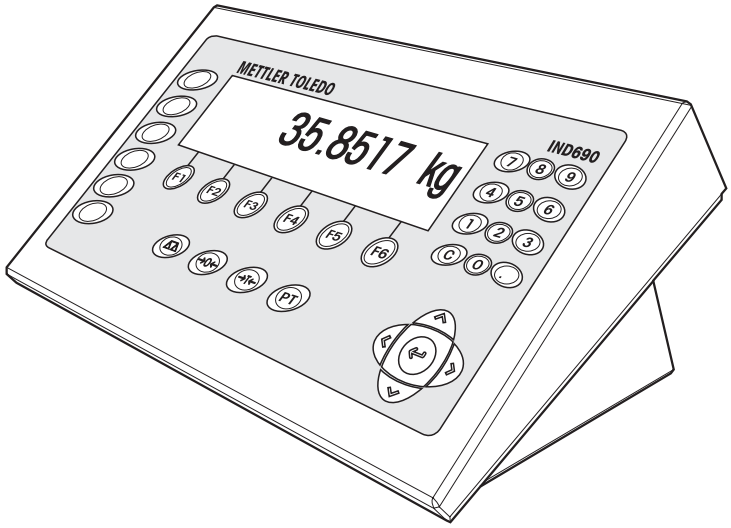
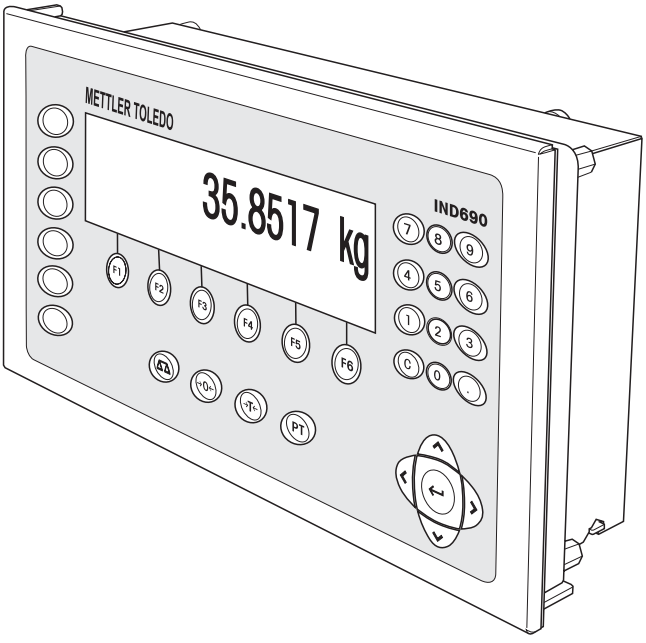
Service manual

METTLER TOLEDO MultiRange

METTLER TOLEDO

IND690 / IND690xx / IND690-24V weighing terminals





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ServiceXXL
Tailored Services

Congratulations on choosing the quality and precision of METTLER TOLEDO. Proper use according to the operating instructions and regular calibration and maintenance by our factory-trained service team ensure dependable and accurate operation, protecting your investment. Contact us about a ServiceXXL agreement tailored to your needs and budget.

We invite you to register your product at www.mt.com/productregistration so we can contact you about enhancements, updates and important notifications concerning your product.

Contents

1 About this service manual

1.1 Versions of the IND690 weighing terminal

Unit versions

This service manual contains all service and repair information for the METTLER TOLEDO IND690 / IND690xx / IND690-24V weighing terminals with all models and applications:

- IND690 desk unit, panel unit
- IND690xx desk unit, panel unit
- IND690-24V desk unit, panel unit

Interfaces

The IND690 / IND690xx / IND690-24V weighing terminals can already be equipped with different interfaces at the factory. Subsequent installation of additional interfaces is described in the IND690 / IND690xx / IND690-24V installation instructions

1.2 Documentation

The IND690-... weighing terminal comes supplied with a CD containing all the documentation on the IND690 weighing system.
This service manual contains all service and repair information for the METTLER TOLEDO IND690 / IND690xx / IND690-24V weighing terminals with all models and applications.
Basic information on working with the IND690 weighing terminal and on the interface settings can be found in the operating instructions IND690-Base.

Exploded drawings and spare parts lists

IND690, IND690xx and IND690-24V differ in a few details.

2 Safety instructions

2.1 General safety precautions

Always observe the following basic safety precautions when performing service work on the IND690 / IND690xx / IND690-24V weighing terminals:

- ▲ Only replace parts or assemblies listed in the spare parts list.
- ▲ Do not conduct repairs on assemblies.
- ▲ Insert internal cables so that no bare primary-side parts of the power supply unit are contacted. The minimum distance amounts to 4 mm.

DANGER

Danger of shock when components on the power supply unit board are touched.

- ➜ Before commencing replacement and installation work:
  - – at the IND690xx de-energize the mains connection or power supply,
  - – at the IND690-24V de-energize the power supply or pull the power plug,
  - – at the IND690 pull the power plug.
- ➜ Before checking, make sure that the power supply unit cover is properly mounted.
- ➜ When the weighing terminal is connected to the mains supply, do not touch parts marked with the symbol on the left.

WARNING

Danger of explosion in the case of improper handling of the battery on the IND690 board.

- ➜ Do not replace battery.
- ➜ Only have boards provided with a battery disposed of by the manufacturer.

2.2 Safety instructions for IND690xx

The explosion-protected IND690xx weighing terminal fulfills Device category 3 and is approved for operation in Zone 2 (gases) and Zone 22 (dusts) hazardous areas.
There is an increased risk of injury and damage when the IND690xx 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 IND690xx weighing terminal, accompanying weighing platforms and accessories may only be installed, maintained and repaired by authorized METTLER TOLEDO service personnel.
- ▲ The mains connection may only be connected or disconnected by the owner's electrician.

Ex approval

- ▲ For the exact specification please refer to the statement of conformity.
- ▲ In order to avoid electrostatic charging the IND690xx may only be installed in rooms or areas at which strong electric field strengths cannot occur from experience.
- ▲ 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 safety of the system, cancels the Ex approval and renders any warranty or product liability claims null and void.
- ▲ The cable glands must be tightened so that a strain relief of ≥ 20 N per mm cable diameter is ensured.
- ▲ When connecting external devices, always observe the maximum permissible connected loads, see installation information. It must be ensured that no voltages are fed into the IND690xx than it itself provides. The interface parameters have to fulfill the standard.
- ▲ Peripheral devices without an Ex approval may only be operating in non-hazardous areas. It must be ensured that no voltages are fed into the IND690xx than it itself provides. In addition the maximum permissible connected loads have to be observed, see installation information. The interface parameters have to fulfill the standard.
- ▲ The safety of a weighing system including the IND690xx 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 regulations and standards in the respective country
  - the statutory requirement for electrical equipment installed in hazardous areas in the respective country, e.g. EN 60079-14 and EN 61241-14
  - all instructions related to safety issued by the owner
- ▲ Before initial start-up and following service work, check the explosion-protected weighing system for the proper condition of all safety-related parts.

Installation and retrofitting

- ▲ Only install or perform maintenance work on the weighing terminal, accompanying weighing platforms and accessories in the hazardous zone if the following conditions are fulfilled:
  - 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).
- ▲ In order to avoid electrostatic charging the IND690xx may only be installed in rooms or areas at which strong electric field strengths cannot occur from experience.
- ▲ The certification papers (certificates, manufacturer's declarations) must be present.
- ▲ Connection values of externally connectable devices and cables of other manufacturers must be known, e.g. capacitances, inductances and current consumption.
- ▲ 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 or METTLER TOLEDO plug and ensure proper seating of the seals. Ensure that the cable shields are connected correctly and that they have a secure connection to the housing.
- ▲ 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.
- ▲ The IND690xx panel unit does not comply with any freedom-from-leaks rating. Therefore the installer is responsible for compliance with the freedom from leaks rating, e.g. at control cabinet installation. For Ex devices at least IP54 is required, in case of conductive dust IP6X.
- ▲ Establish an equipotential bonding.
- ▲ If restricted breathing weighing cells are used, test restricted breathing.
- ▲ If the weighing platforms are installed in a pit, test whether primary explosion protection is required.
- ▲ Do not connect or disconnect plugs until the IND690xx has been de-energized for at least 5 minutes.
- ▲ Cover unused connection sockets with protective caps.
- ▲ Mount the labelling for operation in hazardous areas, see Section 8.
- ▲ After connectors have been mounted, screw on the securing clamps for external connectors.

Operation

▲ Prevent the build-up of static electricity. Therefore:
- only operate the IND690xx in rooms or areas at which strong electric field strengths cannot occur from experience,
- always wear suitable working clothes when operating or performing service work on the system,
- do not rub or wipe off the keyboard surface with a dry cloth or glove.

▲ Do not use protective hoods.

▲ Prevent damage to the weighing terminal. Hairline cracks in the keyboard membrane are also considered damage.

▲ If the IND690xx weighing terminal, accompanying weighing platforms or accessories are damaged:
- Switch off weighing terminal.
- Separate the weighing terminal from the mains in accordance with the applicable regulations.
- Secure the weighing terminal against accidental start-up.

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.

▲ Do not open the device and/or do not connect or disconnect plugs until the IND690xx has been de-energized for at least 5 minutes.

Service

▲ Service technicians must have suitable training for hazardous-duty equipment.

▲ Zone 2 service work should be performed outside hazardous zones wherever possible. With Zone 22 the device may not be opened in an explosive dust atmosphere. Service work includes dismantling an Ex unit inside the hazardous zone and moving it into the safe zone.

▲ To avoid accident and injury, turn the weighing terminal off and wait for at least 5 minutes 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.

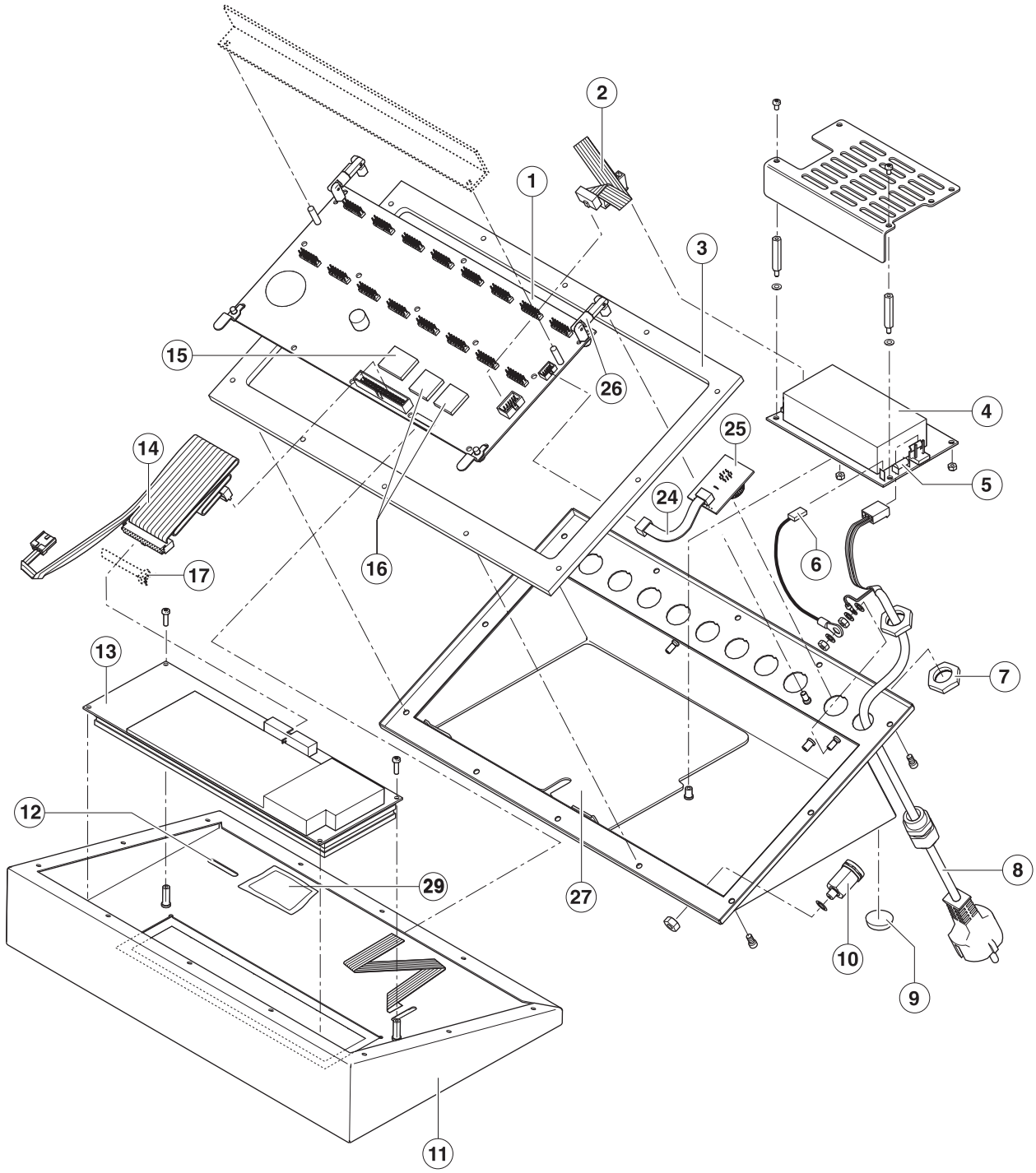
▲ Do not separate connectors until the IND690xx has been de-energized for at least 5 minutes.

3 Spare parts

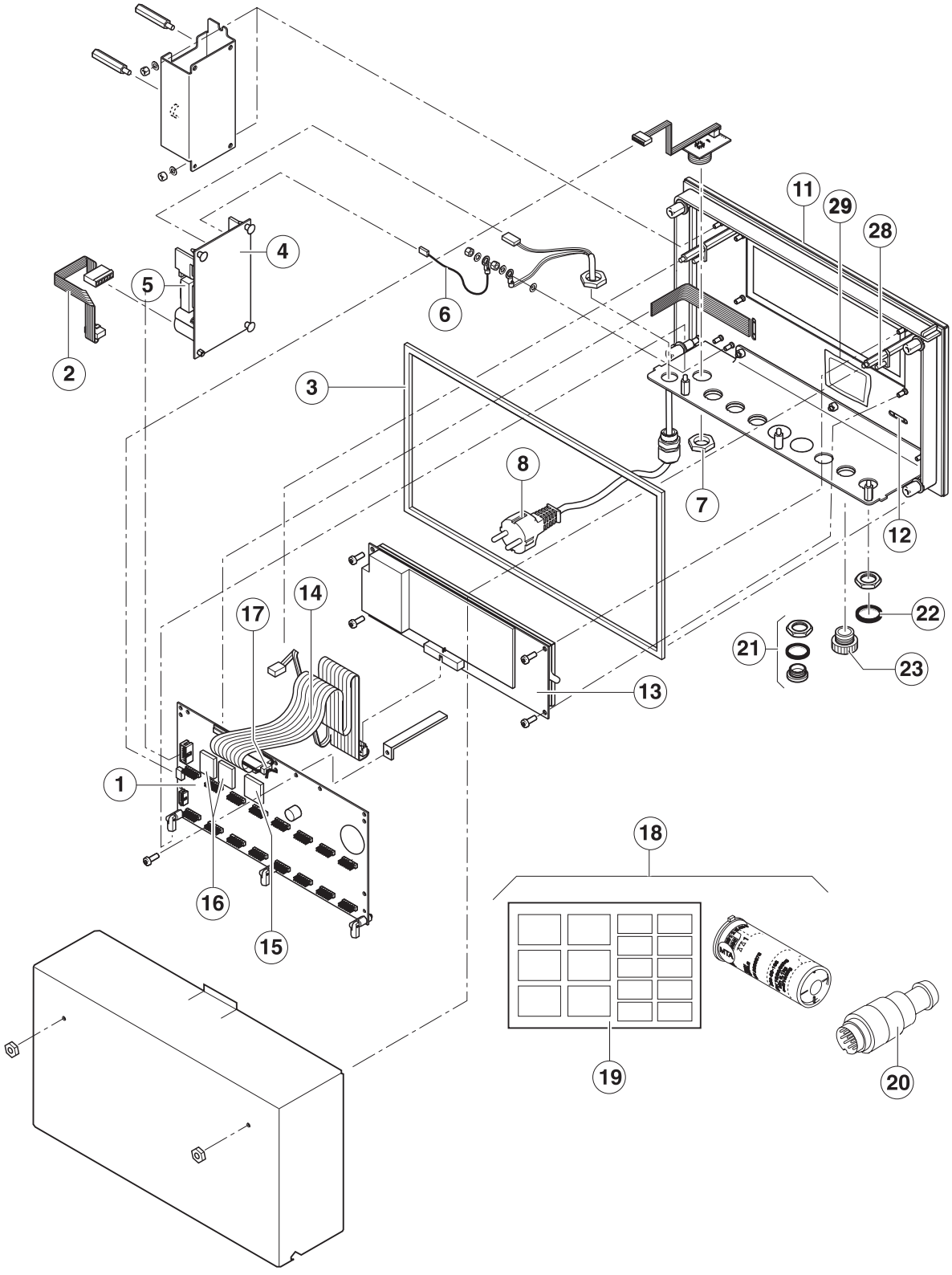
3.1 Exploded view diagrams

3.1.1 Desk unit

Parts that only exist at the IND690xx are indicated with broken lines.



3.1.2 Panel unit



3.2 Spare parts list

Spare parts for IND690xx are printed in bold type.

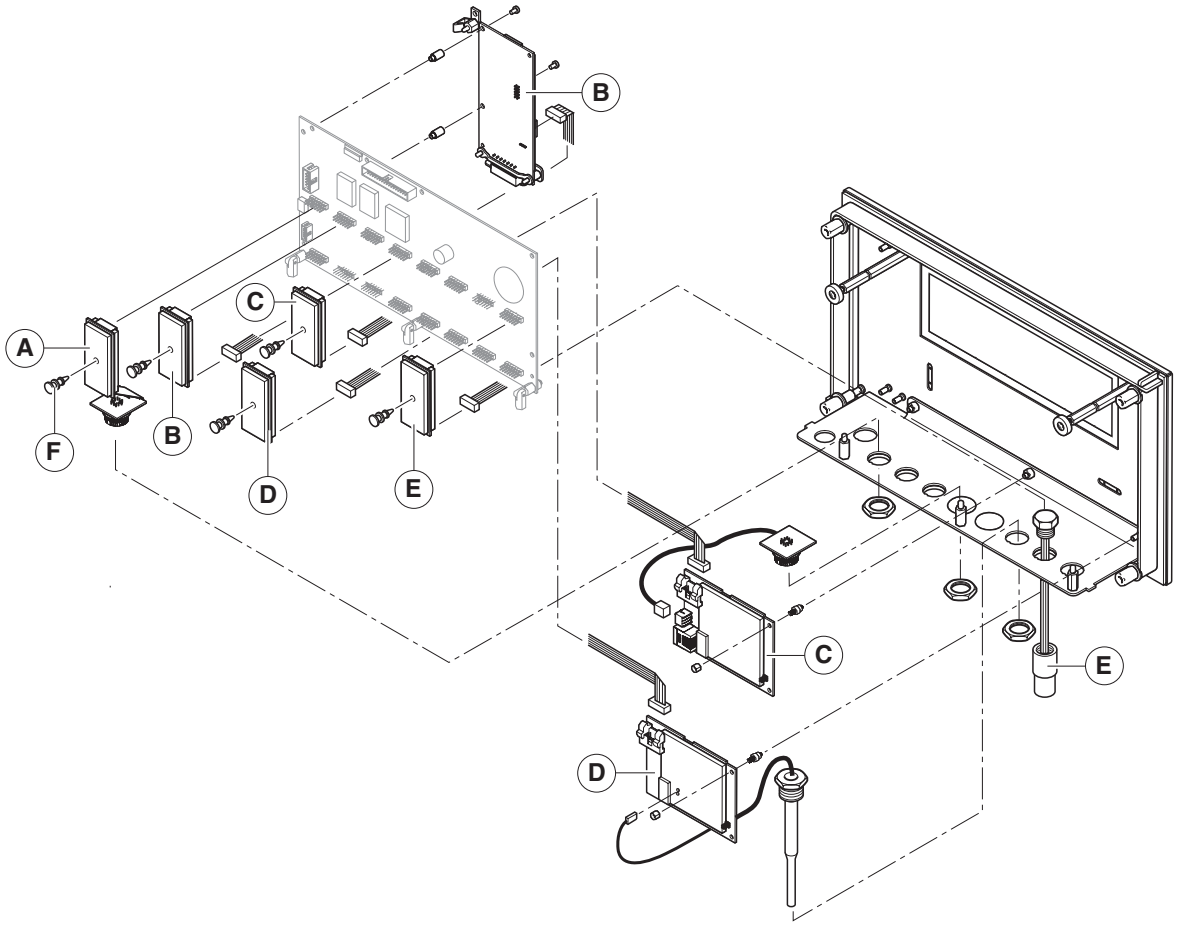
Item	Designation	IND690	IND690xx	IND690-24V
1	IND690 board, without boot EPROM, without flash EPROMs	22 009 713	22 009 713	22 009 713
2	Power supply unit board cable	00 507 695	22 004 383	00 507 695
3	Cover seal for desk unit for panel unit	 22 011 888 22 011 859	 22 011 888 22 011 859	 22 011 888 22 011 859
4	Power supply unit	22 000 360	00 507 945	22 006 793
5	Miniature fuse	22 001 624	00 089 862	–
6	Shielded connection cable	22 014 131	00 200 510	–
7	Hexagon nut, M18 x 0.75	00 507 940	00 507 940	00 507 940
8	Mains cable with plug for IND690 Euro GB USA CH DK ZA AUS Mains cable with open ends	 22 005 877 22 005 878 22 005 879 22 005 880 22 005 882 22 005 883 22 005 881 –	 – – – – – – – 22 004 836	 – – – – – – – 22 004 836
9	Base foot	00 200 068	00 200 068	00 200 068
10	Pressure compensation set complete with O-ring and screw	22 002 277	22 002 277	22 002 277
11	Cover, complete with window and keyboard for desk unit, glass for desk unit, plastic, for US for panel unit, glass for panel and wall unit, plastic, for US	 22 011 995 22 011 994 22 011 993 22 011 992	 22 011 995 – 22 011 993 –	 22 011 995 22 011 994 22 011 993 22 011 992
12	Plug-in card, neutral, markable	22 014 393	22 014 393	22 014 393
13	Display module (dot matrix) IND690	00 203 841	22 003 068	00 203 841
14	Display cable	00 507 696	00 507 696	00 507 696
15	IND690 boot EPROM, Software version 3.xx	22 011 979	22 011 979	22 011 979
16	Flash EPROMs without software, 2 pieces	22 014 141	22 014 141	22 014 141
17	Cable tie for display cable	–	00 088 950	–

Item	Designation	IND690	IND690xx	IND690-24V
18	Calibration set Conversion set for angle ID card and analog weighing platforms, set for weighing platforms of other manufacturers	22 000 386	22 000 386	22 000 386
19	Label set, blank, markable Desk unit Panel unit	 22 000 378 22 014 143	 22 000 378 22 014 143	 22 000 378 22 014 143
20	Terminating connector	00 504 241	00 504 241	00 504 241
21	Blind plug set	22 001 066	22 001 066	22 001 066
22	Sealing ring for ID card	22 000 714	22 000 714	22 000 714
23	Dust protection cap	00 089 263	00 089 263	00 089 263
24	COM1 cable	22 014 113	22 014 113	22 014 113
25	COM1 PCB	22 009 717	22 009 717	22 009 717
26	Hinge-pin set for IND690-Desk	22 014 176	22 014 176	22 014 176
27	PCB adapter plate	22 014 142	22 014 142	22 014 142
28	LP retainer with notch lever	22 011 845	22 011 845	22 011 845
29	Drying agent bag	22 011 844	22 011 844	22 011 844
	Bolt set	22 014 173	22 014 173	22 014 173
	Drilling template for IND690 panel	22 014 134	22 014 134	22 014 134
	Device hood 690 (3 pieces)	22 011 983	not permitted	22 011 983

3.3 Block diagram of interfaces

3.3.1 Installation situation

The following shows the panel unit. The installation situation in the desk unit is described in the IND690 / IND690xx / IND690-24V installation instructions.



3.3.2 Overview

	Item	Designation	Note
Scale interfaces	A	IDNet-690	For connecting IDNet weighing platforms
	A	SICS-Scale-690	For connecting SICS weighing platforms
	B	AnalogScale-690	For connecting analog weighing platforms
Serial interfaces	A	CL20mA-690	–
	A	RS232-690	–
	A	RS485/422-690	Can be configured as RS485 or RS422
	A	USB-690	–
Network and field bus connections	C	Ethernet-690	–
	B	ProfibusDP-690	–
	D	WLAN-690	–
Further interfaces	E	Bluetooth-690	–
	A	4I/O-690	Digital inputs/outputs
	A	AnalogOut-690	Digital-analog output
	A	PS2-690	For connecting an external keyboard
	B	AlibiMemory-690	Alibi memory

Item	Hardware components
A	PCB adapter, socket PCB
B	Interface card, PCB adapter with ribbon cable
C	Interface card, PCB adapter with ribbon cable, socket PCB with RJ45 cable
D	Interface card, PCB adapter with ribbon cable, antenna with cable
E	PCB adapter, antenna
F	Plastic spacer

Note
The complete order information and further accessories are listed in Section 9.3.

4 Checklists

4.1 Maintenance checklist

Visual inspection

➜ Check condition of following scale components:
- Housing
- Keypad; with IND690xx hairline cracks in the keyboard membrane are also considered damage
- Protective cover
- Weighing platform
- Peripherals
- Signage
- Screws, tightening torque approx. 1.5 Nm
- Sockets
- Blind plugs
- Cover seal

➜ Check condition of the following cables:
- Power cable
- Weighing platform connection cable
- Data transfer cable (if used)

➜ On the IND690xx check cable glands. The cable glands must be tightened so that a strain relief of ≥ 20 N per mm cable diameter is ensured.

➜ Check for protected position of cables. The distance to the bare primary-side parts on the power supply unit must amount to at least 4 mm.

➜ Check that the power supply unit board cable of the IND690xx panel is secured by a cable clip.

➜ Check protective caps on interfaces for leaks.

➜ Check the drying agent bag: The label must be blue.
Moist (pink coloured) drying agent bags can be dried in an oven at 100 °C and can be re-used a few times.

Function check

➜ Switch unit off and on.

➜ Check functions with entries via keypad (see operating instructions).

➜ Check settings of weighing platform (see service manual of connected weighing platform):
- Calibration
- Corner load
- Linearity
- Hysteresis

➜ Check plug-in connections for firm seating:
- Mains cable
- Weighing platform connection
- Data transmission cable (if installed)
- Peripherals connection (if installed)

4.2 Service checklist

Prior to troubleshooting and after performing service on the terminal and on the weighing platform, carry out the following test steps:

On terminal

➜ Check whether an operating error has been made.

➜ Check mains and weighing-platform connection cable.

➜ Check functions with entries via keypad (see operating instructions).

➜ Conduct weighing platform test (see operating instructions).

➜ Conduct display and keypad test:
- Activate master mode and select SERVICE.
- Enter password 2481632 and select TEST TERMINAL.
  The terminal conducts the first part of the display test.
- Press ENTER key.
  The terminal conducts the second part of the display test.
- Press ENTER key again; the keypad test is started.
- Press all displayed keys in sequence until END appears.
- End test with ENTER.

➜ Check all plug-in connectors for firm seating.

➜ Check connected units.

On weighing platform

➜ Check whether transport locks of the weighing platform are properly released and adjusted (see service manual of connected weighing platform).

➜ Check support of weighing platform.

➜ Make sure that the load plate is free and does not touch the surrounding area.

➜ Check maximum load and linearity.

➜ Check clearance of all stops and limits.

➜ Make sure that lever system is unobstructed on all sides.

➜ Check cutting edges, pans and bending bearings.

5 Troubleshooting

5.1 Operating error

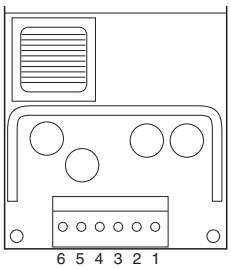
Operating errors on the terminal and operating states of the weighing platform for which a weight value determination is not permissible or not possible are displayed by the terminal in clear text (see operating instructions for the IND690 weighing terminal).

5.2 Check voltages

The main board must be connected during all measurements.

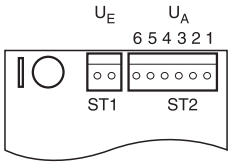
DANGER
Danger of electric shock when components on the power supply unit board are touched.

➜ Do not touch parts marked with the symbol on the left.



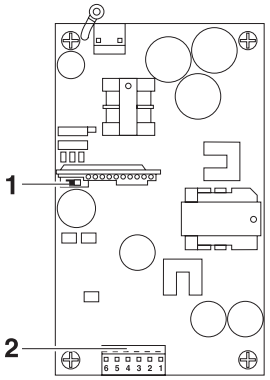
Voltages on the IND690 power supply unit board
The following voltages must be present at the plug of the power supply unit board cable:

Pin 1	+24 V
Pin 2, 3	+5 V
Pin 6	+12 V
Pin 4, 5	GND



Voltages on the IND690xx power supply unit board
The following voltages must be present at the ST2 plug of the power supply unit board cable:

Pin 1	GND
Pin 2	+5 V
Pin 3	GND
Pin 4	+12 V
Pin 5	GND
Pin 6	+24 V



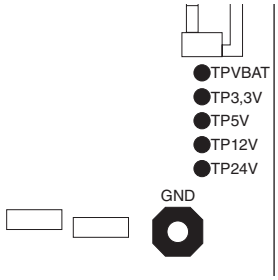
Settings and voltages on the IND690-24V power supply unit board

- Check setting of the operating-mode selector switch (1):

Switch position left: storage battery operation, factory setting
Switch position right: mains operation 24 V

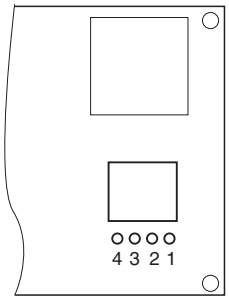
- The following voltages must be available at the plug (2) of the power supply unit board cable:

Pin 1 +24 V
Pin 2, 3 +5 V
Pin 6 +12 V
Pin 4, 5 GND



Voltage at main PCB

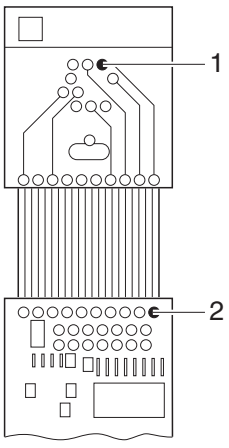
The imprinted voltages have to be applied at the measuring points on the main PCB.



Voltages on display board

The following voltages must be present on plug CN2 on the display board:

Pin 1 +5 V
Pin 2 GND
Pin 3 +24 V
Pin 4 GND



Voltages at the IDNet-690 interface module

A voltage of 30 V DC has to be applied at the measuring points (1) and (2) on the socket PCB and IDNet PCB.

5.3 Faults and their elimination

Fault	Cause	Remedy
Terminal fails to start	• Power cable not plugged in	➜ Produce mains connection
	• No mains voltage	➜ Check power cable
	• Fuse blown	➜ Check microfuse on power supply board and change if necessary
	• Polarity of power supply reversed	➜ Connect power supply properly
	• Switch-off time too short	➜ Switch off voltage for about 10 s
	• Storage battery level too low	➜ Charge storage battery
	• Operating-mode selector switch for storage battery operation/mains operation set incorrectly	➜ Set operating-mode selector switch to desired operating mode
	• Power supply unit defective	➜ Check voltage on power supply unit board
	• Program crashed	➜ Keep the switch on the mainboard pressed approx. 30 s and restart
A whistle sound is emitted at the IND690-24V	• Storage battery level too low	➜ Load the storage battery or switch over to 24 V mains operation
No data transmission to measuring cell	• Fuse defective	➜ Check miniature fuse on power supply unit board and replace if necessary
	• Measuring cell defective	➜ Replace measuring cell (see service manual of connected weighing platform)
No entry possible via membrane keypad	• Keypad cable/keypad extension cable not connected or connected incorrectly	➜ Connect keypad cable/keypad extension cable correctly
	• Keypad defective	➜ Replace cover
	• Main board defective	➜ Replace main board
Display dark	• Display is switched to dark with interface command	➜ Switch on display with interface command
	• Fuse on power supply unit board defective	➜ Replace miniature fuse on power supply unit board
	• Display cable defective	➜ Replace display cable
Terminal conducts a general reset after each switch-on	• Main board defective	➜ Replace main board
Membrane keyboard "inflates"	• Pressure compensation set defective	➜ Replace pressure compensation set

Fault	Cause	Remedy
ERROR 0 IDNET	• Weighing platform defective	➜ Check weighing platform and repair or replace if necessary
	• IDNet cable defective	➜ Replace IDNet cable
ERROR 1 IDNET	• Software in weighing platform defective	➜ Replace software in weighing platform
WRONG SOFTWARE	• Wrong software loaded	➜ Load original software
	• Wrong software dongle installed	➜ Install correct software dongle

6 Repairing

6.1 Open terminal

EXPLOSION HAZARD

➜ Do not open the IND690xx in an explosive dust atmosphere.

➜ On the IND690xx, wait 5 minutes after disconnection from the mains before opening the device.

CAUTION

Before opening the unit:

1. Carry out a backup of the customer-specific settings, see Section 7.2.5.
2. Switch off the terminal.
3. Disconnect the terminal from the power supply:
   - at the IND690xx de-energize the mains connection or power supply and wait at least 5 minutes,
   - at the IND690-24V de-energize the power supply or pull the power plug,
   - at the IND690 pull the power plug.
4. When the terminal is separated from the mains, disconnect the connected weighing platform(s) and peripherals.

CAUTION

Possible formation of condensate

➜ Do not open/close the device in humid rooms.
Ideal: 20 – 30 °C, 30 – 40% rel. humidity
If necessary, remove the device from the operating environment for maintenance work and open, repair and close it in a dry environment.

Opening the desk unit

1. Turn the device around carefully and unscrew the 12 screws on the cover underside.
2. Return the device to its normal position and lay the cover down forwards.
3. Disconnect the display and keyboard cables.
4. In order to access the components on the main PCB underside or at the housing base swivel the main PCB upwards.

Opening the panel unit

1. Remove 2 nuts.
2. Remove the cover.
3. Disconnect the display and keyboard cables.
4. In order to access the components on the main PCB underside or at the socket carrier plate, disengage the LP retainer and swivel the main PCB downwards.

Notes

- Store loosened screws, nuts and washers in a secure location.
- Always lay the components on a dust-free, antistatic, non-magnetic surface.
- Never use force during removal and installation.

6.2 Replace display

1. Open the terminal, see section 6.1.
2. Pull the display cable (14) off the display (13).
3. Unscrew the 4 screws and remove the display.
4. Insert the new display and mount in reverse order.
5. On the IND690xx, secure the display cable again with a cable tie on the display plug.

6.3 Replace cover

Important
The same measuring data labels must be applied on the new cover as on the old cover, see chapter 8.

Note
We recommend replacing the cover sealing ring as well when replacing the cover.

6.3.1 IND690-Desk

1. Open terminal, see Section 6.1.
2. Remove display (13) by unscrewing 4 screws from the old cover.
3. Remove the cover sealing ring (3) from the old cover and insert it into the new cover. Ensure that the 3 fastening lashes lie on the cover sealing ring and not under it.
4. Mount the display with 4 screws in the new cover.
5. Remove the card insert (12) from the old cover and insert it into the new cover.

6.3.2 IND690-Panel

1. Remove the terminal from the control cabinet by loosening the 6 hexagon nuts.
2. Remove the securing clamp, loosen the 2 nuts and remove the cover.
3. Dismantle the power supply unit, main PCB and socket carrier plate from the old cover.
4. Remove display (13) by unscrewing 4 screws from the old cover.
5. Mount the display with 4 screws in the new cover.
6. Remove the card insert (12) from the old cover and insert it into the new cover.
7. Mount the socket carrier plate, main PCB and power supply unit on the new cover.
8. Insert the new cover sealing ring.
9. Reinsert all the cables.
10. Put on the cover and secure it with 2 nuts.
11. Insert the housing from the front into the cut-out.
12. Place on the securing clamps on the rear and fasten the terminal with 6 hexagon nuts and washers. Place the washers so that the cover can be removed easily.

6.4 Replace power supply unit and fuse

WARNING
Danger of electric shock

➜ Do not loosen the protective conductor connection from the power cable.

Remove power supply unit

1. Open the terminal, see section 6.1.
2. Disconnect the power supply unit board cable (2) from the IND690 board (1).
3. Unscrew the 2 screws and remove the cover plate.
4. Unscrew the 2 spacer studs and take out the power supply unit (4).
5. Loosen the earthing cable at the earthing screw at the IND690-24V.

Replace fuse

IND690

➜ Remove the defective miniature fuse (5) with a pair of tweezers and install a new fuse.

IND690xx
EXPLOSION HAZARD

➜ Do not solder in a fuse base.

➜ Unsolder the defective microfuse (5) and solder in a new fuse.

IND690-24V

Fuses are not available as spare parts for the IND690-24V. The power supply unit has to be replaced.

Mount power supply unit

1. Mount the power supply unit in the reverse order. Note the following when doing so:
   - The distance from cables to the bare primary-side parts on the power supply unit must amount to at least 4 mm.
   - All spring washers must be mounted again.
2. Secure the power supply unit PCB cable in the panel unit with a cable clamp.

6.5 Replace main board

1. Open the terminal, see section 6.1.
2. On the IND690xx, remove the interface mounting plate over the interface connections.
3. Pull all cables off the main board (1).
4. If installed, pull the optional interface module off the main board.
5. Pull the software dongle and the boot EPROM (15) off the main board.
6. Mark the flash EPROMs (16) and remove them from the main PCB.
7. Loosen the 3 or 2 joint pin nuts and remove the main PCB.
8. Insert the new main PCB and mount it on the joint pin with 3 or 2 nuts.
9. If installed, push the interface module onto the new main board.
10. Push the software dongle, the boot EPROM and the flash EPROMs onto the main board.
11. Mount the interface mounting plate with the plastic support at the IND690xx.
12. Connect the power supply unit board cable (2), display cable (14) and keypad cable to the main board.

6.6 Closing terminal

Closing the desk unit

1. Fold main PCB downwards, if necessary. Ensure that the fastening lashes lie on the cover sealing ring and not under it.
2. Connect the display and keyboard cables to the main PCB.
3. Put the cover on and turn the device around carefully.
4. Screw the 12 screws on the cover underside.

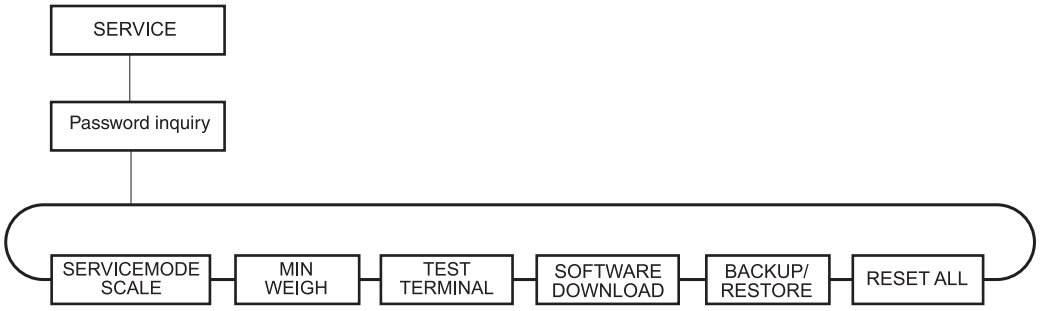
Closing the panel unit

1. If necessary, swivel the main PCB upwards.
2. Connect the display and keyboard cables to the main PCB.
3. Fit the cover.
4. Screw on the 2 nuts.

7 Service mode

7.1 Entry into the service mode

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



7.2 Settings in service mode

With the INDTerminalManager service program software can be loaded, customer-specific settings can be saved or loaded, formatting settings for the GA46 can be loaded etc. via the serial port of the IND690 / IND690xx / IND690-24V.
All information on connecting and operation on the computer is provided with the service program.

7.2.1 SERVICE MODE SCALE block

➜ Select the scale and carry out the weighing platform settings, see service mode of the connected weighing platform.

7.2.2 MINWEIGH block

➜ Select the scales and enable the MinWeigh function.

7.2.3 TEST TERMINAL block

➜ Activate TEST TERMINAL and conduct a terminal test, see section 4.2.

7.2.4 SOFTWARE DOWNLOAD block

With this function software updates can be loaded from a computer to the IND690 / IND690xx / IND690-24V via the serial port without the flash EPROMs having to be replaced.

Note
SOFTWARE DOWNLOAD may not be interrupted.

➜ Activate SOFTWARE DOWNLOAD; DOWNLOAD ACTIVE appears in the display. Loading the software takes approx. 6 minutes, then the IND690 / IND690xx / IND690-24V switches over to the weighing mode.

After the software update the IND690 / IND690xx / IND690-24V checks whether the correct software (suitable for installed dongle) has been loaded. For example, for an IND690-Count only the CountPac software may be loaded.
If incorrect software has been loaded, the WRONG SOFTWARE error message appears. In this case:

➜ Switch the terminal off and then on again and repeat SOFTWARE DOWNLOAD or install suitable dongle.

Note
If incorrect Pac software has been loaded, the terminal can nevertheless be operated, however only with the functions of the IND690-Base.

7.2.5 BACKUP/RESTORE block

With this function customer-specific settings can be saved to an external computer or loaded from there via the COM1 serial port.

➜ Activate BACKUP or RESTORE; BACKUP ACTIVE or RESTORE ACTIVE appears in the display.
After BACKUP or RESTORE is completed, the IND690 / IND690xx / IND690-24V switches over to the weighing mode.

7.2.6 RESET ALL block

This block resets all parameters to the factory setting.

7.2.7 Emergency entry of service mode

1. Switch the terminal off and then on again.
2. When INITIALIZING ... is displayed, press the IDENT F key.

8 Marking and sealing

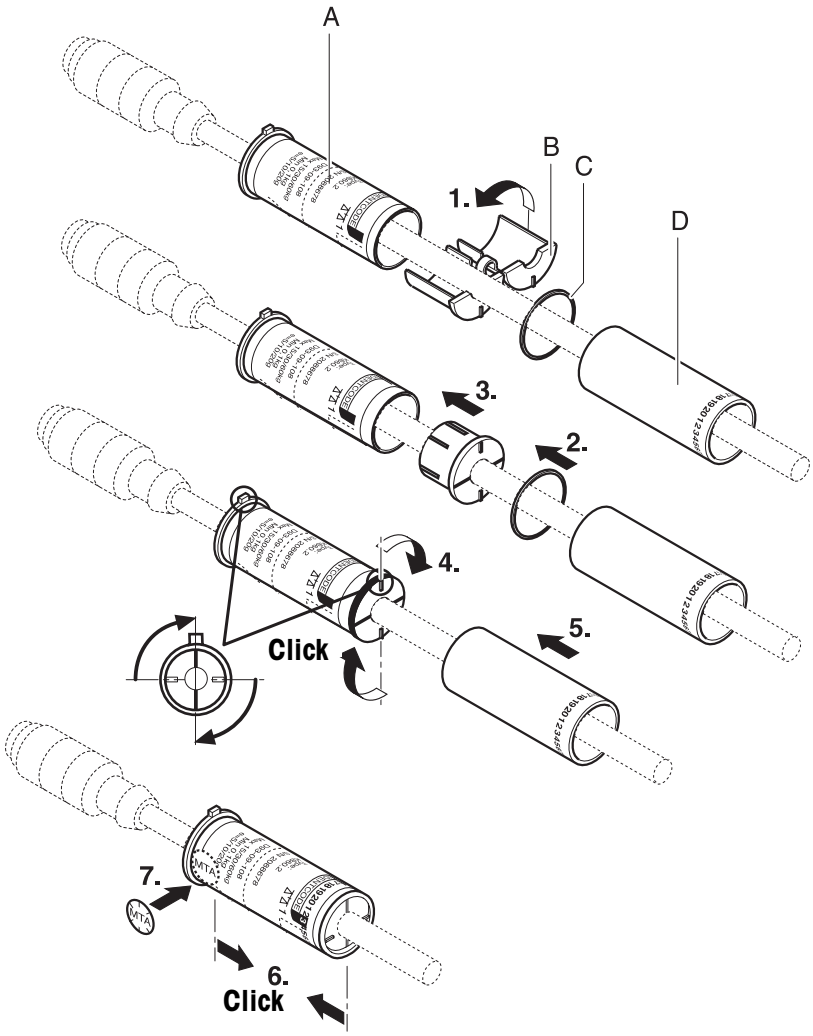
The procedure for marking and sealing for calibrated weighing systems is dependent on the housing shape of the weighing terminal and the weighing platform to be connected.

8.1 Desk unit

8.1.1 New IDNet weighing platforms

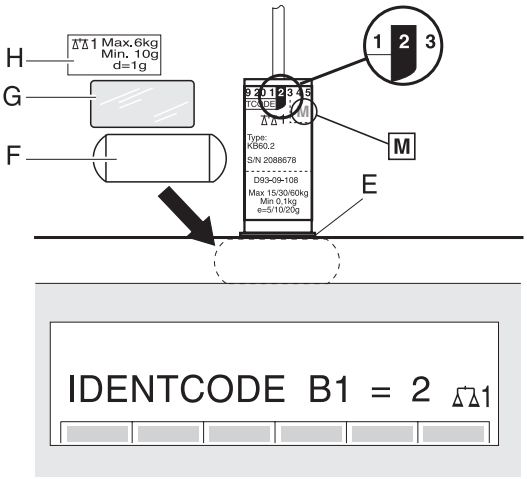
From the factory the ID card of IDNet weighing platforms is provided with the measuring data sticker of the weighing-platform standard configuration.

Mount ID card



1. Check whether the measuring data sticker for the set weighing platform configuration and, if necessary, also the EC calibration symbol (green M), has (have) been applied to the inner socket (A) of the ID card.
   If not: If necessary, remove the EC calibration symbol and the proper measuring data sticker from the sticker sheet and apply it to the inner socket (A) as shown.

2. Push the ID card parts (A) to (D) over the weighing platform plug in the order shown.
3. Fold together center section (B) and lock with O-ring (C).
4. Push the center section (B) into the inner socket (A) with the applied measuring data sticker and turn until it engages.
5. Push the outer socket (D) with the stamped-in ID codes over the inner socket until it engages.
6. Align the outer socket so that the same ID code is shown in the white field of the ID code as on the terminal.
7. Seal transition from inner to outer socket at marked field with a push mark.
8. Mount sealing ring (E) on weighing platform connection, plug in weighing platform plug and screw on.
9. Push ID card completely over weighing platform plug and turn so that ID code and calibration symbol face upward. In this position the ID card on the plug engages.



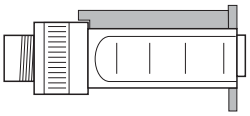
Mount Max-Min sticker

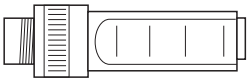
The Max-Min sticker consists of a carrier (G) and a lower section (F).

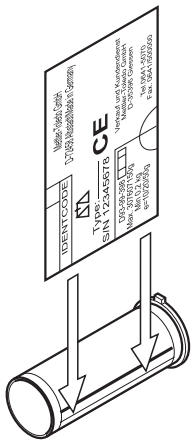
1. Pull the protective film off the lower section (F) and apply it to the terminal near the display.
2. Remove the Max-Min film (H) of the weighing platform from the sticker sheet and apply it to the carrier (G).
3. Clip the carrier (G) onto the lower section (F).
4. On weighing platforms with a maximum load < 100 kg, remove the additional sticker "Not permissible at open sales points" from the sticker sheet and apply it to a highly visible location on the terminal.

8.1.2 Old IDNet weighing platforms

Old IDNet weighing platforms are equipped with the ID card elbow, which can no longer be used in the IND690 / IND690xx / IND690-24V. With the calibration set 22 000 386 these weighing platforms can nevertheless be operated as certified with the IND690 / IND690xx / IND690-24V.







1. Remove ID card elbow from weighing platform cable.
2. Cut the tab off the weighing platform plug until the plug fits in the inner socket of the ID card.
3. Label the blank calibration sticker from the blank sticker sheet of the calibration set with the complete calibration data (measuring data, platform model, platform no., scale no.) using permanent ink.
4. Label blank measuring data sticker with permanent ink.
5. Laminate calibration plate and measuring data plate.
6. Apply measuring data plate to inner socket of ID card as shown.
7. Further assembly as described for IDNet weighing platforms, see section 8.1.1.

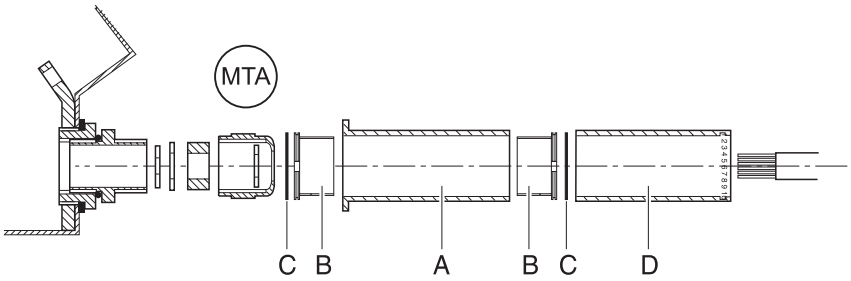
8.1.3 Analog weighing platforms

- METTLER TOLEDO analog weighing platforms with a new ID card:
  The ID card is already marked for the standard configuration.
- METTLER TOLEDO analog weighing platforms with old lead sealing sleeve:
  The calibration set 22 000 386 is required for these weighing platforms.
  Weighing platform stickers can be taken from the sticker sheet of the weighing platform or must be labeled with permanent ink.
- Analog weighing platforms of other manufacturers
  The calibration set 22 000 386 is required for these weighing platforms.
  All weighing platform stickers must be labeled with permanent ink.

Connect weighing platform

1. Check whether the measuring data sticker for the set weighing platform configuration and, if necessary, also the EC calibration symbol (green M), has (have) been applied to the inner socket (A) of the ID card.
   If not: If necessary, remove the EC calibration symbol and the proper measuring data sticker from the sticker sheet and apply it to the inner socket (A).

2. Push the ID card parts (A) to (D) over the cable sheathing in the order shown. On analog weighing platforms the ID card socket is closed on both ends with the center section (B) and the O-ring (C).



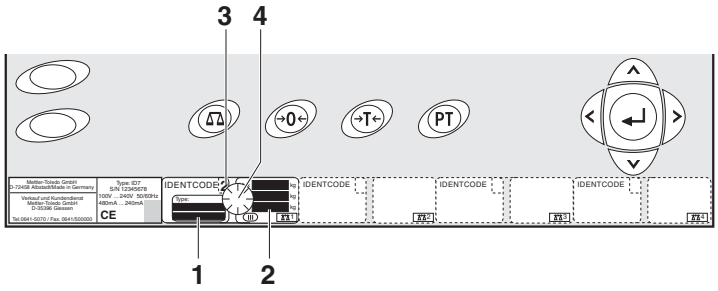
3. Seal screwed cable gland with a slide mark
4. The further procedure for weighing platform connection is as described in the installation information for the IND690 / IND690xx / IND690-24V weighing terminal.

Mounting ID card and sealing

➜ The further mounting is as described for new IDNet weighing platforms, see section 8.1.1.

8.2 Panel unit

No ID card is required for the IND690 / IND690xx / IND690-24V panel unit. Instead of it a blank sticker sheet is provided for certified marking.



1. Connect the weighing platform.
2. For METTLER TOLEDO weighing platforms, remove the type sticker (1) of the weighing platform from the sticker sheet and apply it to the ID code sticker.
   For weighing platforms of other manufacturers, label a blank type sticker with permanent ink and laminate it.
3. For METTLER TOLEDO weighing platforms, remove the measuring data sticker (2) of the weighing platform from the sticker sheet of the weighing platform and apply it to the ID code sticker.
   For weighing platforms of other manufacturers, label a blank measuring data sticker with permanent ink and laminate it.
4. Display the ID code, remove the proper ID code from the sticker sheet and apply it to the ID code field (3).
5. Seal the ID code, type sticker and measuring data sticker with a slide mark (4).

9 Appendix

9.1 Connection of several weighing platforms

IND690 / IND690xx / IND690-24V recognizes the connected weighing platforms automatically and, in the case of brand new scales, also assigns the scales number:
If used weighing platforms are connected, two weighing platforms may have the same scales number. In this case IND690 / IND690xx / IND690-24V automatically activates the service mode in order to assign a new scales number.

9.2 Connection of peripheral devices

The IND690 / IND690xx / IND690-24V weighing terminal can be equipped with up to 9 interface connections.
Information on configuring the interfaces can be found in the IND690 Base weighing terminal operating instructions.

CAUTION

➜ The following total load of the output voltages is to be observed when several peripheral devices are connected:

	IND690	**IND690xx / IND690-24V**
Output voltage 5 V	max. 600 mA	100 up to max. 300 mA*
Output voltage 12 V	max. 200 mA	max. 200 mA
Output voltage 24 V	max. 100 mA	max. 100 mA

* Depending on design level
At the IND690xx and IND690-24V the maximum total load of the 5 V output voltage depends on the combination of the interface modules. If the interface modules Ethernet-690, WLAN-690, ProfibusDP-690 or Bluetooth-690 are installed combined, the 5 V output voltage may only be loaded with 100 mA.

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➜ When connecting several external devices to the power-limited 5 V output voltage of the **IND690xx**, observe the following total connection values for the total of all devices including cables:

Total capacity parallel on 5 V **max. 200 µF**
Total inductance in series on 5 V **max. 60 µH**

9.3 Accessories

Scales connections		Order number
IDNet-690	• Scales connection for IDNet scales	22 011 951
AnalogScale-690	• Scales connection for analog weighing platforms	22 011 952
SICS-Scale-690	• Scales connection for SICS scales	22 011 953
	• Connection cable for RS232-SICS scales with 9 pin Sub-D connector	22 006 795
	• Connection cable for LabTec X scales with voltage supply via IND690	22 015 128

Serial interfaces		Order number
CL20mA-690	• CL20mA interface, 7-pin socket	22 011 954
	• CL cable, 3 m	00 503 749
	• Mating plug, 7-pin	00 503 745
RS232-690	• RS232 interface, 8-pin socket	22 011 955
	• RS232 cable/DTE, 3 m	00 503 754
	• RS232 cable/DCE, 3 m	00 503 755
	• RS232 cable/PC, 3 m	00 504 374
	• RS232 cable/9-pin, 3 m	00 504 376
	• Mating plug, 8-pin	00 503 756
RS485/422-690	• RS485/422 interface, 6-pin socket, electrically isolated	22 011 956
	• RS422/485 cable, open end, 3 m	00 204 933
	• Extension cable for RS422/485, 10 m	00 204 847
	• Mating plug, 6-pin	00 204 866
Bluetooth-690	• Cable-less serial interface, antenna integrated	22 011 958
USB-690	• USB slave	22 011 959
	• USB adapter cable, 3 m	22 015 326
PS2-690	• PCB adapter for MFII/PS2 keyboard connection	22 011 960
	• Connecting cable adapter for PS/2 keyboards, **IP21 only**	22 011 969
	• Protected plug for own fabrication, IP65	22 011 970

Network interfaces		**Order number**
Ethernet-690	• Ethernet10/100 Base T, twisted pair, 8-pin socket	22 011 961
	• Twisted-pair cable, 8-pin, RJ45, 5 m	00 205 247
	• Twisted-pair cable, 8-pin, RJ45, 20 m	00 208 152
WLAN-690	• Radio network, with stub antenna	22 011 962
ProfibusDP-690	• Field bus connected, for direct internal termination, incl. 2 x PG11 cable bushing	22 011 963

Digital I/O interfaces		**Order number**
4I/O-690	• 4 inputs / 4 outputs, 19-pin socket	22 011 965
Relay box 4-690	• Relay box with 4 inputs and 4 outputs, for connection to 4I/O-690	22 011 967
	• Cable for connecting 4I/O-690 to the relay box, 10 m	00 504 458
	• Mating plug, 19-pin	00 504 461
Relay box 8-690	• Relay box with 8 inputs and 8 outputs, for connection to RS485/422-690	22 011 968
ARM100	• 4 inputs / 6 outputs, for connection to RS485/422-690	71 209 352

Alibi memory		**Order number**
AlibiMemory-690	Paperless archiving of certification-relevant weighing data	22 011 950

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