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User manual

ITKU-36-10-03-24-EN

TMX Series

1-LOAD-CELL MULTIFUNCTIONAL SCALES
4-LOAD-CELL PLATFORM SCALES
PALLET AND BEAM SCALES
TRACK SCALES

MARCH 2024

PRECAUTIONS

Prior to installation, use or maintenance activities, carefully read this user manual. Use the TMX scale only as intended.

	Prior to the first use, carefully read this user manual. Use the device only as intended.
	Place weighed loads in the centre of the weighing pan.
	Load the weighing pan with loads of gross weight which does not exceed the maximum capacity.
	Mind not to leave heavy loads on the weighing pan for longer periods of time.
	Do not operate the touch panel using sharp-edged tools (knife, screwdriver, etc.).
	Protect the indicator against considerable temperature variation, solar and UV radiation, substances causing chemical reactions.
	The indicator must not be operated in hazardous areas endangered with explosion of gases, and in dusty environments.
	In case of damage, immediately unplug the device from the mains.
	Scales to be decommissioned must be decommissioned in accordance with valid legal regulations.
	If the scale is to be operated in conditions that are difficult due to electrostatics (e.g. printing house, packing centre, etc.), you must connect it to the earth wire. To enable this, the device features functional earthing terminal, marked with ⏚ symbol.
	Wi-Fi® is a registered trademark of Wi-Fi Alliance. The trademark used in this document serves informative purposes, it does not stand for compliance of any products with products certified by Wi-Fi® Alliance organisation.

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1. INTENDED USE

TMX scales are intended for use in industry. Large colour screen scales with a touch panel significantly increases the comfort of using the program because it does not require the use of a keyboard.

The TMX scale is an original device consisting of two units: the computer and the weighing module, placed in one housing. Both of these units are connected via an internal interface.

The possibility of using common operating systems allows external companies to create its software or to use the existing one. Such common devices as PC computers can be used with the terminal, which is a great advantage while creating a network. Individual workstation with the PC device is as well possible.

2. WARRANTY CONDITIONS

A. RADWAG feels obliged to repair or exchange all elements that appear to be faulty by production or by construction.
B. Defining defects of unclear origin and means of their elimination can only be realized with assistance of the manufacturer and user representatives.
C. RADWAG does not bear any responsibility for damage or losses resulting from unauthorized or inadequate performing of production or service processes.
D. The warranty does not cover:
   - mechanical damage caused by product exploitation other than intended, damage of thermal and chemical origin, damage caused by lightning, overvoltage in the power grid or other random event,
   - inappropriate cleaning habits.
E. Loss of warranty takes place if:
   - a repair is carried out outside RADWAG authorized service point,
   - service claims intrusion into mechanical or electronic construction by unauthorized people,
   - other than original version of the operating system is installed,
   - the scale does not bear security seal stickers.
F. For detailed warranty conditions read the service card.
G. Contact with the central authorized service: +48 (48) 386 63 30.

3. MAINTENANCE

In order to ensure safety in the course of cleaning, it is necessary to disconnect the device from the mains. With this condition met, uninstall the weighing pan and other detachable components.

	***Cleaning of the weighing pan while still installed may cause damage of the measuring system.***

3.1. Cleaning Stainless Steel Components

Avoid using cleansers containing any corrosive chemicals, e.g. bleach (with chlorine). Do not use cleansers containing abrasive substances. Always remove the dirt using microfiber cloth to avoid damage of protective coating. Daily cleaning routine (removal of small stains):

1. Remove the dirt using cloth dipped in warm water.
2. For best results, add a little bit of dishwashing detergent.

3.2. Cleaning ABS Components

To clean dry surfaces and avoid smudging, use clean non-colouring cloths made of cellulose or cotton. You can use a solution of water and detergent (soap, dishwashing detergent, glass cleaner). Gently rub the dirty surface and let it dry. Repeat the cleaning process if necessary.

In the case of hard to remove contamination, e.g. residues of adhesive, rubber, resin, polyurethane foam etc., you can use special cleaning agents based on a mixture of aliphatic hydrocarbons that do not dissolve plastics. Before using the cleanser, for all surfaces we recommend carrying out tests. Do not use cleansers containing abrasive substances.

3.3. Cleaning Platform Scales for Meat Industry

Platforms of meat industry scales are made of stainless steel (0H18N9 by PN, 1.4301 by EN, 304 by AISI) and silicone components.

Exceptions are zink-plated track scales made of galvanized steel and powder-coated livestock scales with an aluminium cover for the weighing pan.

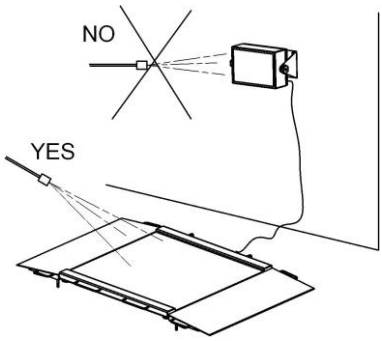
	***Cleaning and disinfecting agents must be properly selected with regard to the scale.***

In case of livestock scales, for commercial purposes it is necessary to use only stainless steel solutions.

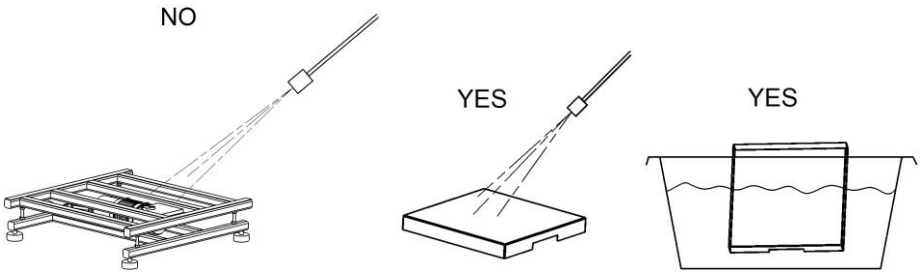
These are much more resistant to long-lasting harsh conditions typical for slaughterhouses and livestock purchase sites. Powder-coated livestock scales can be used for rare small volume production, they must be stored clean in dry storage area and can be washed using water with detergent. Do not use any agents or cleansers that are not intended to come into contact with skin (i.e. requiring use of protecting gloves).

In case of track scales it is forbidden to use chemicals containing penetrating substances. Grease and impurities accumulating in places where the scale track touches the line track must be cleaned off periodically.

Weighing indicators of all scales feature stainless steel housing and polyamide glands. Platforms of both livestock and ramp scales, their load-bearing structures and weighing tracks can be water-jet cleaned, the water temperature must be up to +80°C, respective cleanser needs to be added. When it comes to indicators, it is forbidden to apply water-jet cleaning method, use of hot water is not allowed. It is recommended to cover the indicators for the time of pressure washing of the surroundings.



While cleaning platforms and indicators of waterproof platform scales use neither intense water jet nor hot water, this is to avoid damage of silicone bellow of platform sensor cover, indicator's operation panel or glands. Platforms of platform scales can be water-jet cleaned when uninstalled, they can also be cleaned by immersion into water.



	Ramp scales		Livestock scales		Track scales		Waterproof platform scales		
	Platform with ramps	Weighing indicator	Platform with cage	Weighing indicator	Load-bearing structure with a load cell	Weighing indicator	Platform	Weighing indicator	Uninstalled pan
Water with detergents	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intense water jet	Yes	No	Yes	No	Yes	No	No	No	Yes
Hot water, 80°C max	Yes	No	Yes	No	Yes	No	No	No	Yes

4. SERVICE AND REPAIR



In case of any sign of damage, it is necessary to disconnect the device form the mains immediately. The damaged component must be replaced or repaired by RADWAG service directly.

In case of any problems with correct operation of the scale, contact the closest manufacturer's service point. In case of defects, deliver the faulty product to the manufacturer's service point. If the product cannot be delivered to the manufacturer's service point, call the service and report the defect. Repair scope and method will be set up.



The user is NOT ALLOWED to carry out any kind of repair of the device himself/herself. Any attempt of scale modification, repair etc., by unauthorized persons, will result with loss of validity of manufacturer-issued certificates, declarations and warranty.

5. RECYCLING

HY10 scales must be recycled, they are not to be treated as a regular household waste. Scales to be decommissioned must be decommissioned in accordance with valid legal regulations.

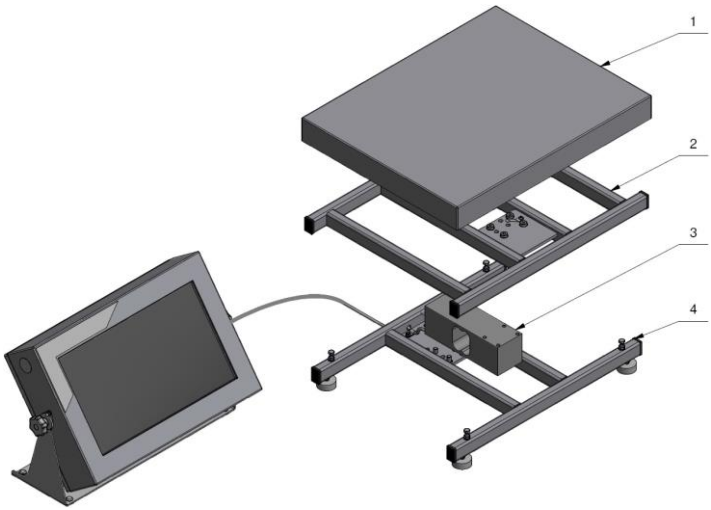


6. MECHANICAL DESIGN

6.1. 1-Load-Cell Scales

1-load-cell TMX scale is intended to carry out fast and precise mass measurement of up to 300 kg loads. Its characteristic feature is a platform with one load cell only. The platform is equipped with a stainless steel weighing pan. Depending on a scale model, the cross and base are made of either stainless steel or powder-coated steel.

1-load-cell scale design, the main components

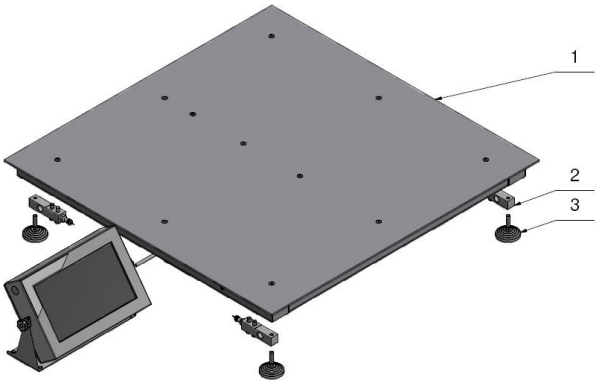


1-load-cell scale design, the main components:
1 - weighing pan, 2 - cross, 3 - load cell, 4 - base.

6.2. Multiple Load Cell Scales

Multiple load cell TMX scale is intended to carry out fast and precise mass measurement of large loads. Its characteristic feature is a platform equipped with numerous load cells, usually four. The platform, depending on a scale model, is made of stainless steel or powder-coated steel, it features customized mechanical design suiting particular customer's requirements (pallet, beam, platform scales).

Multiple load cell scale design, the main components

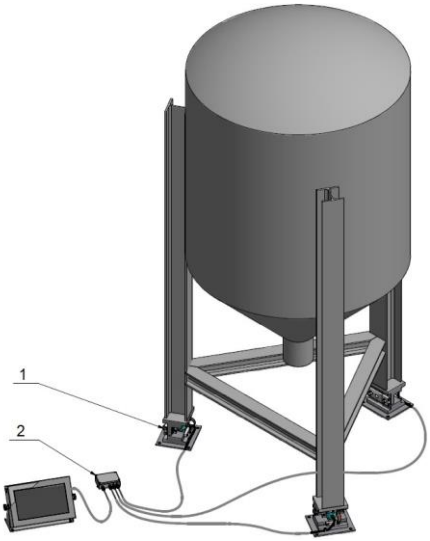


Multiple load cell scale design, the main components:
1 - weighing pan, 2 - load cells, 3 - feet.

6.3. Scales with Load-Cell Modules

TMX scale with load cell modules is intended to carry out mass measurement of silos. The modules are built into construction of ground-fixed silo's support. In most cases, the scale design includes 3-4 load cell modules. The modules, depending on the model, are made of stainless or galvanized steel.

Scale design, the main components

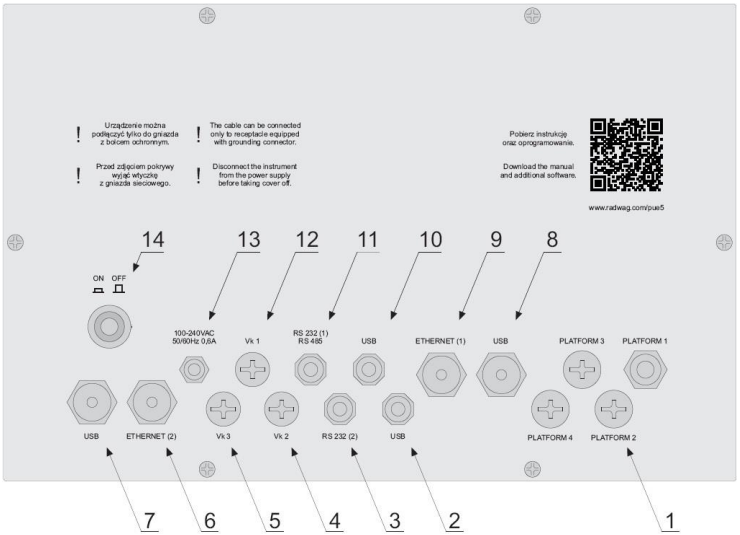


Scale design, the main components:
1 - module, 2 - junction box.

6.4. Dimensions

For overall dimensions read product card of a respective scale, the product cards are to be found on RADWAG website www.radwag.com.

6.5. Connectors

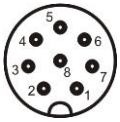
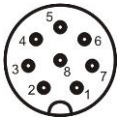
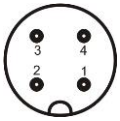


Back PUE 5.15, PUE 5.19 board view

1	Cable glands (x4pcs.) for load cell cable
2	USB M12 4P connector
3	RS232 (2) connector
4	Plug (optionally 4IN, RS232 (1), RS485)
5	Plug (optionally RS232 (3))
6	Ethernet (2) RJ45 connector
7	USB panel connector
8	USB panel connector
9	RJ45 Ethernet (1) connector
10	USB M12 4P connector
11	RS232 (1), RS485 connector (optionally RS232 (1))
12	Plug (optionally 4OUT)
13	Power cord gland
14	ON/OFF switch-key

	***Number of particular connectors may depend on weighing terminal current configuration.***

6.6. Connectors topology

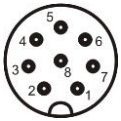
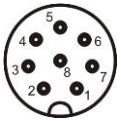
RS232, RS485		Pin1 – B (RS485) Pin2 – RxD Pin3 – TxD Pin4 – A (RS485) Pin5 – GND Pin6 - +5VDC Pin7 – GND Pin8 – 12VDC
RS232		Pin1 – NC Pin2 – RxD Pin3 – TxD Pin4 – NC Pin5 – GND Pin6 - +5VDC
USB		Pin1 – Vcc Pin2 – D- Pin3 – D+ Pin4 – GND
Ethernet	RJ45	Standard RJ45
USB panel	USB A	Standard USB A

6.7. Inputs / Outputs

Optional design

The PUE 5 indicator is optionally equipped with 4 optoisolated inputs and 4 semiconductor outputs (solid-state relays).

6.7.1. Connectors topology

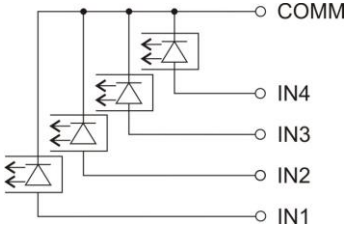
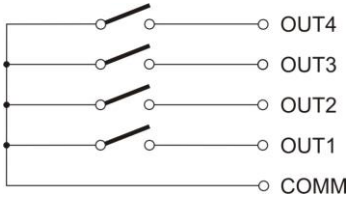
4OUTPUTS		Pin1 – OUT1 Pin2 – OUT2 Pin3 – OUT3 Pin4 – OUT4 Pin5 – COM Pin6 – 24VDC Pin7 – GND Pin8 – NC
4INPUTS		Pin1 – IN1 Pin2 – IN2 Pin3 – IN3 Pin4 – IN4 Pin5 – COM Pin6 – 24VDC Pin7 – GND Pin8 – NC

6.7.2. Technical Specifications

Output parameters	
Output quantity	4
Output type	Solid-state relay
Cable cross-section	0.14 - 0.5 mm^2
Maximum output current	0.5 A DC
Maximum output voltage	30 VDC, AC

Input parameters	
Input quantity	4
Input type	Optoisolated
Cable cross-section	0.14 - 0.5 mm^2
Voltage range	5 - 24 VDC

6.7.3. I/O Schematic Diagrams

	
4 inputs	*4 outputs*

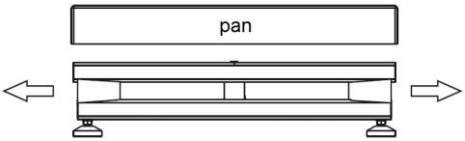
7. INSTALLATION

7.1. Unpacking and Installation

	***Mind not to damage cable connecting the indicator and a weighing platform.***

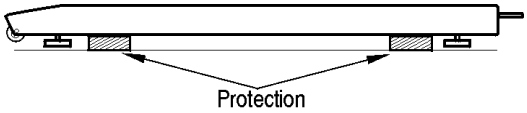
7.1.1. 1-Load-Cell Multifunctional Scales

- Take the device out of the packaging.
- Place the device on a flat and even surface. Keep it away from any sources of heat.
- Remove transport locks and install the weighing pan:



7.1.2. Platform Scales: TMX.4.xx.C, TMX.4.xx.H, TMX.4.xx.H/Z Series

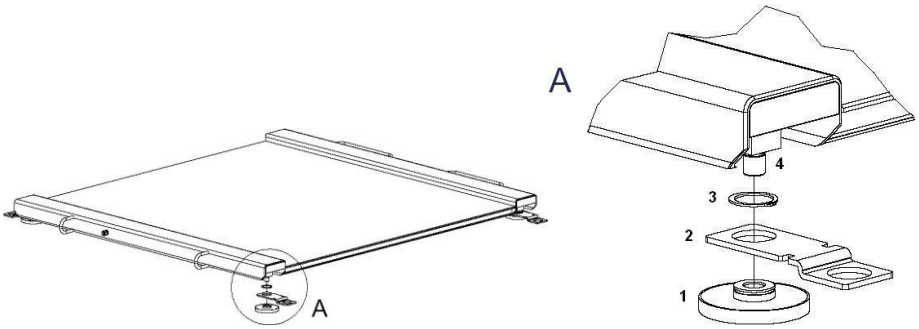
- Take the device out of the packaging (pallet).
- Place the device on a flat and even surface. Keep it away from any sources of heat.
- Remove transport locks (if installed):



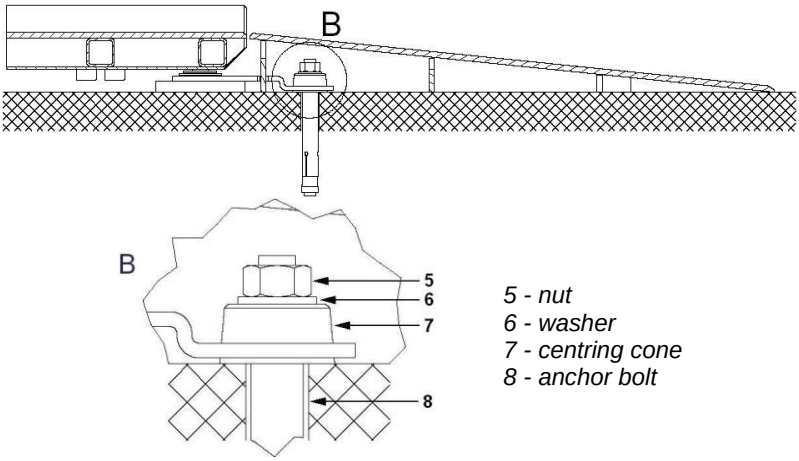
- Fix the feet (if not installed):

7.1.3. Ramp Scales: TMX.4N Series

- Take the device out of the packaging (pallet).
- Prior to installation, mount a steel bracket (2) onto a foot base (1), do it using an expanding ring (3), next screw the foot base (1) onto a foot pin (4).



- Place the scale on a flat and even surface, install ramps onto the steel brackets.
- Remove ramps, looking through bracket holes, mark spots where openings for anchor bolts are to be made.
- Drill openings, mount steel brackets to the ground.



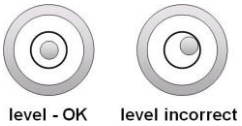
7.1.4. Track Scales: TMX.2K Series

Track scale is comprised of load-bearing structure and load cells (measuring components). The scale is installed on a rail of the load-bearing structure of the suspended track, the load cell is installed in a particular section of the track.

	***The scale must be installed by an authorized RADWAG service exclusively, otherwise the warranty gets null and void. During scale installation attention must be paid to stresses and the weighing system, i.e. the weighing system must lack the stresses.***

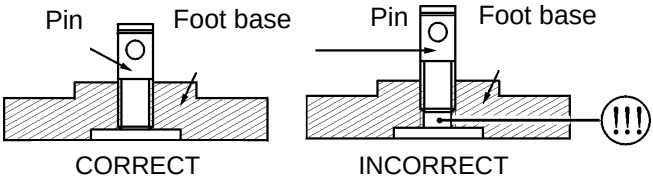
7.2. Levelling: 1-Load-Cell Platform Scales

It is necessary to level the scale, do it by turning its feet. Keep turning the feet until the air bubble takes central position.

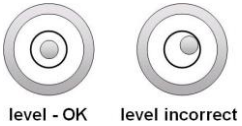


7.3. Levelling: 4-Load-Cell Platform Scales

To level the platform use the levelling feet and the level indicator. Each foot can be turned left and right, turning causes tilt.
Adjustment span of the scale level is narrow therefore the correct level is obtained using steel washers which are to be put under the feet.



Keep turning the feet until the air bubble takes central position.



7.4. Start-Up

- Turn the power on, do it by pressing **ON/OFF** switch located at the back of the indicator housing. Operating system loading begins.
- After completing the startup procedure, the device is ready for operation.

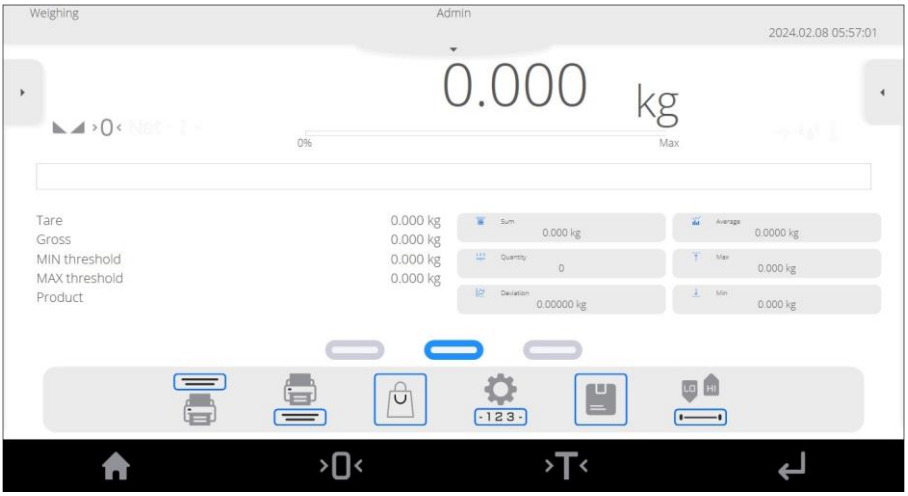
8. „PUE 5 CORE" SOFTWARE

"PUE 5 Core" is a program designed to enable control of MW-04 mass converter. The program allows you to calibrate the mass converter, read mass, tare, zero, set filters, etc.

8.1. Program Start-up

The program can be launched using the **<PUE 5 Core>** shortcut on the desktop. After starting the program, the main program window will be displayed.

8.2. Main Window



The home page can be divided into 5 fields:

- The upper part of the screen shows information on current working mode, logged user, date, time, active connection to PC.



- The weighing result and scale leveling box is displayed below.



- Below is a box containing additional related information with currently performed activities.



- The on-screen functional buttons are showed below:



- At the bottom of the screen you can see permanent functional buttons:



8.3. Navigation in the Menu

Navigation in the menu is intuitive and user-friendly. Thanks to the touch screen display, it is very easy to use the program. Press the screen button or field in the screen to activate the assigned operate or function.

8.3.1. Scale Keyboard

	Press to enter balance menu. Press to go to the home screen.
	Press to zero the scale.
	Press to tare the scale.
	Press to send the weighing result to a printer or computer.
	Press to confirm changes.
	Press to abort modifications and go back.
	Press to go back.
	Press to deselect all marked information.
	Press to select all marked information.
	Press to restore default settings.

8.3.2. Return to Weighing Function

Any changes made in the scale memory are automatically recorded in the menu after going back to the home screen.

Procedure:

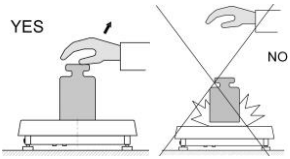
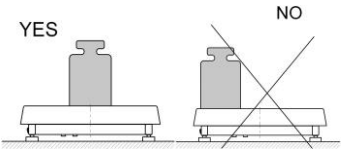
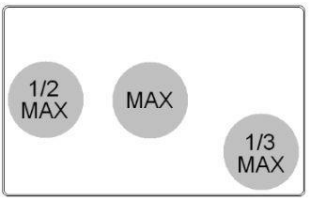
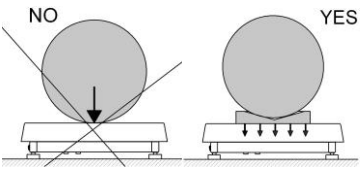
- Press ↰ button a couple of times to make the scale return to home screen.
- Press  in the lower bar to return to home page immediately.

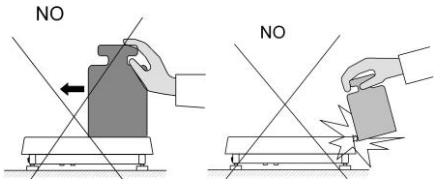
9. WEIGHING

Load the weighing pan. Read the result when ◣◢ stability marker is displayed.

9.1. Operation conditions for 1-load-cell-scales

To assure long-term operation and correct mass measurements, follow the rules presented below:

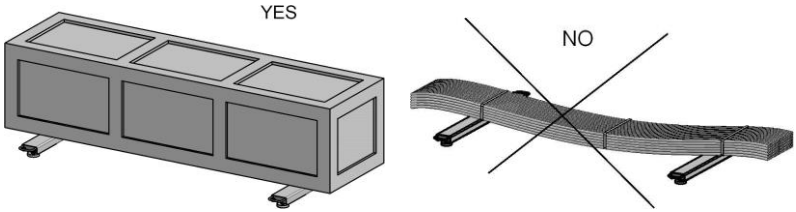
Load the weighing pan steadily, avoid applying mechanical shocks.	
Place the loads centrally on the weighing pan (eccentricity errors are specified by EN 45501 standard, point 3.6.2).	
In case of eccentric loading make sure that: a) the weight of loads placed close to one of the pan edges does not exceed ½ of the max capacity, b) the weight of loads placed in the pan corner does not exceed 1/3 of the max capacity.	
Do not apply concentrated force (total load in one point).	

Avoid side loading, in particular side shocks.	

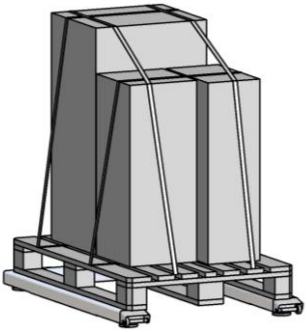
9.2. Operation conditions for special scales

It is forbidden to apply load other than intended for a particular scale:

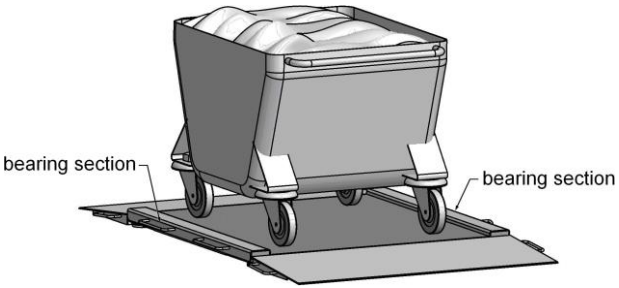
- beam scales; self-supporting, rigid load or load placed in rigid load-transferring packaging:



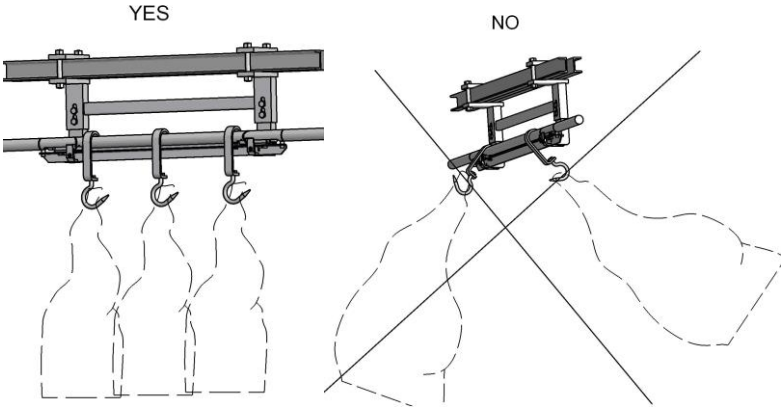
- pallet scales (load placed on EUR-pallet using pallet truck); middle block of pallet placed on the scale must remain unsupported:



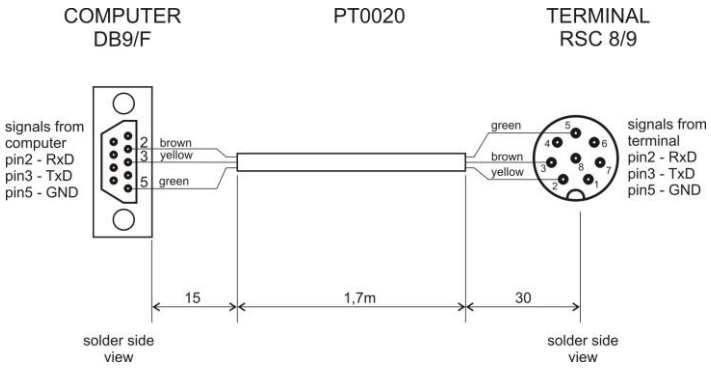
- ramp scales (trucks used in meat plants); it is necessary to select platform matching the span of truck casters, this is to make sure that in case of trucks of weight close to maximum capacity the load is transferred onto platform close to load-carrying sections (profiles):



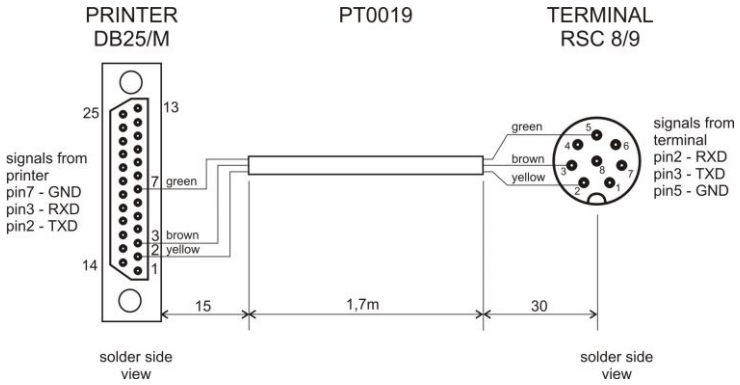
- track scales (product hanging on a hook) intended to slide:
  - hooks suiting a particular track and scale,
  - smooth slide down the track, no jerky moves, no swinging left or right,
  - evenly loaded track.



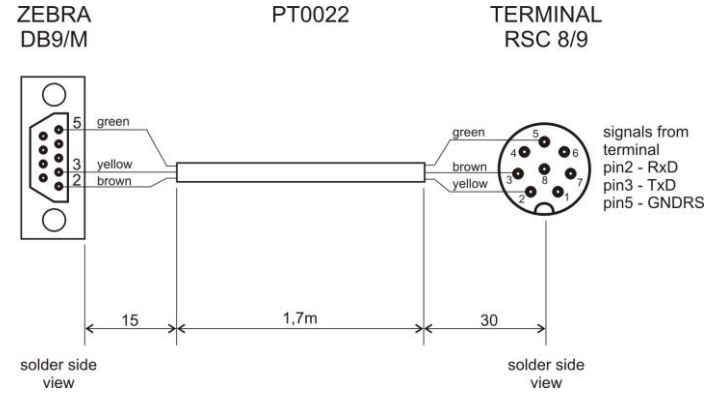
10. DIAGRAMS OF CONNECTION CABLES



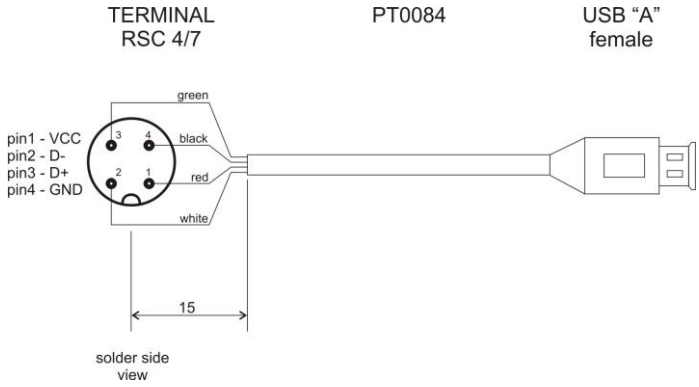
Terminal - computer cable



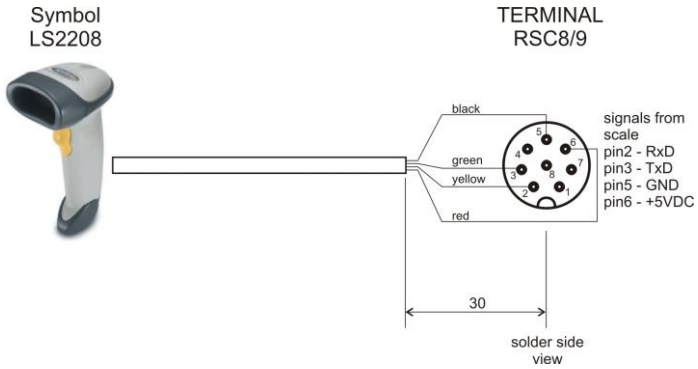
Terminal - printer cable (EPSON)



Terminal - printer cable (ZEBRA)



USB adapter cable



Terminal – barcode scanner cable (LS2208)

	„Scale-Ethernet" cable is a standard network cable terminated with RJ45 connectors on both ends.

11. TECHNICAL SPECIFICATIONS

For technical specifications of respective scales go to RADWAG website www.radwag.com.

12. ERROR MESSAGES

Max weighing threshold exceeded Unload the weighing pan	Min weighing threshold exceeded Install weighing pan
Zeroing out of range Press tarring button or restart the balance	Display capacity out of range Unload the weighing pan
Tarring out of range Press zeroing button or restart the balance	Start mass out of range Install weighing pan
Zeroing/tarring time out of range Weighing indication unstable	