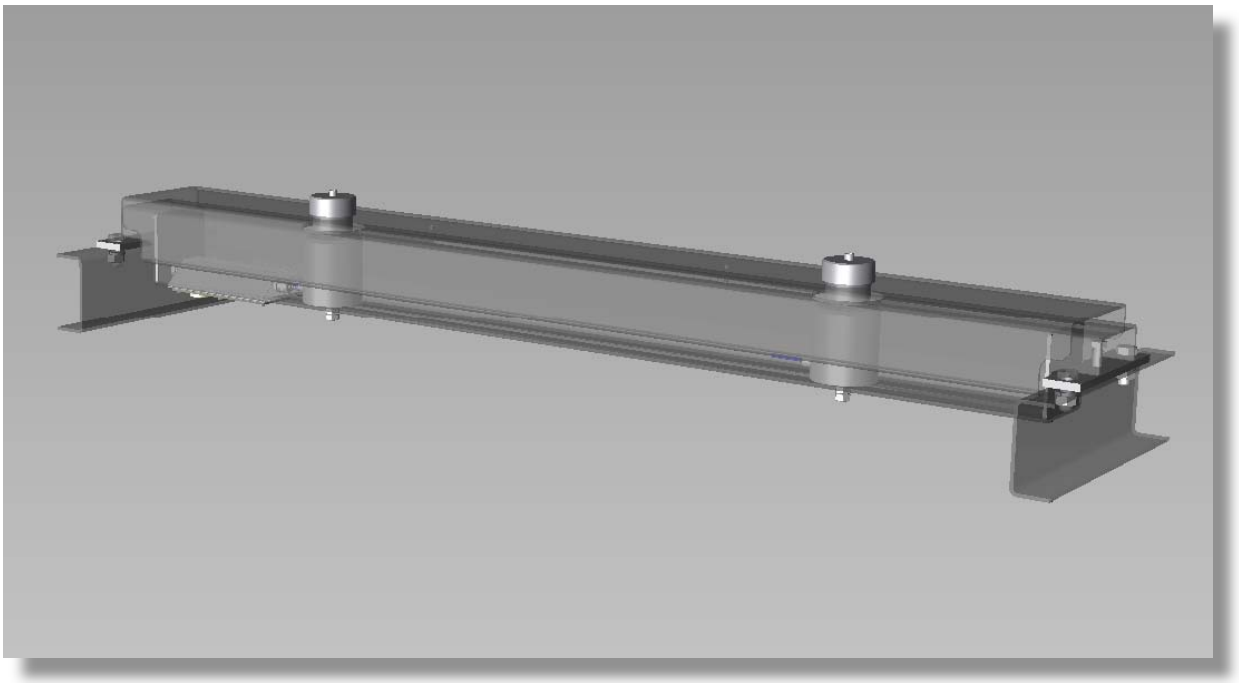
Belt-Weighing System:

Type WBA-1205



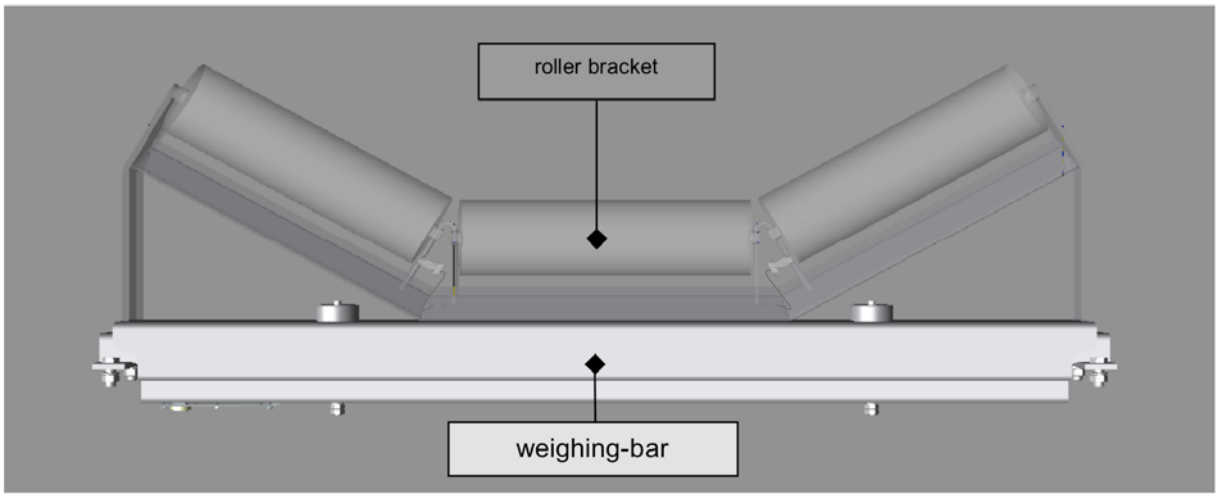
Systemdescription:

The EMSYS belt-weigher is a compact and rugged measuring device for belt conveyors, designed for downhole and non downhole conditions.

An EMSYS Belt-Weighing System exists of

- a weighing-bar with:
  - two load cells
  - and a Transmitter.
- a Control-Unit STG-300-****
- a revoloution sensor:
  - with revolution-sensor idler or
  - running wheel
- a weighing-zone (optional)
  - with four matched and one modified roller bracket
  - one warp resistant supporting frame (separately available)
- Check weight (optional)

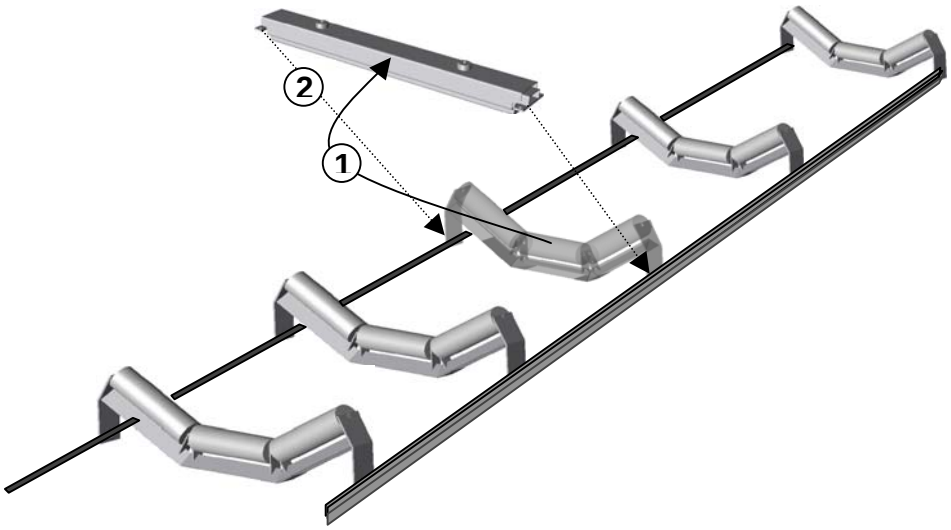
Note:
The weighing-zone is recommended if the mechanical requirements in the sphere of of the belt-weigher can not be warranted by the existing construction of the belt conveyor.



Pic.01: EMSYS belt-weigher

Installation:

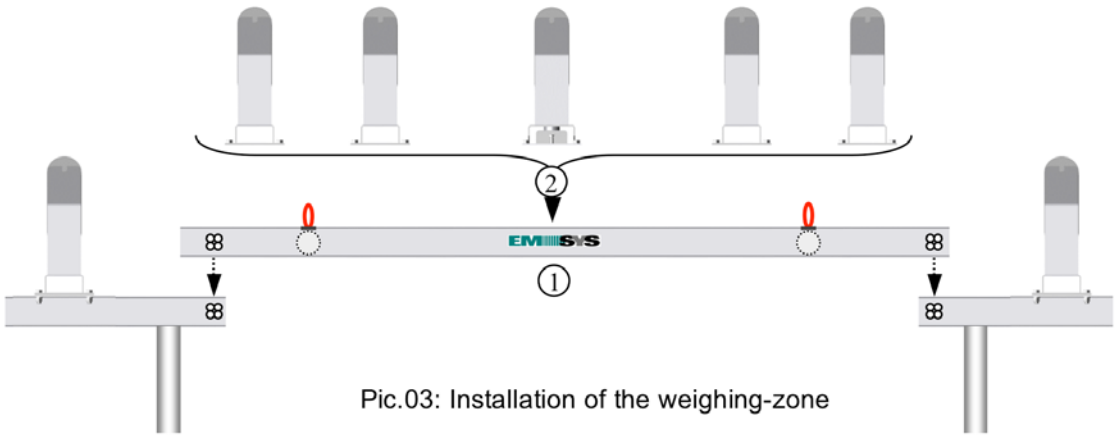
The weighing-bar will be installed at the place of an existing roller bracket. Therefore the roller bracket has to be dismantled from the construction of the belt conveyor and subsequently mounted on the weighing bar.



Pic.02: Installation of the belt-weigher

By utilising the weighing-zone the segment of the construction of the belt conveyor at the installation point will be replaced by the warp resistant supporting frame (Pic. 03:1).

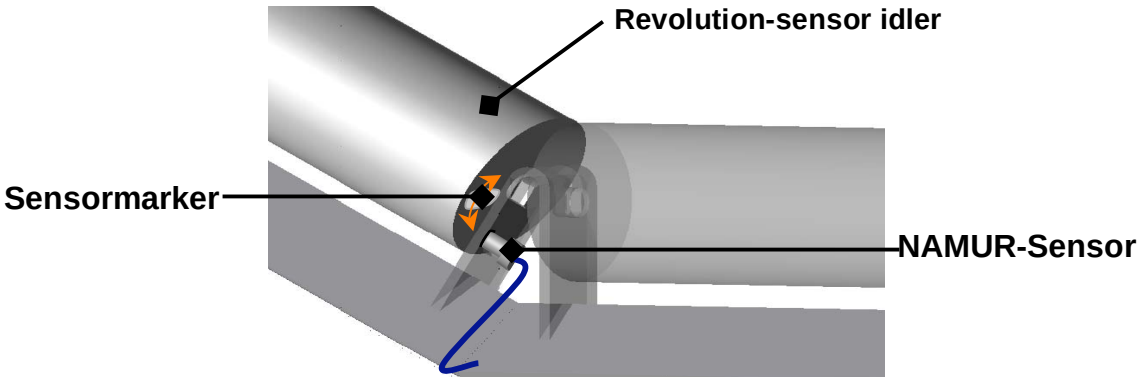
The belt-weigher as well as the matched roller brackets will be screwed on the warp resistant supporting frame at the marked positions (Pic.03: 2).



Pic.03: Installation of the weighing-zone

Measuring principle:

The conveyed material applies a force proportional to its weight through the belt and the roller bracket on to the load cells. On the basis of the design of the belt-weigher, only the vertical component of the weight affects the load cells.
The resulting deflection of the strain gauges in the load cells will be transformed into an electrical signal proportional to the weight. This signal will be collected and evaluated by the control unit.



Pic.04: revolution-sensing with revolution-sensor idler

For measuring the flow rate (tonnage) the belt speed is acquired by the deployed revolution-sensing. Additionally the revolution pulses are used during the automatic null balance.

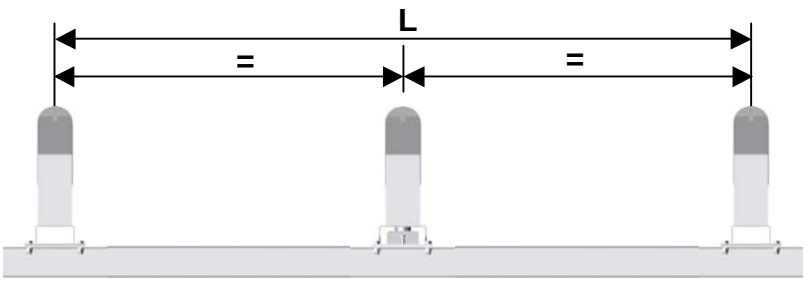
Note:
The speed of the belt is interpreted as the speed of the conveyed material. Therefore a relative movement of the conveyed material to the belt must be avoided!

During the automatic null balance the belt weight of the conveyor is averaged over the whole length of belt. This feature allows the application of the belt-weighing system in conveyors with belts of varying weights.

Parametrisation:

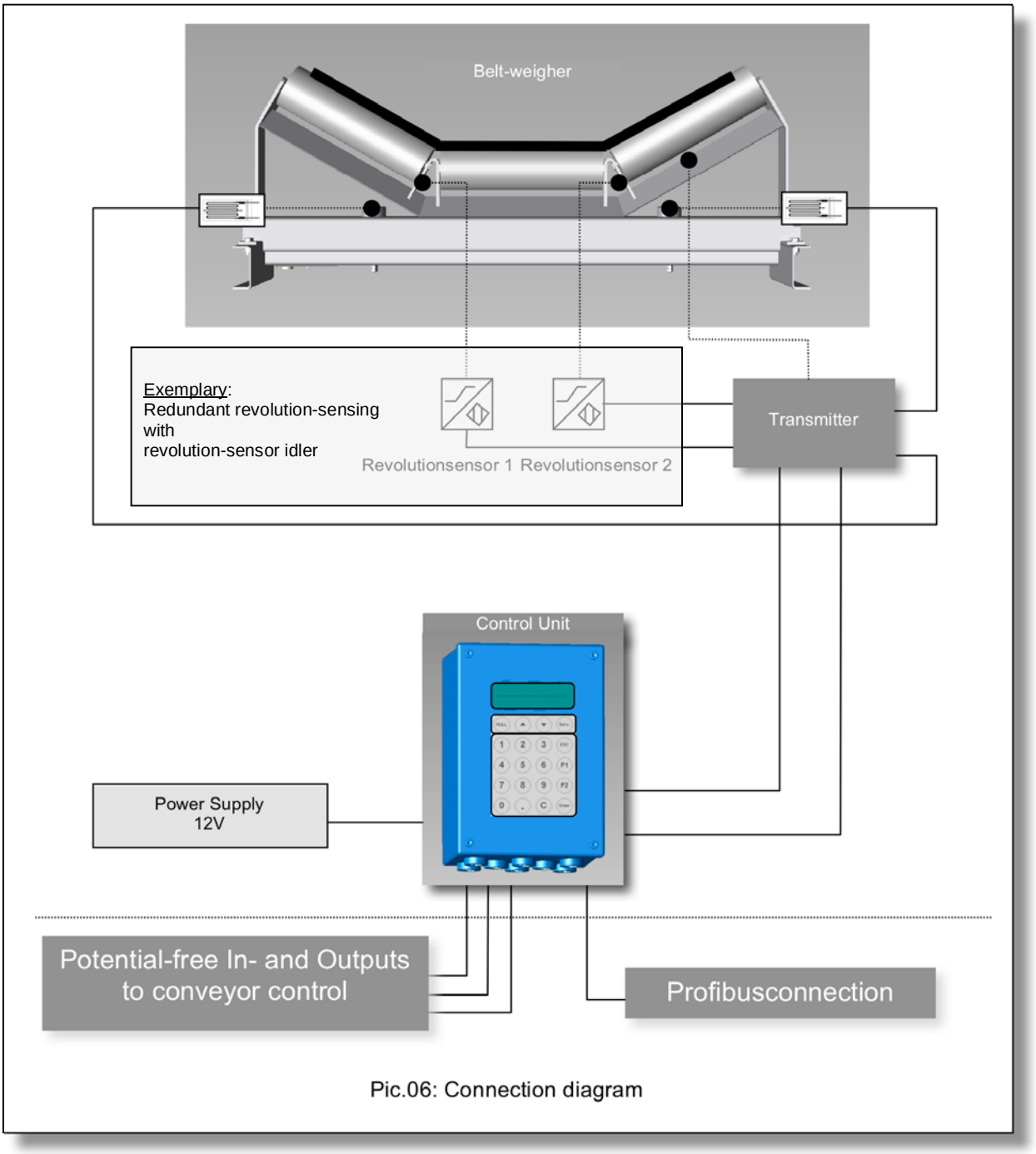
The following information is required for the parametrisation:

- Diameter of the running wheel or revolution-sensor idler
- Distance between neighboured roller brackets (Pic.05)
- Length of the belt
- Gradient of the load cells (supplied by manufacturer)



Pic.05: Distance between roller brackets ´L´

The input of the parameters can be done locally by using the keyboard of the control unit. A remote access is also feasible if Profibus is applicable. Next to the Profibus interface the control unit is equipped with further interfaces for a simple integration of the belt-weighing system into existing control systems.



Pic.06: Connection diagram

Technical Data:

Accuracy[1]:

- ± 0,5% to 1% of the accumulated mass by 25 to100% of the operating range, depending on the application

Load cell:

• Construction	stainless steel
• Power Supply	$5 \leq U_V \leq 15V$
• Output	2mV/V
• Linearity	± 0,02%
• Hysteresis	≤± 0,017%S
• Reproducibility	0,01% of the nominal output
• Capacity	500kg; 1000kg
• Overload	safe to 150% of the nominal capacity
• Temperature	$-20 \leq T_A \leq +40°C$ (for ATEX) $-30 \leq T_A \leq +70°C$

Belt width:

- Standard: 1000 mm to 2500 mm
- Further on request

Belt speed:

- Up to 5m/s

Inclination of the belt-conveyor

- ≤ 20° from the horizontal position; fix inclination and no relative movement of the conveyed material
- > 20° with lower accuracy

Profile of roller bracket:

- 0° up to 40°
- Up to 45° with lower accuracy

Distance between neighboured roller brackets:

- 0,6 m to 1,5 m

[1] See „Notice“

Technical Data:

In-/outputs of the Control unit:

- Optocoupler input: locking of parameters
- Optocoupler input: Setting Tara
- Optocoupler output: Tonnage (5 … 15Hz)
- Relay-output: Pulse per tonne (1Imp./t)

Interfaces of the Control Unit:

- Profibus (optional) DP or FDL

Explosion-proof labelling:

- ⟨Ex⟩ I M2 EEx ib I

Accreditation:

- CE
- ATEX

Notice:

- The specified accuracies are only valid if the installation is done accordingly to the construction rules and by periodical and careful maintenance of the belt-weigher as per instructions.
- To confirm the accuracy it is necessary to perform a measurement for reference. For such a measurement a defined mass of minimum 10% of the nominal tonnage is required and an entire revolution of the belt has to be completed.

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