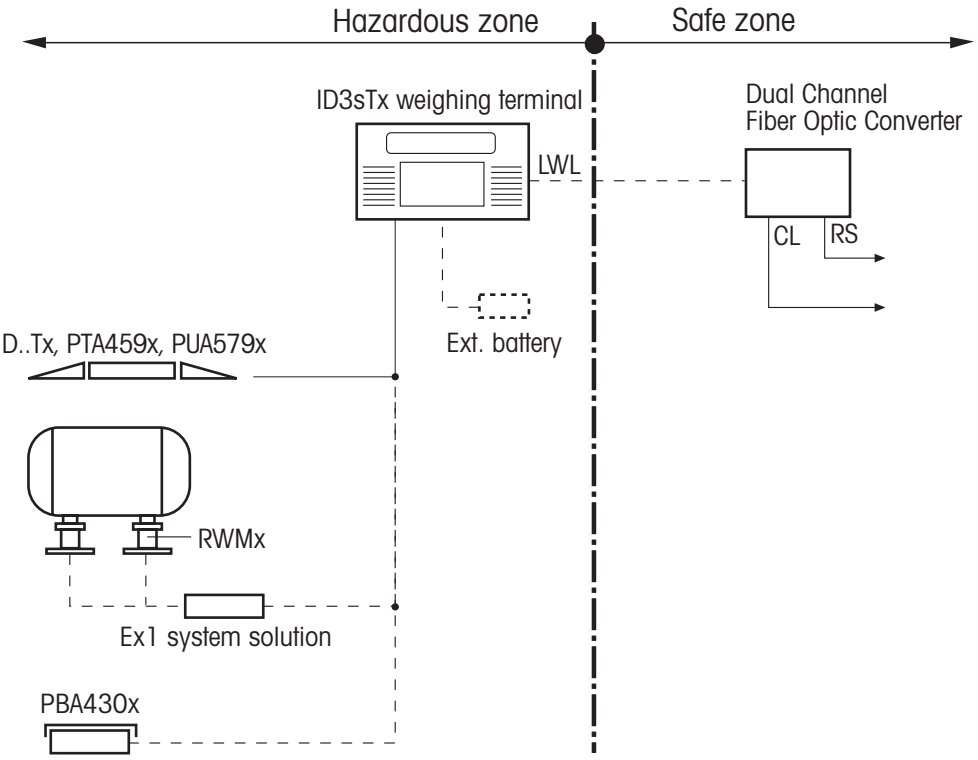
Guide for installers

METTLER TOLEDO MultiRange Explosionsproof weighing system with the ID3sTx weighing terminal



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1 Safety instructions

There is an increased risk of injury and damage when the explosionproof ID3sTx weighing terminal is used in a potentially explosive atmosphere.
Special care must be taken when working in such hazardous areas. The code of practice is oriented to the "Safe Distribution" concept drawn up by METTLER TOLEDO.

Competence

- ▲ The ID3sTx weighing terminal may only be installed, maintained and repaired by authorized METTLER TOLEDO service personnel.
- ▲ The ID3sTx weighing terminal with built-in power supply unit may only be connected or disconnected to/from the mains by a qualified electrician.

Ex approval

- ▲ No modifications may be made to the terminal and no repair work may be performed on the modules. Any weighing platform or system modules that are used must comply with the specifications contained in the installation instructions. Non-compliant equipment jeopardizes the intrinsic safety of the system, cancels the Ex approval and renders any warranty or product liability claims null and void.
- ▲ The safety of a weighing system including the ID3sTx weighing terminal is only guaranteed when the weighing system is operated, installed and maintained in accordance with the respective instructions.
- ▲ Also comply with the following:
  - the instructions for the system modules,
  - the relevant national regulations and standards,
  - the applicable statutory requirements for electrical equipment installed in hazardous atmospheres in the respective country,
  - all instructions related to safety issued by the operator.
- ▲ The explosion-protected weighing system must be checked to ensure compliance with the requirements for safety before being put into service for the first time, following any service work and every 3 years, at least.

Operation

- ▲ Never use protective hoods from other weighing terminals.

Battery operation

- ▲ Always charge the batteries in a safe zone. Install and use METTLER TOLEDO battery chargers in the safe zone. Use the chargers specified by METTLER TOLEDO only.
- ▲ Never try to open or repair batteries. They are intrinsically safe and are irreparable. Recycle defective batteries or dispose of them in the proper manner.

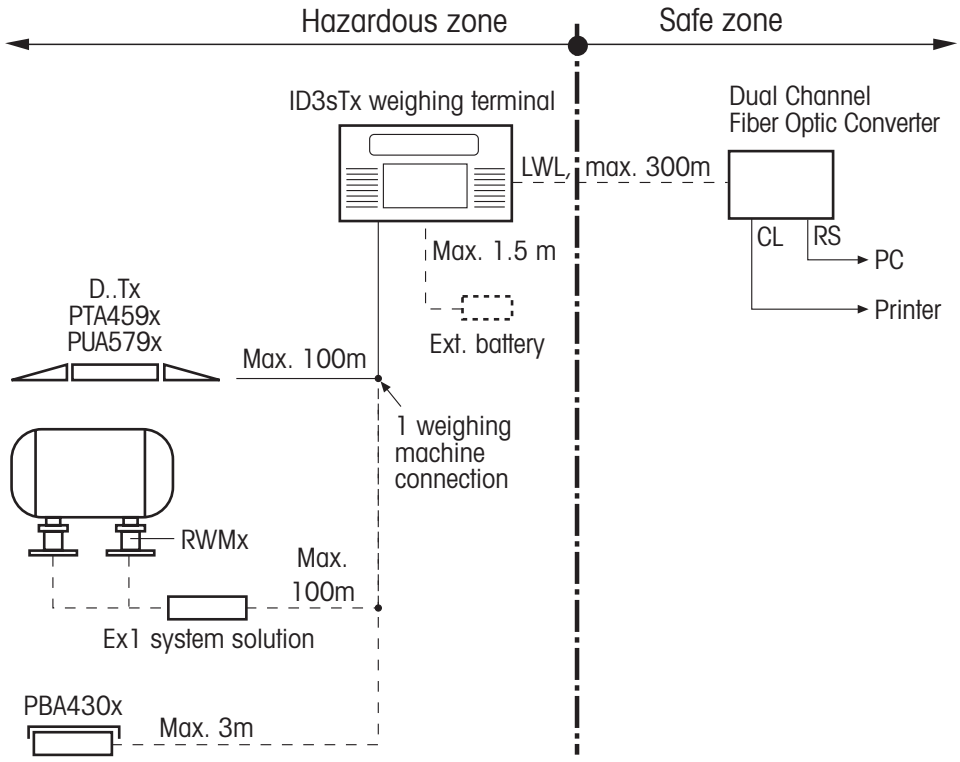
Installation

- ▲ Only install or perform maintenance work on the weighing terminal in the hazardous zone if the following conditions are fulfilled:
  - the operator has issued a permit ("spark permit" or "fire permit"),
  - the area has been rendered safe and the operator's safety coordinator has confirmed that there is no danger,
  - the necessary tools are in position and the operator is wearing any protective clothing that may be required (to prevent the build-up of static electricity).
- ▲ The approval documents (certificates of conformity, manufacturer's declarations) must be available.
- ▲ Only use the cables specified for intrinsically safe circuits by the applicable national regulations and standards to install a weighing system with the ID3sTx weighing terminal.
- ▲ Store cable in such a way as to prevent damage or deterioration.
- ▲ Cable may only be led into the system module enclosure via the earthing cable gland. Ensure that the seals are in their proper positions.
- ▲ If the weighing terminal is used in conjunction with an automatic or manual filling plant, all of the system modules must be equipped with a permanently wired emergency stop circuit, independent of the system circuit, in order to prevent personal injury or damage to other items of equipment.

2 System overview

2.1 The explosionproof weighing system

A weighing system designed for operation in hazardous zones 1 and 21 comprises the following components:



ID3sTx weighing terminal

The weighing terminal designed for use in a potentially explosive atmosphere is characterized by the following features:

- Stainless steel enclosure with large high-contrast liquid-crystal display.
- Numerical keypad to enter default tare values, for example.
- Power supplied by an internal or external battery or an internal power supply unit.
- Up to 2 fiber-optic data interfaces for data communication with peripheral equipment, such as printer, PC or setpoint controller.

Type of protection	II 2 G EEx ib IIC T4 II 2 D IP65 T 50 °C
IP degree of protection	IP65

Intrinsically safe power supply

There are 3 intrinsically safe power supplies to the weighing terminal and weighing platform for the ID3sTx weighing terminal:

Internal battery

Type of protection II 2 G EEx ib IIC T4

When the ID3sTx is used in a zone 21 area, the internal battery may only be operated within the housing of the ID3sTx.

External battery

The terminal is equipped with a 1.5 m cable to enable connection to an external battery.

Type of protection II 2 G EEx ib IIC T4
II 2 D IP65 T 120 °C

Internal AC power supply unit

Type of protection II 2 G EEx m e [ib] IIC T4

Preassembled mains cable 5 m

In a hazardous zone, the terminal must be connected up to the mains in accordance with the applicable national installation regulations.

When the ID3sTx is used in a zone 21 area, the internal AC power supply unit may only be operated within the housing of the ID3sTx.

Weighing platforms ...x

METTLER TOLEDO weighing platforms are available for various maximum loads and readability requirements, equipped with explosionproof extension measuring cells.

Weighing platforms manufactured by other companies may only be connected to the terminal if they fulfil the specifications in the terminal connection diagram at the end of this guide for installers.

DN...Tx, PTA459x, PUA579x

Type of protection II 2 G EEx ia IIC T4
II 2 D IP68 T 80 °C

IP degree of protection IP68

Preassembled cable 5 m long

DB...Tx, DCS...Tx

Type of protection II 2 G EEx ia IIC T4
II 2 D IP67 T 80 °C

IP degree of protection IP67

Preassembled cable 5 m long

PBA430x

Type of protection	II 2 G EEx ia IIC T4	
	II 2 D IP65 T 150 °C	
IP degree of protection	IP68, IP69K	
Preassembled cable	1.5 m	capacity ≤ 30 kg
	2.5 m	capacity ≥ 60 kg

RWM1x (0.5 t / 1 t)

Type of protection	II 2 G EEx ib IIC T6
	II 2 D IP67 T 70 °C
IP degree of protection	IP67
Preassembled cable	5 m long

System solution Ex1 is required for RWM1x. Up to 4 RWMx can be connected to this system solution. Preassembled cable: 5 m long

Dual Channel Fiber Optic Converter

The Dual Channel Fiber Optic Converter has 2 data interfaces; it may only by used in the **safe zone**.
An RS232 or CL terminal is available at each data interface.
The weighing terminal must be equipped with one or two fiber optic data interfaces for data transfer.

3 Installation

EXPLOSION HAZARD
The explosion-protected weighing system must be installed in accordance with the terminal connection diagram at the end of this guide for installers.

3.1 Installing the system modules

1. Install the weighing platform – refer to the operating instructions for the weighing platform.
2. Install the weighing terminal.
3. Install the external battery, where applicable. The battery can be installed permanently – refer to the operating instructions for the dimensions.
4. Install the Dual Channel Fiber Optic Converter in the safe zone, where applicable. The converter can be installed permanently – refer to the operating instructions for the dimensions.

3.2 Connecting the units

Connect the units up in the following order in accordance with the terminal connection diagram:

1. Connect the weighing platform to the weighing terminal.
2. Connect the Dual Channel Fiber Optic Converter, where applicable.
3. Connect the power supply.

Once all units have been connected up

1. Connect up equipotential bonding as described in Section 3.3.
2. Close the weighing terminal in such a way that the cover latches audibly into place at all four corners.

3.2.1 Connecting the weighing platform up to the weighing terminal

CAUTION
Risk of measuring errors

➜ Use only shielded cable for the weighing platform.

➜ Fit connectors onto customer-specific cable as described in Section 3.4.

Weighing platforms with preassembled cable

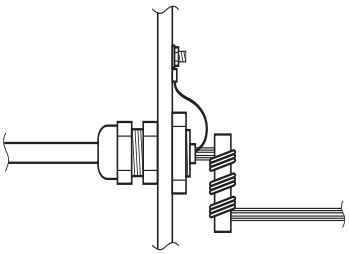
1. Open the weighing terminal.
2. With partially certified scales: Remove the installation cable from the weighing platform terminal.
3. Draw the preassembled weighing platform cable in, making sure that the cable is routed correctly and that the seals are fitted properly.
4. Secure the weighing platform cable in the housing with the pre-mounted cable holders.
5. Connect the cable to the weighing terminal in accordance with the terminal connection diagram.

METTLER TOLEDO weighing platforms without preassembled cable

➜ Remove the load plate from the weighing platform, connect the cable to the junction box in accordance with the terminal connection diagram and replace the load plate.

Comply with the following instructions when using weighing platforms manufactured by other companies

1. Wind the weighing platform cable round the ferrite core three times. Bring the ferrite core as close to the terminal enclosure as possible.
2. Secure the shield cable to the stud bolt. The shield cable must not be routed through the ferrite core!



3.2.2 Connecting the Dual Channel Fiber Optic Converter

The Dual Channel Fiber Optic Converter must be installed in the safe zone.
Only use the power supply unit specified by METTLER TOLEDO.
A weighing system with the Dual Channel Fiber Optic Converter may **not** be operated in a zone 21 area!

EXPLOSION HAZARD

Potentially explosive substances in the hazardous zone may be ignited by intensive incident light radiation. The incident light radiation in a hazardous zone must not exceed 0.4526 mW/mm^2.

➜ Disconnect the weighing terminal from the power supply before connecting the Dual Channel Fiber Optic Converter to the weighing terminal.

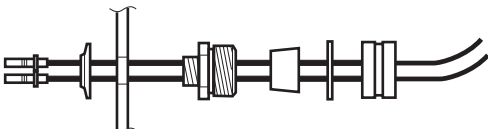
Connecting the fiber-optic cable

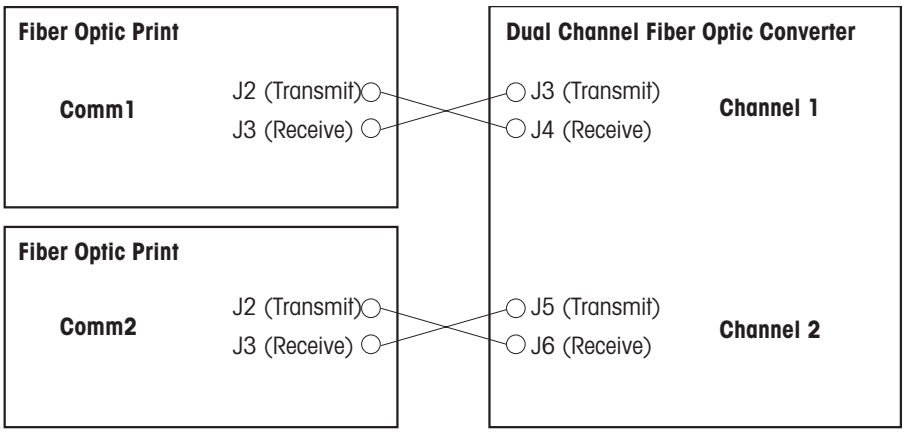
Preassembled METTLER TOLEDO fiber-optic cables are available in various lengths (max. 300 m). Two cables are required for a bi-directional link.

CAUTION

Kinks in fiber-optic cables render them useless!

1. Remove the installation cable from the interface terminal.
2. Draw two fiber-optic cables in, making sure that they are routed correctly without any kinks, and that the seals are fitted properly.
3. Connect the two fiber-optic cables to terminals J2 (Transmit) and J3 (Receive) on the Fiber Optic PCB.
4. Screw-fit the threaded bush to the rear panel of the weighing terminal.
5. Cross the two fiber-optic cables over and connect them to terminals J3 (Transmit) and J4 (Receive). Use terminals J5 (Transmit) and J6 (Receive) accordingly for Channel 2.





3.2.3 Connecting the power supply

Fitting the internal battery

1. Place a charged internal battery in the battery compartment on the right-hand side of the enclosure.
2. Tighten the knurled screws securing the cover of the battery compartment, making sure that the seal is fitted properly.

Connecting the external battery

The weighing terminal is supplied with a 1.5 m long cable to connect it up to an external battery with a bayonet fitting.

1. Connect the bayonet fitting on the battery cable to the charged external battery.
2. Make the equipotential bonding connection.

Connecting the internal power supply unit

EXPLOSION HAZARD

The unit must be connected to the mains by a qualified electrician in accordance with the terminal connection diagram and the applicable national regulations.

3.3 Equipotential bonding

Note

Equipotential bonding must be installed by a qualified electrician authorized by the operating company. The function performed by METTLER TOLEDO Service is of a purely supervisory and advisory nature.

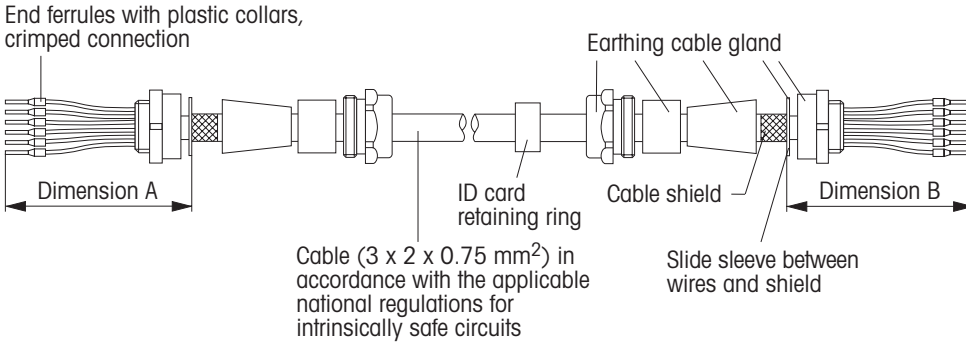
➜ Connect up equipotential bonding (PA) for all items of equipment (ID3sTx, weighing platform, external battery) in accordance with the terminal connection diagram and the applicable national regulations and standards. Ensure that:

- the enclosures of all items of equipment are connected to the same potential via the bonding (PA) terminals,
- no compensating current flows via the shielding on the intrinsically safe cable.

3.4 Fitting connectors on the weighing platform cable

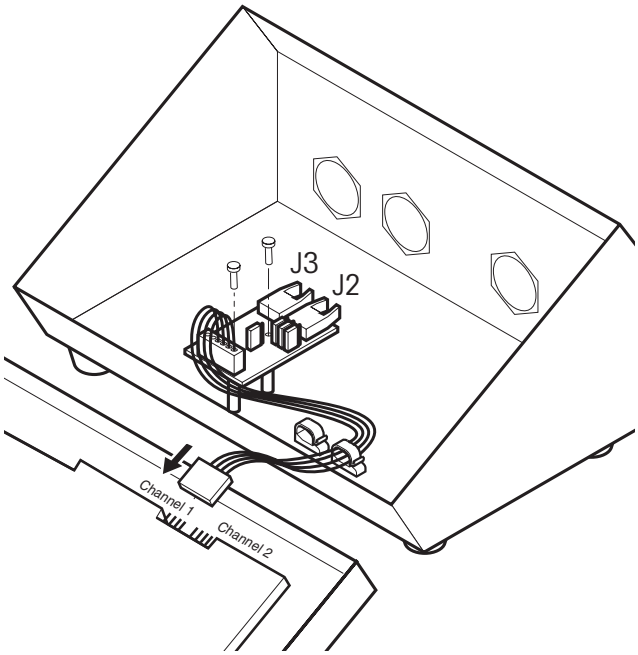
Customer-specific weighing platform cables must be preassembled in the following manner:

Max. length	100	m
Dimension A (ID3sTx)	210	mm
Dimension B (weighing platform)	50	mm



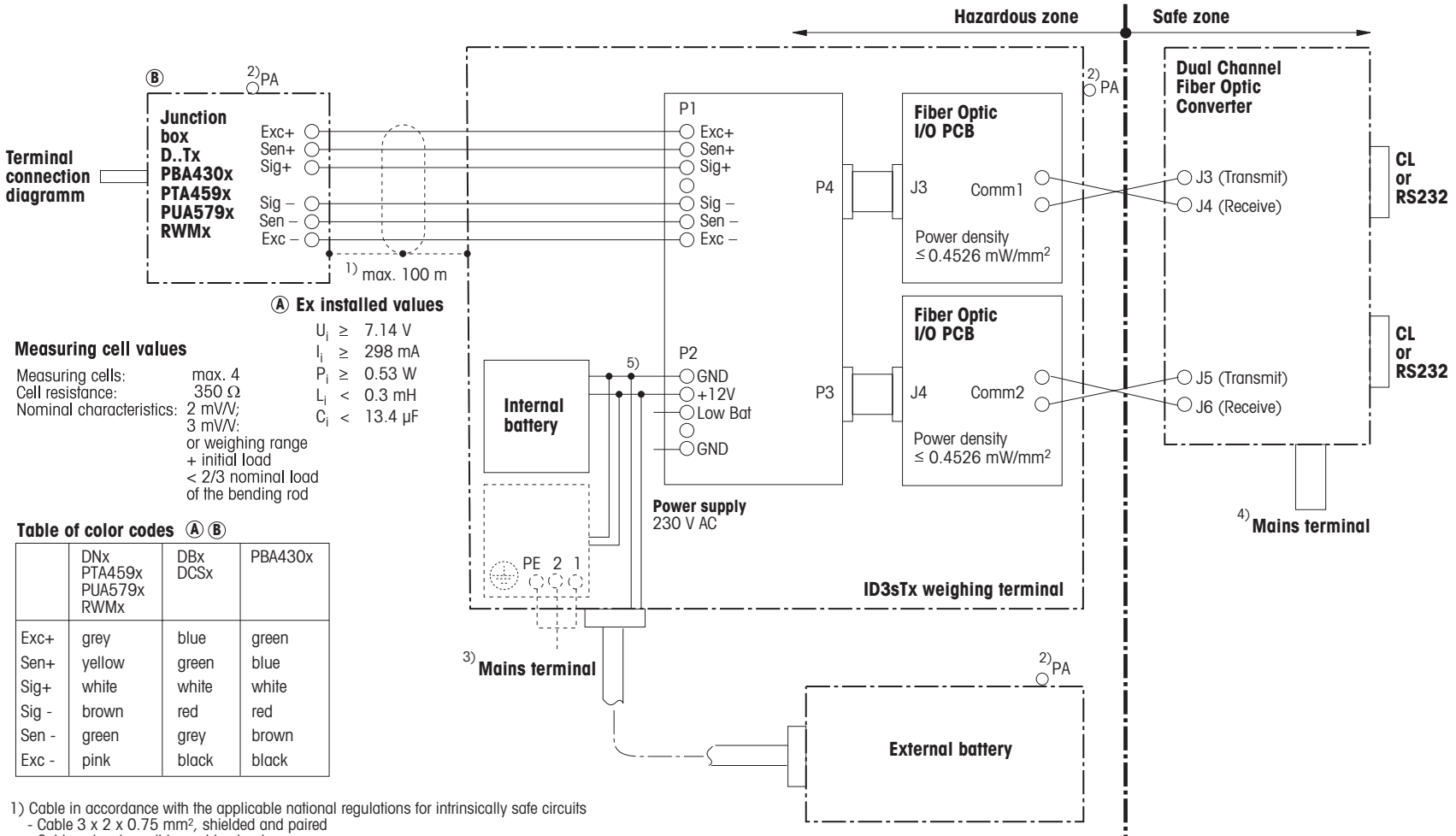
1. Cut the cable to length and strip the ends of the cable according to dimensions A/B.
2. Cut the shield back to 7 mm.
3. Strip the insulation off the ends of the wires.
4. Use a crimping tool to fit ferrules onto the ends of the wires.
5. Slide the three rear parts of the earthing cable gland onto the cable.
6. Slide a sleeve between the wires and the shield, being careful not to damage the insulation on the wires!
7. Slide the front part of the cable gland onto the cable and screw it onto the rear section.

3.5 Installing the Fiber Optic PCB



1. Open the weighing terminal and remove the blanking plug.
2. Fit the Fiber Optic PCB into one of the slots provided and use the screws supplied with the PCB to secure.
3. Connect the Fiber Optic PCB to the main PCB. To do this, connect the lead supplied with the PCB to terminals J1 on the Fiber Optic PCB and to J3 (Channel 1) or J4 (Channel 2) on the main PCB.
4. Connect the fiber-optic cable as described in section 3.2.2.
5. Secure the fiber-optic cable in the housing with the pre-mounted cable holder.

4 Control drawing



	DNx PTA459x PUA579x RWMx	DBx DCSx	PBA430x
Exc+	grey	blue	green
Sen+	yellow	green	blue
Sig+	white	white	white
Sig -	brown	red	red
Sen -	green	grey	brown
Exc -	pink	black	black

1) Cable in accordance with the applicable national regulations for intrinsically safe circuits
   - Cable 3 x 2 x 0.75 mm², shielded and paired
   - Cable entry via earthing cable gland
   - Cable in accordance with Section 3.4 of the Guide for installers
2) Equipotential bonding (PA) connected in accordance with the applicable national regulations. Measures must be taken to ensure that the bonding terminals are used to connect all items of equipment to the same potential. No compensating current may flow via the shielding of the intrinsically safe cable.
3) Power supply 230 V AC mains connection in accordance with the applicable national regulations; refer to the rating plate for information concerning mains voltage and frequency
4) Dual-channel fiber-optic converter mains connection in accordance with the applicable national regulations; refer to the rating plate for information concerning mains voltage and frequency
5) Take the relevant creepage distances and clearances into consideration when installing the 12 V DC lines.

B		05/05	Schultz					
A	/	03/08	Schultz		Datum	Name	Maßstab	Benennung
Ausgabe	Änderung	Datum	Name	Bearb.	05/97	Schultz		ID3sTx terminal connection
				Gepr.	05/97	Schultz		
Ersatz für: /				Ersetzt durch:				
METTLER-TOLEDO				Mettler-Toledo (Albstadt) Waagen und Systeme D-72458 Albstadt				Leitzahl 22000249 A3

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