**Bundesamt
für Eich- und
Vermessungswesen**

Notifizierte Stelle NB 0445

Enclosure to the EU type examination certificate
No. BEV-13.414/0016-NB/2017

1. Design of the instrument

1.1. Construction

Continuous totalizing automatic weighing instrument of type F-EBW.
It consists primarily of a load receptor (single-roller or multi-roller belt scale) with strain gauge load cell(s), a pulse transmitter or tachometer to determine the belt speed, the basic unit (DWC-7B) with the X2X-transmitter, the service unit (OP-7B) and the decentralized peripheral devices which consist of the verification-switch, load cell and the X2X-receiver.
Weighing instruments of the type F-EBW can not only be used as Continuous totalizing automatic weighing instruments but also as weigh feeders. They serve to gravimetrically dose different materials, where the dosing capacity (flow rate) is controlled by adjusting the belt speed or the preceding discharge devices (conveyer channels, screws, …) .

Depending on the type of the bulk material, the weighing instruments can either be constructed open or closed.

The required hardware consists of:
- 1 basic unit

- 1 service unit

- a decentralized arrangement (as described above) including X2X link bus modules for data transfer

The weighing instrument is assessed according to requirements of:
- Directive 2014/32/EU

- OIML R50 (1997)

- WELMEC Guide 7.2 (2015)

The individual parts can be assembled in different manners, for instance in control cabinets or in different control boxes which protect the components. The basic unit and the service unit may be installed separately.

1.2. Sensor

The weighing instrument uses Strain gauge load cell(s). Following types are permitted:

Manufacturer	Type	Accuracy class	Number of scale intervals „n"
HBM	Z6 FD 1	C	≤ 1000
HBM	Z6 FC 3	C	≤ 3000
HBM	Z6 FC 4	C	≤ 4000
HBM	Z6 FC 6	C	≤ 6000
HBM	HLCA	C	≤ 3000

1.3. Measurand value processing

- Hardware:

The force is transmitted via the load cells(s). The measurement signal is then transferred to the basic unit and prepared for the software with the help of an A/D converter.
The belt speed is determined by the pulse generator which is connected to the Tachometer.

- Software of the basic unit DWC-7B:

The digitalized measurement signals of the load cell are prepared and displayed as weight values of the current net load (in % of the maximum load).
The speed "v" is calculated from the signals received from the tachometer input taking the specified tacho frequency and the nominal belt speed into consideration. The current value for the speed can be displayed as absolute value or as percentage value.

Both of these values are used to calculate the current flow rate, and the amount of dispensed material which is used to update the totalization devices. (Every time the partial totalization device "C" is reset, an entry in the memory is generated – see section 1.4)

- Software of the service unit OP-7B:

The service unit display is used to operate the weighing instrument and present relevant information to the user. Additionally the stored measurement values are controlled and displayed and a digital Watermark is shown to indicate that the instrument is verified.

1.4. Indication of the measurement results

The service unit is operated through a touch display.

The "graphic screen" is used by default to display the measurement process (Figure 2). The current values for the flow rate (shown in [t/h], [kg/h] or [%]), the nominal values for the flow rate (shown in [t/h] or [kg/h]), the value of the general totalization device "A" (shown in [t] or [kg]) and some additional information are displayed.

Other information can be displayed by using the "text 1" and "text 2" -screen. Those are for instance the value of the partial totalization device "C" (shown in [t] or [kg]), the actual belt speed (shown in [mm/s]), the actual belt load (shown in [%]) and the correction value of the precision regulator for adjustment of the flow rate.
By pressing the "del"-Key the partial totalization counter "C" will be set to zero.

- Technical specifications of the basic unit DWC-7B:

Power supply: 24 V, DC ± 15 %

Load cell supply voltage: 5,5 V, DC

Maximum signal voltage for dead load: 4,0 mV

Minimum signal voltage for dead load: 0,25 mV

Minimum measuring voltage: 0,25 mV

Maximum measuring voltage: 8,0 mV

Minimum load cell impedance: 85 Ohm

Maximum load cell impedance: 5000 Ohm

Maximum load cell cable length: 100 m

Cable cross-section: ≥ 0,75 mm²

Load cell connection: 4-wire cable or 6-wire cable

Ratio of cable length to cross-section = 120 m/mm²

1.5. Optional equipment and functions subject to MID requirements

The instruments may be equipped with a printer and/or data storage device for legal purpose.

- Legal relevant functions – Software:

The primary task of the software is to determine the measured value and to display it subsequently on the display (see clause 1.3 and 1.4). therefore a secured connection between basic unit, service unit and decentralized arrangement is necessary. It is realized by using the X2X-modules.

The software version is displayed when the instrument is switched on in the lower part of the screen.
The valid software version of the service unit is: P 02.xx.yy

All legal relevant data, such as the software version of the basic unit can be displayed by using the sub-menu „S6: IO-Status".
The valid software version of the basic unit is: W 02.xx.yy

xx und yy … Placeholder for numbers between 00 and 99; a new version is generated when software components which do not affect the metrologically relevant functionality are modified.

To guarantee the correct function of the weighing instrument, the software version of the basic unit and the service unit has to be identical until the „yy" - places. (see Figure 5)

Weighing instruments of type „F-EBW" are equipped with two totalization devices („A" and „C") which are used as long term data storage devices. An entry is generated automatically when the partial totalization device "C" is reset.

The Entries consist of:

  - Consecutive number

  - Serial number of the weighing instrument

  - Actual values of both totalization devices „A" and „C"

  - Time stamp

  - checksum

Up to 1000 records can be saved in this manner and then recalled subsequently (see clause 5.4).

  - Legally relevant functions – Protection of the software:

In order to prevent modification to the parameters or subsequent implementing of new software, the following hardware security systems have been foreseen:
- New Software can be installed only after removing the housing of the „PA Switch". It is fixed with screws and sealed. In this way, it is not possible to open the unit after verification (see clause 5.4).
- In order to readjust the device or to modify parameters specific to the measurement, the "PA switch" shall be operated.

1.6. Technical documentation

  - Short guide of the DWC-7

  - Operating manual of the DWC-7B

  - Parameter manual of the DWC-7

  - Connection assignment

  - Software documentation

  - List of parameters

  - EMC Test report No. 20170823-01_EI Immunity

  - Construction drawings of the indicator and load receptor

  - Instructions on securing the weighing instrument

1.7. Integrated equipment and functions not subject to MID

  - Pulse counter

  - SPS-device

  - Field bus-interfaces

  - Inductive proximity sensor

  - PC via Ethernet-interface

  - printer

  - USB-Interface for documentation of the actual setting of parameters

2. Technical data

2.1. Rated operating conditions

2.1.1 Measurand

mass

2.1.2 Measurement range

Maximum flow rate $Q_{max} \leq 3000$ t/h
Minimum flow rate Q_{min}: shall be specified by the manufacturer, but the instantaneous net load on the weighing module shall be at least 20 % of the maximum capacity.
Minimum totalized load Σ_{min}: is specified by the manufacturer; the minimum totalized load, however, shall be equal or greater than the three subsequent values:

- 1 belt revolution at Q_{max}

- 2 % of Qmax

- 800 d (for accuracy class 0,5),or

    400 d (for accuracy class 1) and

    200 d (for accuracy class 2)

Scale interval : $d \geq 0,1$ kg   (depending on the maximum flow rate Q_{max})

2.1.3 Accuracy class

0,5 / 1 / 2

2.1.4 Environment – influence quantities

- climatic

    Temperature range: -10 °C bis +40 °C

    Humidity: bis 85 % (non condensing)

- mechanic

    class M3

- electromagnetic

    class E2

2.2. Other operating conditions

zero setting device (semi-automatic): Zero setting range ≤ 4 % of Q_{max}
Power supply: according to 1.4 "technical specifications of the basic unit DWC-7B"

3. Interfaces und compatibility conditions

Serial interface (RS-232) for connecting a PC or printer

Field bus interface for further processing of data

4. Requirements on production, putting into use and utilisation

4.1. Requirements on production

The weighing instruments shall be designed in such a manner that they are suitable for their intended purpose, the products to be weighed and the accuracy class specified.

The weighing instruments shall only be put into operation if:
- The conveyor belt is continuously in contact with the weighing pulleys,

- The inclination of the conveyor belt does not cause the weighing product to slide,

- Equipment to clean the conveyor belt does not affect the result of the weighing operation,

- The tension of the belt is held constant at any time. Where appropriate the system has to be equipped with a weight-loaded tensioning device.

The weighing product shall possibly be transported in the middle of the conveyor belt.

Conformity with this type examination certificate in particular means:
- The metrological characteristics should not get affected by any random misadjustment or

  misalignment.

- Any mal-operation of the controller of the belt weigher during a weighing operation should not

  cause any incorrect weighing results.

- It shall not be possible to reset the general totalization device.

- In case of failure in the power supply, the conveyor belt shall be stopped and the total weighed

  value added up to then shall be maintained.

- If the weighing instrument is operated outside the scope of application (instantaneous net load

  greater than "Max" or the permissible flowrate is overshot or undershot), an error message

  shall appear on the display

4.2.   Requirements on putting into use

- An operating manual in the official language shall be available for the instrument.
- Moreover, information on the weighing instrument according to Annex I, 9.3 of the Directive 2014/32/EC shall be enclosed.
- A label with the following inscription or with the similar meaning in the official language shall be affixed near the display: "The zero value shall be set before starting a new measurement or 1 time daily. Value set to zero at least after 1 complete belt circulation."
  The indication of the „Watermark" (as identification for usage under legal control) has to be checked. (see clause 5.4)
- Load cells shall be marked with their specifications (type, serial no., nominal load).
- Measurement cables shall be interrupted only within sealed junction boxes.
- An assignment label shall be affixed on the load receptor with specification of the type examination certificate no. and the serial number of the indicator as a minimum.
- The sealing positions (see clause 6.1) shall be easily and safely accessible, as well as without the need of any tools.

4.3.   Requirements on utilisation
- The zero value shall be set before starting a new measurement or 1 time daily.
- The indication of the „Watermark" has to be checked periodically.

5. Control of measuring tasks of the instrument in use

5.1.   Documentation of the procedure

- Operating manual
- EU type examination certificate No. BEV-13.414/0016-NB/2017

5.2.   Special equipment or software

- Suitable non-automatic weighing instrument for checking the mass of the product of each weighing operation
- Standard weights for checking the non-automatic weighing instrument
- Adequate product for carrying out the number of weighing operations foreseen at the minimum totalized load.

5.3.   Identification
- Hardware: see Figure 1

- Software: see clause 1.3

5.4.   Metrological inspection
The initial verification and in-service inspection shall be performed with consideration of the normative document OIML R50-2 (2014) or according to the specifications of the testing body and the national regulations respectively.
It consists of:
- Checking of zero

- Discrimination of the indicator used for zero-setting

- Maximum variation during zero-load test (if applicable)

- In-situ product tests

In addition following measurements are to be done:
- Mimimum of three tests with various flow rates (for checking the correct function as a weigh feeder)

- At least one measurement by using the test weight
The error may not exceed the maximum permissible error as defined for the specific accuracy class of the instrument.

Testing the Software:

- Checking the data storage device in conformity with the directive (see Figure 3)

Five measurements need to be done to test the data storage device. The measured values shall be noted accordingly. The stored values in the data storage device shall then be checked whether they correspond with the noted measurement data.

The data storage device can be read out in the main menu by selecting the Option „S7:additional function" and „ALIBI".The data is then loaded from the storage device and after checking the correct value of the checksum displayed without being changed. The individual entries can be selected by using the Arrow-Keys. The consecutive number and the time stamp may be used to identify the measurements.

If the Checksum test was correct, the CRC-Checksum will be shown in green color.
If not, the Checksum will be shown in red color. That means that the data were changed after they have been saved. Therefore they are no more rated as correct values.

- Checking the printer

If a printer is connected to the weighing instrument, the five measures for checking the data storage device have to match the printed values.

- Checking the software protection

The software should neither be updated subsequently nor should the parameters of the weighing instrument be modified.
For this purpose, the verification switch (PA) on the basic unit is brought to position „Verification Mode active ".Finally, you can no longer access the adjustment of the weighing instrument. The

specified Watermark „ **0445** " has to appear on the display.

6. **Security measures**

   - Sealing

     The marking label shall be secured with the help of a seal against being replaced

   - The decentralized arrangement shall be secured with the help of a seal between the cover and

     the mounting plate to prevent it from being opened.

   - Any junction boxes in the measurement line shall be secured with the help of a seal to prevent

     them from being opened

   - The additional label on the load receptor shall be secured with the help of a seal against being

     replaced

7. Labelling and inscriptions

7.1. Information to be borne by and to accompany the instrument
The following inscriptions shall be fixed permanently to the weighing instrument: (see Figure 4)

- Name or Logo of the manufacturer: Kukla Waagenfabrik GmbH & Co KG

- Type designation: F-EBW

- Serial number of the instrument: ….

- EU type examination certificate No.:   „BEV-13.414/0016-NB/2017"

- Type of instrument: continuous totalizing automatic weighing instrument

- Accuracy class: ….

- Scale interval: $d = …$ [kg] oder [t]

- Depending on the type:

     Nominal value of belt speed: $v = …$ [m/s]

     Range of belt speed: $v = … / …$ [m/s]

     Power supply: 24 VDC

- Maximum flow rate: $Q_{max} = …$

- Minimum flow rate: $Q_{min} = …$

- Minimum totalized load: $\Sigma_{min} = …$

- Maximum capacity: $Max = …$ [kg] oder [t]

- Weigh lenght: $l = …$

- Temperature range: -10 °C bis +40 °C

- Weighing product: …

- Inspection (test) value: … %


7.2. Markings and inscriptions in accordance to Annex I, 9
The conformity marking shall be affixed to the marking label.

8. List of illustrations annexed to the certificate

Figure	Titel
Figure 1	Sample-configuration of the Hardware
Figure 2	Sample for display of the weighing operation
Figure 3	Sample for display of the stored data
Figure 4	Example for labelling
Figure 5	Sample for display of the software version
Figure 6	Seal of the manufacturer (Kukla Waagenfabrik GmbH & Co KG)

9. Annex

9.1. Figure 1: Sample-configuration of the Hardware
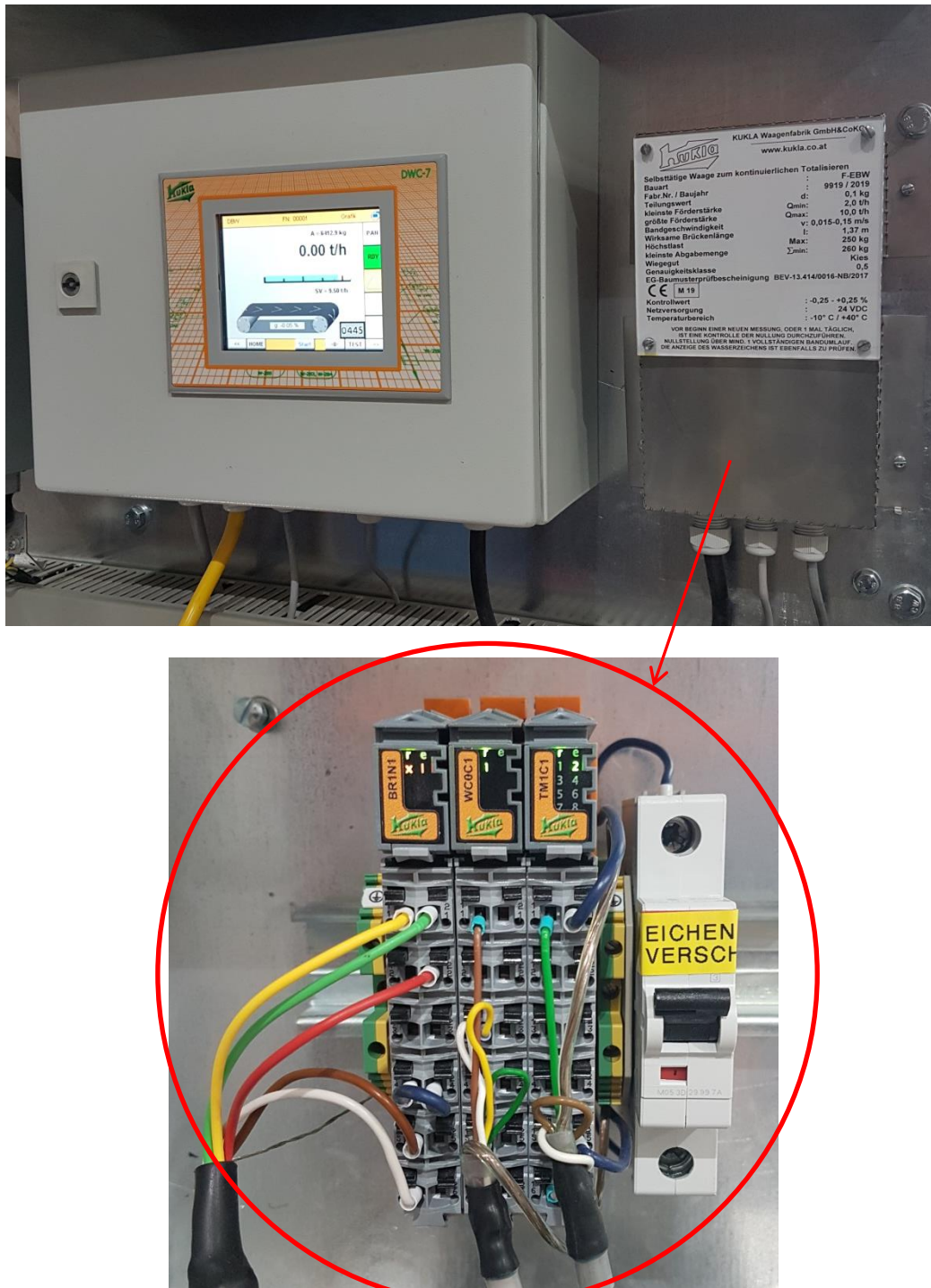
9.2. Figure 2: sample for display of the weighing operation

9.3. Figure 3: sample for display of the stored data

DBW		FN: 10222	Feature		
2	A = 22852kg	24.07.2017 11:06	⏫	Alibi	
10222	C = 455kg	CRC = 50726			
3	A = 22865kg	24.07.2017 11:06	🔼		
10222	C = 13kg	CRC = 48188			
4	A = 22980kg	24.07.2017 11:07	🔄		
10222	C = 115kg	CRC = 18157			
5	A = 26467kg	24.07.2017 11:53	🔽		
10222	C = 3487kg	CRC = 202			
			⏬		
<<	HOME		Start	>0<	TEST	>>

9.4. Figure 4: example for labelling
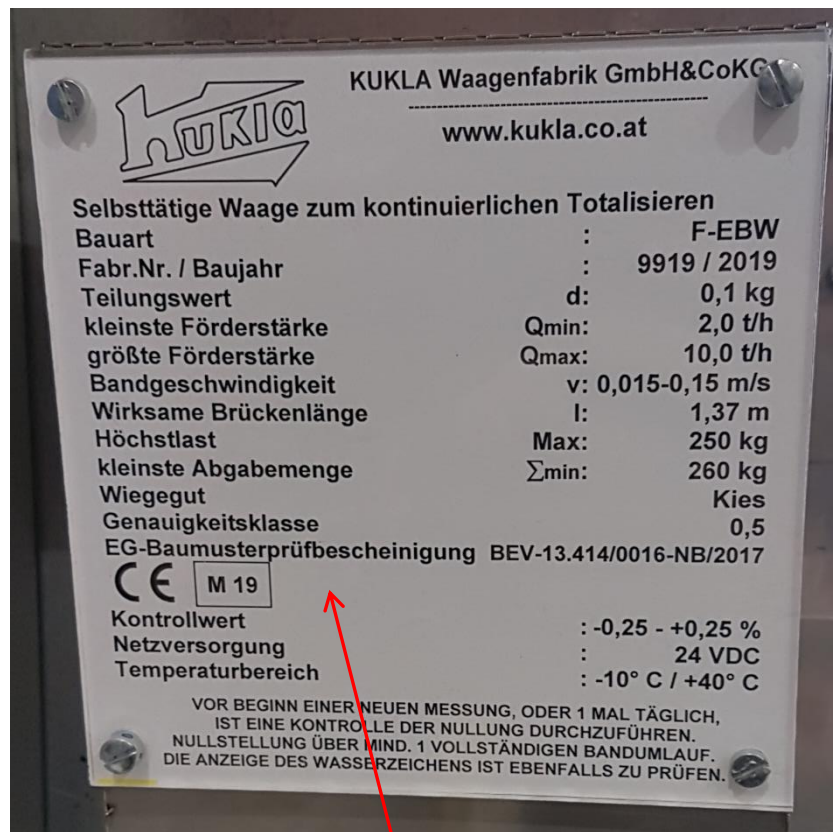
Placeholder for Number of the notified body

9.5. Figure 5: sample for display of the software version

9.6. Figure 6: Seal of the manufacturer (Fa. Kukla Waagenfabrik GmbH & Co KG)