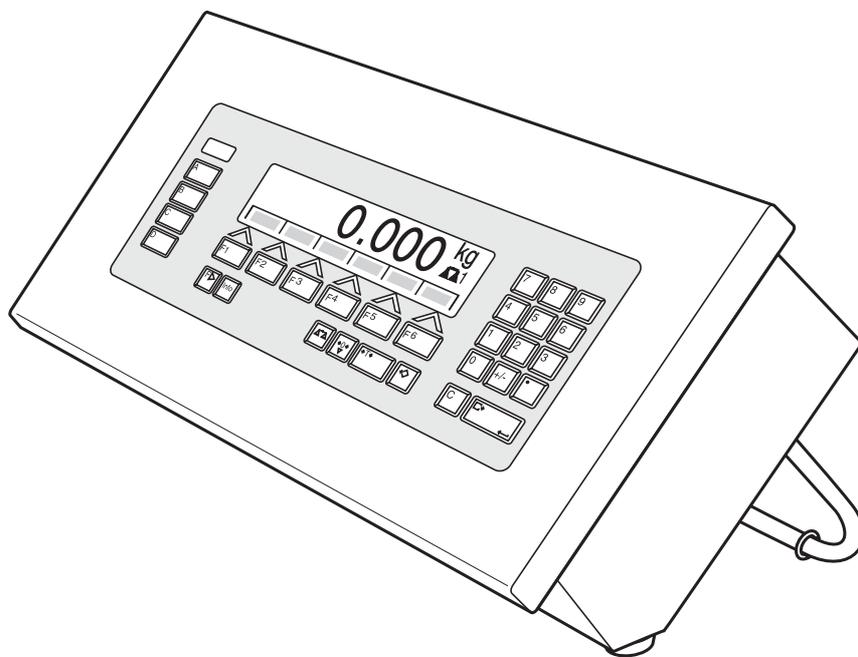


Service manual

**METTLER TOLEDO MultiRange
ID7sx weighing terminal**

METTLER TOLEDO



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1 Safety instructions

1.1 Safety instructions



The ID7sx weighing terminal is approved for use in zone 1 and 21 hazardous areas. It may only be used in areas in which the causes of static electricity build-up, which lead to propagating brush discharges, have been eliminated.

Particular care is required when using weighing systems with the ID7sx weighing terminal in hazardous areas. The code of practice is oriented to the "Safe Distribution" concept drawn up by METTLER TOLEDO.

- Competence** ▲ The weighing system may only be installed, maintained and repaired by authorised METTLER TOLEDO service personnel.
- 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 jeopardises the intrinsic safety of the system, cancels the Ex approval and renders any warranty or product liability claims null and void.
- ▲ The safety of the weighing system 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 regulations and standards in the respective country
 - the statutory requirement for electrical equipment installed in hazardous areas in the respective country
 - all instructions related to safety issued by the owner
- ▲ 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** ▲ Prevent the build-up of static electricity. Always wear suitable working clothes when operating or performing service work in a hazardous area.
- ▲ Do not use protective coverings for the devices.
- ▲ Avoid damage to the system components.

- Installation**
- ▲ Only install or perform maintenance work on the weighing terminal in the hazardous zone if the following conditions are fulfilled:
 - if the intrinsically safe characteristic values and zone approval of the individual components are in accord with one another
 - the owner has issued a permit ("spark permit" or "fire permit")
 - the area has been rendered safe and the owner's safety co-ordinator has confirmed that there is no danger
 - the necessary tools and any required protective clothing are provided (danger of the build-up of static electricity)
 - ▲ The certification papers (conformity certificates, manufacturer's declarations) must be present.
 - ▲ Use only cables for intrinsically-safe circuits in accordance with the applicable country-specific regulations and standards for the installation of a weighing system with the ID7sx weighing terminal.
 - ▲ Lay cables in such a way that they are protected from damage.
 - ▲ Only route cables into the housing of the system modules via the earthing cable gland and ensure proper seating of the seals.
 - ▲ 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.
- Maintenance**
- ▲ Always disconnect the system from the power supply before commencing maintenance work. Where certain inspections, tests or adjustments require the system to remain connected to the power supply, this work must be performed with particular care.
- Service**
- ▲ Service technicians must have attended a product-specific course of training for hazardous-duty equipment.
 - ▲ Service work should be performed outside hazardous zones wherever possible. Service work includes dismantling an Ex device inside the hazardous area and moving it into the safe area.
 - ▲ To avoid accident and injury, turn the weighing terminal off and wait for at least 30 seconds before connecting or disconnecting cables to/from the printed circuit board.
 - ▲ Only use the parts or modules specified in the spare parts list as replacements.

2 Troubleshooting

2.1 Operating errors

Operating errors at the terminal and operating conditions of the weighing platform which lead to inadmissible or impossible weight determination are displayed by the terminal in plain text (see operating instructions of ID7sx weighing terminal).

2.2 Checking voltages

2.2.1 ID7sx mainboard

Note

To check the voltages on the ID7sx mainboard, the back-lit display and keyboard must be connected.

Voltage	Measuring point	Setpoint [V DC]
U 3.9	MP2/MP1 (GND)	3.4 to 4.4
U 6.7	MP3/MP1 (GND)	6.4 to 7.2
U 5.6	MP4/MP1 (GND)	5.1 to 6.1
U 5.1	MP5/MP1 (GND)	4.7 to 5.4
U 3.7	MP6/MP1 (GND)	2.6 to 3.7
U -13.6	MP7/MP1 (GND)	-12.5 to -14.5
U -5.2	MP8/MP1 (GND)	-3 to -10

2.2.2 Scale interface Scale-ID7sx

Note

To check the voltages on the scale interface Scale-ID7sx, the S plug (supply voltage) must be inserted at the module. The W (scale) plug must be unplugged.

Voltage	Measuring point	Setpoint [V DC] TBrick-Ex	Setpoint [V DC] AWU-Ex
U1	W2/W3 (GND)	7.6 to 8.5	11.4 to 12.8
U2	W1/W3 (GND)	11.3 to 12.6	–

2.2.3 Point Ex analog scale interface

Note

To check the voltages on the Point Ex analog scale interface, the S plug (supply voltage) and W plug (scales) must be inserted at the module. The weighing cell connection must also be inserted.

If voltage M1 or M2 is not maintained, check the output values of the supply card or the power supply (current and voltage).

Measuring point	Setpoint [V DC] Point Ex mode
M1, GND	5.5 to 8.7
M2, GND	6.5 to 7.9
M3, GND	5.8 to 6.2
M4, GND	4.8 to 5.2

2.2.4 Interface module CL20mA-ID7sx

Voltage	Measuring point	Setpoint [V DC]
Vcc	MP2/MP1 (GND)	4.8 to 5.3

2.2.5 Interface module RS232-ID7sx

Voltage	Measuring point	Setpoint [V DC]
U _z D1/D2	R.2 – R.1	4.6 to 5.4

2.2.6 Module 8 I/O-ID7sx

Voltage	Measuring point	Setpoint [V DC]
GND – Vcc	MP1 – MP2	4.8 to 5.4

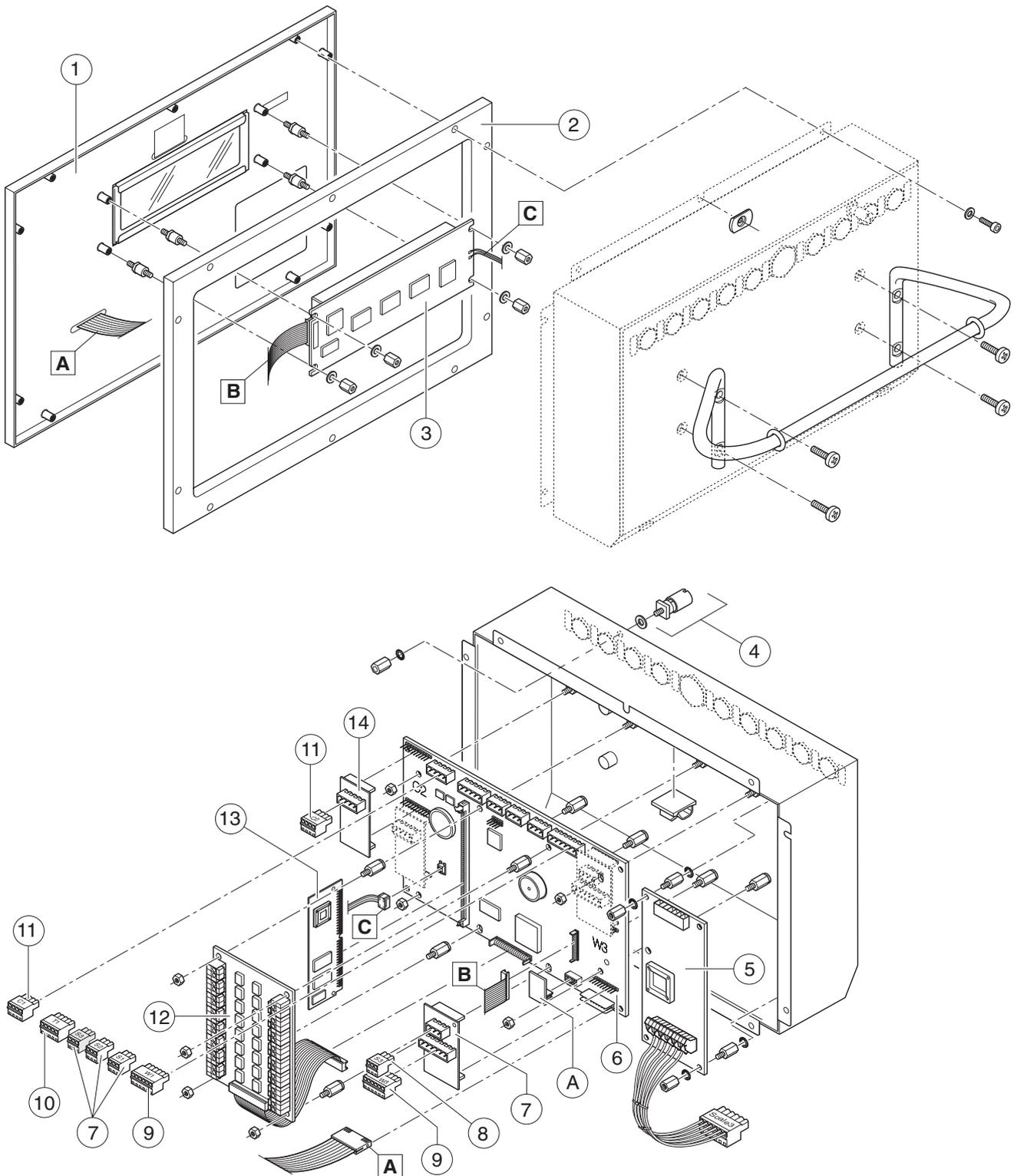
2.3 Faults and their rectification

Fault	Possible causes	Rectification
No display at terminal	<ul style="list-style-type: none"> • Mains voltage not connected • Slotcard ID.sx of PSU/.Ex defective • Display defective • ID7sx PCB defective • Cable to display loose or not inserted • Display turned dark with interface command 	<ul style="list-style-type: none"> → Notify owner's electrician → Measure supply voltage of slotcard ID.sx and the PSU mainboard and replace defective components if necessary → Change display. See Section 4.2 → Change ID7sx PCB. See Section 4.3 → Insert cable properly → Switch on display via interface command
The following appears in the display: "----", or the weight display changes continuously	<ul style="list-style-type: none"> • Transport lock(s) of weighing platform not released • Mechanical system scraping with movement • Unrest on the weighing platform • Analogue voltage for Point Ex too low • Supply card is not in agreement with the weighing electronics of the Point Ex, or the wrong hardware mode is set at the Point Ex 	<ul style="list-style-type: none"> → Release transport lock(s). See operating instructions of the weighing platform → Adjust frame and lever system. See service manual of weighing platform → Eliminate unrest on the weighing platform → Check voltages at Point Ex → Check cabling → Adhere to max. cable lengths → Replace supply card in PSU
Measured value negative despite load	<ul style="list-style-type: none"> • Analog scale improperly connected to Point Ex 	<ul style="list-style-type: none"> → Check connection of weighing cell cable and correct if necessary
Measured value changes too low	<ul style="list-style-type: none"> • Transport lock not released • Mechanical system scraping with movement • Point Ex not yet adjusted 	<ul style="list-style-type: none"> → Release transport lock → Adjust frame and lever system. See service manual of weighing platform → Adjust Point Ex. See service manual of Point Ex
Terminal does not start	<ul style="list-style-type: none"> • Power supply unit faulty 	<ul style="list-style-type: none"> → Check voltage at PSU/.Ex mainboard or PSUx and replace defective components if necessary

Fault	Possible causes	Rectification
No data transfer to measuring cell	<ul style="list-style-type: none"> • Scale interface Scale-ID7sx defective • Ex-i cable defective • Measuring cell faulty 	<ul style="list-style-type: none"> → Check voltages at the scale interface Scale-ID7sx → Replace weighing platform cable → Replace measuring cell (see the service manual of the connected weighing platform)
No entry via membrane keyboard possible	<ul style="list-style-type: none"> • Keyboard cable not inserted or inserted incorrectly • Keyboard faulty • ID7sx PCB defective 	<ul style="list-style-type: none"> → Insert keyboard cable properly → Replace cover → Replace ID7sx PCB
ERROR 0 IDNET	<ul style="list-style-type: none"> • Weighing platform faulty • Ex-i cable (3 x 2 x 0.75 mm²) is defective 	<ul style="list-style-type: none"> → Check weighing platform, repair if necessary or change → Replace weighing platform cable
ERROR 1 IDNET	<ul style="list-style-type: none"> • Software in weighing platform faulty 	<ul style="list-style-type: none"> → Download new software into the measuring cell or change EPROM
PLUG IN	<ul style="list-style-type: none"> • Weighing platform connection not installed properly • Selected weighing platform not connected • Connection cable of weighing platform defective • Measuring cell of weighing platform defective 	<ul style="list-style-type: none"> → Install IDNet-ID7sx module properly. See guide for installers ID7sx → Connect weighing platform. See guide for installers ID7sx → Check weighing platform cable and replace if necessary. See guide for installers ID7sx → Replace measuring cell. See service manual of the weighing platform
WRONG SOFTWARE	<ul style="list-style-type: none"> • Incorrect software loaded 	<ul style="list-style-type: none"> → Load original software → Install the proper software dongle

3 Spare parts

3.1 Exploded drawing



3.2 Spare parts list

Item	Designation	Part number
1	Housing cover, complete with window and keyboard	22 008 501
2	Housing seal	22 008 502
3	LCD	22 008 507
4	Mantle terminal	00 504 664
5	Analog scale interface Point Ex	22 008 543
6	ID7sx mainboard	22 008 508
7	IDNet-ID7sx	22 008 509
9	Spring-force plug, 3-pin, 10 pcs.	22 008 503
9	Spring-force plug, 6-pin, 10 pcs.	22 008 506
10	Spring-force plug, 5-pin, 10 pcs.	22 008 505
11	Spring-force plug, 4-pin, 10 pcs.	22 008 504
12	8 I/O-ID7sx	22 008 512
13	Memory-ID7sx	22 008 513
14	Serial interface module CL20mA-ID7sx RS232-ID7sx	22 008 510 22 008 511
A	Software dongle / CD (accessories) Data Dos Form XP	22 008 442 22 008 441 22 008 440

4 Repairs



ATTENTION

- De-energise the system before opening the device.
- Ensure that you are earthed before touching electronic components.
- Always place electronic components on antistatic materials.
- Record customer-specific parameter settings before making repairs or make a backup via ID/PC-Expert. See Section 6.5.

4.1 Opening terminal

4.1.1 Desk version / wall version

1. Loosen the 10 screws on the bottom of the housing cover.
2. Unplug keyboard, display and backlighting cabling from the ID7sx mainboard and remove cover with LCD.

4.1.2 Installation version

1. Open switch cabinet.
2. Loosen 8 screws on the back of the device and turn both housing claws outward.
3. Remove lower housing section and unplug keyboard, display and backlighting cabling from ID7sx mainboard.

4.2 Replacing the display

1. Loosen 4 nuts at display and remove defective display.
2. Insert new display and secure with 4 nuts.

4.3 Replacing mainboard

1. Disconnect all spring-force plugs from mainboard and additional modules.
2. If necessary, remove additional modules and dongle from mainboard.
3. Loosen 8 nuts and remove defective mainboard from the housing.
4. Insert new mainboard and secure with 8 nuts.
5. Reinstall additional modules and dongle on the mainboard if necessary.
6. Reinsert all spring-force plugs on mainboard and additional modules.

4.4 Replacing Point Ex analog scale interface

1. Unplug ST1 plug at Point Ex and disconnect cable at KL1 plug.
2. Loosen fastening nuts and remove lock washers.
3. Insert new Point Ex and secure with two lock washers and two nuts.
4. Reinsert ST1 plug and connect cable to KL1 plug in accordance with terminal diagram ME-22006478.

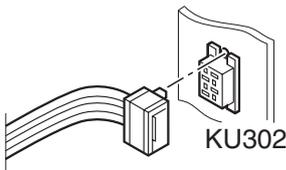
4.5 Closing terminal



ATTENTION

The following must be ensured during installation:

- Ensure proper positioning of seals. Replace damaged seals.
- Ensure proper seating of all plug-in connections. See also guide for installers PSU/..Ex.
- When inserting the backlighting cable, ensure a clean engagement of the plug catch.



4.5.1 Desk version / wall version

1. Insert keyboard, display and backlighting cabling on ID7sx mainboard.
2. Place lower housing section on the cover and secure with 10 screws.

4.5.2 Installation version

1. Insert keyboard, display and backlighting cabling on ID7sx mainboard.
2. Place lower housing section on the cover and hold in place with the housing claws.
3. Secure lower section of housing with 8 screws.
4. For changes to the weighing platform configuration with the verified model, attach additional labels from the inside of the housing cover to the front of the housing cover and secure with slide marks.

5 Checklists

5.1 Maintenance checklist

Visual inspection

- Check condition of the following scale components:
 - Housing
 - Weighing platform
 - Peripherals
- Check condition of the following cables:
 - Supply cable
 - Weighing platform connection cable
 - Data transfer cable (if used)
- Check for protected position of cables.
- For verified scales: Check sealing and slide marks.

Function check

- For verified scales: Check ID code.
- Check functions by making entries via the keyboard (see operating instructions).
- Check settings of the weighing platform (see service manual of the connected weighing platform):
 - Calibration
 - Corner load
 - Linearity
 - Hysteresis
- Check plug-in connections for firm seating:
 - Weighing platform connection
 - Data transfer cable (if used)
 - Peripheral connection (if used)

5.2 Service checklist

Carry out the following check procedure at the terminal and the weighing platform before troubleshooting and after servicing:

At the terminal

- Check for an operating error.
- Check weighing platform connection cable and supply cable.
- Check functions by making entries via the keyboard (see operating instructions).
- Carry out weighing platform test (see operating instructions).
- Run display and keyboard test. See Section 6.3.
- Check all plug-in connections for firm seating.
- Check connected devices.

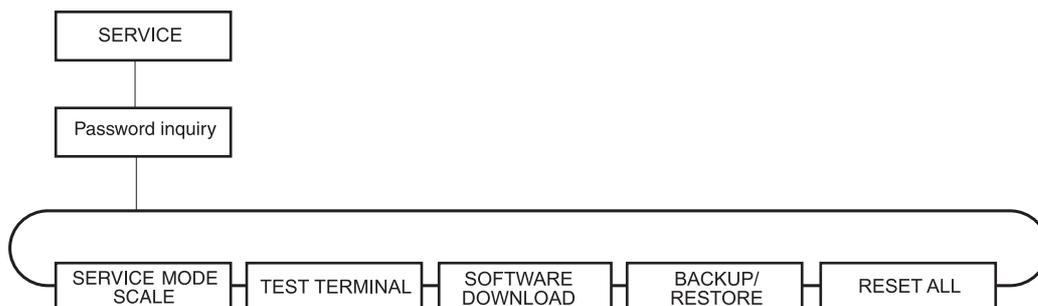
At the weighing platform

- Check that transport locks of the weighing platform have been released properly and are in the correct position (see the service manual of the connected weighing platform).
- Check support of the weighing platform.
- Ensure that the load plate is free and does not touch anything.
- Check maximum load and linearity.
- Check play of all stops and limits.
- Check that the lever system is free on all sides.
- Check knife edges, bearings and flexible bearings.

6 Service mode

6.1 Entering service mode

1. Activate master mode and select SERVICE.
2. Enter password 2481632. The following selection appears:



6.2 SERVICE MODE SCALE

- Select scale and make weighing platform settings. See service mode of the connected weighing platform.

6.3 TEST TERMINAL

1. Activate TEST TERMINAL and press the ENTER key. The terminal runs the first part of the display test.
2. Press ENTER key again. The terminal runs the second part of the display test.
3. Press ENTER key again. The keyboard test is started.
4. Press all displayed keys of the row individually until the name of the current application appears (Base, Data etc.).
5. End the test with the ENTER key.

6.4 SOFTWARE DOWNLOAD – Upgrading application software

Using this function and the METTLER TOLEDO service program ID/PC-Expert, you can load the software updates via the serial interface COM1 of the PSU power supply unit from a computer to the ID7sx.

All information on the connection and operation at the computer is found in the service program ID/PC-Expert.

Note

Always make a backup of the previous software and customer-specific settings before downloading the software. See Section 6.5.

Conditions

- ID7sx connected to PSU.
- Interface module RS232-PSU installed at connector COM1.
- Connection between PSU and PC via an RS/Sub-D cable.

6.4.1 Loading application software**When upgrading**

1. Open terminal. See Section 4.1.
2. Plug in dongle for the application software to be upgraded onto the mainboard and secure with a spacer.
3. Close terminal again. See Section 4.5.

Service mode ID7sx

1. Activate SOFTWARE DOWNLOAD and select TERMINAL.
2. Select interface COM1.
DOWNLOAD ACTIVE appears in the display.

ID/PC Expert

1. Under TERMINAL SETTING ID7sx, select the corresponding Pac and the desired application and confirm with OK.
2. Select the file for download under SOFTWARE DOWNLOAD TERMINAL.
3. Press the START key, select the baud rate 9600 and confirm with OK.
The download process is started.

Loading the software lasts about 10 minutes, after which the ID7sx switches to weighing mode.

Note

The SOFTWARE DOWNLOAD may not be interrupted.

After the software update, the ID7sx checks whether the right software was loaded. For example, only the Form XP software may be loaded for an ID7sx Form XP. If the wrong Pac software was loaded, the error message "WRONG SOFTWARE" appears. In this case:

→ Switch weighing system off and on again and repeat the SOFTWARE DOWNLOAD.

Note

If incorrect Pac software has been loaded, the terminal can nevertheless be operated, however only with the functions of the ID7sx-Base.

6.4.2 Loading scale software

Software can also be loaded via the ID/PC-Expert for weighing platforms of the series K...x-T4, without having to replace the measuring cell.

Requirements for the download

- Only **one** scale is connected to the ID7sx.
- The connected scale must be set to **non verifiable**.
If necessary, adjust setting in SERVICE MODE SCALE accordingly.
A re-verification of verified weighing platforms is necessary with the software download.

- Service mode ID7sx**
1. Activate SOFTWARE DOWNLOAD and select SCALE.
 2. Select interface COM1.
DOWNLOAD ACTIVE appears in the display.

- ID/PC Expert**
1. Select SCALE and confirm with OK.
 2. Select scale type TBrick.
 3. Press the START key, select the baud rate 9600 and confirm with OK.
The download process is started.

Loading the software lasts about 10 minutes, after which the ID7sx switches to weighing mode.

Note

The SOFTWARE DOWNLOAD may not be interrupted.

6.5 BACKUP/RESTORE

Using this function and the METTLER TOLEDO service program ID/PC-Expert, customer-specific settings can be saved to an external computer via the serial interface COM1 of the PSU power supply unit or loaded from there.

The requirements for a software download also apply for a backup/restore. See Section 6.4.

6.5.1 Backup

1. Activate BACKUP/RESTORE BACKUP in the service mode block.
BACKUP ACTIVE appears in the display.
2. Activate BACKUP in the ID/PC-Expert program as well.
ID/PC-Expert saves the current settings of the ID7sx to the PC.
3. Once the save procedure to the PC is complete, enter a file name and path, if necessary, for the backup file.

Once the BACKUP is complete, the ID7sx switches to weighing mode.

6.5.2 Restore

1. Activate RESTORE in the BACKUP/RESTORE service mode block.
RESTORE ACTIVE appears in the display.
2. Activate RESTORE in the ID/PC-Expert program as well.
3. Select file to be loaded to the ID7sx and confirm with ENTER.
ID/PC-Expert saves the settings from the PC to the ID7sx.

Once the RESTORE is complete, the ID7sx switches to weighing mode.

6.6 RESET ALL

This block resets all parameters to the factory setting.



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