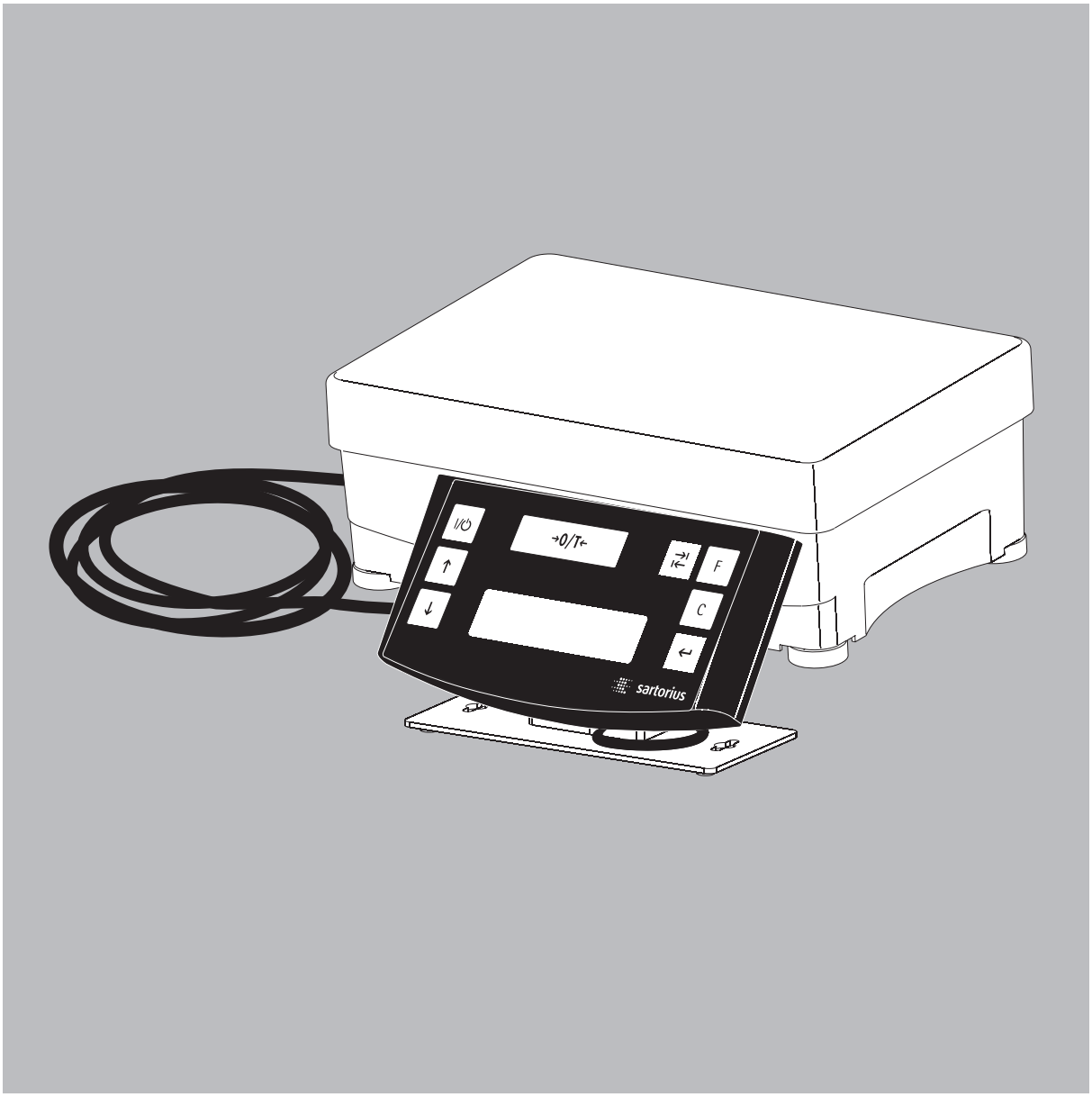
Operating Instructions

Sartorius PMA.Power
Model PMA35001-X

Electronic Paint-mixing Scale for Use
in Potentially Explosive Atmospheres



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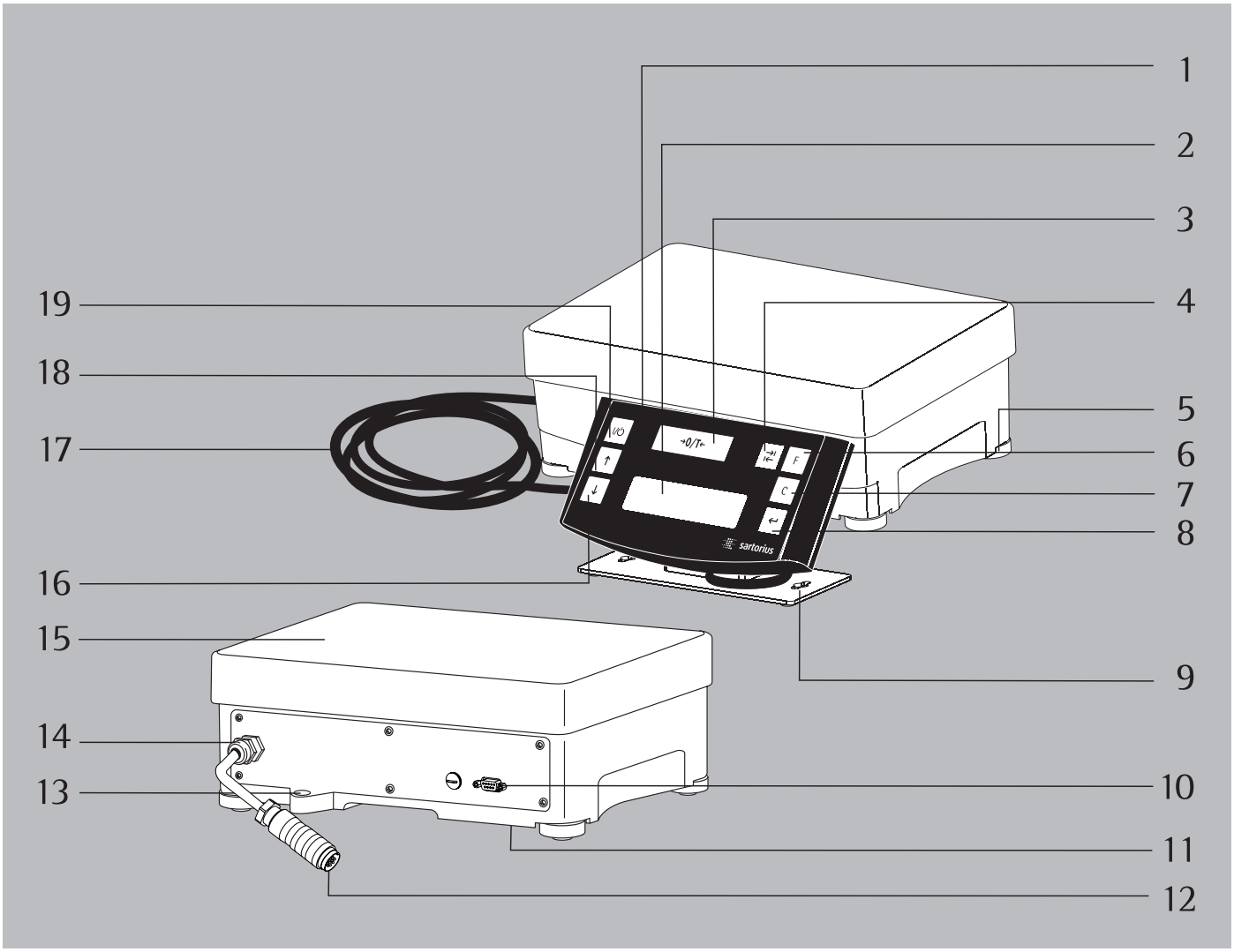
General View of the Equipment



Item	Description
	Display and control unit
2	Display
3	[→0/T←] key (Zeroing/Taring)
4	[⇄] toggle key depending on the menu setting: You can configure the PMA35001 menu to enable toggling between grams (g) and parts per pound (p).
5	Leveling foot
6	[F] factor key for paint-mixing applications
7	[C] key (Clear) and [REC] key for paint-mixing applications
8	[↵] [ENTER] key and [MEM] key for paint-mixing applications

Item	Description
9	Mounting bracket for display and control unit
10	Interface (D-SUB socket, 9-pin)
11	Grounding terminal
12	Adapter cable for the AC adapter
13	Level indicator
14	Cable connection
15	Load plate
16	[↓] key: down
17	Power supply and data cable for the display and control unit
18	[↑] key: up
19	[I/⏻] key (on/standby)

Contents

User Information

About these Installation Instructions

- ▶ Please read these installation instructions carefully before putting the equipment into operation for the first time.
- ▶ Make sure to follow the safety instructions.
- ▶ Keep these installation instructions in a safe place that is easily accessible to all personnel who operate this equipment.
- ▶ If these instructions are lost, please contact Sartorius for a replacement or download the latest manual from our website, www.sartorius.com.

Warning/Danger Symbols

Warning/danger symbols used in these instructions:

	**This symbol identifies hazards which have a high probability of resulting in death or serious physical injury if not avoided.**
	**This symbol identifies hazards that can result in moderate or mild injuries if not avoided.**
	**These notes identify hazards associated with the risk of material damage.**
	**This symbol identifies useful information and tips.**

Explanation of Symbols

The following symbols are used in these instructions:

▶ Indicates a required action

▷ Describes what happens after you have performed a particular step

1. Perform steps in the specified order
2.

– Indicates an item in a list

Intended Usage

The PMA35001-X is a scale designed for use in paint-mixing applications. The scale can be operated via the keypad as a stand-alone device or using application software (such as a paint-mixing program from a paint manufacturer) installed on a connected PC.

If you wish to create your own application software, Sartorius can supply the required drivers for Windows operating systems.

Make sure to read and store these installation instructions carefully before installing and operating your paint-mixing scale.

Safety Instructions

This device meets stipulated safety requirements. Improper use or handling, however, can result in damage and/or injury. The manufacturer is not responsible for any damage caused by non-compliance with warnings or safety instructions.

– The requirements pertaining to applicable installation regulations must be followed when using electrical equipment in systems and environmental conditions with increased safety requirements.

Use of the paint-mixing scale is not permitted in legal metrology or in medical areas or hazardous areas containing dust or explosive materials.

– The intrinsically safecolor-mixing scale has been manufactured in accordance with the European standards of CENELEC (see “EC Type Examination Certificate” in the appendix).
The color-mixing scale can be used with intrinsically safe Sartorius accessories in Zone 1 areas. (see: “Verification of Intrinsic Safety”, cert. no: 36953-761-60).

The IP protection rating of the color-mixing scale in accordance with EN 60529 is IP 43.
The device must be handled carefully in accordance with the IP protection rating. The environment must be suitably secured.

The color-mixing scale meets all requirements for electromagnetic compatibility (EMC). Interference stronger than the maximum values specified in the standards (see Declarations of Conformity) should be avoided.

The casing on all connection cables as well as the casing on the wires inside the equipment housing are made of PVC. Chemicals that corrode this material must be kept away from these cables.
None of the components of the color-mixing scale should be exposed to ambient temperatures outside the range of 0°C to 40°C during operation. Sufficient ventilation must be provided, in order to avoid excessive build-up of heat.

The equipment must only be used indoors. Avoid generating static electricity on glass and plastic parts. The color-mixing scale must be connected to the equipotential bonding conductor using a suitable low resistance method.
All electrical circuits are earthed and electrically connected to the metal parts of the device.

- The scale must be checked for correct function and safety by a trained and qualified person at appropriate intervals (e.g. checking the cable for damage).

- Operating personnel must be trained to recognize faulty operating states and to be able to initiate the necessary safety measures.

Proceed with extreme caution when using pre-wired connection cables purchased from other manufacturers, as the pin assignments may not be compatible with Sartorius equipment.
Only use cables and cable lengths approved by Sartorius.

- The operator is solely responsible when using cables not supplied by Sartorius.

The scale should only be opened by trained personnel with the power disconnected. Danger to life: do not touch conductive parts of the power supply wiring!

The scale must be installed and operated in a way that ensures that the control unit cannot be damaged (e.g., by falling objects).
If the control unit is damaged, disconnect the device from the power supply immediately.

A defective device may only be repaired by trained service technicians in accordance with Sartorius guidelines. Only original replacement parts should be used. Always ensure that the equipment is disconnected from AC power before performing any maintenance, cleaning, or repair work.
If the equipment is opened by anyone other than persons authorized by Sartorius, all claims under the manufacturer's warranty are forfeited. If necessary, speak to your dealer or the Sartorius Service Center.

Ex Zone 1 (Category 2 Equipment)

– In accordance with Directive 94/9/EC, the PMA35000-X model is a category 2 device, suitable for use in Zone 1 potentially explosive areas.
EC Type Examination Certificates: DEKRA 12ATEX0180 X ID code: II 2 G Ex ia IIC T4 Gb

The scale may only be connected to supply voltages of 90 V to 264 V at a frequency of 48–62 Hz.

IMPORTANT

If the device is used in Zone 1 potentially explosive areas outside the Federal Republic of Germany, the relevant national electrical codes and safety regulations must be observed. Ask the dealer or Sartorius Service Center about the guidelines that apply in their country.

The following points must be followed:

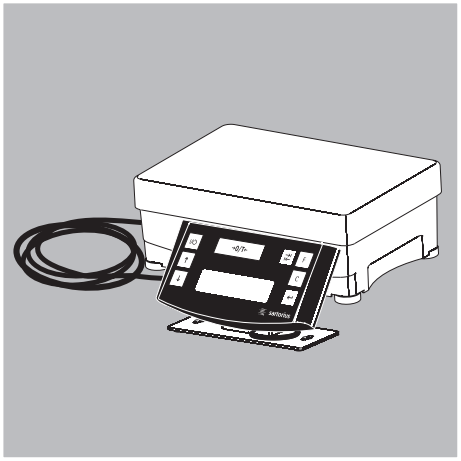
This scale should only be opened by trained personnel with the power disconnected.

The device is intended to be installed exclusively in locations that offer sufficient protection against the penetration of solid foreign bodies or water. The safety of the equipment is compromised by foreign bodies and water.
The terminal must be protected against damage and direct or indirect penetration of water and foreign bodies (< 1 mm diameter).

Avoid generating static electricity on the front panel and plastic casing.
The equipotential bonding conductor of the devices must be connected properly, according to commonly accepted technical standards.
Only clean the device as stipulated in the cleaning instructions.

The device must be protected from unnecessarily extreme temperatures, aggressive chemical vapors, moisture, shocks, and vibrations. Note the connection data (see EC Type Examination Certificate of the device and/or the safety instructions, drawing no. 36953-760-16).

Commissioning



Equipment Supplied

▶ Unpack the scale carefully.

The scale comprises the following components:
- Scale
- Load plate – Display and control unit

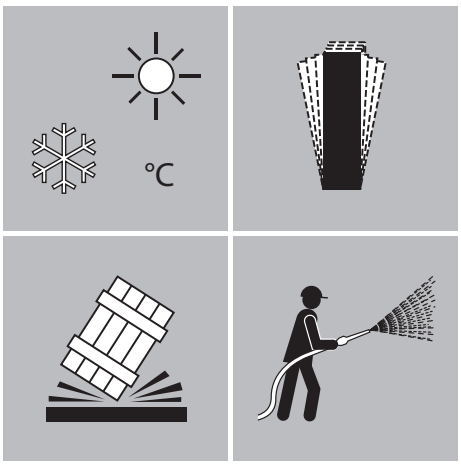
▶ After unpacking the equipment, check immediately for any visible external damage. If you detect any damage, proceed as directed in the “Safety Inspections” chapter (page 23).

Installation

The color-mixing scale is authorized for use in Zone 1 potentially explosive areas (see documents).

IMPORTANT

Make absolutely sure that the device is unplugged from the power supply before connecting/disconnecting data transfer or control lines.



Installation Location

Choose a suitable location where the power supply will not be exposed to drafts, heat radiation, moisture, or vibrations.

Setup Instructions

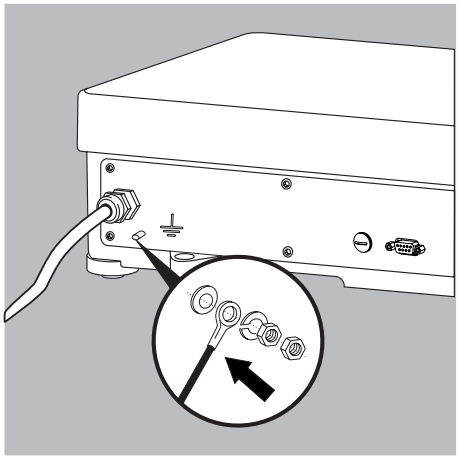
The following ambient conditions must be avoided when selecting the installation location so you can work with extra speed and accuracy:
- Uneven installation location
- Drafts
- Extreme moisture or chemical vapors
- Extreme heat (e.g. avoid placing the terminal/control panel in close proximity to a heater or exposing it to direct sunlight). Do not set up the device in a control cabinet or in any other poorly ventilated location.
- Extreme vibrations

Follow all warnings and safety precautions.

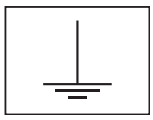
- Before startup, make sure that the power cable is properly connected to the power supply. In particular, the protective conductor must be connected to the housing of the AC adapter. Connect all devices to the potential equalization using a ground connection cable (not included) via the equipotential bonding conductor terminals ⏚ on the device.
  Make sure that the cable gage conforms with national specifications.
  Installation must be carried out properly by trained personnel and according to commonly accepted technical standards.
- Only cables and cable lengths approved by Sartorius should be used, which take account of the limitations of the cable lengths due to the capacity and inductance values (see appendix on EC Type Examination Certificate) and the EMC behavior.
- The system should only be operated for the first time when it is certain that the area is not potentially explosive.
- If deviations are evident during startup due to transport damage (no display, no backlighting, etc.), the system should be disconnected from the power supply and service professionals should be contacted.
  Make absolutely sure that the device is unplugged from the power supply before connecting/disconnecting data transfer or control lines.
  This explosion-protected color-mixing scale should be set up according to commonly accepted technical standards. The applicable national electrical codes and safety regulations for your particular country must be observed.

- Before commissioning the color-mixing system in potentially explosive areas, a check must be carried out by or under the supervision of a qualified electrician to ensure that the system is in good working order.

Check whether or not the competent authorities (e.g. industrial supervisory board) need to be informed. It is also necessary to carry out inspections of the system during operation. Inspection intervals should be such that any significant defects that may occur can be identified in good time. Inspections should be carried out at least once every three years. The applicable requirements and guidelines should also be observed during operation.

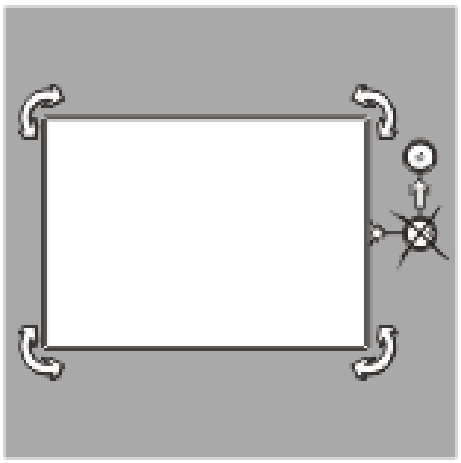


Connect the equipotential bonding connector:



Establish a low resistance connection with the color-mixing scale using a suitable grounding cable with a gage of at least 4 mm^2 (not included) via the equipotential bonding conductor connections (PA) on the devices.
Installation must be carried out properly by trained personnel and according to commonly accepted technical standards.

If deviations due to transport damage are evident during startup (e.g. no display, no backlighting), the system should be disconnected from the power supply and service professionals should be contacted.



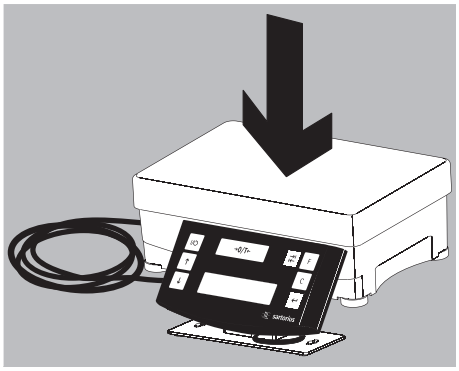
Leveling the Weighing Platform
Purpose:
- To compensate for unevenness at the place of installation
- To ensure that the equipment is placed in a perfectly horizontal position for consistently reproducible weighing results. Always level the weighing platform again any time after it has been moved to a different location.

▶ Level the weighing platform using the four leveling feet. Turn the feet until the air bubble is centered in the level indicator.

▶ Ensure that all leveling feet are resting securely on the work surface.

▷ Each of the leveling feet must support an equal load.

▷ Adjusting the leveling feet:
To raise the weighing platform, extend the leveling feet (turn counterclockwise). To lower the weighing platform, retract the leveling feet (turn clockwise).

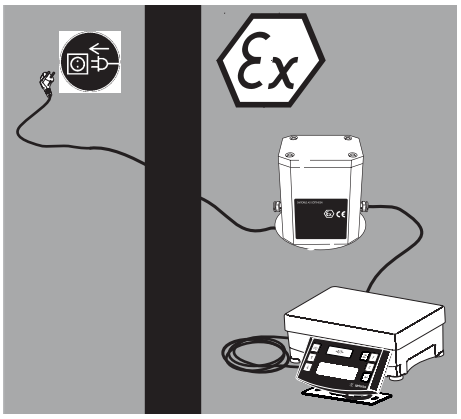


▶ Place the weighing pan on the balance.

Connecting the Device to AC Power
Power is supplied via a Sartorius AC adapter. Make sure that the voltage rating printed on this unit matches the voltage at the place of installation.
If the stated supply voltage or the plug design of the power cord does not comply with the standard you use, please inform your nearest Sartorius representative or your supplier. Use only original Sartorius adapters: A list of permitted models can be found in the Accessories (Options) chapter on page 28. The use of cables from other manufacturers, even if these units have a registered approval rating from a national testing laboratory, requires the consent of a qualified technician.

IMPORTANT

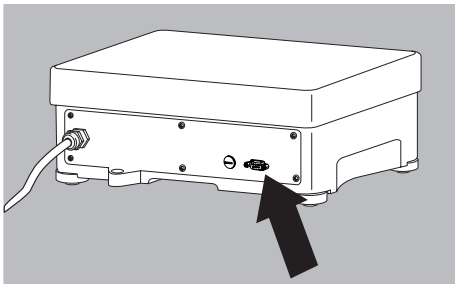
When operating the scale in Zone 1 potentially explosive areas, follow the current standards and regulations for the installation of devices in Zone 1.



In order to connect the equipment to the power supply, use a correctly installed wall outlet with a protective grounding conductor (PE) and a fuse of a maximum 16 A.

▶ Connection of the power supply outside of the potentially explosive atmosphere or mechanically secured (refer to “Safety Information” documents).
▶ Plug the power cord on the Sartorius AC adapter into the wall outlet (mains).

Observe all warnings and safety precautions.
See also: “Safety Instructions” documents.

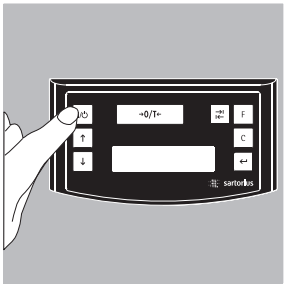


Connection of Peripheral Devices:
When installing the device in potentially explosive atmospheres of Zone 1, connectors may only be plugged in or disconnected in a currentless/dead-voltage state.
Disconnect the scale from the power line before connecting peripheral devices (printer, PC) to the interface port of the device.

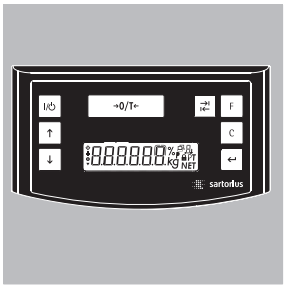
▶ When connecting peripheral devices (printer, PC) to the scale’s interface port, make sure that the screws on the data plug are securely tightened.

Observe all warnings and safety precautions.
See also: “Safety Instructions” documents.

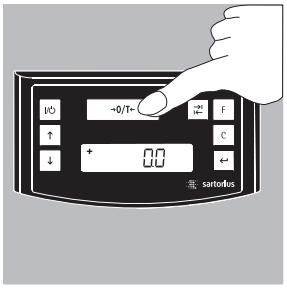
Operation



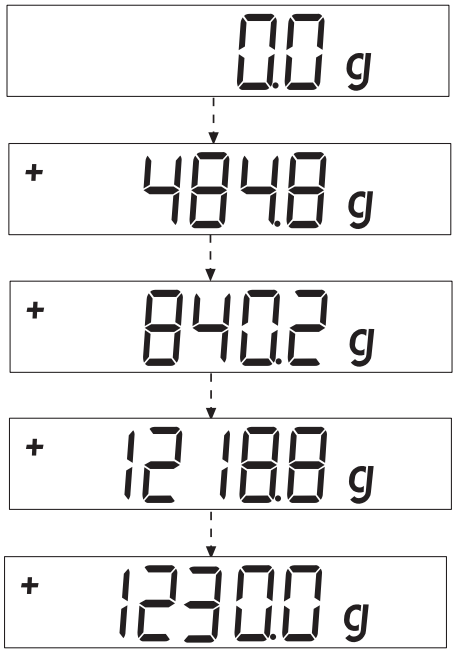
Press the I/⏻ key to turn on the scale.



Once the scale has been turned on, it will run an automatic self-test. This ends when the display shows 0.0 g.



If a different value is displayed: Tare the scale using the →0/T← key (Zero/Tare).



Weighing

Place an empty paint can on the load plate.
Press the →0/T← key (Zero/Tare) (3).

The display shows "**0.0** g." Pour the first component of your formula into the can and read off the weight when the stability symbol (in this example) "**g**" is displayed.

Add the other components up to the desired weight (formula).

Remove the filled paint can from the load plate.

Never use a hammer to close a paint can while is it still on the load plate, as this will damage the weighing system.
The weighing system will get damaged!

Applications

Formulation Mode (Calculation by a Factor)

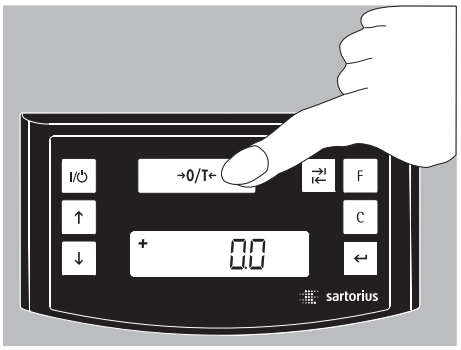
This mode enables you to weigh in amounts that are smaller or larger than that of your basic formula for a specific paint color (e.g. 250 ml of a 1 l formula). Press the F factor key to select the desired factor (quantity):

By pressing the	↑ key: up
or	↓ key: down
the value can be modified	– in 0.1 increments for factors of 1.0 to 6.0
or	– in 0.01 increments for a factor of up to 1.0.

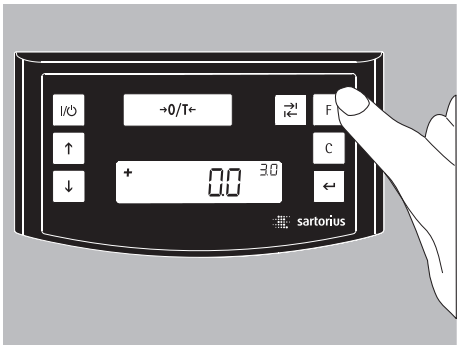
Note:
A flashing ▼ arrow on the display indicates that the weight value displayed is not valid in legal metrology (i.e. not legal for trade).

Example:
As you pour in the components of your formula, the weight is displayed in "g."
Let's suppose you want to weigh out 3 kg of a 1kg basic formula, and you don't want to have to manually recalculate the individual components of the formula.
The basic formula for 1 kg is:

	250 g	1st component
+	250 g	2nd component
+	500 g	3rd component
Total:	**1000 g**	



1. Place the empty container on the load plate and tare the scale.



2. Press the F factor key repeatedly to set the factor to "3.0" for this example.

3. A “**3.0**” appears next to the weight readout.

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

5. Pour in the second “250 g” component until “**500 g**” is displayed.

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

   This concludes the recalculation example. According to the display, exactly 1000 g was poured in, but the paint in the container weighs 3 kg in accordance with the factor you selected.
   The procedure is the same for any other conversion factor.

Weighing Using the Recalculation Mode

Let’s suppose that you poured in too much of one color component for a given formula (in this example, a 4-component recipe).
This example further assumes that you previously poured in all of the other amounts exactly according to each of the values you entered and saved by pressing the ↵ key [MEM]. Press the ↓ key to start the recalculation program; “C” flashes on the display. Press the ↓ key to correct the value so that it matches the amount specified in the formula. Press the ↵ key [MEM]; the scale returns to component 1 and automatically calculates the amount to be added for each of the components that were already poured. The display shows the amounts required to correct the formula up to the point at which the overpour occurred.
After the correction has been completed, you can continue filling the remaining components. The same factor is used.

Note:
You can correct overpours as often as needed.
Keep in mind that the total quantity of paint at the conclusion of filling increases each time you correct a component. Press the C key to check how much the correction factor for the total quantity will be. “**C**” stands for “Correction factor.”

An ▼ arrow on the display indicates that the weight value displayed is not valid in legal metrology (i.e. not legal for trade).

Example (Cumulative Weighing)

1. Center an empty paint can on the load plate.
+ 118.0 g

2. Press the →0/T← key (Zero/Tare).
0.0 g

3. Add first component.
+ 50.0 g

4. Press the ↵ key [MEM]
STO 01

5. Add the second component
+ 110.0 g

6. Press the ↵ key [MEM]
STO 02

7. Add the third component
+ 203.0 g
Oops! You poured in too much. The correct value for the formula is 200.0 g.

8. PPress the ↓ key to start the recalculation mode.
A »C« (“Correction”) flashes on the display.

9. Press the ↓ key repeatedly to correct the value.
+ 200.0 g

10. Press the ↵ key [MEM]
COR 01

11. Add the required amount of the first component. “C1” appears on the display.
–1.7 g.

12. Add until value reaches 0.0 g.
0.0 g

13. Press the ↵ key [MEM]
COR 02

14. Add the required amount of the second component. “C2” appears on the display.
2.0 g

15. Add until value reaches 0.0 g.
0.0 g

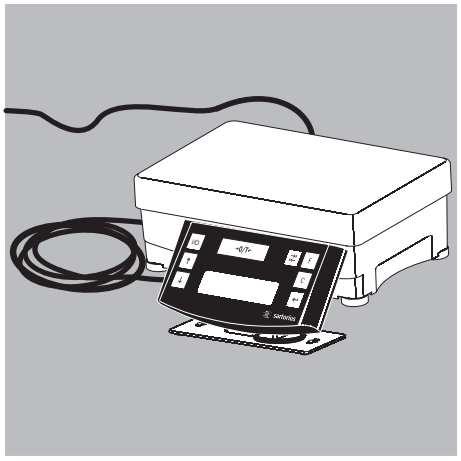
16. Press the ↵ key [MEM]. The scale returns to the formulation program. »**C**« is no longer displayed.
+ 200.0 g.

17. Press the C key (7) [REC] to view the factor by which the total weight will exceed the original target.
(**C** = “Correction;” in this example, 1.03).
(Total weight = original target × correction factor)

18. Add fourth component
+1000.0 g

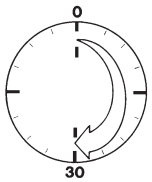
This concludes the recalculation example.

Adjustment

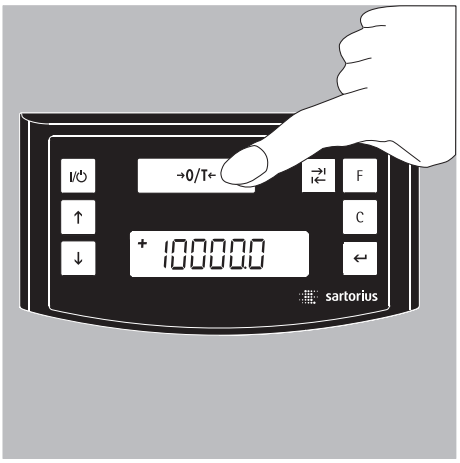


You can calibrate/adjust the scale by pressing the →0/T← key (Zero/Tare).

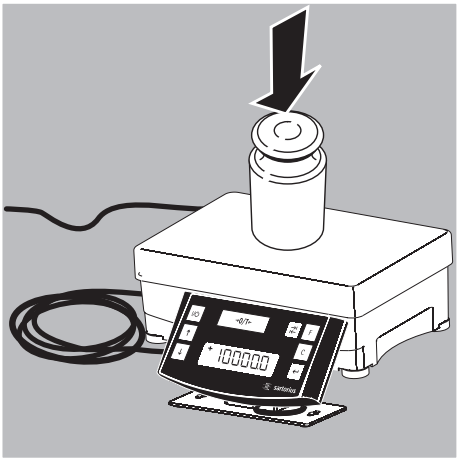
Calibration weight: 10000 g; precision: ±2%.



Always allow approximately 30 minutes for the scale to warm up after connecting it to AC power and before performing calibration/adjustment.



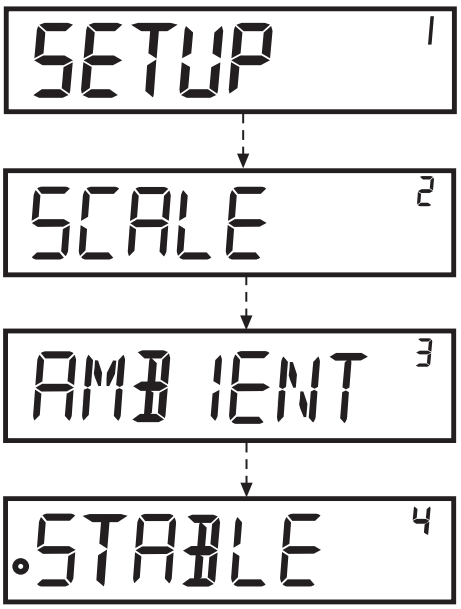
Press and hold the →0/T← key (Zero/Tare) for 2 seconds; "10000" is displayed.
Release the key.



Center the calibration weight on the load plate. Adjustment is performed automatically.
Remove the calibration weight.

Menu Settings

Accessing the SETUP Menu
Example:
Menu Item: Adapting the Scale to the Installation Point



- Hold down the ↵ key [ENTER] for approximately 2 seconds; “SETUP” is displayed (level one).
- Use the ↑↓ keys to select the desired menu item for level one.
- Press the ↵ key [ENTER] to select the next menu level (level two).
- Call up the desired menu item in level two.
  Use the ↑↓ keys to select the desired menu item.
- Use the ↵ key [ENTER] to select the next menu level (level three).
- The third level menu is displayed. Use the ↑↓ keys to select the desired menu item.
- Press the ↵ key [ENTER] to select the next menu level (level four).
- Call up the desired menu item in level four. Use the ↑↓ keys to select the desired menu item.

  (This concludes the example.)
- Press the ↵ key [ENTER]; “o” is displayed, indicating that this new item is set.
- Press the C key (Clear) repeatedly to exit the menu.

Note:
Contact your local Sartorius office for a detailed list of the menu codes.

Configuring the Main Menu Settings

Hold down the ↵ key [ENTER] for approximately 2 seconds; “SETUP” is displayed (level 1).

Level 1
SETUP

Language Setting

Level 1	Level	Setting
LANGUAGE		Press the ↑ key to select LANGUAGE Press the ↵ key [ENTER]
	o GERMAN	Press the ↑↓ keys to select a language
	ENGLISH	Press the ↵ key [ENTER];
	FRENCH	**o** indicates the active setting
	ITALIAN	Press the C key (Clear) repeatedly to exit
	etc.	the menu

Default Unit: Standard and Grams/Parts per Pound

The default setting that is active when the scale is switched on can be found under “SETUP > SCALE > UNIT” and SETUP>SCALE>SET:

Level 1	Level 2	Level 3	Level 4	Setting
SETUP				Press the ↵ key [ENTER]
	SCALE			Press the ↵ key [ENTER]
		UNIT		Use the ↑↓ keys to select e.g. “SET”
			GRAMS	Press the ↵ key [ENTER]
			KG	
			o PT./PD.	Use the ↑↓ keys toselect e.g. “STANDARD”
		SET		Press the ↵ key [ENTER]; **o** indicates
			o STANDARD	the new code is set
				Press the C key (Clear) repeatedly
				to exit the menu

⇄ Activating the Toggle Key

When the toggle key ⇄ (6) is active, you can use it to toggle the weight unit between grams and parts per pound or to toggle between the decimal places. The unit is toggled each time the key is pressed.

Level 1	Level 2	Level 3	Level 4	Setting
SETUP				Press the ↵ key [ENTER]
	APPLICATION			Use the ↑↓ keys to select “APPLICATION”
				Press the ↵ key [ENTER]
		TOGGLE		Use the ↑↓ keys to select “TOGGLE”
			OFF	Press the ↵ key [ENTER]
			o ON	Use the ↑↓ keys to select “ON”
				Press the ↵ key [ENTER]; **o** indicates
				the active setting
				Press the C key (Clear) repeatedly
				to exit the menu

⇄ Configuring the Toggle Key Function

Pressing the toggle key ⇄ toggles the scale between the default unit (see previous page) and the unit defined as follows under SETUP > APPLICATION > UNIT.

Level 1	Level 2	Level 3		Level 4	Setting
SETUP					Press the ↵ key [ENTER]
	APPLICATION				Use the ↑ ↓ keys to select "APPLICATION"
		UNIT			Press the ↵ key [ENTER], press ↓ to select "UNIT" and press ↵ [ENTER] to confirm.
			o	PT./PD.	Use the ↑ ↓ keys to select the desired unit; e.g., "GRAMS"
				GRAMS	Press the ↵ key [ENTER]; **o** indicates the active setting
					Press the c key (Clear)

Activating the "LOCK" Function 🔒

The LOCK function protects the scale from unauthorized use. When this function is active, the scale readout shows weight values only when there is active communication between the scale and a PC. If communication is interrupted, the readout goes blank and the display shows a padlock symbol. The LOCK function is activated under "Extras."

Level 1	Level 2	Level 3	Level 4	
SETUP				Press the ↵ key [ENTER]
	EXTRAS			Use the ↑ ↓ keys to select "EXTRAS"
				Press the ↵ key [ENTER]
		LOCK		Use the ↑ ↓ keys to select "LOCK"
				Press the ↵ key [ENTER]
			OFF	Use the ↑ ↓ keys to select ON and
			o ON	press ↵ to confirm
				Press the c key (Clear) repeatedly to exit the menu.

Configuring Password Protection
In addition to the LOCK function, you can configure password protection for additional security. With this feature, the LOCK function can be deactivated only by entering the valid password. The password is numeric and can have up to 6 digits. Use the ↑ ↓ keys to select the digits (0 through 9) for your password. The password is hidden on the display; only dashes ("------") are shown. The first dash flashes to prompt input. Press the ↑ ↓ keys to select the desired digit (0 to 9) and then press the ↵ key [ENTER]. The digit is stored and the second dash flashes on the display. Repeat the input procedure as described for the first digit. To store a space as a character in the password, press the ↵ key [ENTER] while the corresponding dash is flashing.
Once all 6 characters have been stored, press the ↵ key [ENTER] to enter the password.

Note:
Keep a copy of your password in a safe place.
The LOCK function can be deactivated only with this password.

Level 1	Level 2	Level 3	Setting
INPUT			Use the ↑ ↓ keys to select "INPUT"
	PASSWORD		Press the ↵ key [ENTER]
			Press the ↵ key [ENTER]
		PW.NEW	Use the ↑ ↓ keys to select "PW.NEW"
		--------	Enter the password and press the ↵ key [ENTER]
			Press the C key (Clear) repeatedly to exit the menu

Changing the Password
To define a new password, the existing password must first be entered correctly under "PASSWORD." "PW.OLD" prompts this input. Once the old password is entered correctly, the "PW.NEW" prompt is shown automatically. Enter the new password or press ↵ at each position to confirm. The display shows spaces.
Note:
Entering 6 spaces deletes the password, which deactivates the password function.

Level 1	Level 2	Level 3	Setting
INPUT			Use the ↑ ↓ keys to select "INPUT"
	PASSWORD		Press the ↵ key [ENTER]
		PW.OLD	Press the ↵ key [ENTER]
		--------	Enter the old password
		PW.NEW	After the old password has been entered correctly, "PW.NEW" is displayed.
		--------	Enter the desired password and press the ↵ key [ENTER]
			Press the C key (Clear) repeatedly to exit the menu

Configuring the Text Length ("LONG" or "SHORT")

You can define the length of the operator guidance texts shown on the display.

Level 1	Level 2	Level 3	Level 4	Setting
SETUP				Press the ↵ key [ENTER]
	EXTRAS			Use the ↑ ↓ keys to select "EXTRAS"
				Press the ↵ key [ENTER]
		TEXTS		Use the ↑ ↓ keys to select "TEXTS"
				Press the ↵ key [ENTER]
			LONG	Use the ↑ ↓ keys to select "SHORT"
			o SHORT	and press ↵ to confirm
				Press the c key (Clear) repeatedly to exit the menu

Resetting the Scale ("RESET")

You can restore the factory settings on the scale.

Note:

If you have activated the password function, this feature is password-protected.

Level 1	Level 2	Level 3	Level 4	Setting
SETUP				Press the ↵ key [ENTER]
	RESET			Use the ↑ ↓ keys to select "RESET"
				Press the ↵ key [ENTER]
		MENU		Use the ↑ ↓ keys to select "MENU"
				Press the ↵ key [ENTER]
			YES	Use the ↑ ↓ keys to select "YES"
			o NO	Press the ↵ key; factory settings are restored and "MENU" is displayed
				Press the c key (Clear) repeatedly to exit the menu

Code Settings

Select the "CODES" setting to have menu items identified by numeric codes (1.1.1.1.) rather than texts.

Level 1	Level 2	Setting
LANGUAGE		Press the ↑ key to select "LANGUAGE"
		Press the ↵ key [ENTER]
	GERMAN	Use the ↑ ↓ keys to select "CODES"
	etc.	Press the ↵ key [ENTER]; **o** indicates the active setting
	o CODES	Press the c key (Clear) repeatedly to exit the menu

Note:

Contact your local Sartorius office for a detailed list of the menu codes.

Error Codes

Problem	Cause	Remedy
No segments appear on the weight display	– No AC power is available	– Check the AC power supply
The weight readout shows “Low”	– No load plate on the scale	– Position the load plate
The weight readout shows “High”	– Weighing capacity exceeded	– Unload the scale
The weight readout changes constantly	– The setup location is unstable – Excessive vibration or draft	– Change the setup location – Make the necessary adjustment via the scale operating menu (see “Menu Settings”)
The weight readout is obviously incorrect	– The sample is not stable – Scale not tared before weighing	– Tare before weighing
No weight value is shown and the padlock symbol 🔒 is displayed	– Communication between scale and PC has been interrupted, activating the LOCK function	– Access the menu to make the necessary adjustment and switch off the LOCK function – Check the connection

Care and Maintenance

Service

Regular servicing by a Sartorius technician will ensure continued functional safety. Sartorius offers its customers service contracts with regular maintenance intervals ranging from 1 month to 2 years.
The maintenance interval depends on operating conditions and requirements.

Repairs

Disconnect defective equipment from power supply immediately.
Repair work must be performed only by authorized Sartorius service technicians using original replacement parts. Repairs performed by untrained persons may result in considerable hazards for the user.

Safety Inspections

Safe operation of the device is no longer ensured when:
– the device has visible damage or is no longer working;
– it has been stored for a relatively long time under unfavorable conditions.

In this case, notify the Sartorius Service Center. Maintenance and repair work may only be performed by authorized service technicians who have access to the required maintenance manuals and instructions and have attended relevant service training courses. If you are sending your scale to be repaired:

- ▶ remove as much paint residue as possible and disconnect all cables before sending, in order to avoid any further damage;
- ▶ enclose a description of the error.

Cleaning

Prevent moisture from penetrating the interior.
Do not use aggressive cleaning agents. Never use concentrated acids, alkali solutions or pure alcohol to clean the equipment.
Spraying the device with water or blowing it with compressed air is not permissible.

- ▶ Turn off the device before cleaning the control unit, since touching the screen could trigger unwanted inputs.
- ▶ Use a damp, lint-free cloth to clean the device.

Do not apply any cleaning agents to ID labels or printed surfaces.

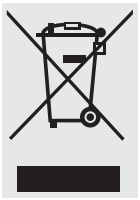
Corrosive Environment

▶ Remove all traces of corrosive substances from the device on a regular basis.

Storage and Shipping Conditions

– Permissible storage temperature: -10 °C ... +60 °C

Disposal



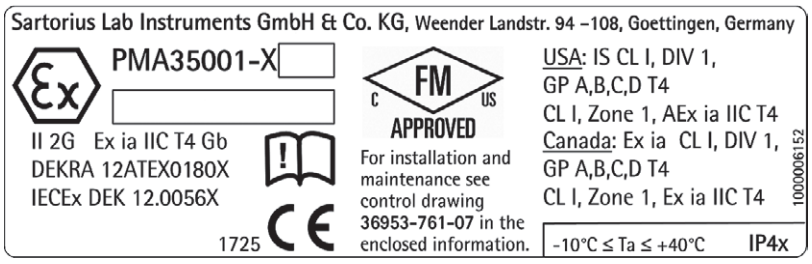
The packaging is made of environmentally friendly materials that can be used as secondary raw materials. If you no longer require the packaging, you can dispose of it free of charge in Germany through the Vfw dual system (contract number D-59101-2009-1129). Otherwise you should dispose of the material in accordance with the waste disposal regulations that are applicable in your area. The device, including its accessories and batteries, should not be disposed of as household waste. It should instead be recycled as electric/electronic equipment. For more information regarding disposal and recycling, please contact our local service representatives. Our partners listed on the following website will also be able to provide assistance within the EU:

1) Go to http://www.sartorius.com.
2) Select the “Services” tab.
3) Then select “Disposal Information.”
4) Addresses for the local Sartorius disposal contacts can be found in the PDF files available for download on this page.

Sartorius will not take back equipment contaminated with hazardous materials (ABC contamination) – either for repair or disposal.

Detailed information, including service addresses for returning your device for repair or disposal, can be found on our website (www.sartorius.com) or requested from a Sartorius Service Center.

Serial Number Coding



The manufacture date of this device is encoded in the serial number.

The format is as follows: YMM x x x x x

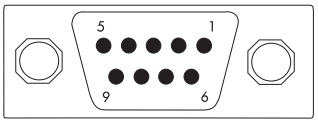
Y	Year
1	2000–2006
2	2007-2013
3	2014–2020, etc.

The Y column indicates the year group, which covers a period of 7 years. Within each year group, the months (M M) are counted up from 13.

Year:	2013	2014	2015	2016	2017	etc.
MM:	85-96	13-24	25-36	37-48	49-60	etc.

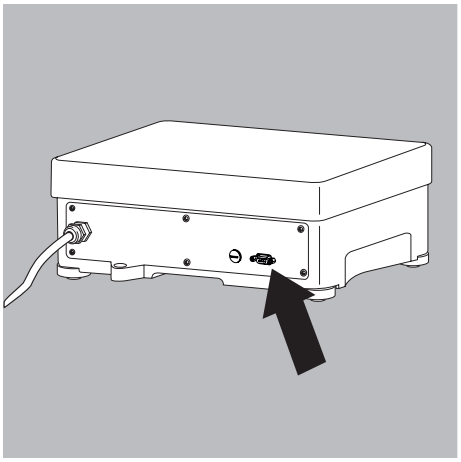
Example: 288xxxxx (April 2013). “xxxxx” is a consecutive number, increasing by one every month.

Interface Port



Pin assignment
9-pin data output (socket):
Pin 2: (RXD) Receive data
Pin 3: (TXD) Transmit data
Pin 4: (DTR) Data terminal ready
Pin 5: (GND) Ground
Pin 6: not used.
Pin 8: Clear to send (CTS)

Make sure to observe the safety instructions.



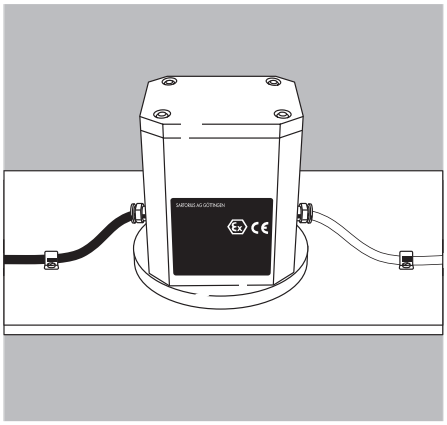
▶ Remove the protective cover from the interface port.
Keep the protective cover in a safe place.

▷ Replace the interface cover when storing or shipping the scale.

Specifications

Model		**PMA 35001-X**
Weighing Capacity	g	35000
Readability	g	0.1
Tare range (subtractive)	g	-35000
Linearity	g	≤±0,2
Stability range (configurable in menu)	Digit	0.25 to 4
Humidity class	F	non-condensing
Permissible ambient operating temperature range	°C	0 to +40
IP protection		IP 43, in accordance with EN60529/IEC60529
Load plate dimensions	mm	350 × 240
Scale housing (WxDxH)	mm	350 × 243 × 132,5
Net weight, approx.	kg	11.4
External calibration weight	kg	10 (accuracy class F2 or better)
Interface		RS232
Format		7-bit ASCII, 1 start bit, 1 or 2 stop bits
Parity		Even, odd, none
Transmission rates		1200 to 38,400 bps
Handshake		Software or hardware
Power consumption	VA	Average: 8, max. 16
Mains Connection	V	100 – 240 V ~
Voltage frequency	Hz	50 – 60
Device ID (explosion protection) II 2G Ex ia IIC T4 Gb DEKRA 12ATEX0180 X The terminal/control panel is suitable for use in potentially explosive areas in accordance with Directive 94/9/EC		Zone1 (devices in category 2)
Ambient conditions		
Environment		For indoor use only
Ambient temperature: Storage and shipping		-10 °C ... +60 °C
Ambient temperature: Operation		0 °C ... +40 °C
Highest relative humidity:		80% for temperatures up to 31 °C, decreasing linearly up to 50% relative humidity for 40 °C
Safety of electrical equipment		as per EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements
Electromagnetic compatibility		as per EN 61326-1:2006 Electrical equipment for measurement, control, and laboratory use – EMC requirements – Part 1: General requirements
Defined immunity to interference:		Industrial areas
Limitation of emissions:		Class B: Suitable for use in residential areas and areas that are directly connected to a low voltage network

Accessories



AC adapters	
ATEX certified for Europe: AC adapter for use inside of potentially explosive area	YPSC01-X
ATEX certified for Europe: AC adapter for use outside of potentially explosive area	YPSC01-Z
FM certified for the USA: AC adapter for use inside of potentially explosive area	YPS02-XUR
FM certified for the USA and Canada: AC adapter for use outside of potentially explosive area	YPS02-ZKR
CSA certified for Canada: AC adapter for use inside of potentially explosive area	YPS02-XKR
In-use dust cover	YDC01PMA
Data communication cable (2 m)	YCC01-0047M2

sartorius

EU-Konformitätserklärung
EU Declaration of Conformity

Hersteller
Manufacturer

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

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

Geräteart
Device type

Hochlastige Farbmischwaage
High-capacity paint mixing scale

Modell
Model

PMA35001-X, PMA35001-XV1

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

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

2014/30/EU — Elektromagnetische Verträglichkeit
Electromagnetic compatibility
EN 61326-1:2013

2011/65/EU — Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten (RoHS)
Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
EN 50581:2012

2014/34/EU — Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen
Equipment and protective systems intended for use in potentially explosive atmospheres

EN 60079-0:2012, EN 60079-11:2012

Kennzeichnung II 2 G Ex ia IIC T4 Gb
Marking

EG-Baumusterprüfbescheinigung Nummer DEKRA 12ATEX0180 X
EC-Type Examination Certificate number

Anerkennung der Qualitätssicherung (Produktion) FM13ATEXQ0092
Quality Assurance Notification (production)

Jahreszahl der CE-Kennzeichenvergabe / *Year of the CE mark assignment:* 16

Sartorius Lab Instruments GmbH & Co. KG
Goettingen, 2016-04-20

i.V. P. Baumfalk

Dr. Reinhard Baumfalk
Vice President R&D

i.V. Klausgrete

Dr. Dieter Klausgrete
Head of International Certification Management

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten EU-Richtlinien, ist jedoch keine Zusicherung von Eigenschaften. Bei einer mit uns nicht abgestimmten Änderung des Produktes verliert diese Erklärung ihre Gültigkeit. Die Sicherheitshinweise der zugehörigen Produktdokumentation sind zu beachten.

This declaration certifies conformity with the above mentioned EU Directives, but does not guarantee product attributes. Unauthorised product modifications make this declaration invalid. The safety information in the associated product documentation must be observed.

Doc: 2014124-01 SLI14CE011-01.de,en 1 / 1 PMF: 2014123 OP-113_fo1_2015.10.12

FCC Supplier's Declaration of Conformity

Device type Electronically laboratory balance

Model PMA35001-X, PMA35001-XV1

Party issuing Supplier's Declaration of Conformity / Responsible Party – U.S. Contact Information

Sartorius Corporation
5 Orville Dr Suite 200
11716 Bohemia, NY
USA
Telephone: +1.631.254.4249

FCC Compliance Statement
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Information to the user
Note: This equipment has been tested and found to comply with the limits for a **class B** digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Connections between the device and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits.

Any modifications made to this device that are not approved by Sartorius may void the authority granted to the user by the FCC to operate this equipment.

Doc: 2416860-00 SLI18FCC029-00.en 1 / 1 PMF: 2014123 OP-113_fo1_2015.10.12

These safety instructions apply to the installation, operation, maintenance and repair of the equipment

1) The equipment must be installed, operated, maintained and repaired by a qualified technician in compliance with applicable laws, rules and regulations, ordinances and standards. In particular, be sure to conform to the European Standards EN 60079-14 (Explosive atmospheres – Part 14: Electrical installations design, selection and erection). For more information see „Verification of Intrinsic Safety" 36953-761-60 (ATEX) and „Control Drawing" 36953-761-07 (for use in the USA and in Canada).

   Installation, maintenance, cleaning and repair work may only take place with all power disconnected from the equipment. Do not plug in or disconnect the cable in potentially explosive atmospheres.

2) Be sure to follow the installation, operating, maintenance and servicing instructions given in the manuals supplied.

3) The equipment shall be installed in such a way that it is protected against the entry of solid foreign objects or water capable of impairing the safety of the apparatus. Reduce the risk of mechanical damage to a minimum.

4) The equipment must be powered by a suitable certified/approved power supply/battery pack with intrinsically safe circuits as described in the certificate of this equipment.

5) Exposure to UV radiation is not allowed! Avoid exposure to direct sunlight.

6) The connecting cables of the display unit must be protected against damage and stress caused by strain.

7) Prior to opening the equipment, disconnect the power supply or make sure that there is no potentially explosive atmosphere or any other explosion hazard in the surrounding area!

8) The data cables connected to the equipment are considered as intrinsically safe circuits. The connection is secured against accidental disconnection and may only be plugged in or disconnected when the power is switched completely off. Check the correct function of the data transfer before you use the equipment in a hazardous location.

9) If the equipment is not operating properly, unplug it immediately from the line power (mains supply) and secure it against any further use!

10) All metal parts must be electrically connected to the terminal for the equipotential bonding conductor (PA). The equipment operator must to connect a lead with a gauge of at least 4 mm² (cross section) to the PA terminal located on the side of the housing (indicated by the ground symbol). The low resistance of this connection to the PA busbar must be checked when the system is installed at the intended place of use. Ensure that the connection cannot be unplugged by pulling on the grounding cable. The shielding of the connecting cables may only be used for grounding when no impermissible difference in voltage is generated and the shielding is able to conduct the equipotential current.

11) Avoid generating static electricity. Use only a damp cloth to wipe down the equipment. The equipment operator shall be responsible for preventing any risks caused by static electricity.

12) Keep chemicals and other agents, which can corrode the housing seals and cable sheaths, away from the equipment. These agents include oil, grease, benzene, acetone and ozone. If you are not sure about the safety of a certain substance, please contact the manufacturer.

13) Use equipment only in the temperature ranges indicated. Avoid exposing the equipment to inadmissible sources of heat or cold. Avoid heat build-up and ensure that the equipment has sufficient ventilation.

14) The equipment operator is responsible for any non-Sartorius cables used.

15) Check the EX approval marking (particularly the group for gases and temperature code) on all equipment in the hazardous area before operation to ensure that the equipment is permitted to be operated in this area.

16) At reasonable intervals, have your equipment installation checked for proper functioning and safety by a trained and certified technician.

17) If your equipment needs to be repaired, use only original spare parts supplied by the manufacturer!

18) Any tampering with the equipment by anyone, other than repair work done by authorized Sartorius service technicians, will result in the loss of EX conformity and in the forfeiture of all claims under the manufacturer's warranty. Only authorized specialists may open the equipment.

19) Modifications, including those to be carried out by Sartorius employees, may be permitted only after express written authorization has been obtained from Sartorius.

Ex	2012-10-18	sartorius	Safety Instructions	PMA35001-X..	
	Dr. D. Klausgrete		36953-761-16	Revision 00	Sheet 1 of 1

CERTIFICATE

EC-Type Examination

(1)

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **DEKRA 12ATEX0180 X** Issue Number: 1

(4) Equipment: **Intrinsically Safe Weighing Units, Type PMA35001-X..**

(5) Manufacturer: **Sartorius Weighing Technology GmbH**

(6) Address: **Weender Landstr. 94-108, 37075 Goettingen, Germany**

(7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification 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. NL/DEK/ExTR12.0049/**.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2012 **EN 60079-11 : 2012**

(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 Ex ia IIC T4 Gb

This certificate is issued on 23 May 2013 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

DEKRA Certification B.V.

R. Schuller
Certification Manager

Page 1/3

PRODUCTS RvAC 001

DEKRA Certification B.V. Utrechtseweg 310, 6812 AR Arnhem P.O. Box 5185, 6802 ED Arnhem The Netherlands
T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com Registered Arnhem 09085396

DEKRA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate DEKRA 12ATEX0180 X** Issue No. **1**

(15) **Description**

The intrinsically safe weighing unit type PMA35001-X.. has a painted aluminum enclosure and a display unit in a plastic enclosure.

Ambient temperature range: -10 °C to +40 °C.

Electrical data

Supply circuit (permanently connected cable):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
V_1 (pin 2 and 6): U_i = 12,6 V; I_i = 133 mA; P_i = 1,46 W; C_i = 188 nF; L_i = 0,0 mH;
V_2 (pin 1 and 4): U_i = 12,6 V; I_i = 133 mA; P_i = 1,46 W; C_i = 3 nF; L_i = 0,0 mH;
V_3 (pin 5 and 8): U_i = 8,6 V; I_i = 187 mA; P_i = 1,51 W; C_i = 391 nF; L_i = 0,0 mH;
V_4 (pin 3 and 7): U_i = 12,6 V; I_i = 150 mA; P_i = 1,68 W; C_i = 223 nF; L_i = 0,1 µH.

Power Supply Type YPS02-.X.. (Certificate KEMA 98ATEX0892 X), Power Supply Type YPS02-Z.. (Certificate KEMA 98ATEX0611X) and Power Supply Type YPSC01-X and YPSC01-Z (Certificate KEMA 08ATEX0044) may be applied to fulfil the maximum electric values in type of protection intrinsic safety Ex ib IIC.

Dependent on the internal construction, the weighing unit communicates either via RS232, RS485 or RS422 protocol.
The selected communication protocol is provided either via a Data Interface Connector, or via a 9-pole SUB-D Connector.

RS485 circuit (Data Interface Connector, pins J/K/M or SUB-D connector, pins 2/3/5):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

U_i	± 12,4 V	12,0 V	7,2V
I_i	130 mA ***	164 mA ***	Any

***: resistively limited
P_i = any; C_i = 0.23 µF; L_i = 0 mH;
U_o = 5,2 V; I_o = 210 mA; P_o = 263 mW; C_o = 60 µF; L_o = 0.6 mH; L_o/R_o = 125 µF/Ω;

RS422 circuit (Data Interface Connector, Connector, pins A/B/C/E/F/G/J/K/M/N):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
U_i = 8,6 V; I_i = 210 mA; P_i = 0,5 W; C_i = 0,5 µF; L_i = 0 mH;
U_o = 5,2 V; I_o = 290 mA; P_o = 496 mW; C_o = 60 µF; L_o = 0,3 mH; Lo/Ro = 50 µH/Ω.

RS232 circuit (Data Interface Connector, pins A/J/K/N/M, or SUB-D connector pins 2/3/4/5/8):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
U_i = 12,6 V* / 25,2 V**; I_i = 328 mA***; P_i = any; C_i = 2,2 nF* / 0,5 nF **; L_i = 0 mH;
U_o = 10,0 V* / 20 V**; I_o = 101 mA***; P_o = 253 mW; C_o = 3 µF* / 217 nF**; L_o = 3 mH;
L_o/R_o = 140µH/Ω;
*: versus ground **: between lines ***: resistively limited

Form 100
Version 4 (2013-02)

DEKRA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate DEKRA 12ATEX0180 X** Issue No. **1**

Digital I/O signals (Data Interface Connector, pins G/F/E/D/O/M, or SUB-D Connector pins 9/5): in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
U_i = 8,6 V; I_i = any; P_i = any; C_i = 0 nF; L_i = 0 mH;
U_o = 6,0V; I_o = 45 mA***; P_o = 67 mW; C_o = 40 µF; L_o = 20 mH; L_o/R_o = 530 µH/Ω.
***: resistively limited

All intrinsic safe signals are directly connected with the earthed metal enclosure.

Installation instructions

The instructions provided by the manufacturer shall be followed in detail to assure safe operation of the equipment.

(16) **Test Report**

No. NL/DEK/ExTR12.0049/**.

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

Electrostatic charges shall be avoided.

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

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

(19) **Test documentation**

As listed in Test Report No. NL/DEK/ExTR12.0049/**.

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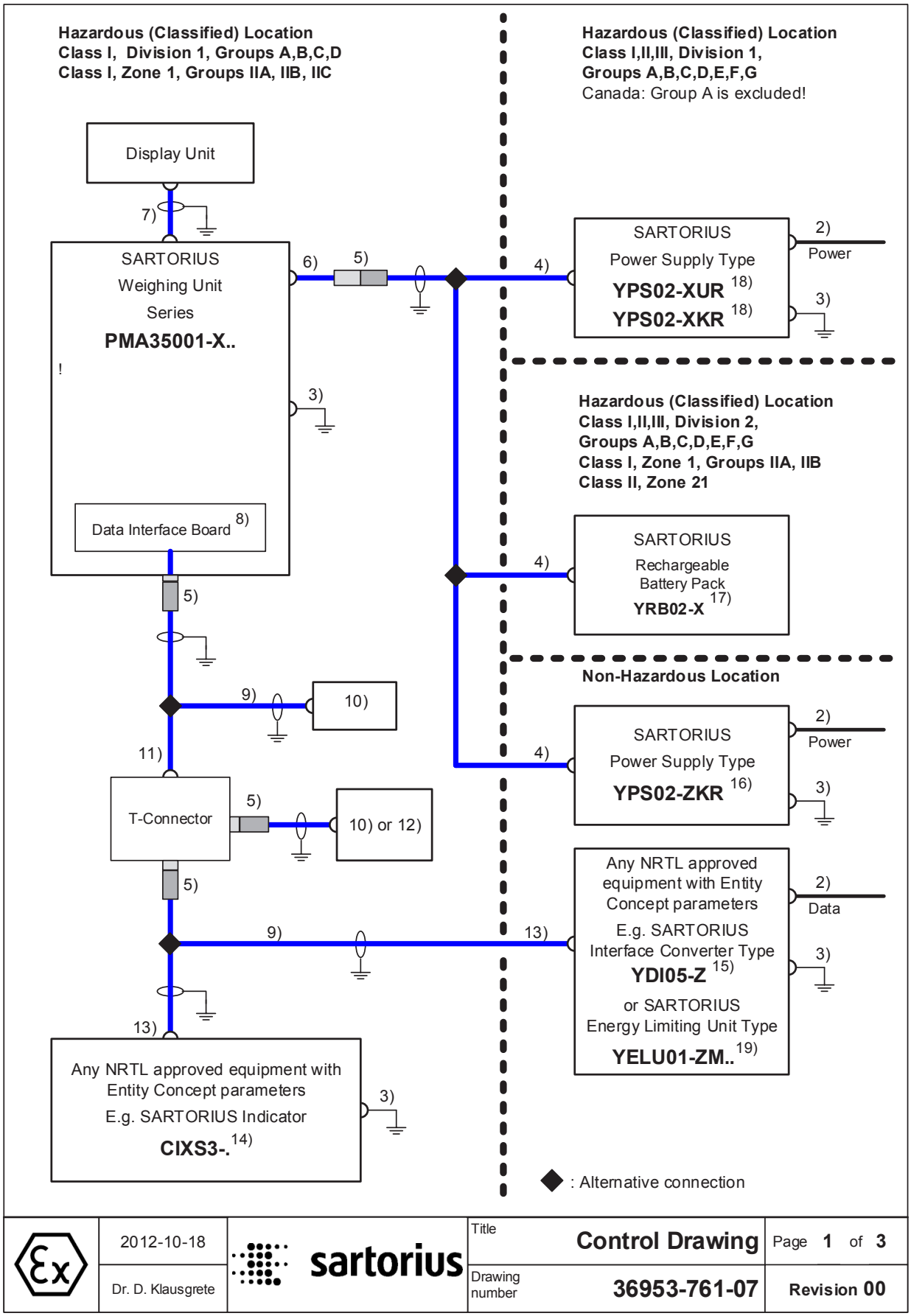
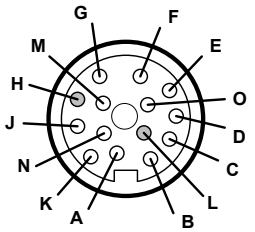


Ex	2012-10-18	sartorius	Title: Control Drawing	Page 1 of 3
	Dr. D. Klausgrete		Drawing number: 36953-761-07	Revision 00

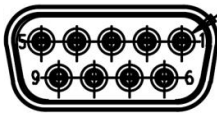
Data Interface of the PMA35001-X..

RS232 + Digital I/Os	RS422	RS485 + Digital I/Os	Pin 14pin Round connector	Pin 9pin D-SUB connector
CTS	GND	GND	A	8
RxD	GND	TxD-RxD_P	J	2
TxD	TxD_N	TxD_RxD_N	K	3
DTR	TxD_P	---	N	4
GND	DRT_P	GND	C	5
GND	RxD_N	GND	M	
GND	DTR_N	GND	B	
UNI_IN	---	UNI_IN	O	9
SET	---	SET	D	
PAR	CTS_N	PAR	E	
MIN	CTS_P	MIN	F	
MAJ	RxD_P	MAJ	G	

14pin female connector in IP65:



9 pin female D-SUB connector:



Input parameters (combined circuits):

	Ui	Ii	Pi	Ci	Li
RS232	12.6 V* 25.2 V**	328 mA***	any	2.2 nF*/0.5nF**	0 mH
RS422	8.6 V	210 mA	0.5 W	0.5 µF	0 mH
RS485	see below	see below	any	260 nF	0 mH
Digital I/Os	8.6 V	any	any	0 µF	0 mH

*: versus ground; **: between the lines; ***: resistively limited

RS485 (Rmin = Ui / Ii is the minimum output resistance of the combined circuits of the equipment connected to the PMA35001-X..):

Ui	±12.4V	12.0V	7.2V
Ii	130 mA***	164mA***	any
Rmin	95Ω	73Ω	any

Output parameters (combined circuits):

	Uo	Io	Po	Co	Lo	Lo/Ro
RS232	10.0 V*	101 mA***	253 mW	3 µF*	3 mH	140µH/Ω
	20.0 V**			217 nF**		
RS422	5.2 V	290 mA	496 mW	60 µF	300 µH	50µH/Ω
RS485	5.2 V	210 mA***	263 mW	60 µF	600 µH	125 µH/Ω
Digital I/Os	6.0 V	45 mA***	67 mW	40 µF	20 mH	530 µH/Ω

*: versus ground; **: between the lines; ***: resistively limited

	2012-10-18	sartorius	Title: **Control Drawing**	Page **2** of **3**
	Dr. D. Klausgrete		Drawing number: **36953-761-07**	**Revision 00**

Notes

1) In the **USA**: The installation must be in accordance with the National Electrical Code®, NFPA 70, Article 504 or 505 and ANSI / ISA-RP 12.6.

   In **Canada**: The installation must be in accordance with the Canadian Electrical Code®, Part1, Section 18.

2) The apparatus must not be connected to any device that uses or generates in excess of 250Vrms or DC.

   U_m = 250V.

3) In the **USA**: The Apparatus must be connected to a suitable ground electrode per National Electrical Code®, NFPA 70, Article 504 or 505. The resistance of the ground pad must be less than 1 ohm.

   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) Connection by non interchangeable cable type LiYC-Y-CY 4 x 0.5; max length: 50m (164 ft).

5) Connection by means of polarized connector outside of the indicator.

6) Connection by non interchangeable cable type LiYC-Y-CY 4 x 0.5; max length: 0.5m (1.6 ft).

7) The cable must be protected against damage.

8) The circuits of the data output interface shall be assumed to be connected to earth.

9) The cable needs not be protected against damage.

10) Equipment with metallic housing (IP4x in minimum) and passive wiring, only. For use in Class II,III, Division 1 and in Zone 21 the housing must be IP6x.

11) The cable to the T-Connector must be protected against damage.

12) Any NRTL approved equipment with Entity Concept parameters (see note 12)

13) 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.

    For the input and output parameters of the data interface of the PMA35001-X... see page 2.

14) The Sartorius Indicator Series CIXS3-. is approved/certified by FM for use in the USA and in Canada. See Certificate of Compliance and Control Drawing number 65607-000-07-A4.

15) The Sartorius Interface Converter YDI05-Z.. is approved/certified by FM for use in the USA and in Canada. See Certificate of Compliance and Control Drawing number 65710-800-07-A4.

16) The Sartorius Power Supply Model YPS02-ZKR is approved/certified by FM for use in the USA and in Canada. See Certificate of Compliance and Control Drawing number 65501-000-17.

17) The Sartorius rechargeable battery pack YRB02-X is approved/certified by FM for use in the USA and in Canada. See Certificate of Compliance and Control Drawing number 65656-000-07-A4.

18) The Sartorius Power Supply Model YPS02-XUR is approved by FM for use in the USA. The Sartorius Power Supply Model YPS02-XKR is certified by CSA for use in Canada. See Certificate of Compliance and Control Drawing number 65516-000-17.

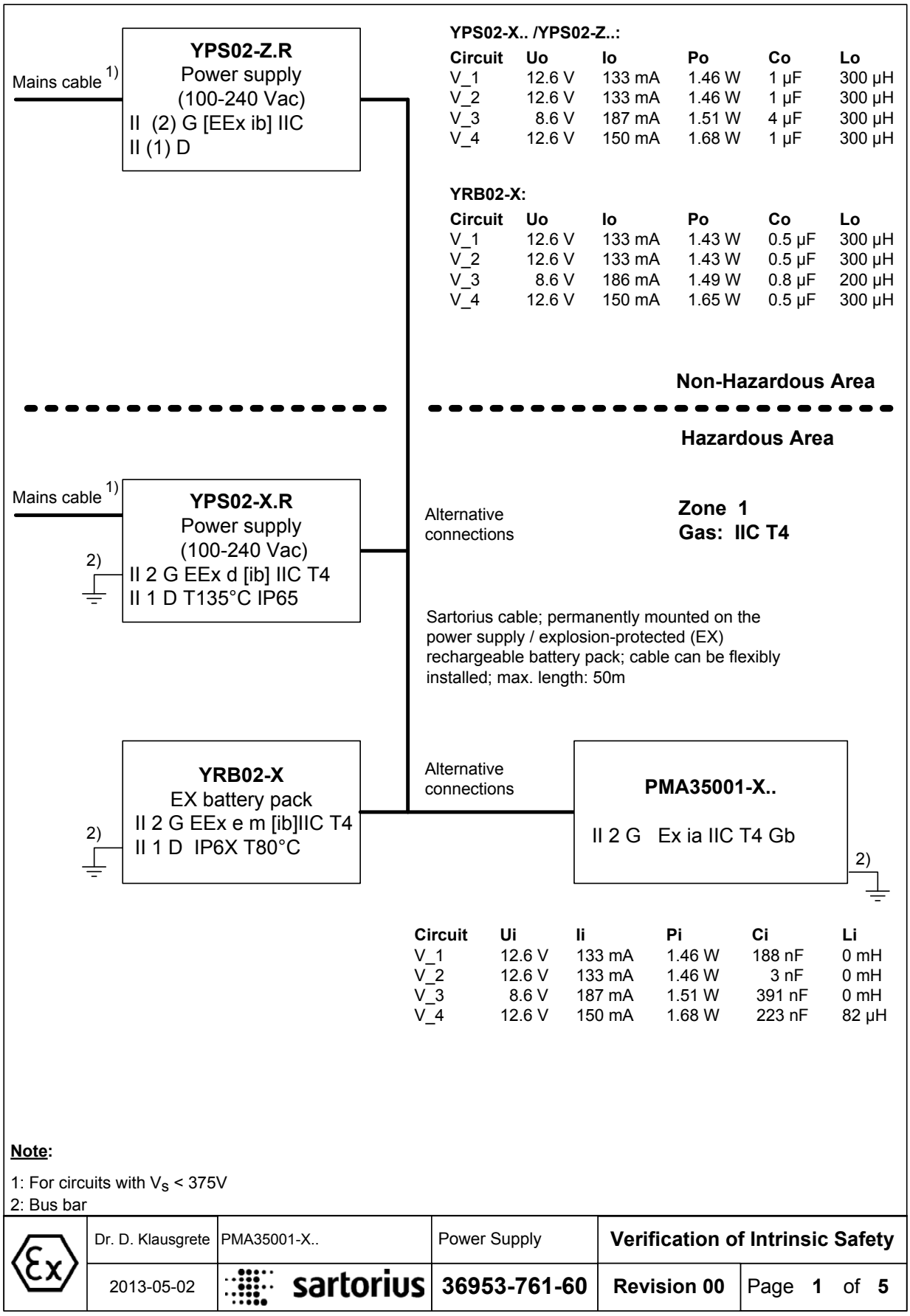
19) The Sartorius Energy Limiting Unit Type YELU01-ZM.. is approved/certified by FM for use in the USA and in Canada. See Certificate of Compliance and Control Drawing number 98864-000-07.

20) Ambient temperature range: -10°C .... +40°C (14°F .... +104°F) The temperature class for gases of the SIWXS...-3-..-... / ISXS...-3-..-...is T4. The maximum surface temperature for dusts of the SIWXS...-3-..-... / ISXS...-3-..-...is 80°C (176°F).

21) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

    AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

Ex	2012-10-18	sartorius	Title **Control Drawing**	Page **3** of **3**
	Dr. D. Klausgrete		Drawing number **36953-761-07**	**Revision 00**



YPS02-X.. /YPS02-Z..:

Circuit	Uo	Io	Po	Co	Lo
V_1	12.6 V	133 mA	1.46 W	1 µF	300 µH
V_2	12.6 V	133 mA	1.46 W	1 µF	300 µH
V_3	8.6 V	187 mA	1.51 W	4 µF	300 µH
V_4	12.6 V	150 mA	1.68 W	1 µF	300 µH

YRB02-X:

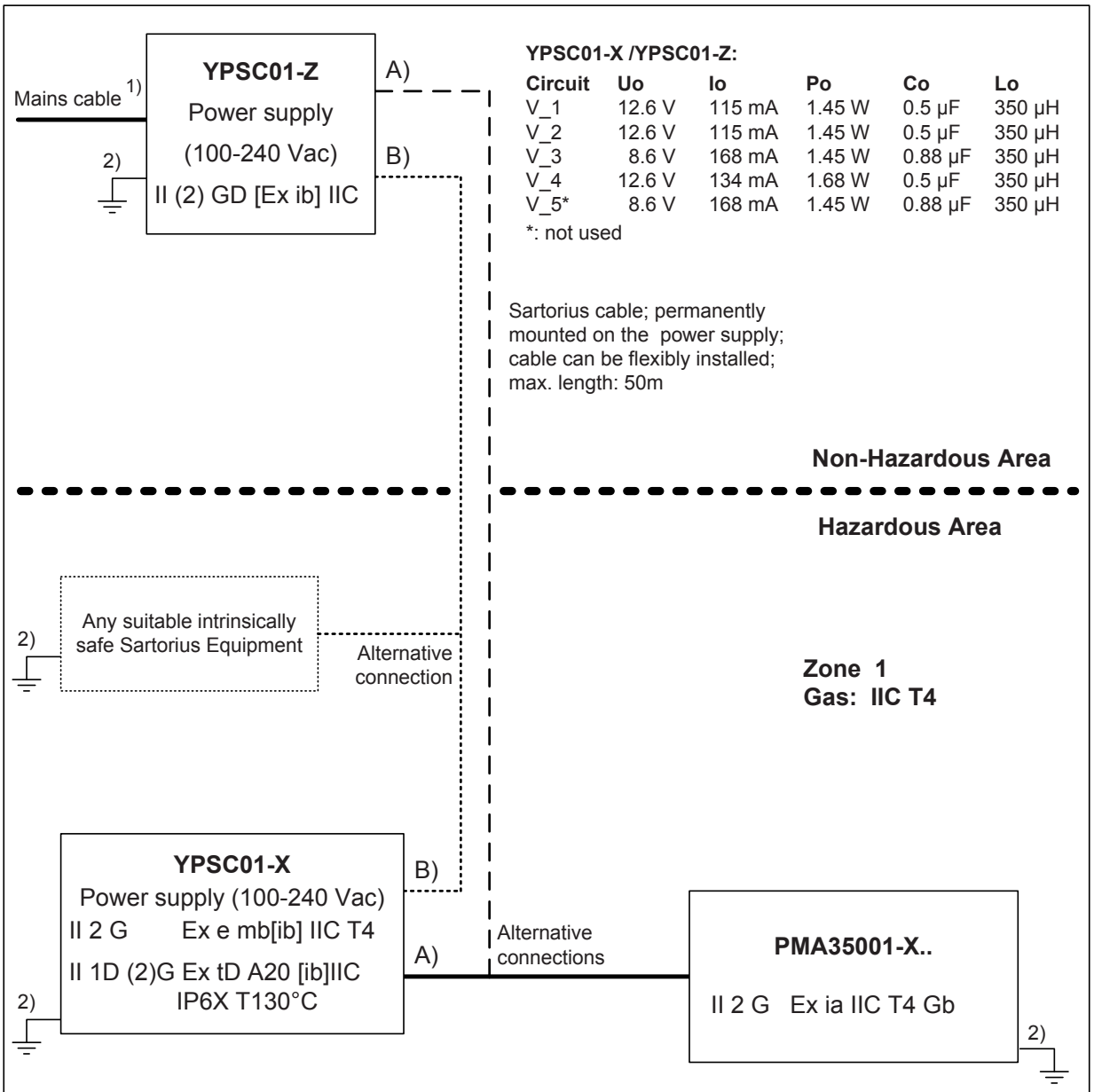
Circuit	Uo	Io	Po	Co	Lo
V_1	12.6 V	133 mA	1.43 W	0.5 µF	300 µH
V_2	12.6 V	133 mA	1.43 W	0.5 µF	300 µH
V_3	8.6 V	186 mA	1.49 W	0.8 µF	200 µH
V_4	12.6 V	150 mA	1.65 W	0.5 µF	300 µH

Circuit	Ui	Ii	Pi	Ci	Li
V_1	12.6 V	133 mA	1.46 W	188 nF	0 mH
V_2	12.6 V	133 mA	1.46 W	3 nF	0 mH
V_3	8.6 V	187 mA	1.51 W	391 nF	0 mH
V_4	12.6 V	150 mA	1.68 W	223 nF	82 µH

Note:

1: For circuits with V_S < 375V
2: Bus bar

Ex	Dr. D. Klausgrete	PMA35001-X..	Power Supply	**Verification of Intrinsic Safety**	
	2013-05-02	sartorius	**36953-761-60**	**Revision 00**	Page **1** of **5**



Note:

1: For circuits with V_S < 375V
2: Bus bar
A: Connection to main printed circuit board (PCB) 1 in YPSC01-.
B: Connection to main PCB 2 in YPSC01-.

Ex	Dr. D. Klausgrete	PMA35001-X..	Power Supply	**Verification of Intrinsic Safety**	
	2013-05-02	sartorius	**36953-761-60**	**Revision 00**	Page **2** of **5**

YDI05-Z.. interface converter
II (2) GD [EEx ib] IIC or

Z966 Zener barrier [4]
in YDI02-Z..: II (2) G [EEx ib] IIC or

YCO01-Y interface converter
II (2) GD [EEx ib] IIC or
II 3 (2)GD EEx nR[ib]IIC T4

YDI05-Z.. [2]

Uo	12.4 V*	Ui	12.6 V*
	24.8 V**		25.2 V**
Io	260 mA***	Ii	any
Po	800 mW	Pi	any
Co	1.24 µF*	Ci	0
	112 nF**		
Lo	400 µH*	Li	0
	400 µH**		
Lo/Ro	44 µH/Ω* / 22 µH/Ω**		

Z966 [1] pins A/J/K/N and M

Uo	12 V*
	24 V**
Io	82 mA /164 mA [8]
Po	0.24 W / 0.48 W [8]
Co	1.41 µF*
	125 nF**
Lo	5.52 mH
	1.38 mH[8]
Lo/Ro	147 µH/Ω
	57 µH/Ω [8]

YCO01-Y [2]

Uo	11.8 V*	Ui	12.6 V*
	23.6V**		25.2 V**
Io	123 mA***	Ii	131 mA
Po	361 mW	Pi	any
Co	1.5 µF*	Ci	0.5 nF
	129 nF**		
Lo	2 mH*	Li	0.8 µH
	2 mH**		
Lo/Ro	98 µH/Ω* / 98µH/Ω**		

Non-Hazardous Area

Hazardous Area

Zone 1
Gas: IIC T4

RS232 data interface
(pins A/J/K/N and M)[1]

Ui	12.6 V	Uo	12.6 V
Ii	85 mA	Io	28 mA
Pi	270 mW	Po	88 mW
Ci	3 nF	Co	1.15 µF
Li	0	Lo	50 mH

6-wire standard cable, up to 0.5mm² stranded wire, with max. 250nF/km, 750µH/km and minimum 34ohm/km has 22µH/ohm. However, the length of the cable (**flexibly installed**) is limited to **under 25m** by the RS-232 specifications. 6-wire cable, type PR6136 (Lmax = 1.1mH/km; Cmax = 220nF/km; Rmin = 26 ohms/km: 43µH/ohm): under 25m (see above).

FC/FCA/IS.....-.X.. [3]
scale / weighing platform
(see remark 5 on page 3)

Alternative connection

PMA35001-X..

II 2 G Ex ia IIC T4 Gb

RS232 data interface [2] **COM1**

Ui	12.6 V* / 25,2V**	Uo	10 V* / 20V**
Ii	328 mA***	Io	101 mA***
Pi	any	Po	253 mW
Ci	2.2 nF* / 0.5nF**	Co	3 µF* / 217nF**
Li	0 mH	Lo	3 mH
		Lo/Ro	140 µH/Ω

Note:
1: Per circuit
2: Combined circuits
3: Not all models can be used in zones 20,21,22
4: BAS01ATEX7005; II (1) GD [EEx ia] IIC
5: Both channels connected on Z966
*: Versus GND; **: Between the lines; ***: Resistively limited

Ex	Dr. D. Klausgrete	PMA35001-X..	RS232 Data Interface	**Verification of Intrinsic Safety**	
	2013-05-02	sartorius	**36953-761-60**	**Revision 00**	Page **3** of **5**

YDI05-Z.. interface converter
II (2) GD [EEx ib] IIC or

Z966 Zener barrier [4]
in YDI02-Z..: II (2) G [EEx ib] IIC
or

YCO01-Y interface converter
II (2) GD [EEx ib] IIC or
II 3 (2)GD EEx nR[ib]IIC T4

YDI05-Z.. [2) 3)]

Uo	12.4 V*	Ui	12.6 V*
	24.8V**		25.2 V**
Io	130 mA***	Ii	any
Po	400 mW	Pi	any
Co	1.24 µF*	Ci	0
	112nF**		
Lo	0.4 mH*	Li	0
	0.4 mH**		
Lo/Ro	44 µH/Ω* / 22 µH/Ω**		

Z966 [1)] pins A/J/K/N and M

Uo	12 V*
	24V**
Io	82 mA /164mA [6)]
Po	0.24 W / 0.48W [6)]
Co	1.41 µF*
	125nF**
Lo	5.52 mH
	1.38mH [6)]
Lo/Ro	147 µH/Ω
	57 µH/Ω [6)]

YCO01-Y [2)]

Uo	7.2 V*	Ui	12.6 V*
	8.0 V**		25.2 V**
Io	207 mA***	Ii	1.5 A
Po	330 mW	Pi	2.5 W
Co	13.5 µF*	Ci	1 nF
	8.4 µF**		
Lo	0.7 mH*	Li	1.6 µH
	0.7 mH**		
Lo/Ro	36 µH/Ω* / 36µH/Ω**		

Data cable:
Recommended: Sartorius cable **YCC485-X** with approx. 10µH/ohm and 120pF/m (wire/wire) **up to 1000m flexibly installed**.

Non-Hazardous Area

Hazardous Area

Zone 1
Gas: IIC T4

RS485 data interface [5) 2)] (**UNICOM**. **LV2**)

Uo	7.2 V	Ui	12.6 V
Io	127 mA*	Ii	1.5 A*
Po	0.273 W	Pi	2.5 W
Co	11.3 µF	Ci	0
Lo	2 mH	Li	2 µH
Lo/Ro	118 µH/ohm		

RS485 data interface [5) 2)] (**LV4**)

Uo	7.2 V [3)]	Ui	12.6 V
	8.2 V [4)]		
Io	168 mA*	Ii	1.5 A*
Po	0.25 W	Pi	2.5 W
Co	13 µF [3)]	Ci	300 nF [3)]
Co	7.6 µF [4)]	Ci	100 nF [4)]
Lo	0.8 mH	Li	0 mH
Lo/Ro	118 µH/ohm		

Up to 7 additional **CIXS3** or **SIWS… / ISXS...** [3)]

PMA35001-X..

II 2 G Ex ia IIC T4 Gb

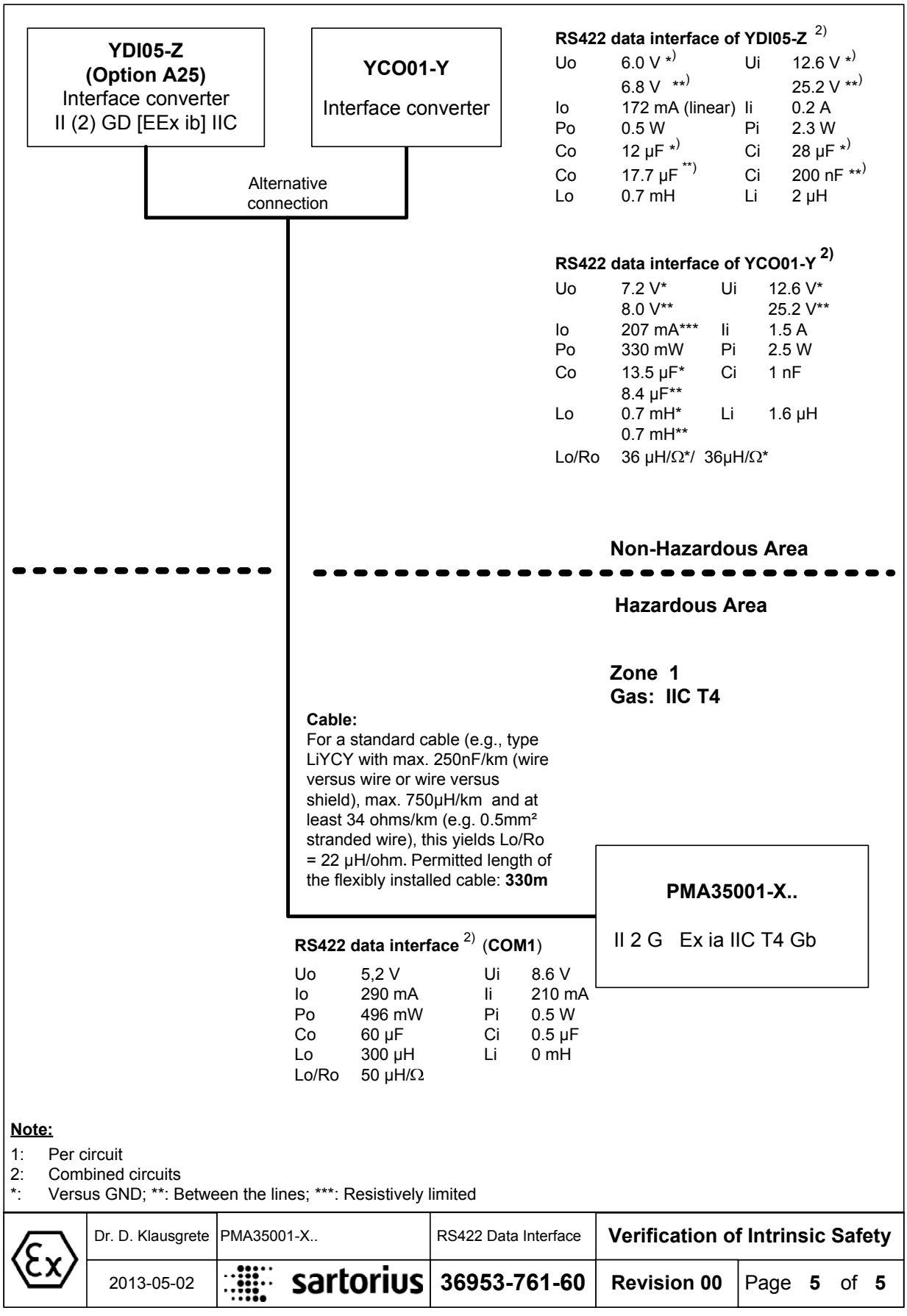
RS485 data interface [2)]

Ui	see below	Uo	5.2 V
Ii	see bwlow	Io	210 mA***
Pi	any	Po	263 mW
Ci	260 nF	Co	60 µF
Li	0 mH	Lo	600 µH
		Lo/Ro	125 µH/Ω

Ui	±12.4V	12.0V	7.2V
Ii	130 mA***	164mA***	any

Note:
1: Per circuit
2: Combined circuits
3: Only two RS232 connections are used on the YDI05-Z
4: BAS01ATEX7005; II (1) GD [EEx ia] IIC
5: Data for CIXS3
6: Both channels connected on Z966
*: Versus GND; **: Between the lines; ***: Resistively limited

Ex	Dr. D. Klausgrete	PMA35001-X..	RS485 Data Interface	**Verification of Intrinsic Safety**	
	2013-05-02	sartorius	**36953-761-60**	**Revision 00**	Page **4** of **5**



Note:

1: Per circuit
2: Combined circuits
*: Versus GND; **: Between the lines; ***: Resistively limited

Ex	Dr. D. Klausgrete	PMA35001-X..	RS422 Data Interface	**Verification of Intrinsic Safety**	
	2013-05-02	sartorius	**36953-761-60**	**Revision 00**	Page **5** of **5**

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

CERTIFICATE OF COMPLIANCE

HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS

This certificate is issued for the following equipment:

PMA35001-Xab. Weighing Unit.
IS / I / 1 / ABCD / T4 – 36953-761-07; IP4X
I / 1 / Ex ia / IIC / T4 – 36953-761-07; IP4X
Special Condition of Use:
1. Electrostatic charging of the equipment shall be avoided; clean only with a damp cloth.

Equipment Ratings:

PMA35001-X Weighing Unit as Intrinsically Safe for use in Class I, Division 1, Groups A, B, C and D; Class I, Zone 1, Ex ia Group IIC; in accordance with Control Drawing 36953-761-07; Temperature Class T4; Hazardous Indoor Locations over a temperature range of -10°C to +40°C.

FM Approved for:

Sartorius Lab Instruments GmbH & Co. KG
Goettingen, Germany

To verify the availability of the Approved product, please refer to www.approvalguide.com

FM Approvals
Member of the FM Global Group

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

CAN/CSA-C22.2 No. 157-92	2006
CAN/CSA-C22.2 No. 61010-1	2009
CAN/CSA-C22.2 No. 60079-0	2011
CAN/CSA-C22.2 No. 60079-11	2011

Original Project ID: 3047530 Approval Granted: June 19, 2013

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3050637	January 16, 2014		

FM Approvals LLC

J.E. Marquedant
Group Manager, Electrical

16 January 2014
Date

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FM Approvals HLC 6/07 3047530C
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FM Approvals
1151 Boston Providence Turnpike
P.O. Box 9102 Norwood, MA 02062 USA
T: **781 762 4300** F: 781-762-9375 www.fmapprovals.com

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

PMA35001-Xab. Weighing Unit.
IS / I / 1 / ABCD / T4 – 36953-761-07; IP4X
I / 1 / AEx ia / IIC / T4 – 36953-761-07; IP4X
Special Condition of Use:

1. Electrostatic charging of the equipment shall be avoided; clean only with a damp cloth.

Equipment Ratings:

PMA35001-X Weighing Unit as Intrinsically Safe for use in Class I, Division 1, Groups A, B, C and D; Class I, Zone 1, AEx ia Group IIC; in accordance with Control Drawing 36953-761-07; Temperature Class T4; Hazardous Indoor (Classified) Locations over a temperature range of -10°C to +40°C.

FM Approved for:

Sartorius Lab Instruments GmbH & Co. KG
Goettingen, Germany

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

Class 3610	2010
Class 3600	2011
Class 3810	2005
ISA-60079-0	2009
ISA-60079-11	2012

Original Project ID: 3047530 Approval Granted: June 19, 2013

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FM Approvals HLC 6/07 3047530
Page 2 of 2

Sartorius Lab Instruments GmbH & Co. KG
Otto-Brenner-Strasse 20
37079 Goettingen, Germany

Phone: +49.551.308.0
www.sartorius.com

The information and figures contained in these instructions correspond to the version date specified below.
Sartorius reserves the right to make changes to the technology, features, specifications and design of the equipment without notice.
Masculine or feminine forms are used to facilitate legibility in these instructions and always simultaneously denote the other gender as well.

Last updated:
01 | 2020

Printed in the EU on paper bleached without chlorine. | W
Publication No.: WPM6074-e200105