

Quick reference guide

K1



DWC-8C

Revision list

Revision	Date	Author	Chapter	Description
K1_DWC-8C_V03_00_xx_en	03.04.2024	Ratzinger		Creation Initial Edition

Software indication

These instructions are based on following Software versions:

W.03.00.xx (Weighing system)

In course of the technical progress changes can be carried out at the software. At subsequent software versions therefore, deviations are possible compared to these instructions.

Operating instructions in German or English are considered as

ORIGINAL INSTRUCTIONS

All other languages are defined as Translations.

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*** SAFETY REGULATIONS ***

Being under voltage the device must not be opened. Danger of electric shock exists. Service works at the weighing equipment are permitted only for qualified personnel. In case of works at conveying lines, all relevant drives have to be switched-off and secured against re-engaging.



The related device/system may only be set-up and operated in connection with this documentation. Start-up and operation of a devices/system may only be carried out by **qualified personnel**. Qualified personnel in terms of safety notes of this documentation are persons being authorized to take into operation, to ground and to label the devices, systems and circuits in accordance with the standards of safety engineering.

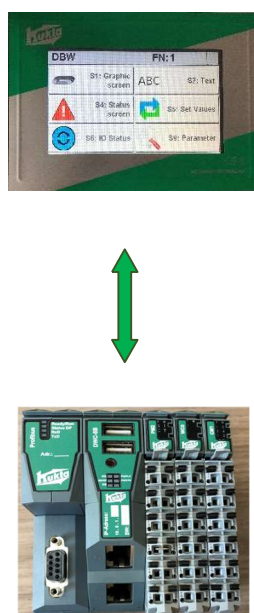
1 General Description

The DWC-8C scale controller is used to measure mass flows of bulk materials on belt scales, weighing screw feeder and in flow meters. Basically, the system can measure the conveying capacity and conveying volume. Optionally, a simple feed control can be realized.

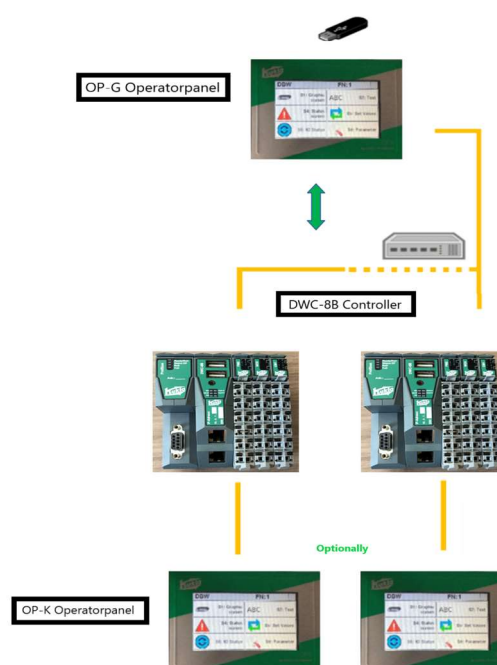
1.1 Structure of the scale system

Following configurations are possible:

Minimal structure



Networked structure



In principle, at least one service module must be existing in the complete system for operation and parameterization. This also applies for an operation / parameterization via a PC. Here the PC is connected to the OP-K and DWC-8B via ETH (Ethernet connection). The screen content of the OP-K is displayed on the PC via VNC viewer, and the OP-K can be operated from the PC. At normal scale operation, no service module is required.



The operator panel is equipped with a touch screen that can also be operated with gloves. The display with the touch screen should be cleaned at regular intervals. The power panel device may only be cleaned when the device is switched off so that no unintentional functions can be triggered when touching the touch screen or pressing the buttons.

For cleaning the power panel device, a damp cloth shall be used. For damping of the cloth only use water with flush fluid, screen detergent or alcohol (Ethanol). Do not spray the detergent directly onto the power panel device, but onto the cloth! In no case use of aggressive solvents, chemicals, abrasives, compressed air or steam jet.

2 Operation of the weighing system

The DWC-8C is technically a limited and simplified version of the DWC-7C, therefore DWC-7C manuals are also generally applicable within the scope of the limited functionality.

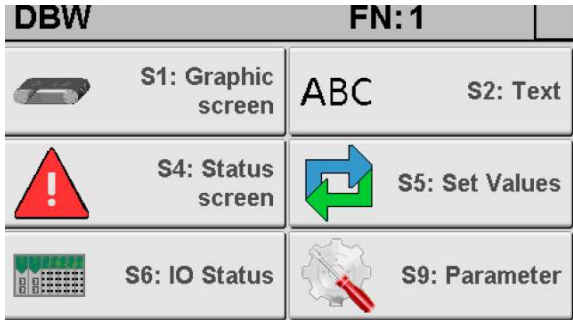
2.1 Preparations for start-up / holding system operational

The scales must be tared manually during commissioning or regularly during normal use. No material may be conveyed during this process.

If possible, a material test should then be carried out. If not possible, or in addition, at least a test weight test should be carried out!

2.2 Main selection screen

Within one scale the main selection can be opened with key "MODE".

The upper bar describes which scale is shown currently.			
 <p>The image shows a grid of icons for different screens: S1 (Graphic screen) with a scale icon, S2 (Text) with 'ABC', S4 (Status screen) with a red warning triangle, S5 (Set Values) with a blue and green circular arrow, S6 (IO Status) with a green bar chart, and S9 (Parameter) with a gear icon.</p>		<p>S1: Graphic screen shows the most important scale data (normal screen)</p> <p>S2: Text 1 shows detail information, primarily for maintenance works</p> <p>S4: Status screen shows warnings and operational faults</p> <p>S5: Set Values permits changes of set points and changes of functions</p> <p>S6: IO-Status shows the status of all analog and digital in- and outputs (if a Fieldbus interface is included, also all Bus signals are represented)</p>	

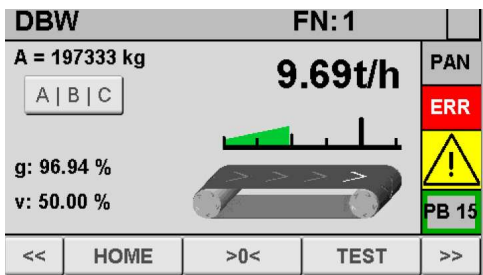
For reading the operating data, entering setpoints with appropriate parameterization and for various images are available in normal operation.

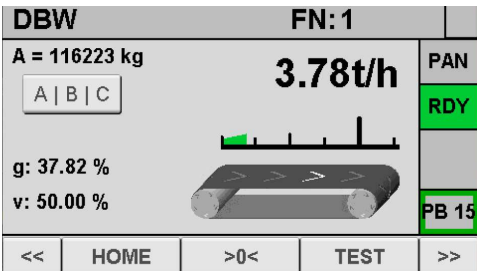
2.3 S1: Graphic screen

The usual screen is the „Graphic screen“. At Graphic screen there are several possibilities of representation, determined depending on the type of scale in the parameterizing mode.

The squares on the right side describe the operational status.

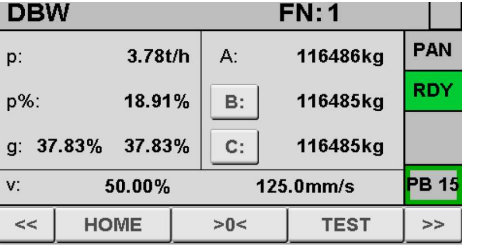
The uppermost row shows symbols for information about certain operational states (1-4).

 <p>The image shows the S1 Graphic screen with data: DBW, FN: 1, A = 197333 kg, 9.69t/h, g: 96.94 %, v: 50.00 %, and a control bar with <<, HOME, >0<, TEST, and >> buttons. On the right, there are status indicators: PAN, ERR (red), a yellow warning triangle, and PB 15 (green).</p>	<p>REM - setting of set point is in Remote-mode PAN - system and set point is controlled by the panel LOC – system and set point is controlled locally</p>
	<p>RDY - READY TO OPERATE (Green) ERR - NOT READY TO OPERATE (Red)</p>
	<p>Through pressing the keyboard, a direct switch to the status figure S4 is possible.</p> <p>S Simulation active / inactive</p>

	<p>Fbxx Fieldbus address</p> <p>A green frame shows that the communication to the central control is active.</p>
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A =	actual, not resettable counter
SW =	actual set point (absolute and as rectangular bar)
g =	actual loading in percent
Xx / h =	actual capacity (absolute and as cascaded bar)

2.4 S2: Text (TXT)

	<p>With arrow-keys „<<“ and „>>“ further information pictures can be represented.</p>
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A:	Total quantity counter "A" This counter cannot be reset.
B:	Quantity counter "B" A reset is done with the key to the right.
C:	Quantity counter "C" A reset is one with the key to the right.
P:	Actual conveying capacity in kg/h or t/h
P%:	Actual conveying capacity in percent of rated capacity of the system
g:	Actual load at the corresponding point 1 (2) 3
v:	Actual belt speed measured by tachometer as percentage and absolute value in mm/s

2.5 S4: Status screen

<div style="background-color: #cccccc; border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;">DBWFN: 1</div> <div style="background-color: red; color: black; padding: 2px;">S00: Loadcell mV error channel 0</div> <div style="background-color: yellow; padding: 2px;">S10: Max Load</div> <div style="background-color: #cccccc; padding: 2px;">S21: Belt misrun LEFT</div> <div style="background-color: #cccccc; padding: 2px;">S22: Belt misrun RIGHT</div> <div style="background-color: #cccccc; height: 40px; margin-top: 5px;"></div> <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 5px;"> << HOME ACK >> </div>	<div style="background-color: #cccccc; border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;">DBWFN: 1</div> <div style="background-color: yellow; padding: 2px;">S24: Tare error</div> <div style="background-color: yellow; padding: 2px;">S18: Setvalue error</div> <div style="background-color: yellow; padding: 2px;">S19: Deviation</div> <div style="background-color: yellow; padding: 2px;">S25: Test error</div> <div style="background-color: yellow; padding: 2px;">S08: Scale is empty</div> <div style="background-color: yellow; padding: 2px;">S09: Min Load</div> <div style="background-color: blue; color: black; padding: 2px;">S00: Loadcell mV error channel 0</div> <div style="background-color: #cccccc; height: 40px; margin-top: 5px;"></div> <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 5px;"> << HOME ACK >> </div>
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RED / ReadyToOperate

YELLOW / Warning

BLUE / Memory

GREY / StatusInfo

switches off the ready-to-operate message and usually results in a stop of system indicates a problem to be solved, however, an immediate shut-down is not required. messages are stored messages, which, however, are NO LONGER active status message, typically just information without effects

Messages can be deleted with the "ACK" button in the error screen.

Error messages are always displayed with a number and as far as possible in plain text. Further details can be found in the maintenance manuals T1_xxx -T3_xxx.

2.6 S5: Set point settings

<div style="background-color: #cccccc; border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;">DBWFN: 1</div> <div style="padding: 5px;"> SV: <div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">10.00</div> t/h </div> <div style="background-color: #cccccc; height: 80px; margin-top: 5px;"></div> <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 5px;"> << HOME >0< TEST >> </div>	<div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; margin-bottom: 5px;"> PAN RDY </div> <div style="background-color: #cccccc; height: 40px; margin-bottom: 5px;"></div> <div style="background-color: #cccccc; border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;">PB 15</div>
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For the Option abandonment regulation, a setpoint input will be required. SV is the adjusted capacity set value and can be changed.

3 Taring >0<

3.1 Taring >0<

A belt scale is a sensitive measuring device. As interfering material deposits sometimes occur, appropriate maintenance is essential. The maintenance intervals depend on the ambient conditions. After commissioning, a daily check should be carried out. The maintenance intervals can be changed accordingly at a later date based on the condition found.

Maintenance work on scales is essentially limited to checking for contamination and checking the tare.

The tare must be set correctly for the scale to deliver accurate results.



Before taring, the scales must be checked for interfering influences. This usually involves a visual inspection by trained personnel.

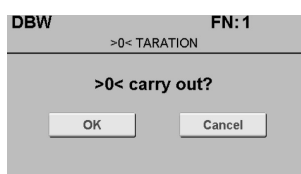
After replacing parts of the scale or after exchange of the digital weighing electronics, the impeccable function of the scale has to be re-established by taring and tests.

Taring always at running belt or weighing screw! Impact flow meters are taring with switched-off conveying system.

To ensure the supply of correct results, the tare of the scale has to be adjusted properly. The taration can only be started in the Graphic screen.



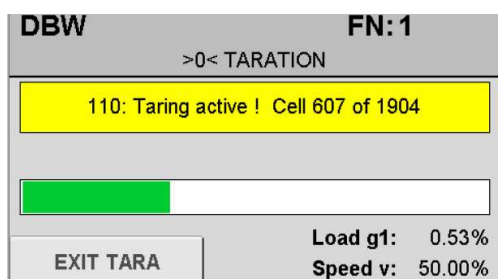
After pressing key >0< and confirmation the taring process runs automatically. The ZERO POINT of the scale is determined. Then the system changes again into normal operation.



confirm "OK" !

In rare cases where the conveyor belt is equipped with a synchronization mark now with **"Wait for SYNC"** and **"Measure strip"** (one strip circulation) a length measurement of the Tape.

Then, the actual taring process takes place.



The aim of the taring process is to determine all weights that are not relevant for the measurement so that they can be calculated in normal measuring mode. (Conveyor belt, rolls, frame etc.)

4 TEST

By means of a test the accuracy of the scale can be checked with real material or with test weight and in case of need be corrected. If in normal operation the key „TEST” is pressed, a selection appears:

„TEST with TESTWEIGHT !” is the standard selection, at which the scale usually is tested with the test weight supplied.

„TEST with MATERIAL !” permits the check of the scale with real material and has to be preferred against the test with test weight, if possible.

DBW	FN: 1
TEST	
TEST with TESTWEIGHT !	
TEST with MATERIAL !	
EXIT TEST	

4.1 Test with test weight (test load)

If for reasons of time or for technical reasons no material test is possible, the measuring accuracy of the system can be checked quick and easy with the test weight.

The drive must run, but the system must not convey any material during the test with test weight!

Press    to start the process.

If the report “210: waiting for EMPTY at g3 point” appears, the tare of the scale is not o.k. or there is still material on the scale.


It has to be waited until the remaining material has left the scale. Otherwise the test has to be stopped (“EXIT TEST”) and the scale has to be checked and tared.

Load g1:	18.73%
Load g3:	18.72%

DBW	FN: 1
TEST	
210: waiting for empty at g3 point !	
EXIT TEST	Load g3: 43.46% Load g1: 43.47% Speed v: 50.00%

After the start the measured weight must fall beneath the adjusted empty limit at the measuring point g1 as well as at the discharge point g3. Only then the system switches into the next step.

DBW	FN: 1
TEST	
211: PLEASE LAY ON TESTWEIGHT !	
EXIT TEST	Load g1: 1.97% Speed v: 50.00%

If  is indicated, the test weight usually has to be laid on the scale manually or by levers.

Sometimes the test weight consists of two weights, which have to be laid on the left and right side of the weighing bridge.

Also, automatic or semi-automatic, motor-driven systems exist.

DBW	FN: 1
TEST	
214: waiting 5 s !	
EXIT TEST	Load g1: 43.48% Speed v: 50.00%

If the load by the test weight achieves approx. 60% of the test weight parameter, the system changes to the settling time for approx. 15s.

DBW	FN: 1
TEST	
217: Test !	
<div style="width: 20%; height: 10px; background-color: green;"></div>	
Test weight: 50.00% Last Test: 11.00%	Load g1: 43.48% Speed v: 50.00%

The test with test weight (test load) runs down.

During the test is running, the load value with test weight is indicated („weight g1 :”).

A progress bar informs about the test run.

DBW	FN: 1
TEST	
219: PLEASE LAY OFF TESTWEIGHT !	
Result Test:	2.23%
Repeat Test !	
Automatic Correction !	lift TW !

Shown is: „Test result:” **+ -xx.yy%**

The result informs about the measuring accuracy of the scale. If the deviation is more than the permitted tolerance and within the limits of correction (standard adjustment = 5%), a correction of the measuring can be done with the key „Automatic correction”.

The message „limit of correction” indicates that a correction is not possible because of too high deviation. If during the test with test weight a deviation higher than the permitted tolerance (1%) is measured, the test has to be repeated with key „Repeat test !”.

As soon as the test weight is lifted, the change into normal operation is done after a short period of settling time.

Possible causes of a too big deviation, which have to be eliminated before the correction:

- Pollution of weighing roller(s)/weighing bar resp. of measuring length limiting
- Pollution of the weighing belt or maybe bad run of weighing belt
- Damage of weighing belt
- Test weight(s) not laid on correctly
- Material guiding not adjusted correctly. The material guiding must not impede the scale.

4.2 Test with material

Permits material check with 10-fold resolution of counting compared to normal operation. Evaluation is done at dosing point „g3“.

The counters „A“, „B“ and „C“ as well as the counting pulse output are NOT blocked during material test. The dosing continues as normal.

If the weighing belt gets empty during material test, negative measured values are deducted from the actual counter reading. However, a negative count is not possible.

If an adaptation has been done with the area weight correction, the adaptation is deleted!

Procedure at material test:

Provide a material sample with at least 10-fold quantity of the counting step at normal operation (= 100-counting steps at material test).




DBW		FN: 1	
TEST			
232: Materialtest is running !			
Finish Test		129.2 kg	
		p: 14.99t/h	
		Load g: 113.27%	
EXIT TEST		Speed v: 66.22%	

Proceeding at material test:

1. Press key „TEST“.
Selection screen „TEST“ appears.
2. Start with key „Material test“.
The picture represented on the left appears.
3. Switch on material conveying. The weighing belt load should be in the normal range during the material test („g1“ = approx. 50-80%).
4. When the material sample has passed, stop the material transport.

Evaluation of material test:

DBW		FN: 1	
TEST			
233: MatTest !			
Measured by DWC:		186.0 kg	
Inputfield real weight:		186.0 kg	
EXIT TEST		Next	

1. Press key . The picture represented on the left appears.
In case of a test quantity less than 100 counting steps, the test routine is left after 10s. Evaluation is not possible.
2. Re-weigh the material sample conveyed.
3. Overwrite the suggested value (= the value measured by the scale) with the actual weight in the yellow real weight field and press .
4. The material test permits a correction corresponding to the adjustment at parameter „P2015 limit of correction“. If due to the correction the limit of correction or the measuring range of the weighing channel would be exceeded, no correction is possible. An error message appears. The change is rejected and the original value is indicated again.
5. With the key  the mode can be left.
Otherwise the material test is finished self-acting after 15s.