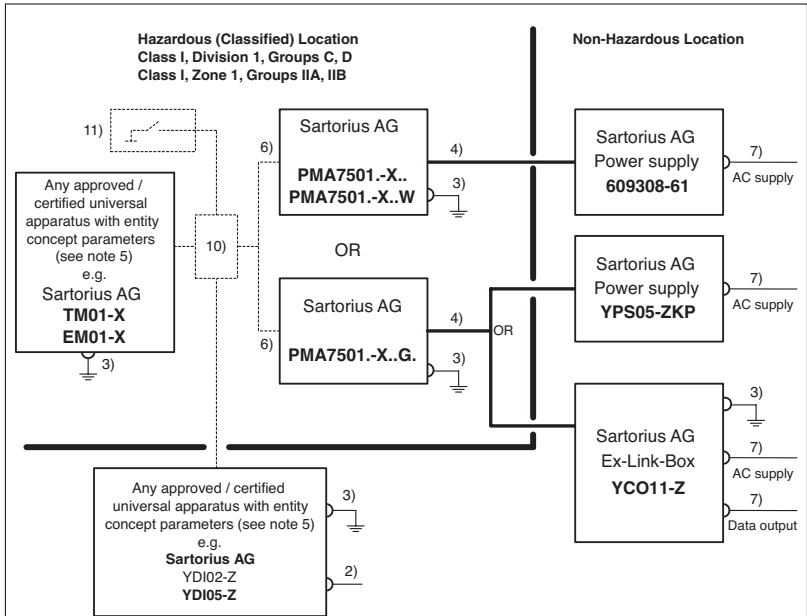
Ambient temperature range 0 °C ... +40 °C.

(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.



- 1) In the US, the equipment must be installed in accordance with the National Electrical Code®, NFPA 70, Article 504 or 505 and ANSI / ISA-RP 12.6 and in Canada with the Canadian Electrical Code®, 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®, NFPA 70, Article 504 or 505. In **Canada** the Apparatus must be connected to a suitable ground electrode per Canadian Electrical Code®, 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 (9-pin 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 to +40°C** (+32°F to +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.

	Date	Name		Title		<b>sartorius</b>					
Written by	2006-01-10	Klausgrete						<b>Control Drawing</b>			
Reviewed by	2006-01-10	Klausgrete						Drawing number	<b>35958-000-07-A4</b>	Revision	<b>00</b>
Released by	2006-01-10	Klausgrete						Sheet	<b>1</b>	of	<b>2</b>

**609308-61**

<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 *

**YPS05-ZKP**

<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 *

**YCO11-Z**

<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>	
DC Supply:	12.6 V	230 mA	2.9 W	575 nF *	420 $\mu$ H *
RS-422 (combined)	6.8 V	100 mA #	127 mW	200 $\mu$ F	5 mH



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

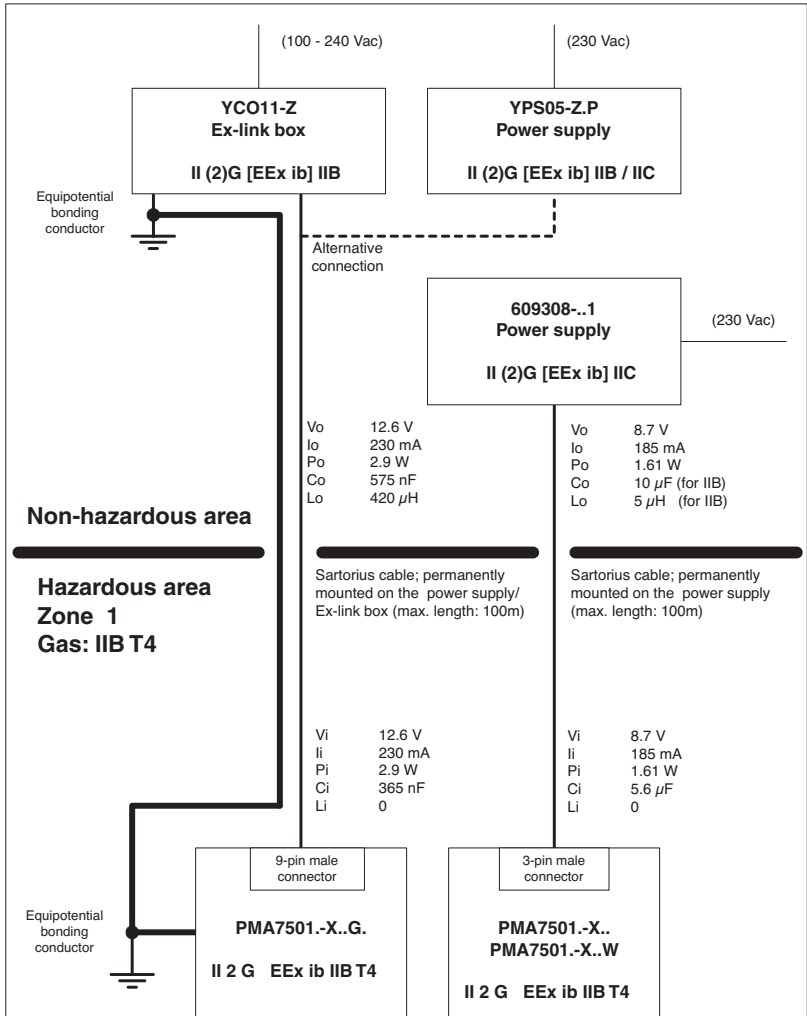
	<b>U<sub>i</sub></b>	<b>I<sub>i</sub></b>	<b>P<sub>i</sub></b>	<b>C<sub>i</sub></b>	<b>L<sub>i</sub></b>
DC Supply	8.7 V	185 mA	1.61 W	5.6 $\mu$ F	0
RS-232 (combined)	12.6 V	330 mA #	any	0	0
RS-232 (combined)	12.0 V	125 mA	373 mW	9 $\mu$ F	8 mH

**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>
DC Supply	12.6 V	230 mA	2.9 W	200 nF	0
RS-232 (combined)	12.6 V	330 mA #	any	0	0
RS-422 (combined)	6.8 V	100 mA #	127 mW	0	0
RS-232 (combined)	12.0 V	125 mA	373 mW	9 $\mu$ F	8 mH

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

	<b>Date</b>	<b>Name</b>		<b>Title</b>	
Written by	2006-01-10	Klausgrete		<b>Control Drawing</b>	
Reviewed by	2006-01-10	Klausgrete		Drawing number	
Released by	2006-01-10	Klausgrete		<b>35958-000-07-A4</b>	
				<b>Revision</b>	Sheet 2 of 2
				<b>00</b>	



	Date	Name	Material	PMA7501.-X... / Power Supply and PA Connection (Equipotential Bonding Conductor)		Maßstab / Scale
	Erstellt Written by	10.01.06	Klausgrete		Benennung / Title	---
	Geprüft Reviewed by	10.01.06	Klausgrete		<b>Verification of Intrinsic Safety</b>	Blatt Sheet
	Freigabe Released by	10.01.06	Klausgrete	Ausgabe / Revision	Änderung / Alteration	Zeichnungs-Nr. / Drawing number
			<b>00</b>	<b>---</b>	<b>35958-741-60-A4</b>	<b>3</b>

**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>
	23.6V <sup>3</sup>		25.2 V <sup>3</sup>
Io	123 mA *	Ii	131mA
Po	361 mW *	Pi	any
Co	1.5 μF <sup>2</sup>	Ci	0.5 nF
	129nF <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. 750μH/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

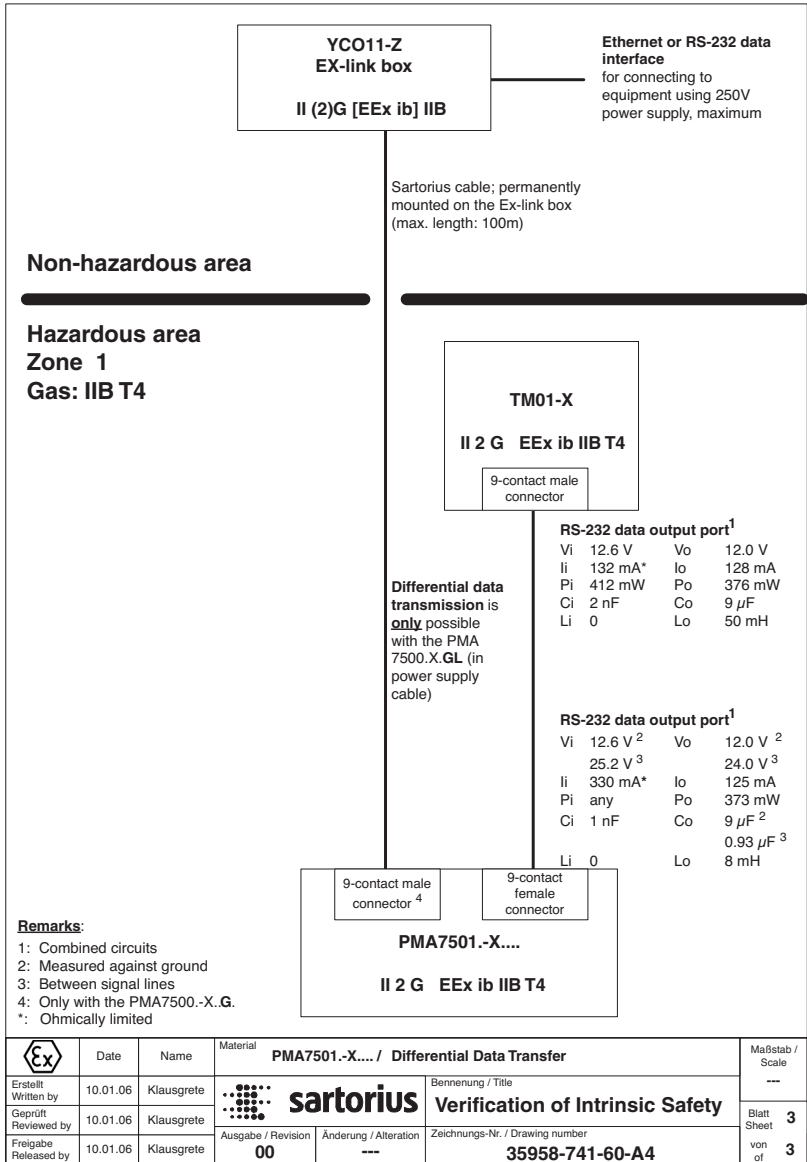
9-contact female  
connector

**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		Benennung / Title	---
	Geprüft / Reviewed by	10.01.06	Klausgrete		<b>Verification of Intrinsic Safety</b>	
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



Member of the FM Global Group

FM Approvals  
1151 Boston-Providence Turnpike  
P.O. Box 9102 Norwood, MA 02062 USA  
T: 781 762 4300 F: 781 762 9375 www.finglobal.com

# CERTIFICATE OF COMPLIANCE

## HAZARDOUS LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

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

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

I/I/ 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
---------------	------	---------------	------

FM Approvals LLC

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

*SEPTEMBER 14, 2006*  
Date



Member of the FM Global Group

FM Approvals  
1151 Boston-Providence Turnpike  
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:

### **YPS05-ZKP Power Supply**

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

### **609308-61 Power Supply**

AIS//I/ABCD – 65530-001-07-A4; Entity  
AIS//I/[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 GOTTINGEN  
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 22, 2006*

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
---------------	------	---------------	------

FM Approvals LLC

  
Robert L. Martell, Jr.  
Assistant Vice President

*August 22, 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 / II B

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.1, 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 35958-000-07-4A.

**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 1, 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):

- $U_o = 8.7$  Vdc;  $I_o = 185$  mA;  $P_o = 1.61$  W;
- Group A., B and IIC:  $L_o = 5$  uH and  $C_o = 4.1$  uF
- Group C, D and IIB:  $L_o = 5$  uH and  $C_o = 10$  uF
- Group C, D and IIB:  $L_o = 200$  uH and  $C_o = 8.5$  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 1, Grp C,D and Class I, Zone 1, Groups IIB as per control drawing 35958-000-07-A4 ; and with Entity Parameters (non Linear):

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

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

RS422 (Combined) Entity Parameters (Linear):

- $U_o = 6.8$  Vdc;  $I_o = 100$  mA;  $P_o = 127$  mW;  $L_o = 5$  mH and  $C_o = 200$  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):

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

or

I.S. System Connection to:

- Sartorius Power Supply: Model 609308-61

**RS232 (combined):**

Entity Parameters (Linear):

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

Entity Parameters (non Linear):

- $U_o = 12.0$  Vdc;  $I_o = 125$  mA;  $P_o = 373$  mW;  $L_o = 8.0$  mH and  $C_o = 9.0$  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 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):

- $U_i = 12.6$  Vdc;  $I_i = 230$  mA;  $P_i = 2.9$  W;  $L_i = 0.0$  mH and  $C_i = 200$  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):

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

Entity Parameters (non Linear):

- $U_o = 12.0$  Vdc;  $I_o = 125$  mA;  $P_o = 373$  mW;  $L_o = 8.0$  mH and  $C_o = 9.0$  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)

**RS422 (combined):**

Entity Parameters (Linear):

- $U_i = 6.8$  Vdc;  $I_i = 100$  mA;  $P_i = 127$  mW;  $L_i = 0.0$  mH and  $C_i = 0.0$  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)

**Master Contract:** 167555

**Project:** 1821541

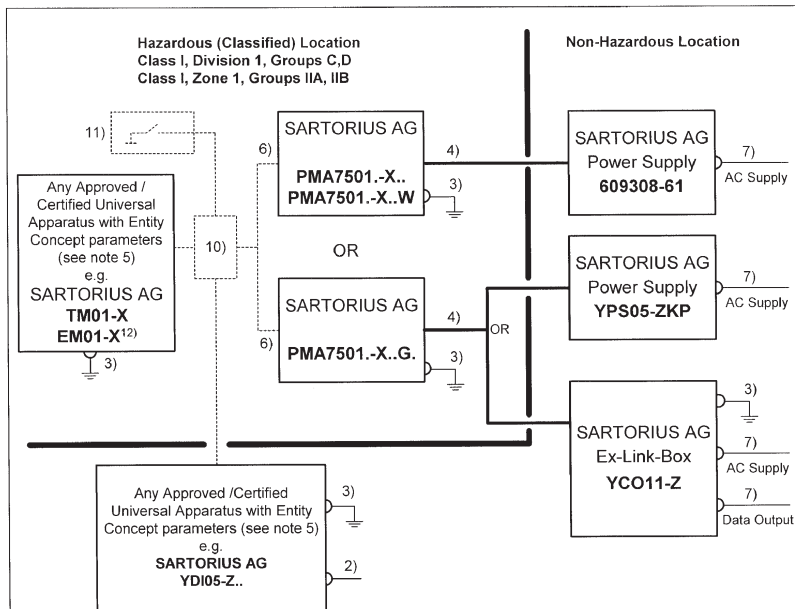
**Date Issued:** 2006/10/12

#### **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 YPS03-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: 35958-000-07-4A
- 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			
Written by	08.09.2006	Klausgrete		<b>Control Drawing</b>					
Reviewed by	08.09.2006	Klausgrete		Drawing number			Revision		
Released by	08.09.2006	Klausgrete		<b>35958-000-07-A4</b>			<b>01</b>		
						Sheet <b>1</b> of <b>2</b>			

<u>609308-61</u>	<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 µF *	5 µH *

<u>YPS05-ZKP</u>	<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 µH *

<u>YCO11-Z</u>	<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 µH *
<b>RS422 (combined)</b>	6.8 V	100 mA #	127 mW	200 µF	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 µF	0
<b>RS232 (combined)</b>	12.6 V	330 mA #	any	0	0
	<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>RS232 (combined)</b>	12.0 V	125 mA	373 mW	9 µF	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>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>RS232 (combined)</b>	12.0 V	125 mA	373 mW	9 µF	8 mH

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

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

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specifications and illustrations  
in this manual is indicated  
by the date given below.  
Sartorius AG reserves the  
right to make changes to the  
technology, features,  
specifications and design of the  
equipment without notice.

Status:  
July 2006, Sartorius AG,  
Goettingen, Germany