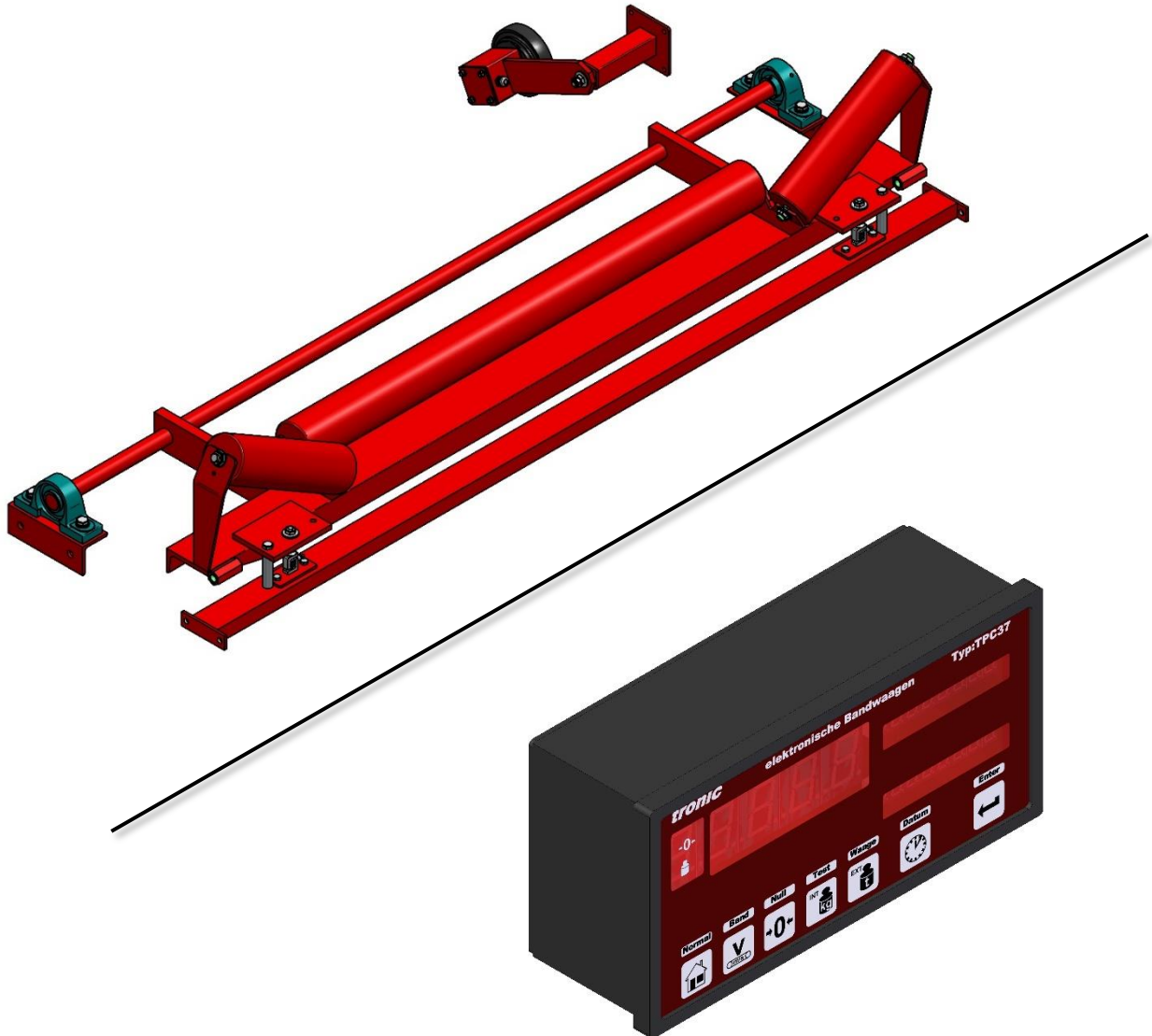


TPC 37-DFB-24



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1. Overview



- Processor controlled
- Easy to use
- Automatic tare
- Test mode with test weight integrated
- Insensitive measuring system
- High resolution and reproducibility
- Integrated clock
- Two galvanically isolated outputs for PLC
- Serial interface
- Current loop interface 0(4) - 20mA

Load Cell System

- Weighing using load cells
- Very fine resolution

2. Safety information

2.1 Risks from the conveyor belt

When working on running machines, there is a considerable risk of injury.

Before starting any work, take note to the following warnings.



WARNING

Moving parts

Risk of injury from moving and driven machine parts

- Before any work on the machine:

1. Turn off the machine.
2. Wait till the machine stands still.
3. Safe the machine against turning back on.
4. Disconnect the power supply to the machine.

2.2 Danger from bulk material



DANGER

Danger from stray bulk materials

Risk of injury with possible death from falling or "shooting" bulk material.

- Before any work on the machine:

1. Interrupt and deactivate the material supply.
2. Secure the material supply against being switched on again.

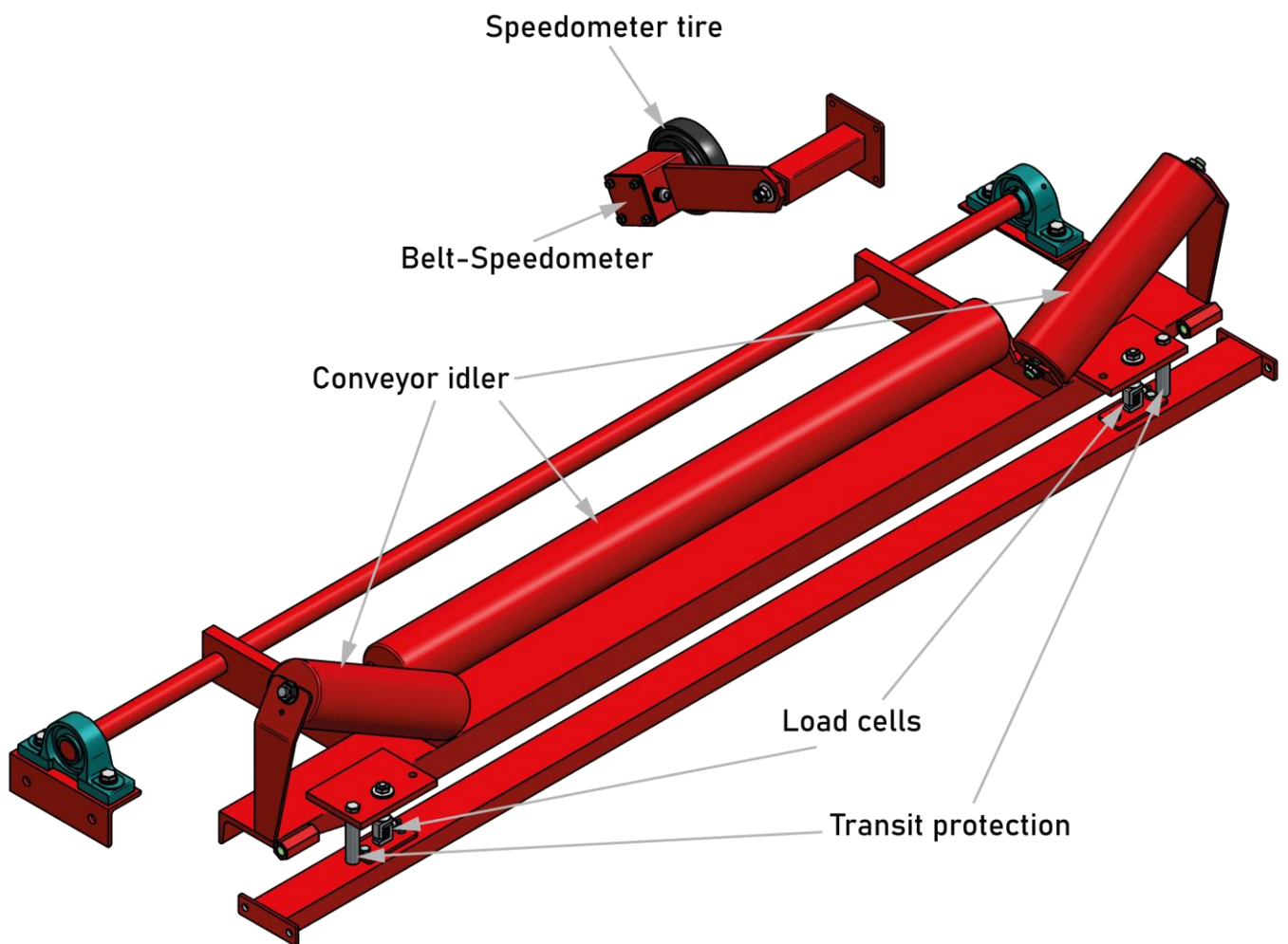
3. Technical specifications

Case:	To DIN 43700 with the following dimensions 192 X 96 X 64 (WxHxD) The DIN case (protection class IP 55) consists of fibreglass reinforced NORYL GFN2 SE1
Displays:	3 displays are installed. <ul style="list-style-type: none">- 1 x 5 digit 20mm display height- 2 x 8 digit 8mm display height <p>In normal operation of the weighbelt, the following data is displayed constantly:</p> <ul style="list-style-type: none">- Average conveying rate in t/h- Current time- Tonnes per day in 0.1t steps <p>Furthermore, the belt speed, date, annual ton counter and special displays for calibration and zeroing can be accessed.</p>
Keys:	7 film keys with different icons
Mechanics:	Lever arm mechanism with LVDT measuring transducer Tacho generator for belt speed
Belt width:	400-2200 mm
Electronics:	<ul style="list-style-type: none">- Supply 24VDC or 100-240VAC, 50/60Hz (option)- Power consumption max. 12VA- Working temp. range -20 to +50° Celsius- Accuracy better than 1 %- Cable length up to 200m
Measuring range:	depending on the design, from 20 t/h to 3000 t/h
Means of adjustment:	<ul style="list-style-type: none">- Automatic zeroing- Calibration with test weight or test weighing- Limits for max. and min. conveying rate- Limits for min. speed
Outputs:	Analogue and digital interfaces are programmable to order

3.1 Load cell

Manufacturer	GALOCE	
Model	GSL312-50KG (490N)	
Rated Output	mv/v	1.91996
Comprehensive precision	%F.S	$\leq \pm 0.1$
Linearity error	%F.S	0.1
Repeatability error	%F.S	0.1
Hysteresis error	%F.S	0.05
Creep	%F.S/30min	0.05
Zero balance	%F.S	± 2
Input impedance	Ω	350 ± 5
Output impedance	Ω	350 ± 3
Temp.effect on zero	%F.S/10°C	0.05
Temp.effect on span	%F.S/10°C	0.05
Excitation voltage	VDC	5~10
Compensated temp range	°C	-10~+60
Operating temp range	°C	-20~+80
Safe overload	%F.S	150
Ultimate overload	%F.S	200
Material		Stainless steel
Cable		$\Phi 2 \times 3m$
Defend grade		IP66

4. Descriptions



5. Technical overview

5.1 Mechanics

The mechanical part of our weighbelts is deliberately robust because experience has shown that, particularly in mobile applications, the weighing stations are subjected not only to the applied weight force of the conveyed material, but also to heavy vibrations and overloading when the conveyor belts are in motion.

In the weighing station, care was taken to ensure that all moving parts at the conveyor belt frame have adequate clearance. This measure prevents falling conveyed material from impeding the movement of the station by jamming. This experience gathered on site led us to decline cost-reducing savings in the mechanics.

5.2 Belt speedometer

The belt speedometer is held in triple bearings and has a rubber running surface which minimizes slippage between the idle wheel and the conveyor belt.

5.2 Load cells

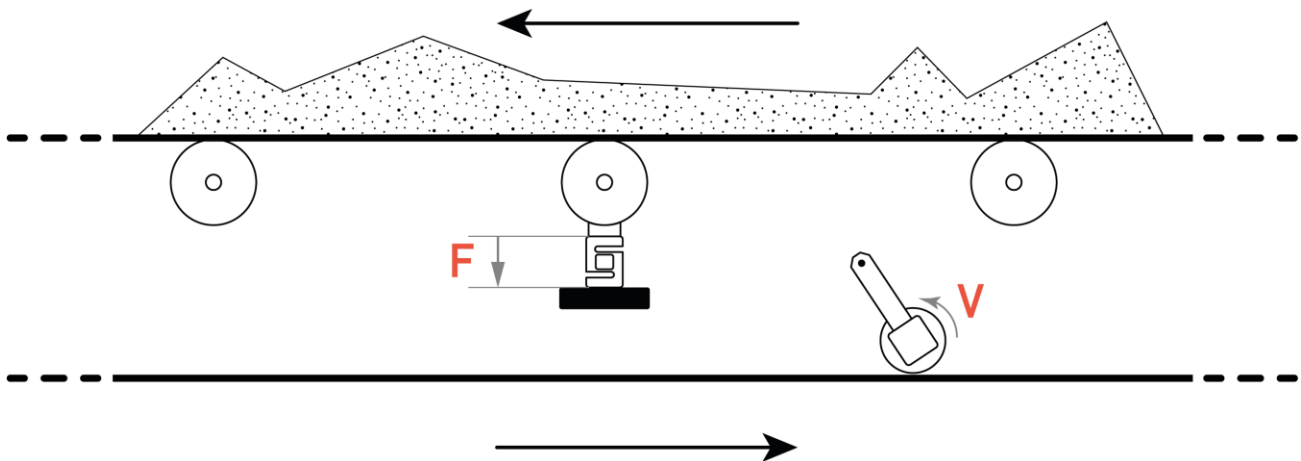
5.3 Measurement acquisition electronics

The electronic system of the weighbelt consists of two parts. One part is located directly at the mechanical part of the weighbelt. The very small signal of the measuring transducer is processed here to create a signal of 4-20mA. This has two advantages: 1. the signal generated in this way is extremely insensitive to externally generated interference fields and the length of the cable can be changed without recalibration. 2. if the evaluation circuitry is replaced, it is unnecessary to calibrate the measuring transducer.

With the current loop interface, it is also possible to detect open circuits and short-circuits.

The 2nd part of the electronic system is the evaluating circuitry.

5.4 Working principle

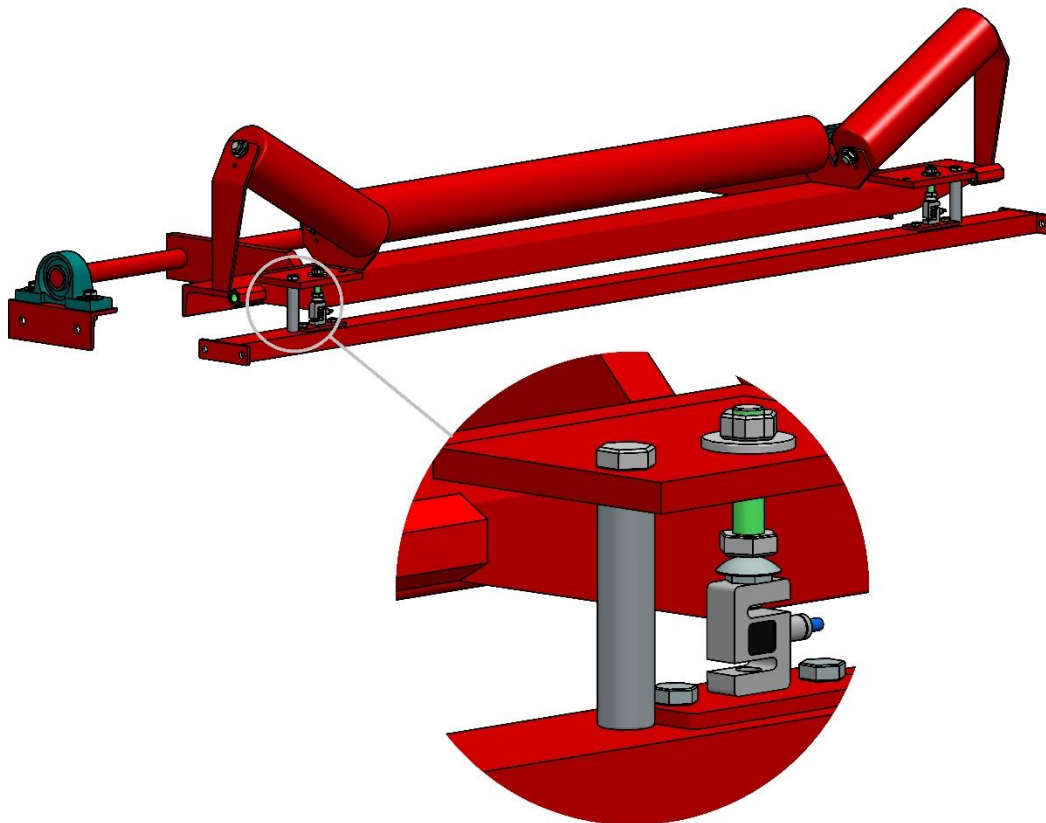


With the Load Cell System the weight (F) is measured continuously by two load cells.

The belt-speed (V) is measured by the belt-speedometer.

6. Transit protection

The transit protections are used to protect the load cells, as these are usually defect after an overload.



Always use the transit protection if:

- The conveyor is moved
- Workings take place on the conveyor
- The conveyor scale is exposed to an impermissible load

7. Maintenance

The system is low maintenance. There are only a few things to look at:

7.1 Idler roller

- Keep the roller clean.
- Make sure the rollers run smoothly.

7.2 Belt speedometer

- Make sure the speedometer tire runs smoothly.
- Check the tire for rough wear.
- Make sure that the speedometer can move easily up and down.

Manual

TPC 37



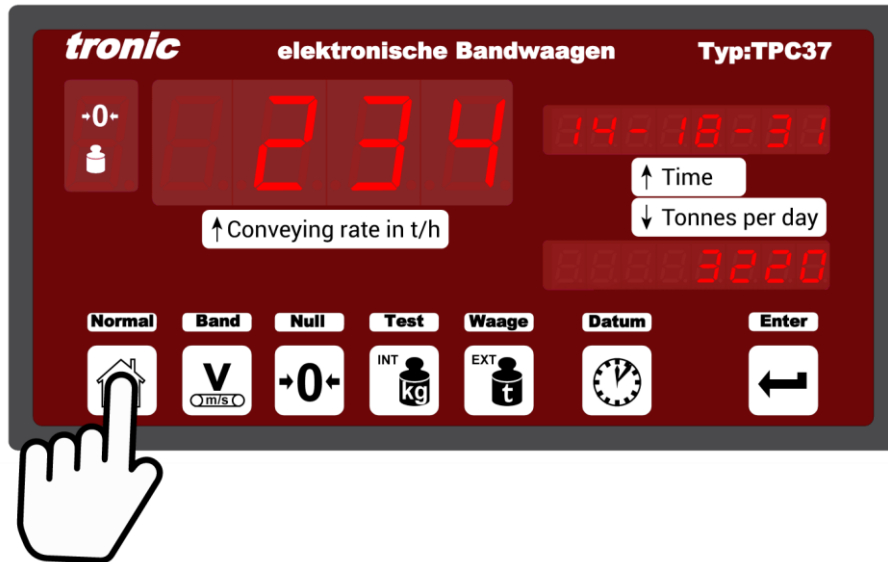
8. Manual

8.1 Normal operation

The weighbelt switches automatically to normal operation after commissioning.

If a different mode is active, normal operation can be chosen at any time by pressing the "NORMAL" KEY.

In normal operation, the following data is displayed continuously:



Reset daily counter:

The daily counter can be reset to zero by pressing the "NORMAL" key and then pressing the "DATE" key.

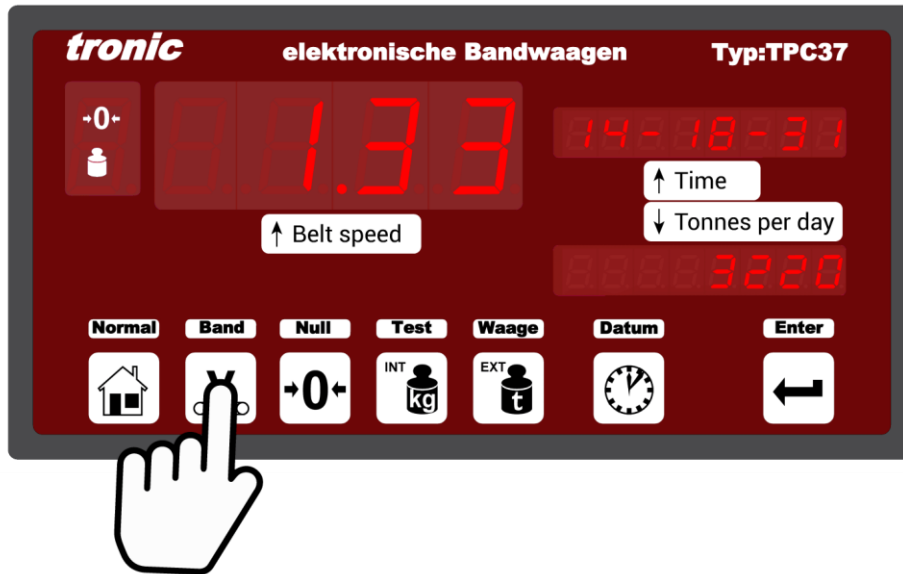
This makes it possible to determine whether this is to be a daily, weekly, monthly or other counter.



8.2 Belt speed

If you wish to determine the belt speed, press the "BELT" key.

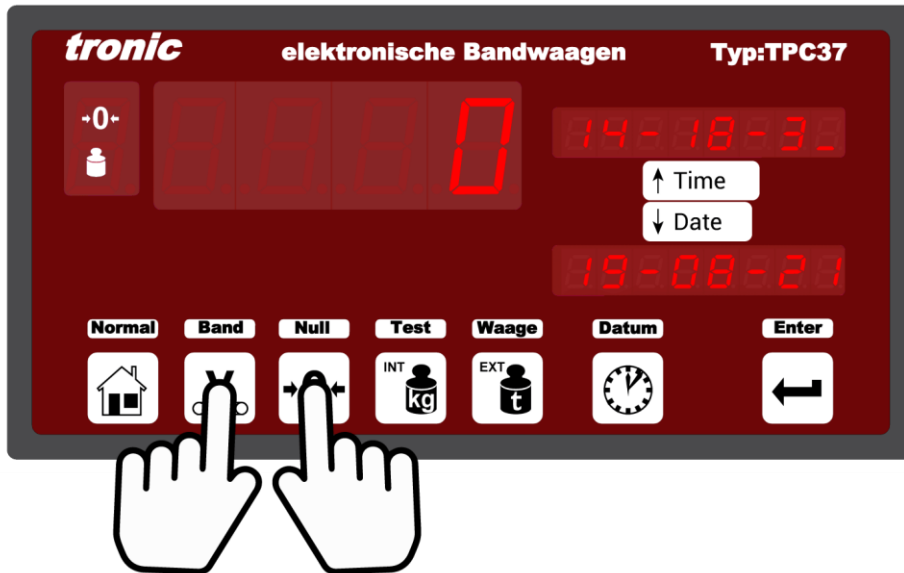
The following values are then displayed:



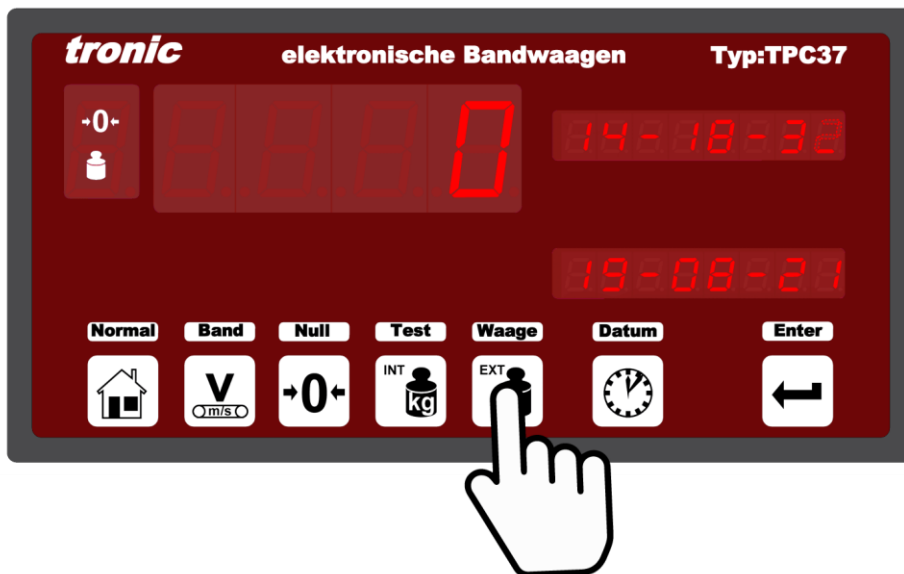
8.3 Set the clock/date

The time and date can be correctly adjusted in a single operation. The same work is required for both settings.

After pressing the "BELT" key and then pressing the "ZERO" key, display 2 indicates the time, by which the last digit blinks in display 2. Display 3 indicates the date.



By pressing the "SCALES" key, the blinking digit can be adjusted.



When the blinking digit is adjusted as desired, press the "DATE" key.

The cursor then moves one digit further.

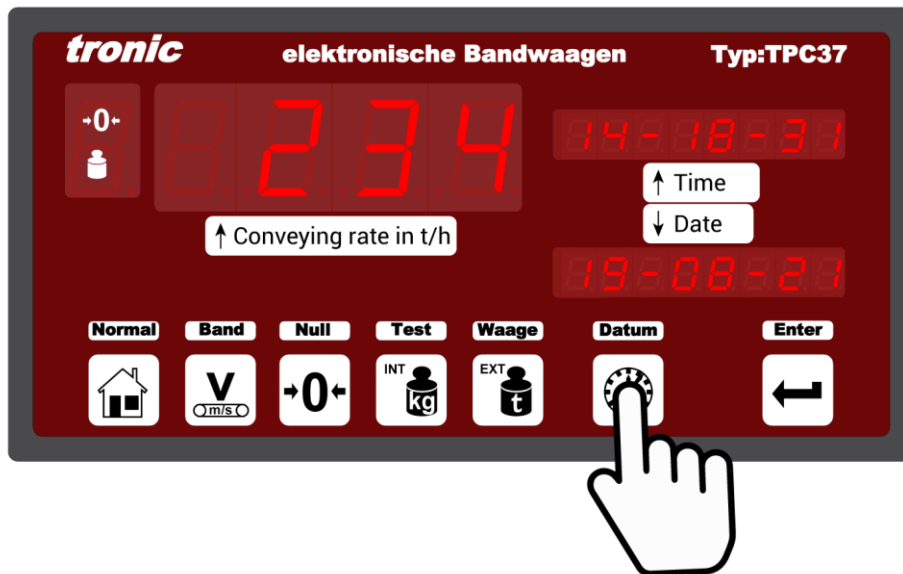
Repeat these steps until the time and date are correctly adjusted.

When the "ENTER" key is pressed, the scales store the new value and return to normal operation.

8.4 Date

You can call the date by pressing the "DATE" key.

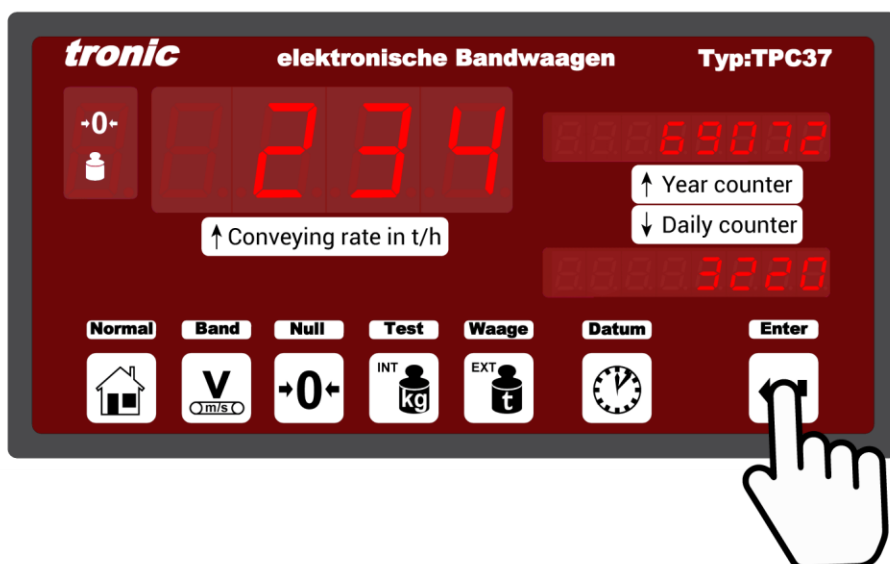
The following values are then displayed:



8.5 Year counter

The year counter shows you the sum of the conveyed tons. The year counter can be called by pressing the "ENTER" key.

The following values are then displayed:



8.6 Tare adjustment

For the orderly operation of the weighbelt, it is necessary to adjust the tare weight at regular intervals, particularly after the conveyor belt has been moved. The following work is necessary for this:

1. Start the empty conveyor belt
2. Press the key „ZERO“.
The number **118** then appears on display 1



3. Tare adjustment is started by pressing the "ENTER" key. As long as tare adjustment is running, display 1 also marks the TARE Icon on the upper left.

Tare adjustment is performed automatically by the controller. Display 1 indicates a number decreasing continuously to 0. When the value 0 is reached, the adjustment is complete and the unit switches automatically to normal operation.



8.7 Calibration

The precision of the scales depends on its calibration. Calibration can be performed in two ways, with a test weight or by test weighing.

The two methods are introduced and described below.

8.7.1 Calibration with a test weight

Calibration with a test weight is intended specially for mobile application of the scales. This makes it possible to perform a calibration at any place or time. Before calibration, it is necessary to adjust the tare weight (see Point 8.6).

To access the test mode "Calibration with test weight", the following steps must be taken:

1. Suspend the test weight.
2. Start the conveyor.
3. Press the key „TEST“.
Display 1 also marks the CAL Icon on the upper left.



4. Press the key "ENTER".
The number in display 1 reduces continuously to 0.
In display 2, the value increases and approaches the nominal value in display 3.



5. By renewed pressing of the "ENTER" key, the value in display 2 is adjusted to the nominal value in display 3.
Display 1 briefly indicates the letters "-CAL-", the scales then automatically switch to normal operation.

The test weight must then be removed.



8.7.2 Calibration by test weighing

If test weighing is possible, this is preferable to calibration with a test weight. Tare adjustment must firstly be performed (see Point 8.6).

The following work must then be performed:

1. Press key "**Scales**".
2. The weighing procedure starts when the "**ENTER**" key is pressed.
3. Material should now be fed to the conveyor belt.
The weight is indicated by display 2.
Load a truck with the weighed, conveyed material.
4. When the truck is loaded, press the "**NORMAL**" key.
The scales switch to normal operation. Weigh the truck on a calibrated industrial weighbridge. Adjust the value of the weighbelt with the value determined in this way as follows:
5. Press the "**SCALES**" key, display 2 indicates the weight determined by the weighbelt.
If the actual weight is almost identical with this, it is unnecessary to readjust the scales and the procedure can be terminated by pressing the "**NORMAL**" key.
6. If the actual weight deviates substantially from the weight determined by the industrial weighbridge, the scales must be adjusted.
For this, press the "**DATE**" key instead of the "**NORMAL**" key.
Display 3 now indicates the same value as display 2.
7. By pressing the "**SCALES**" key, you can reduce the nominal value in display 3.
By pressing the "**DATE**" key, you can increase the nominal value.
8. When the nominal value is correctly adjusted, press the "**ENTER**" key.
Display 1 briefly shows "-CAL-".

The scales are now calibrated and are back in normal operation.

9. How to apply the test weight

