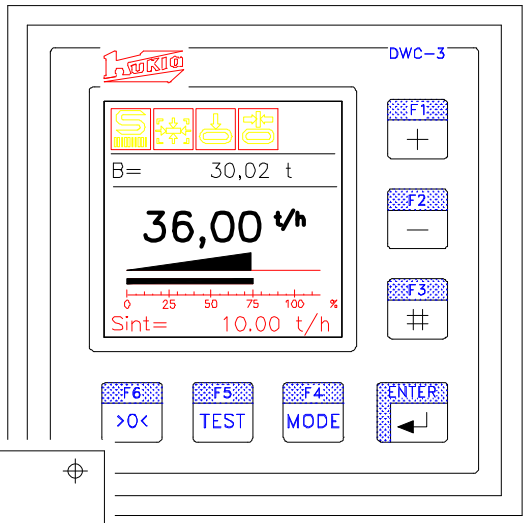
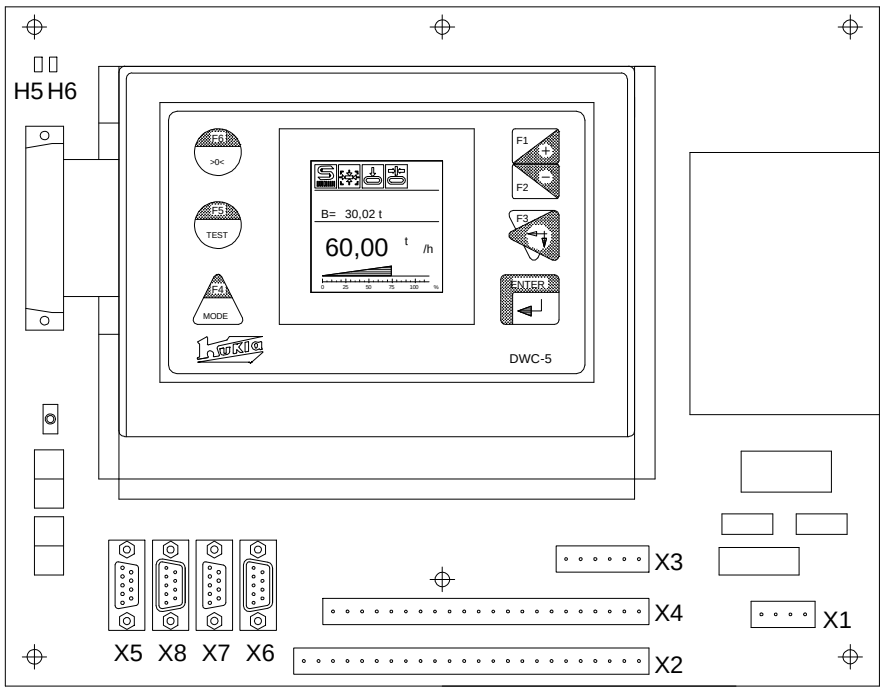
Weighing computer

Manual
Parameterizing
T2

DWC-3D





DWC-5C

Index

Annex

Dimension sheet DWC-3D / DWC-5C

Software indication

These instructions are based on Software version (N1) A1.70 / C2.0a.
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.

*** 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 the weighing belt the drive has to be switched off.

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4. March 2004

1 Description of the digital weighing electronics

The weighing computer is equipped with a universal-software. Thus, many different ranges of application result.

Applicability of the software-variant:

- Belt scale (RBW)
- Impact flow meter (DFM; with linearization)
- RBW / DFM with feeder control (maximal 4 hoppers; dosing, „**Integrat.range**“ = 10)
- RBW / DFM for batch discharge (maximal 4 hoppers)
- RBW / DFM for batch discharge with feeder control
- RBW / DFM in multi range design (maximal 4 ranges)
- Weigh feeder (DBW = RBW with dosing and „**Integrat.range**“ > 10) for direct hopper discharge or with synchronous material feeding
- DBW with feeder control (load control)
- DBW for production of fleece
- DBW for batch discharge
- DBW in multi range design (maximal 4 ranges)

- Loss-in-weight-feeder (DDW)
- DDW for batch discharge

The applicabilities of the loss-in-weight-feeder are not included in these instructions but are described in a separate additional manual.

Via the digital and analog interfaces the hardware-connection from external pre-set- and evaluation devices and controls is possible.

For bus-systems at the DWC-3B a design with profibus-DP interface is available.
At the DWC-5A this interface is standard.

The bus-system CANopen is used for data transfer within a user-group without master, whereby in addition to weighing calculators also other participants (e.g. frequency converters) are possible.

1.1 Service module DWC-5C

While at the DWC-3D the service module is installed directly, it has to be detached on the device in case of DWC-5C .
The two fastenings at the back side of the service module have to be hanged into the metal hood from above according to the instructions sticked on the housing. Only then the service module can be detached on the base device with slight pressure.

The service module may be detached on and removed during operation. Immediately after detaching a text- or graphic representation should be on the display.

In exceptional cases a manual re-set may be necessary. This is done by pressing down the switch SW6 for a period of approx. 2 seconds.

2 Indication- and adjustment pictures in normal operation

For reading the operational data, input of set values at corresponding parameterizing and for control-indications several pictures are available in normal operation.

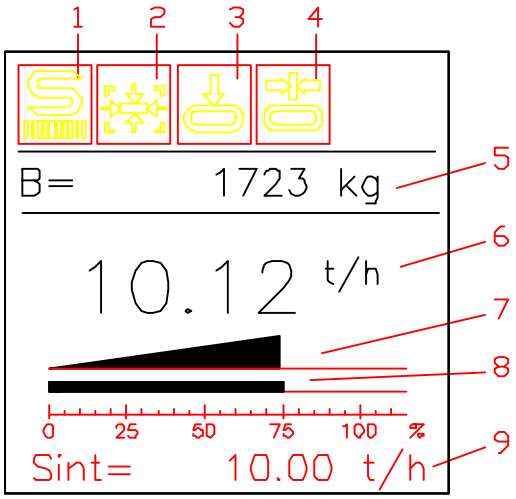
2.1 Graphic screen

After switching on the power supply the „**GraphScreen**“ is represented.
At the „GraphScreen“ there are several possibilities of representation, which can be selected in the parameterizing mode in „**KUK-SETUP**“ under „**SYSTEM 1**“ at „**DISPLAY**“ (see page 55).

2.1.1 Standard picture for belt scale and weigh feeder and for impact flow meter

In the uppermost row symbols for information about certain operation statuses are faded-in (1-4).

1	Simulation activated
2	Error recognized
3	Load of the measuring length under "**Belt empty**" (Parameter "**Belt empty**", see page 64)
4	Belt drive stopped (tacho frequency below 1Hz)
5	Quantity counter "**B**" Re-set to zero with key „F3“ at kept-pressed key „F2“
6	Conveying capacity in kg(t)/h. Alternative indication: actual load (g1) in per cent (only if source of nominal value is at „**Sext**“)
7	Conveying capacity in per cent of final value
8	Capacity set value in per cent [1]
9	**Sint** [2] or **Sext** [3] Set value in kg/h (t/h)

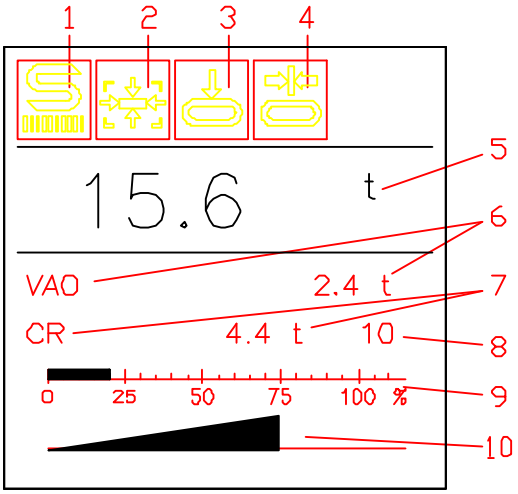


[1] Set value indication only at „DOSING“.
[2] **Sint:** Source of set value "INTERNAL" is used.
[3] **Sext:** Source of set value "EXTERNAL" is used.

2.1.2 Picture for batch weighing

Batch operation is possible at registration and dosing.

In the uppermost row symbols for information about certain operation statuses are faded in (1-4).



1	Simulation activated
2	Error recognized
3	Load of the measuring length under "**Belt empty**"" (Parameter "**Belt empty**", see page 64)
4	Belt drive stopped (tacho frequency below 1Hz)
5	Batch quantity counter [1]
6	Silo No. (**VA0/1/2/3**) and pre-switch-off-value [2]
7	**CS** or **CR** .. batch set quantity or residual quantity [3]
8	Batch-run-off-indication (run-off-step) [4]
9	Batch set value / residual quantity in per cent
10	Conveying capacity as ramp in per cent of final value

Run-off-steps variant a):

0	Wait for Start, overtake set value.
1	Started, re-set batch quantity counter, switch on contact outputs „**Batch drive** “ and „**Batch mode**“.
10	Batch runs. **Final condition:** Batch quantity counter equal set quantity.
50	Switch off „**Batch drive** “ and „**Batch mode**“.
51	Settling time 5s.
52	Printer output (Timeout after 5s).
53	Batch step counter to 0.

1) The batch quantity counter (6-digit, with comma 5-digit) is set to zero at batch start. At batch end printer output is done.

2) Only at operation modes „**Emptying**“ and „**Fine stream**“.

3) The switching-over from batch set quantity (**CS**) to batch residual quantity (**CR**) is done at batch start. Batch (charge) set quantity is indicated at run-off-step „0“.

4) The step number of the batch-run-off:
There are 3 different batch-run-offs:
a) Standard batch operation with loaded weighing belt at Start and Stop.
Control output „**Batch drive** “.
b) Start and Stop with empty weighing belt. It is possible to work with 4 different pre-switch-off-quantities (distance to the storage hopper).
Control by „**Batch drive** “ and „**Batch mode**“.
c) Batch operation with loaded weighing belt at Start and Stop, reduction of the discharge quantity before batch end (**Fine stream**).
Control additional to „**Batch drive** “ by „**Coarse stream**“ and „**Fine stream**“ resp. by the analog signal „**Charge fine**“.

Run-off-steps variant b):

0	Wait for Start, overtake set value.
1	Started, re-set batch quantity counter, switch on contact outputs „**Batch drive** “ and „**Batch mode**“.
20	Batch runs. **Final condition:** Batch quantity counter equal set quantity minus pre-switch-off-value (**VAX**).
21	Switch off „**Batch mode**“. **Final condition:** Belt load under „**Belt empty**“.
22	Post-Runtime. **Final condition:** Time has run down.
50	Switch off „**Batch drive** “.
51	Settling time 5s.
52	Printer output (Timeout after 5s).
53	Batch step counter to 0.

Run-off-steps variant c):

0	Wait for Start, overtake set value.
1	Started, re-set batch quantity counter, switch on contact outputs „**Batch drive** “ and „**Batch mode**“.
30	„**Coarse str.**“ is switched on. Batch runs. **Final condition:** Batch quantity counter equal set quantity minus pre-switch-off-quantity (VA0). „**Coarse str.**“ is switched off.
31	Fine stream. „**Fine stream**“ is switched on. The analog output „**Charge fine**“ (see page 72) runs down proportionally to the decreasing remainder to 5% of the final value. At „DBW“ the nominal value is decreasing proportionally to the decreasing remainder to „**Min-Set Value**“. **Final condition:** Counter „**B**“ equal set quantity. „**Fine stream**“ is switched off.
50	„**Batch drive** “ and „**Batch mode**“ are switched off.
51	Settling time 5s.
52	Printer output (Timeout after 5s).
53	Batch step counter at 0.

2.1.2.1 Printer output

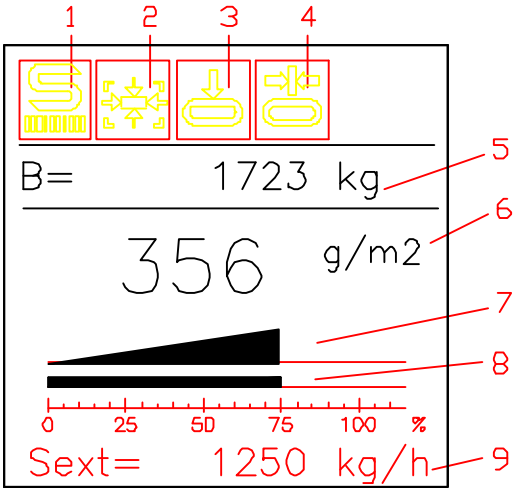
At charge end resp. at activating binary input „**B=>0 print**“ via serial interface the following output is started:

```
08:43:15  05.Jan.2001  B=     27,3 t
```

2.1.3 Picture for fleece plants

The representation of the production actual value is done in (k)g/m2 resp. in oz/sy (ounces per square yard) or in per cent, if a multiplying set value **„EXTERNAL“** is active.

In the uppermost row symbols for information about certain operation statuses are faded-in (1-4).

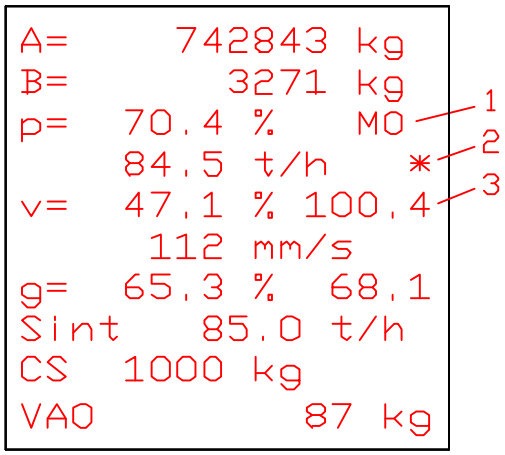


1	Simulation activated
2	Error recognized
3	Load of the measuring length under „**Belt empty**“
4	Belt drive stopped (tacho frequency below 1 Hz)
5	Quantity counter „**B**“ Re-set to zero with key „F3“ at kept-pressed key „F2“
6	Production value in (k)g/m^2 Alternative indication: actual load (g1) in per cent (in case of source of set value „**Sext**“)
7	Conveying capacity in %
8	Capacity set value in per cent [1]
9	**Sint** [2] or **Sext** [3] set value in kg/h (t/h).

[1] Set value indication only at „**DOSING**“.
[2] **Sint:** The source of set value "**INTERNAL**" is used.
[3] **Sext:** The source of set value „**EXTERNAL**“ is used.

2.2 Text screen 1

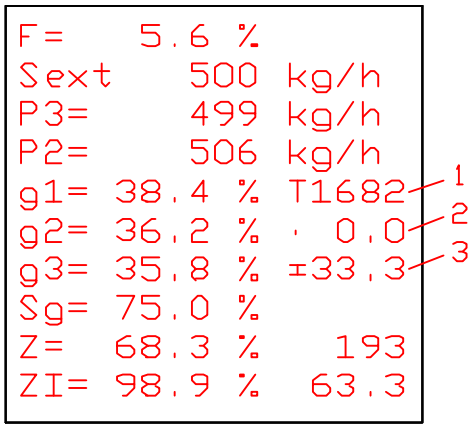
A=	Total quantity counter "**A**" Re-set to zero with „F3“ at kept-pressed keys „F1 + F2“.
B=	Quantity counter "**B**" Re-set to zero with key „F3“ at kept-pressed key „F2“.
p=	Conveying capacity in per cent; Conveying capacity in kg(t)/h**.**
v=	Speed of the weighing belt in %, speed in mm/s
g=	Load of the measuring length in per cent and load at discharge end (**g3**)
Sint / Sext	Set value in kg/h (t/h) [1]
CS / CR	batch set quantity / residual quantity and run-off-step batch control [2]
VA0/1/2/3	pre-switch-off-value at batch with „**Emptying**“ [3]
1	At multi range design indication of the actually effective range [4]
2	At re-calculation of the control factor
3	At „**Integrat.range**“ >10:control factor



[1] **Sint:** The source of set value "**INTERNAL**" is used. **Sext:** The source of set value "**EXTERNAL**" is used.
[2] Only at activated batch operation.
[3] At „**FLEECE**“ the calculated productions value, at „**BATCH**“ the pre-switch-off-value, at net-calculation the gross load (**b**).
[4] M0 = basic range, M1-M2-M3 are the ranges selectable via the binary inputs.

	(100% ± 5%)

2.3 Text screen 2



F=	actual moisture measured value [5]
Sint	actual set value (= INTERN) "**Sext**" = EXTERN
P3=	actual conveying capacity
P2=	Conveying capacity at point „**g2**"
g1=	Load of the measuring length
g2=	Load at point „**g2**"
g3=	Load at point „**g3**“
Sg=	Load set value [6]
Z=	%-Feeder to belt drive resp. variable at continuously control dosing device. Dead length counter [6] to the right
ZI	Actual position and nominal position (value at the right) at continuously controlled dosing device [6]
1	actual tare cell (max. 2000)
2	Control deviation in % [7]
3	admissible Minimal load (only DBW)

2.4 Error

In this picture the actual error messages are indicated. The indication „**A**" at the right side of the screen means „actual", the indication „**M**" means „stored". Stored errors can be deleted with key „F2“.
Deleting with key „F2“ is possible only if the error picture is indicated. If errors are activated, the error picture is shown automatically each 20 seconds during a period of approx. 2 seconds in the operation pictures (graphic screen and text screen).

In picture „**Error**“ right at the bottom a hexadecimal number is given. This hexadecimal number indicates all actually recognized errors, regardless, whether the error is considered in the error handling or not. Stored errors, which are no longer active, are not indicated!

[5] tThe moisture measured value is indicated only at released dry weight calculation.
[6] Only at activated feeder control.
[7] Related to „**RATED CAPACITY**“.

Meaning of the errors and remedy in case of occurrence of errors

· Fuse (00000001)

Reason: The falling out of a fuse has been indicated to the weighing electronics from external (OPTO „**Fuse**").

Remedy: Check the fuses.

· Drive/Tacho (00000002)

Reason: The weighing electronics receives the message „Drive switched on", nominal value is present, but no tacho pulses can be measured.

Remedy:
1. Check, if the motor is really running.
2. Check, if the indication changes between 0 and 1 in figure „**CONTROL**" under „**OPTO**" at „**STRINT**".
3. Check, if the tacho is working.
4. Check, if the connection of wiring between weighing electronics and tacho is O.K.

If there is the tacho-pulse at the terminals X13:19/20 existing but no change between 0 and 1 to be determined in figure „**CONTROL**", the weighing electronics is defective.

· A/D-Error (00000004)

Reason: The measured value at the weighing channel is either less than 12.000 or greater than 60.000.

Remedy:
1. Check, if a damage can be determined at the load cell(s).
2. Check, if the cable connections between weighing electronics and load cell(s) is O.K.
3. Check supply voltage for power measuring and measuring signal:
   Connection 2/3: 10VDC
   Connection 1/4: Measured signal, max. 20mV, 0mV at discharged load cell(s) (see test-protocol).

· Overheat (00000008):

Reason: The temperature inside the weighing electronics is too high (admissible max. temperature is 68°C).

Remedy: Provide for lower ambient temperature (max. approx. 40°C).

· Speed (00000010):

Reason: The drive system is not adjusted optimally. Thus, the precision regulator cannot keep the nominal dosing capacity.

Remedy: Correct adjustment of the motor-controller.
If there is a rotational number feedback 0-10VDC to the motor controller via frequency-converter on the I/O-card1, check resp. correct the adjustment of the frequency-converter. (Trimmer „f0" = 0V, trimmer „f" = 10V on the I/O-card 1. „f0" = 0V at motor-standstill, „f" = 10V at maximal motor speed).
At AC-motors with frequency converters the rotational number must be linear to the master value.

· Feeder limit. (00000020):

Reason: At feeder control the measuring distance load cannot meet the adjusted load set value (at belt scale with feeder control the adjusted nominal capacity) with the adjusted limit values „**Min-Limit**" and „**Max-Limit**" .

Remedy: Improve feeder-adaptation.

· Mis-Run (00000040):

Reason: The belt monitoring signals an uncentric running of the weighing belt.

Remedy: Check the belt steering device, adjust belt to centric running.

· Min Load (00000080):

Reason: At a weigh feeder the belt load required for keeping the dosing capacity (according to the set value) only hardly can be achieved.

Remedy: Provide for a higher material discharge. If the lower material feeding is due to changed material characteristics, a re-adjustment of the material feeding may be necessary.

· Max Load (00000100):

Reason: The weighing belt is overloaded.

Remedy: Provide for a lower material discharge. If the heavier material feeding is due to changed material characteristics, a re-adjustment of the material feeding may be necessary.
At a belt scale the weighing range (rated capacity) is set too low.

· Belt slip (00000200):

Reason:
1. At existence of a control pulse generator the control pulses do not come or come too late.
2. At the design with „Absolute value tare" the synchronizing pulse does not come or comes too late.

Remedy: A torn weighing belt might also be the reason for „**Belt slip**". If the belt does not really slip, at design „Absolute value tare" also the synchronizing mark might be fallen off.

· Test wrong (00000400):

Reason: At the test with test weight the desired number 1000 was not achieved by more than the permitted tolerance (+/- 1%).

Remedy: Check the scale, make taration, repeat the test.

· Taration err. (00000800):

Reason:
1. During taration an inadmissible measured value was supplied by the weighing bridge (A/D-error resp. deviation of „**WC-OFFSET**" higher than „**Taration err.**", page 66)
2. The taration was cut short before the regular end.

Remedy: Check/clean the scale, repeat taration .

· Belt stopped (00001000):

Reason: No tacho pulses arrive (drive switched off).
Remedy: If the message comes at running belt, check tacho for proper function.
Also see „**Drive/Tacho**".

· Bad Set Value (00002000):

Reason: The dosing capacity set value is not within the permitted range.
Admissible range:
Smaller than „**SetValueNull**" and „**MinSet Value**" up to 102% of „**Rated capacity**".
Remedy: Provide for correct set value. At set value higher than 102% limiting to 102% is done.

· Belt empty (00004000):

Reason: The belt load is smaller than the limit value „**Belt empty**".

· Deviation (00008000):

.Reason: Due to a minor belt load or due to an error in the drive system the nominal dosing capacity cannot be kept. The deviation is higher than the adjusted tolerance (tolerance related to the rated capacity of the scale).
Remedy: 1. Weigh feeder.
Provide for sufficient weighing material on the weighing belt. Check the drive system at sufficiently loaded scale (minimal load is the percentage indicated quite right in the row of „**g3**" in text screen 2).
2. Belt scale with feeder control.
Improve feeder adaptation.

· ProgrammFLASH (00010000):

Reason: The parameterizing level was left after a changing of parameters without data securing.
Remedy: Switch into the parameterizing mode (switch at the back wall of the device) and leave parameterizing mode **with** data securing.

· ParameterInp. (00040000):

Reason: The monitoring device of RAM and EEPROM has responded.
Remedy: Carry out priming charge and re-adjust parameters.

· Data lost (00020000):

Reason: The parameters were re-charged from the EEPROM.

2.5 Pre-sets/LOG

In this picture several set values can be changed, the data sets registered in the „**Log book**“ can be read and the clock can be adjusted. The pre-sets are offered only if at the parameterizing a corresponding adjustment had been chosen. The maximal input value is 50.000, in case of per cent values 150,0%. If the %-pre-set is used for a quantity pre-set (e.g. batch set value), the highest variable of 150,0(%) corresponds to the number 15.000. In case of employment of the quantity pre-set for a per cent adjustment the variable 15.000 corresponds to a per cent number of 150,0. Values higher than 15.000 must not be adjusted in case of use of the quantity adjustment for a per cent pre-set.

- **Transfer value (TransValue1(2))**
  If „**Pre set 1(2)**“ or „**%Pre set1(2)**“ is adjusted as source for the transfer value, the variable can be described under „**Pre-sets/LOG**“.

- **Batch set value (ChargeIntern / ChargeExtern)**
  Display pre-selection of batch discharge quantity.

- **Working width**
  Display input of the real working width, if no automatical actual-value-signalling is done.
  In case of a variable working width always a working width has to be measured or adjusted!

- **Capacity set value (Cap.set value)**
  Display-set value adjustment for capacity set value (kg(t)/h, **xx * Disp.+/-**). Also the binary inputs „**Mot.Poti +**“ and „**Mot.Poti -**“ access to set value „**Disp.+/-**“ (see page 47).

- **Nominal load**
  Display-load set value at feeder control.

- **MOISTURE**
  The measured value of the load of the measuring length is reduced by the %-value adjusted here (dry weight calculation).

- **BATCH**

  1. Batch-termination before the regular end:
  In picture „**BATCH**“ with key „ENTER“ the residual set value can be adjusted to „0“, if the selection-arrow is at „**Break batch**“. Thus, if not „**Emptying**“ is adjusted, the batch discharge is terminated at once. If „**Emptying**“ is activated, the contact „**Batch mode**“ switches off at once and the usual emptying process follows.

  2. Pre-switch-off-quantity:
  At batch-operation-mode variant b) (with Emptying, see page 10) the scale can be fed from different hoppers. In order to keep the batch set quantity as exact as possible, the weighing electronics needs the indication of the material quantity, which is on the way between hopper discharge and scale at 100% capacity.
  It is possible to adjust 4 different material quantities (distances). Via the binary inputs „**Select 1**“ and „**Select 2**“ the weighing electronics has to be informed which pre-switch-off-quantity has to be used.

Input value	Binary contact	Silo
PreSwitchOff 0	-	1
PreSwitchOff 1	**Select 1**	2
PreSwitchOff 2	**Select 2**	3
PreSwitchOff 3	**Select 1 + Select 2**	4

  The proportion of „**PreSwitchOff 1-3**“ to „**PreSwitchOff 0**“ is taken into consideration for the dead length at feeder control.
  At batch-operation-mode variant c) (see page 10) at the residual quantity a switch over to „Fine stream“ is done, which corresponds to the adjustment of „**PreSwitchOff 0**“.

2.5.1 Log book

The log book can be activated in the parameterizing. About 6000 data sets can be stored. The storage is always carried out with date and time.

The following activities can be stored:

- Taring with tare mean value
- Test load with test result
- Material test with factor of correction (1000 = no correction)
- Area weight test with factor of correction(1000 = no correction)
- Leaving of parameterizing mode with check sum „**RA**“ and „**FP**“

Always stored are:

- Cold start with indication, which type of scale had been charge.

  V = 1 (Belt scale)

  V = 3 (Weigh feeder)
- Data loss with indication, how often re-charging has been carried out.

When the log book is called, always the latest registration is indicated. With key „F2“ it is possible to switch to the registration before. With key „F1“ the next higher registration is achieved. After actuating key „F3“ the data set counter runs to registration No. 1.

2.5.2 Adjustment of the clock

Change of adjustments with keys „F1“ (+) and „F2“ (-). At kept-pressed key the speed of adjustment is increasing.
The changeable position is marked by a cursor. The cursor is adjusted with key „F3“ (also see page 51).

2.6 Report status

For purpose of test the analog input channels AD1 and AD2, the load of the scale and the speed of the weighing belt can be replaced by a simulated value.
For the impact flow meter always a simulated speed is used.
The sources for the simulation can be adjusted in the parameterizing mode under „**CONTROL**“ (see page ..).
In picture „**Report status**“ activated simulations with the adjusted per-cent-values are indicated.
Symbol „S“ in the symbol ledge of „GraphScreen“ shows that a simulation is activated.

2.7 CONTROL

```
CONTROL
→ AD/SYS
  DA
  Relay
  OPTO/BCD
  COMMUNICATION

  ANALYSIS

 == exit <F4>==
```

Under „**CONTROL**“ actual measured values, signal statuses, output values and internal information can be read.

Selection picture „**CONTROL**“.

2.7.1 Analog measured values and system data

```
AD/SYS
WC= 25260  17.3%
S= 100.0 % 30000
AD1=   12   0.0%
AD2=   12   0.0%
Temp= 43 C
NC= 0
KT=80 [20000]
    256 1763
RA=1482 FP=1482
```

WC = Measured value weighing channel and percentage of the net load (calculated considering „**WC-OFFSET**“)
Minimal value: 15.000
Maximal value: 55.000

S = Percentile correction of the working span („**SPAN 100%**“) compared to „**SICHAD**“ and the working span (the working span is changed at area weight).

AD1 = Measured value analog channel 1 and percentage of the signal

AD2 = Measured value analog channel 2 and percentage of the signal

Temp = Temperature inside the device in °C

NC = Number of the automatic parameter re-charges carried-out. Is deleted at cold start.

KT = Test of keys. Hexadecimal number of pressed key(s).
F1 = **8** F2 = **4** F3 = **2**
F4 = **10** F5 = **20** F6 = **40**
PA = **80** ENTER = **1**

At simultaneous pressing of several keys the HEX-sum is indicated.

Examples: F6 + ENTER = **41**
F1 + F2 = **c**

In the row of „**KT**“ in square brackets the value deposited in the tare memory is indicated
Both at absolute value tare and at mean value tare max. 2000 tare values are deposited per belt revolution and are indicated here at running belt
At mean value tare the mean value of the deposited tare values is used. This tare mean value can be read under „**ANALYSIS**“ in picture „**TARE**“.

Beneath two numbers are indicated.
The left number shows the WC-measured value less tare. At net load calculation (series feeding, see page 33) also the net calculation has already been taken into consideration.

The right number indicates the number of the actual tare cell. At achieving the tare cell with the highest number the tare cell number is recorded.
SYNC stops the counter, at belt slip monitoring therefore the counting mostly is terminated before achieving the highest tare cell!

RA = Check sum RAM-memory

FP = Check sum EEPROM-memory

The RA-check sum is made and stored at leaving the parameterizing mode, the FP-check sum after „**Data securing**“.
Both check sums are unequal, if after a change of parameters no data securing has been carried out (Error message „**programmFLASH.**“).

2.7.2 The analog outputs

```
DA
**0800**
DA1= 76%
DA2= 36.8 %
DA3= 45.2 %
DA4= 76.2 %

tFIFO    0   123

 == exit <F4>==
```

Actual output values of the analog output channels 1 - 4.
The retardation-run and the output value is indicated by the shifting register „**t-FIFO**“ (100% = 10.000)

The number in row 2 is an internal information.

In the standard adjustment is put out:

DA1 = Actual capacity
DA2 = Variable for belt drive
DA3 = Variable for feeder
DA4 = Actual capacity

The adjustments of the DA-channels 1-4 can be chosen differently at the parameterizing (see page 72).

The DA-channel 1 has a lower resolution (8-Bit) than the other DA-channels (DA2 - 4 = 10-Bit).

2.7.3 The contact outputs

```
Relay

TICK= 0
  K1= 1
  K2= 0
  K3= 0
  K4= 1
  K5= 0 00000913
  K6= 0 59d90087
 == exit <F4>==
```

Actual switch position of the contact outputs 1-6 and of the counting pulse output („**TICK**“).

Standard adjustment of the contact outputs:

K1 = Ready to operate
K2 = Error
K3 = Belt load under the Min-Limit-value
K4 = Feeder release
K5 = Charge relay
K6 = Lay on test weight

The hexadecimal number in the row of „**K5**“ informs about the activated outputs (outputs not occupied by relays are also indicated):

Example:
913 = 800 + 100 + 10 + 2 + 1

1	=	Error	**1000**	=	Max at point „**g1**“
2	=	Ready to operate	**2000**	=	Field relay 1
4	=	Silo discharge ON at charge	**4000**	=	Field relay 2
8	=	Feeder ON	**8000**	=	Control deviation
10	=	MIN at point „**g3**“	**10000**	=	Coarse stream
20	=	MAX at point „**g3**“	**20000**	=	Fine stream
40	=	Lay on test weight	**40000**	=	Belt stopped
80	=	Test/Tare runs	**80000**	=	Direction feeder (see page 31)
100	=	Belt empty	**100000**	=	Feeder OPEN (3-point-step)
200	=	Belt slip	**200000**	=	Feeder CLOSED (3-point-step)
400	=	Scale ON at charge			
800	=	MIN at point „**g1**“			

In the row of „**K6**“ an internal information is put out.

2.7.4 Binary- and BCD-inputs

```
OPTO/BCD
STRINT= 1
SYNC  = 0    0
U1= 0 BCD1= 1010
U2= 1 BCD2= 2020
U3= 0 S1=  10000
U4= 0 S2=  10000
U5= 1   00000020
LoSpeTach 0
 == exit <F4>==
```

Actual signal status at the binary inputs. Possibly adjusted invertings are **not** considered.

Consider the indication values „**BCD1/2**“ if factor 10 or 0,1 is parameterized.

„**S1(2)**“ inform about the composition of the multiplying set values. Both values 10.000 each are set value 100%.
At variable working width adjustment, however, the set value is reduced in the ratio „**Belt width**“ to „**Working width**“.

S1 = First value of set value forming
(e.g. A/D1)
S2 = Second value of set value forming
(e.g BCD1)

STRINT = Pulse inlet digital tacho

SYNC = Control pulse inlet
To his right the adjustment (0-3) decided by the OPTOS „**Selection 1(2)**“

Standard adjustment of the binary inputs:
U1= Motor fault
U2= Belt runs
U3= Set value switching-over INTERNAL/EXTERNAL
U4= Delete errors
U5= free
„**U5**“ is an internal marker but no binary input (also see page 74).

The hexadecimal number in the row of „**U5**“ indicates the activated binary functions.

1	= Start Tare	**1000**	= Emptying
2	= EXTERNAL (Cap. set value)	**2000**	= Display set value +
4	= free	**4000**	= Display set value -
8	= Mis-run (weighing belt)	**8000**	= Printer output and zero-setting of counter „**B**“
10	= Belt runs	**10000**	= Charge set value EXTERNAL
20	= not occupied (free)	**20000**	= Select 1 (Charge with „Emptying“ resp. „Multi range design“)
40	= Delete errors	**40000**	= Select 2 (Charge with „Emptying“ resp. „Multi range design“)
80	= Motor fault	**80000**	= Charge with Fine stream
100	= Fuse defective	**100000**	= Load measuring with moisture correction
200	= Enable regulations	**200000**	= Low Speed Tat
400	= Start batch	**400000**	= Control contact shifting register „**t-FIFO**“
800	= Break batch		

2.7.5 COMMUNICATION

```
COMMUNICATION
→ Profibus1
  Profibus2
  COM 1

  SdoReadTermina
  SdoWriteTermin


 == exit <F4>==
```

Selection of the pictures for supervision of the data transfers.

Description see separate manual.

2.7.6 ANALYSIS

```
ANALYSIS
® TARE
  Actual load
  LinearTAB

  PLC1
  PLC2
  CV

 == exit <F4>==
```

Selection picture for inspection of the graphic representations, of the calculations in the freely programmable calculating unit and of the results of the calculating unit.

2.7.6.1 TARE

After calling „**TARE**“ a graphic representation of the measured values at taration appears.

Disconnected line = **WC OFFSET**

Curve = measured tare values

Connected line = mean tare values

At „**WC-OFFSET**“ = tare value and minor tare fluctuation only one line is visible.

The vertical line, moving from left to right, shows the movement of the belt. The circle at the line shows the actual measured value.

The screen represented by points has a vertical partition of 5 % of the load of the measuring length. Horizontal the profile of the belt revolution is distributed over the screen width.
At mean value tare the line - due to missing synchronizing - is not identical with the measuring length.

The number upper right in the picture is the tare mean value.

At the bottom left in the picture the number of the used tare cells is indicated.

2.7.7 Load indication (actual load)

The measured values in the discharge shifting register are represented. The resolution at the screen is 10% (vertical).
The three vertical lines signify the points „**g1**“, „**g2**“ and „**g3**“ from left to right.

2.7.7.1 Linearization of measured value (CorrectTAB)

If the detection of the weight measured value is not linear (e.g. at a flow meter) a linearization can be carried out (see page 58)..
The horizontal line indicates the working point.
The vertical line indicates how much the measured value is deviating from the ideal course.
Upper left the value (%) measured at the weighing channel is indicated.
The percentage beneath is the value corrected by the linearization which is used in reality.
Upper right the actual percentile correction is indicated.

2.7.7.2 The calculating unit (PLC1(2))

The function of the calculating unit can be observed.
A change of the formula(s) is possible only in the parameterizing mode (see page 58).

2.7.7.3 Result indication of the calculating unit (CV)

The results of the calculations („**CV0**“ up to „**CV5**“) are indicated. Additional the Long-values „**RL0**“ and „**RL1**“.

2.8 Actual parameterized (ActualParamet)

After calling this menu point the complete parameter adjustment can be scanned step by step with key „ENTER“ or key „F1“.

The picture before can be achieved with key „F2“.

At kept pressed key the speed of scanning is increasing.

With key „F6“ the dosing data can be achieved from any position.

Key „F4“ effects the immediate exit from parameter scanning into the menu „**MODE**“.

Via interface „**COM 1**“ the adjustment of parameters is put out, if key „F3“ is pressed. Also a parallel output at the display is given.

Find indications for software version in picture 1.

3 Check- and maintenance mechanisms

3.1 Maintenance

In order to ensure an exact and troublefree operation of the weighing device, the periodical works described in the mechanic instructions (cleaning etc.) are to be carried in any case.

Additionally it is necessary to check the scales after periods of operation to be stipulated and to check by means of test with test load.
A test with test load before cleaning and taring informs about changes of the scale's tare caused by pollution etc. since the last check/taring. This shows if the maintenance works are carried out in sufficient intervals.

3.1.1 Taring

At taring maximal 2000 measured values in tare cells are stored during one belt revolution. If the number of tacho pulses during one belt revolution is greater than 2000, automatically a pre-divisor for the number of the tacho pulses per each tare cell is determined.

If the tare of the scale is not o.k., the quantity registered by the scale is deviating form the actual value. Thereby has to be taken into account that e.g. in case of a tare 3% and a load of the scale of approx. 60% the measuring error is 5%.

At „RBW / WB" the drive has to be switched on at taring process!
At the impact flow meter (DFM) the taring also works without binary input „Belt runs".

If the log book is activated, a registration, when the scale has been tared, is done. Thereby also the tare mean value is stored (also see page 18).

At the taring process weigh feeders run with the parameterized speed for tare and test (see page 79).
A capacity set value is not necessary.
If at the start the weight „**g3**" is not below the limit value „**Belt empty**", during the display „**EMPTY THE SCALE**" still the normal process is run. To ensure that the weighing belt runs, then a set value has to exist.

The taring process is started either by an external command or by key Taste >0< (F6) at the DWC-3-device. The real taring process does not start before „**Belt empty**" is recognized. If the scale is not empty, after 2 belt revolutions the operation picture re-appears. In this case no taring has taken place.

The checking „**Belt empty**" is done first after the discharge shifting register at point „**g3**". If this value is below the limit value „**Belt empty**", the checking of the direct measured value „**g1**", whereby, however, not the latest tare value is used for determining the net measured value, but the calibration value „**WC-OFFSET**". Thus it is ensured, that the tare value cannot gradually take higher values.

If the scale does not recognize „**Belt empty**" in spite of an empty weighing belt, there might be the following reasons:

- The weighing belt is extremely polluted or damaged.
- The weighing belt does not run centric (failure of the steering device, „**Mis-Run**")
- A new, heavier weighing belt has been drawn-up
- The alignment of the measuring length is not o.k.
- The rollers resp. slide-bars are polluted or the slide-bars are worn out extremely
- The load cell(s) is (are) defective
- At the DFM (impact flow meter) in the conveying system a pseudo measured value may arise caused by blast

The scale has to be checked and the failure is to be eliminated. If a heavier weighing belt was drawn up, a re-adjustment of the tare-compensation or of parameter „**WC-OFFSET**“ has to be done.

In picture „**EMPTY THE SCALE!**“ it is possible to enforce the taring with key „F1“.

If the measured value is deviating by more than the parameter „**Taration Err.**“ from the value „**WC-OFFSET**“ (+/-) during the taring process, after taring the error „**Taration Err.**“ appears.

In case of „**A/D-Error**“ during the taring process the taring process is interrupted at once. Additionally the error message „**A/D-Error**“ appears.

At taring maximal 2000 measured values of the signal of the scale are stated during one belt revolution.

At normal operation at „**mean value**“ the mean value of these measured values is deducted from the measured value of the scale.

At normal operation at „**absolute value**“ the deduction of tare is done by the memorized measured values synchronously with the belt run. A „synchronizing label“ ensures that the memorized measured values a re used for the corresponding belt segment. „**Absolute value**“ therefore is possible only if a „synchronizing label“ is integrated in the weighing belt.

Absolute tare ensures that even in case of minor net load of the scale only minimal tare fluctuations are arising.

In picture „**CONTROL**“ (see page 18) the tare values can be read.

The run-off of the taring process is depending on the programming „mean value tare“ or „absolute value tare“.

The kind of taring is selected at the parameters (see page 66).

3.1.1.1 Mean value tare

The taring process runs off in following steps:

- **EMPTY THE SCALE!** (only if the scale does not recognize „empty“ at taring-start).
- **SettlingTime** (5 seconds)
- Storing of the measured values (one belt revolution).

3.1.1.2 Absolute value tare

The taring process runs off in following steps:

- **EMPTY THE SCALE!** (only if the scale does not recognize „empty“ at taring-start).
- **Wait for SYNC**
- **Calibr.of belt** (one belt revolution).
- Storing of the tare-measured values (one belt revolution).

3.1.2 Checking of the weighing - and dosing accuracy

The weighing- and dosing precision of the scale can be checked best by material specimen with a biggest possible quantity of weighing material under normal operating conditions. The material specimen should correspond at least to 200 counting steps at the quantity counter of the weighing electronics.

Prior to precision-tests the scale should be tared.

There are special facilities for easier checking resp. correction (**TEST**).

If the log book is activated, a registration is done, when and which kind of test has been carried out. If a correction is carried out due to a deviation, a registration is done, how big the change at the weighing channel caused by the correction has been. (see page 18).

3.1.2.1 Material test

With the material test device it is possible to check the scale with 10-fold counter resolution.
Negative measured values are deducted at the material test (until „0“). A negative result is not possible.

At the material test the weight „g1“ is measured.

At „**Integrat.range**“ >10 also during the material test the normal dosing process is running. Therefore- just as in normal operation - a capacity set value is needed.
At the end of the material test the scale can be calibrated by input of the actual weight of the material specimen. Due to the calibration also the per cent value for the test weight is changed. Thus, the calibration has no effect on the result of test with test weight.

If the parameters changed at the correction after the material test shall be taken into the safety memory, after the correction a data securing has to be done (data securing see page 81).

The material test can be started at empty or at loaded weighing belt.
At termination of the material test, however, the load of the weighing belt has to correspond to the state at the start, if not, a deviation between measured quantity and registered quantity is arising due to the different load value.

The counters „**A**“ and „**B**“ and the counting pulse output are blocked during material test. The D/A-channels continue to work in normal way.

If net load calculation (see page 34) or moisture correction (see page 57) is activated, this special function is switched off at the material test. At activated net load calculation the material test has to be started always with empty weighing belt.

3.1.2.1.1 Material test run-off:

Provide material specimen with at least 50-fold quantity of the counting step in normal operation (=500-counting steps at material test).

Start of material test at the weighing electronics.

1. Press key „TEST“ . Selection picture „**TEST**“ appears.
2. Start material test with key „F1“. Picture „**MAT-TEST**“ appears. The counters „**A**“ and „**B**“ and the counting pulse output are blocked.
   If the material test is not selected within 10 s, the test screen is left.
3. Switch on weighing belt and convey the material specimen. Thereby must be considered, that the indication „**g1**“ possibly is in the usual load range (approx. 50-80%).
4. If the material specimen has run through, stop the conveying belt.

3.1.2.1.2 Material test evaluation:

1. Press key „F4“. The text „**RE-WEIGHING ?**“ appears. The counters „**A**“ and „**B**“ and the counting pulse output are released again.
   At a test quantity less than 100 counting steps the test routine is left after approx. 10 seconds, an evaluation is not possible.
2. Re-weigh conveyed material specimen.
3. Overwrite the proposal value (= the value measured by the scale) with the actual value of the material specimen.
4. Press key „ENTER“ (key „F4“ leaves the material test without correction).
   The material test permits a correction corresponding to the adjustment at the parameter „**Lim.of correc.**“. If the limit of correction or the WC-measuring range were exceeded due to the correction, no correction is possible. The error message „**Lim.of correc.**“ resp. „**A/D-Error**“ appears. The change is rejected and the original value is indicated.
   If the correction is possible, in row two the percentage of the correction is faded-in
   The correction at the material test changes the parameters „**SICHAD**“ and „**SPAN 100%**“ and the reference value for the test weight („**Test weight xx.x%**“).
5. With key „F4“ „Material test“ is left.
   Without pressing key „F4“ the material test is terminated self-acting after approx. 20 s.

3.1.2.2 Test load

If the scale was adjusted by material weighings, subsequently mostly a test with the test weight is sufficient.
Only if bigger changes have been carried out (e.g. re-newing of the weighing belt) in any case the keeping of the tolerance should be checked by the material test.
At the test load the scale must be , the weighing belt must be running. The counters „**A**“ and „**B**“ and the counting pulse output are blocked at test load.

At the „**DFM**“ the test load also works without binary input „**Belt runs**“.

At the weigh feeder the weighing belt runs with the parameterized speed for TARE and Test. A capacity set value is not necessary.

If the load „**g3**“ at the start of the test load is not below the limiting value „**K_0**“, during the display „**EMPTY THE SCALE!**“ the usual process is still running. For the running of the weighing belt at the weigh feeder a capacity set value must be present then.

During the test load the operation counters are blocked (not at „**EMPTY THE SCALE!**“!).

<u>Proceedings at the test load:</u>

1. Press key „TEST“ and start test load with key „F3“.
   If the message „**EMPTY THE SCALE!**“ appears, the TARE of the scale is not o.k. The test must be stopped (key „F4“), the scale is to be checked and tared.
   After two belt revolutions at „**EMPTY THE SCALE!**“ the test load is stopped automatically.
   If „**LAY ON TESTW.!**“ is indicated, lay on the test weight (sometimes the test weight consists of two weights, which have to be laid on left and right at the weighing bridge).
   If a motoric lay-on-device for the test weight is existing, the test weight is laid on by pressing key e „ENTER“ .
2. When the load by the test weight achieves approx. 60% of the test weight parameter, the display changes to „**SettlingTime**“. The settling time is approx. 10 seconds.
3. The test load is running.
   While the test is running, the load value with test weight is indicated („**g1**“).
   „**Cell no**“ informs about the progress of the test run.

„**End at**“ indicates, at which cell number the test is finished (one belt revolution; maximal 2000).

4. Evaluation.
   If „**Cell no**“ achieves the number of „**End at**“, the evaluation is done.

   Faded-in is:

   Test o.k.
   at 1000
   RESULT !xxxx!

   The result informs about the measuring accuracy of the scale. If the deviation is greater than the admissible tolerance limit and within the correction limits (standard adjustment = 5%), a correction with key „F1“ (+) can be carried out.

   The messages „**Lim.of correc.**“ and „**A/D-Error**“ indicate, when a correction is not possible due to a too great deviation.

   If at the test load a deviation greater than the admissible tolerance limit (1%) is measured, the test is to be repeated with key „F3“.

   Only if several test loads in succession supply the same result being above the tolerance limit and if it sure, that the deviation determined at the test is not caused by a failure of the scale, the possibility of correction with key „F1“ may be used.

Possible reasons of a too great deviation, which have to be abolished before correction:

- Pollution of weighing roller(s), measuring bar resp. of measuring length limiting.
- Pollution of the weighing belt or mis-run of the weighing belt
- Damage at the weighing belt
- Material sediments on the test weight (in case of built-in test weight)
- Not correctly laid-on test weight(s)
- Not correctly adjusted material guiding. The material guiding must not inhibit the scale.

5. Terminate test load.
   If the test weight is lifted (in case of motoric test load with key „ENTER“), after falling short under the limiting value „**K_0**“ the scale returns to normal operating. The operating picture re-appears.

3.1.2.3 Correction of area weight

The correction of area weight is provided for compensating - especially at the weighing bar - measuring errors which occur in case of manufacturing of different materials.
At the correction the working span („**SPAN 100%**“) is changed. Thereby a limiting to 50% up to 200% compared to „**BASIC AD**“ is installed („**Lim.of correc.**“) resp. the weighing channel limiting values must not be achieved („**A/D-Error**“).

The correction of area-weight is deleted at material test and test load.

At weigh feeders the correction of area weight can be used to compensate immediately dosing errors, which are arising during production caused by pollution.

Losses occurring during production, however, can also be compensated by deliberated wrong dosing.

Attention!
The additional dosing for compensation of production losses is not registered by the scale at compensation via correction of area-weight!
Therefore we recommend to compensate losses caused by production by a higher adjustment of set value.

3.1.2.3.1 Proceedings at the correction of area weight:

Input of area weight correction is possible also during running process. While the picture of area weight correction is faded-in on the display, the scale continues to work normally..

1. Start correction of area weight:
   Press key „TEST“ and select correction of area weight with key „F2“.
   In the display „**Set quantity**“ and the adjusted area set value are indicated. If the pre-set is not carried out via thumb wheel or BUS-connection in „g/m2“, „oz/sy“ or „%“, „**10000**“ is proposed. This value can be changed to the area weight set value if the correction shall not be done in „%“.

2. Input of correction value:
   Press key „F4“ .
   Input picture „**RE-WEIGHING**“ appears.
   The indicated value corresponds to the value in picture „**Set quantity**“.
   Change the indicated value to the really measured actual weight. Adjust the percentage of the deviation at the indication „**10000**“ (at e.g. 10% too heavy actual weight „**11000**“, at 10% too light actual weight „**9000**“).
   If the number is adjusted correctly, transfer it to „**ACT**“ key „ENTER“. This is only possible if the value of „**RE-WEIGHING**“ is between 50% and 200% of „**Set quantity**“.

3. Carry out correction and leave correction of area weight:
   Press key „F4“.
   The indication „**CORR Span**“ informs about the percentage of the correction carried out at the load measuring of the scale.

   If the correction would change „**SPAN 100%**“ compared to „**BASIC AD**“ to less than 50% or greater than 200%, no correction is carried out. The message „**Lim.of correc.**“appears.
   If „**SPAN 100%**“ would be adjusted to a value greater than 60 000, no correction is carried out, too. The message „**A/D-Error**“ appears.

   Press key „F4“ .

   The usual operating picture is faded-in again.

4 Special operating modes

4.1 Feeding control at RBW, WB or DFM as well as at DBW

The feeding aggregate can be controlled via analog signal or via BUS-connection. There are, however, also outputs for the drive of a motor operator via reversing contactor (use only at „**Integrat.range**“ =10) or via 4-quadrant drive (with additional motor controller) available.

At RBW, DFM and WB with constant conveying speed at „**TYPE SCALE**“ „**DOSING**“ and at „**Integrat.range**“ =10 has to be adjusted.
The control is adjusted to constant output (P1).
For the pre-set of nominal conveying output a selection is provided (see page 78).

At RBW and WB with controlled conveying speed (DBW) and additional dosing device „**DOSING**“ and at „**Integrat.range**“ > 10 (pay attention to technical data!) must be adjusted.
The measured value „**g1**“is kept constant.

For the pre-set of nominal load a selection is provided (see page 78).
The adjusted load set value (**Sg**) is indicated in „**Text screen 2**“ in the third line from bottom.

Attention: For correct function of the control a load set value has to be adjusted. At adjustment via service module the input is done under „Pre-sets/LOG“ in picture „Nominal load“. The ideal load set value is depending on „Integrat.range“ (see page 38). The adjustment should be approx. the mean load value, which is admissible due to the integration range for the load measured value.

Examples:

Range of integration	Admissible loads range	Load set value
30 X/10	33.3 - 100%	65%
20 X/10	50 - 100%	75%

4.1.1 3-point- step-control of the dosing device

This kind of control is usable only for output control at design with „**Integrat.range**“ = 10 .

The drive of the adjustment device is done via the contact outputs (Relay, see page 48)

- **Feeder-OPEN** and
- **Feeder-CLOSE**

For clearing at „**FEEDER 1**“ (see page 44 and page 77)

- **active** or
- **active >MIN**

has to be parameterized.

„**DeadLength**“ determines, which conveying distance is running down, before a new controlling pulse is put out. „**DeadLength**“ starts running at the end of the controlling pulse.
The dead length counter is released, if „**Belt runs**“ is activated and if at „**active**“ also the binary „**Enable regu**“ is switched on.
At „**active >MIN**“ additionally to the binary input „**Belt runs**“ the measured value must be greater than „**Feeder free**“.
If the conditions for releasing are not fulfilled, the dead length counter is adjusted to the maximal value and no controlling pulses are put out.

4.1.2 Parameters for the 3-point-step-controller:

FEEDER1:	**DeadLength**	Determines the waiting time after each controlling pulse. Is scales with „**Rated speed**“
	Feeder free	Load value, under which the controller is blocked at „**active > MIN**“.
	active	Enabling of controller (regulator) via binary inputs „**Enable regu**“ and „**Belt runs**“ (both must be activated).
	active > MIN	Enabling of the regulator by load via „**Feeder free**“.
FEEDER2:	**Steptime100%**	Length of the controlling pulse, if at 100% set value the actual value is 0% t. 150 corresponds to 10 seconds.
	Feeder Area	Percentage of the deviation, under which no controlling pulses are put out. The percentage is related to parameter „**Nom. capacity**“ .
Relay:	**Feeder-OPEN**	Dosing device higher output.
	Feeder-ZU	Dosing device lower output.
OPTO IN:	**Enable regu**	Enabling of the regulator, if at „**FEEDER1**“ „**active**“ is adjusted.

4.1.3 Feeder with control drive (control of the operating speed)

Suitable for control of output and of load (control of load by DBW).
For dosing devices which can be controlled via an analog signal or via BUS-connection concerning their discharge capacity (speed controlling), the variable

- **FeedSetVal.**

is available.
Conditions for release (enabling) as at 3-point-step-controller.
The variable „**FeedSetVal.**“ is re-calculated and put out always after run-off of the dead length at released control.
If the conditions for release are not fulfilled, the dead length counter is kept at the maximal value and the variable „**FeedSetVal.**“ is kept at the adjustment selected at „**Funct. at off**“

4.1.3.1 Parameters for the analog controller

FEEDER1:	**Min-Limit**	Limiting of the variable downwards (at DBW in per cent of conveying drive).
	Max-Limit	Limiting of the variable upwards (at DBW in per cent of conveying drive).
	DeadLength	Determines the waiting time after each re-calculation of the output. Calculated with „**Rated speed**“
	Readj.fact.	The change of the variable calculated due to the control deviation can be reduced (important in case of not-linear-behaviour of the dosing device, as. e.g. at vibration trough)
	Funct. at off	of the 3 possibilities - **Last value** - **MEAN VALUE** and - **Outp.setval** at „DBW“ the adjustment „**MEAN VALUE**“ is the most suitable one. Concerning the other designs „**Outp.setval**“ is recommended.
	Feeder free	load measured value, at which at „**active >MIN**“ the controller (regulator) is released.
	active	Enabling of the regulator via the binary input „**Enable regu**“.
	active >MIN	Enabling of the regulator via „**Feeder free**“.
D/A-Channel:		**FeedSetVal.** Variable for the dosing device.
OPTO IN:	**Enable regu**	Enabling of the regulator, if at „**FEEDER1**“ „**active**“ is adjusted.

4.1.4 Continuously controlled dosing device (e.g. dosing slide)

Suitable for output control and load control (load control at DBW).
Dosing devices with motoric actuated adjustment device can - in case of an existing position response synchro - also be adjusted continuously via 4-quadrant motor controlling device.
The weighing electronics delivers a variable for the control device (**FeederDevia**) and a contact output for reversing of sense of rotation (**FD-directi.**). The control also can be effected via BUS connection.
The variable for the dosing device calculated by the regulator (**Feeder SW**) is compared to the actual value delivered by the response synchro and continuously controlled.
At missing binary signal „**Belt runs**“ the dosing device is closed.
If „**Belt runs**“ is switched on, the regulator release, however, is switched off, the dosing device is adjusted to the value provided at „**Funct. at off**“.
The position of the dosing device and the position set value are indicated in text screen 2 under „**ZI**“ (see page 13).
Due to the selection of a source of actual value for the position response synchro the control function for the continuously controlled dosing device and in text screen 2 the display „**ZI**“ are activated.

4.1.4.1 Parameters for the control of the dosing device:

FEEDER1:	**Min-Limit**	Limitation of the dosing device adjustment downwards (at DBW in per cent of conveying drive).
	Max-Limit	Limitation of the dosing device adjustment upwards (at DBW in per cent of conveying drive).
	DeadLength	Determines the waiting period after each re-calculation of set value for the dosing device position. Scaled with „**Rated speed**“
	Readj.fact.	The change of the set value for the dosing device calculated due to the control deviation can be reduced (important at non-linear behaviour of the dosing device (as e.g. at a vibration trough)
	Funct. at off	Of the 3 possibilities · **Last value** • **MEAN VALUE** and • **Outp.setval** at „**Integrat.range**“ >10 the adjustment „**MEAN VALUE**“ is the most advisable one. For the other designs „**Outp.setval**“ is recommendable.
	Feeder free	Switch point for the measured value, at which at „**active >MIN**“ the regulator is released
	active	Release of the regulator by binary input „**Enable regu**“.
	active >MIN	Release of the regulator by „**Feeder free**“.
FEEDER2:	**FeederActVal**	For the position reply from the dosing device of the offered possibilities the following ones can be used: · **BCD 1(2)** · **Profibus1(2)** · **Pre set 1(2)** · **%Pre set1(2)** · **A/D 1(2)**
	Steptime100%	No function.
	Feeder Area	Per cent value of deviation, under which no adjustment of the dosing device is done The Per cent value is related to parameter „**Nom. capacity**“ .
Relay:	**FD-directi.**	Switch-over-contact for the sense of rotation of the actuator at the dosing device.
OPTO IN:	**Enable regu**	Release of regulator, if at „**FEEDER1**“ „**active**“ is adjusted.
D/A Channel:	**FeederDevia**	Speed set value for the actuator.

4.2 Batch operation

Batch/charge operation mostly is used for scales without dosing resp. with feeder control.
However, also at weigh feeders („**Integrat.range**“ >10) batch operation mode according to variant a) or c) can be activated.
The sources of set value for discharge are selectable (see page 46).

The discharge can be carried out in three different ways:

Variant a): Batch-start and -end with loaded weighing belt.
In order to prevent greater deviations at the discharge - especially in case of smaller charge quantities - between recorded and discharged quantity, it is required that the scale has the same belt load at discharge start and -end.
Run-off-steps of batch control according to variant a) see page 9.

Variant b): Batch-start and -end with empty weighing belt..
If the feeding of the scale is done via a silo discharge device, the scale can be emptied after each batch. In order to avoid a charge quantity greater than the adjusted set value due to the weighing material conveyed after switching-off the silo discharge , under „**Pre- sets/LOG**“ in sub menu „**BATCH**“ at „**PreSwitchOff0**“ the quantity of weighing material conveyed subsequently at 100% conveying capacity has to be adjusted.
If the batch operation shall work according to variant b), at the OPTO's „**Emptying**“ has to be activated (in case of exclusive operation with empty weighing belt after the batch „**U5**“ can be used). With the help of the OPTO's „**Select 1** and **2**“ altogether 4 different distances to the feeding hoppers can be considered. Thereto also 4 input-possibilities for the after-running-quantity („**PreSwitchOff0-3**“) are available.
Run-off-steps of batch control according to variant b) see page 10.

Variant c): Batch-start and -end with loaded weighing belt, fine stream control at the end.
At weigh feeders with range of integration >10 from the switch-over-point to Fine stream a continuous reduction of capacity set value to the value of „**Min-Set value**“ takes place.
At belt scale with controllable weighing belt drive or at DFM with controllable feeder the master value for the belt drive (resp. for the feeder at the DFM) is reduced continuously from the switch-over-point to Fine stream to 5% (DA-Channel „**Charge fine**“).
The switch-over-point to Fine stream is determined by „**PreSwitchOff0**“.
If the belt scale or the feeder at the DFM have a drive with reversible speed, with the binary outputs „**Coarse str.**“ and „**Fine stream**“ a reduction of discharge from the switch-over-point to Fine stream on can be realized.
Run-off-steps of batch control according to variant c) see page 10.

4.2.1 Parameters for batch operation

CHARGE:	**ChargeIntern**	Selection of the source of set value for the batch operation.
	ChargeExtern	Selection for second source of set value.
	Post-Runtime	After-running-time of the weighing belt at operation mode with „Emptying“.
OPTO IN:	**Start batch**	Start of batch-discharge.
	Break batch	Stop of a running batch (residual set value is set to zero).
	Emptying	Activation of operation mode with „Emptying“.
	Select 1(2)	Silo selection at operation mode with „Emptying“.“ (maximal 4 silos).
	ChargeExter	Switch-over to source of set value „**ChargeExtern**“.
RELAY:	**Batch drive**	Switch-on-command for the scale (and transport to and off at „with emptying“).
	Batch mode	Switch-on-command for silo discharge at „with emptying“.
	Coarse str.	Only at Coarse - Fine stream control.
	Fine stream	Only at Coarse - Fine stream control.
D/A-Channel:		**Charge fine** Variable for weighing belt drive (resp. conveying drive at DFM) at design with continuous Fine stream reduction.

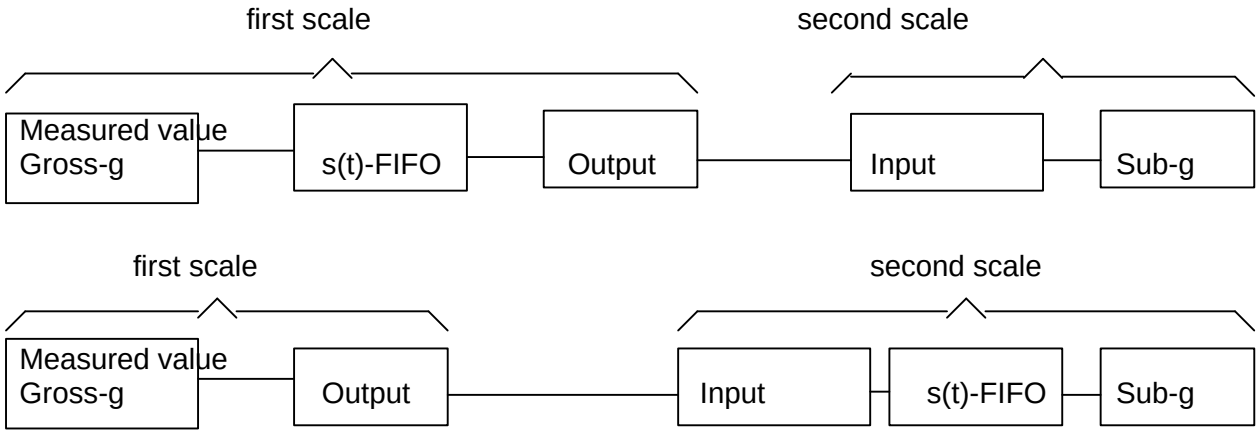
4.3 Net load calculation at series feeding

In case of several feeding points onto a conveying belt with a scale after each feeding point the measured value of each feeding point can be evaluated with the help of net load calculation. Thereto the gross measured value of the scale, which is arranged after the preceding feeding point, has to be deducted from the load measured value of the scale.
It is important, that the net calculation is carried out at the right time. Therefore the signal used for net calculation has to be retarded with the help of the shifting-register „**t-FIFO**“ or „**s-FIFO**“ either at output or before application.

Which source is used for net calculation, has to be adjusted in „**KUK-SETUP**“ under „**SYSTEM 2**“ at „**Sub-g**“ (see page 61).

At the design without serial coupling the deduction normally is done via analog signal. If the scales are provided with serial coupling, the deduction is done via the bus connection. At profibus coupling „**Profibus**“ must be adjusted.
In case of coupling with CanBus the operation is to read in the CanBus-description.

Examples net calculation:



At coupling via analog signal in case of unequal nominal ranges of both scales an adaptation with the help of the AD scaling can be done. Thereby is to be considered that „**AD-SPAN**“ may only be adjusted to values between 2000 and maximal 30000 minus OFFSET, in order to avoid a calculation value over flow.
If the possibility „**AD-SPAN**“ is not sufficient - resp. at BUS-coupling - the adaptation can be done with the help of the calculation unit (see page 60). At Profibus-coupling also an adaptation via the BUS-Master is possible.

If shifting-register „**s-FIFO**“ is used, the delay loop is fixed with „**g2-Length**“ . Thereby „**g3-length**“ must have at least the value of „**g2-length**“.

The measured value „**Gross-g**“ corresponds to the measured value of the scale without consideration of the net load calculation and without moisture correction.
In „**Text screen 1**“ the gross measured value is represented in the lowest row („**b**“).

4.3.1 Parameters for net calculation

SYSTEM 2:	**Sub-g (FIFO)**	Selection of source for deduction value
	s-FIFO	straight cut controlled shifting register(**g2-Length**)
	t-FIFO	time controlled shifting register
	tFIFO Time	delay time at time controlled shifting register
	CALC1 / 2	Adaptation in case of different nominal rages of the scales, if this is not possible via „**AD-SPAN**“
BELT DATA	**g2-Length**	Delay loop for the straight cut controlled shifting register
	g3-Length	Discharge delay, must be adjusted at least as long as **g2-Length**
OPTO IN:	**t-FIFO**	Control input for the time controlled shifting register

5 The calculating unit

With the help of the both pages for calculations „**PLC1**“ and „**PLC2**“ maximally 6 calculation results can be made.
The results „**RL0**“ and „**RL1**“ are intended for visualization of provisional results exceeding the numerical range of 32 .000.
The calculating unit works similar to a PLC. Description see page 58.

ATTENTION:
The calculating unit does not work in parameterizing mode, i.e. no calculating operations are carried out. In case of interrogation „CV“ under „CONTROL“ therefore only old values are indicated, which were calculated in normal operating mode.

6 Parameterizing of the weighing computer

All functions of the weighing computer are determined by parameters. The adjustment of the parameters is done at the rear of the device, the parameterizing switch being set upwards (position „PA).

Attention:
In case of an interruption of the supply voltage during parameterizing old parameters may be re-charged from the EEPROM when the supply voltage returns!

All adjustments are done with the keys of the front unit .

In case of employment of the Profibus DP connection alternatively the charging of the most important parameters via the overriding calculator is possible.

The adjustments indicated at the parameters correspond to the adjustment for a „WEIGH FEEDER“ after „Priming charge“ (Cold start). The adjustments of a „BELT SCALE“ are different from those of a „WEIGH FEEDER“.
„Priming charge“ see page 79.

Attention:
The adjustments „Pre set 1(2)“ and „%Pre set1(2)“ may be used only once for the several possibilities of set values!

Possible application of these inputs via the service module („**Pre-sets/LOG**“) at:

- Capacity set value „**INTERN**“ and „**EXTERN**“ (see from page 41 on)
- Batch set value „**ChargeIntern**“ and „**ChargeExtern**“ (see page 46)
- „**Nominal load**“ at feeder control (see page 44)
- „**MOISTURE**“ (see page 57)
- „**TransValue1(2)**“ (see page 63)
- „**g(v)-SIMU**“ (see page 52)
- „**Working width**“ (see page 56)

6.1 Moving into the parameterizing menus, adjustment of parameters

1. **Call of sub menus and alternative adjustments with key „F3“.**

   The arrow at the left screen margin is moved downwards with key „F3“. From the last row the arrow re-jumps to the first line with key „F3“.
   At the menu- and adjustment-selections (e.g. the language version) with key „ENTER“ the adjustment marked by the arrow at the left screen margin is activated.
   The activated adjustment is indicated by a block (☐) on the left beside the text .

2. **Adjustment of numbers with cursor-marking.**

   In case of numbers with keys „F1“ (+) and „F2“ (-) the figure marked by the cursor can be adjusted.
   The cursor (beneath the figure) is moved to the left with key „F3“. From the outermost left figure the cursor re-jumps to the unit's place with key „F3“.
   The readjustment of the number has to be transferred to „**ACT**“ with key „ENTER“ to be effective.
   The fade-in „**MAX**“ and „**MIN**“ informs about the possible range of adjustment.

3. **Adjustment of numbers without cursor-marking**

   At these numbers the adjustment is done only with keys „F1“ (+) and „F2“ (-). At kept-pressed key the speed of adjustment is increasing.

   This kind of adjustment is in function only at the mean value-formings in picture „**ITG - AD/DA**“, at the correction table (see page 58) and at adjustment of the clock. Here a changed adjustment need not be confirmed by „ENTER“.

6.2 The main menu

If the parameterizing switch is switched upwards, while the normal operating picture (GraphScreen) is indicated, the main menu appears on the display.

With „Priming charge“ in the main menu the base adjustment is fixed in case of readjustment.

Priming charge for belt scale: F6 + F2
Priming charge for weigh feeder: F6 + F3

„Priming charge“ always is possible in parameterizing mode!
The correct proceeding for priming charge is described on page 79.

```
 MAINMENUE----
→Language
  User language

  Data input
  COMMUNICATION
  CONTROL
  ActualParamet
  -KUK-SETUP-
 == exit <F4>==
```

In the main menu the language adjustments and the sub menus „**Data input**“, „**COMMUNICATION**“, „**CONTROL**“, „**ActualParamet**“ and „**KUK-SETUP**“ can be called.

First the language version desired is adjusted. Thereby there are separate adjustments for the operating level and for the parameters.
The language versions available are marked by a code in the software indication (Nx).

Language block 1 (N1):

Parameter:	**Operating level:**
Deutsch	**Deutsch**
English	**English**
Francaise	**Francaise**
Italiano	**Italiano**
Espanol	**Espanol**
P CCK (russisch)	**P CCK** (russisch)
	Nederlands

Further language versions will be available later on.

If key „MODE“ is pressed, „**DATA SECURING**“ and leaving of the parameterizing level is offered (see page 81).

If „**ActualParamet**“ is called, the parameters can be leafed through (and printed out), just as in selection „**MODE**“ (see page 23).

6.3 The data input

The switching-on to the next parameter is done with key „F4“, also there, where the indication in the lowest row is not mentioned.
There is no re-jump to a previous parameter possible.

```
 TYPE SCALE
→
 ☐RBW / WB
   DFM


 ☐DOSING


 == exit <F4>==
```

The first figure indicates, if the weighing computer is provided for registration, dosing or for an impact flow meter..

The weighing beam can be employed for registration, with feeder control or as weigh feeder .

At belt scale, weighing beam or impact flow meter with feeder control also „**DOSING**“ is to be adjusted.

Without „**DOSING**“ the parameter „**Integrat.range**“ is not offered.

```
 Integrat.range



       30 X/10
        ^
ACT      30 X/10
MAX     100
MIN      10
 == exit <F4>==
```

With this parameter it is fixed, in which range at dosing the speed of the weighing belt is readjusted in case of a change of the belt load.
The actual belt load is shown by the per cent value „**g**“ in the text screen.
„**Integrat.range**“ = 30 means, that the value „**g**“ may be between 33.3% and 100%. At adjustment 40 e.g. „**g**“ may be between 25% and 100%.
At belt scale resp. impact flow meter with feeder control „**Integrat.range**“ is adjusted to 10 (no speed control).
The value indicated in the technical data of the scale must not be changed..

```
 Tarat.mode
→
 ☐MEAN VALUE
   ABSOLUTE TARE




 == exit <F4>==
```

Normally the TARE MEAN VALUE is used at belt scales one belt revolution).
At minor net load of the weighing belt - and if a high short time accuracy is required - the ABSOLUTE TARE is used.
At „**ABSOLUTE TARE**“ a synchronizing-pulse-pick-up and a belt-label at the weighing belt are required.“

```
 Nom. capacity



    12000 kg/h
        ^
ACT   12000 kg/h
MAX10000000
MIN       0
 == exit <F4>==
```

Scaling of the scale (measuring range). The indication always is done in kg/h.

```
 Rated speed



     5000 mm/10s
        ^
ACT     5000
MAX    65000
MIN        1
 == exit <F4>==
```

Speed of material conveying at maximal motor speed (the tacho delivers „**Rated freque.**"),resp. the velocity of fall at the flow meter (DFM)
Serves for calculation of the lengths „**g2-Length**" („**P2 Capacity**"), „**g3-Length**" (discharge delay) and „**DeadLength**" (feeder control).
At MEAN VALUE TARE also for fixing the line interrupts per tare cell and the number of the tare cells. AT ABSOLUTE TARE the line interrupts of a belt revolution are determined at the proceeding „**Calibration**", which takes place before each taring.

```
 Rated freque.



     1000 Hz
        ^
ACT     1000 Hz
MAX     2000
MIN       10
 == exit <F4>==
```

At „**Integrat.range**" > 10 indication of the pulse tacho frequency at maximal speed of the drive motor. The maximal speed of the drive motor is achieved at set value equal „**Nom. capacity**" and minimal admissible value of „**g**".

At flow meter and belt scale without tacho always 100 Hz.

```
 Belt length



     4000 mm
        ^
ACT     4000 mm
MAX10000000
MIN       10
 == exit <F4>==
```

Endless length of the weighing belt. The parameter serves for calculation of the required duration at MEAN VALUE TARE and test load.
Imaginary length at the impact flow meter (DFM).

```
 Scaling2



     1000
        ^
ACT    10000
MAX   100000
MIN       10
 == exit <F4>==
```

At set values, which are determined by multiplications (e.g. „**A/D1*BCD1**") the second value is fixed with „**Scaling2**" to 100% (at „**A/D1*BCD1**" the input „**BCD1**").
The indication at „**FLEECE**" is also scaled with this parameter.
Exceptions are the set values „**A/D1*A/D2**" and „**A/D1(2)*%1**", which are scaled with „**Scaling3**" (see page 56).

```
 Scaling1



    10000
        ^
ACT     1000
MAX   100000
MIN        0
 == exit <F4>==
```

At set values, which are determined by multiplications (e.g. „**A/D1*BCD1**"), the first value is fixed with „**Scaling1**" to 100% (at A/D 100% = 10 000).

```
 g2-Length



        0 mm
        ^
ACT        0 mm
MAX    65000
MIN        0
 == exit <F4>==
```

Determination of the point, at which the capacity „**P2**“ is calculated.

If shifting register„**s-FIFO**“ is used, the delay loop is fixed with „**g2-Length**“.

May maximally have the value of „**g3-Length**“.

```
 g3-Length



       10 mm
        ^
ACT       10 mm
MAX    65000
MIN        0
 == exit <F4>==
```

Discharge delay. The parameter determines the length, after which the load measured at the measuring length is used for evaluation (registration and dosing).

```
 TestWeight TW
 Value
 in per mille
  75.0% =  750

    750
      ^
MAX    120.0%
MIN     10.0%
 == exit <F4>==
```

Determines, to which percentage of the measured value of weight the test weight is corresponding..
If after a material test a correction is carried out, an automatical re-calculation of the parameter is done. After a material test with subsequent correction therefore always a data securing should be cone at the end.

```
 SETUP
→ NO
  YES




 == exit <F4>==
```

„**YES**“ has to be selected, if at the previous parameters a change has been carried out.

The following parameters are re-adjusted at „**SETUP**“ :

· **Indication unit of capacity:**

```
up to     199.9 kg/h=   0.1 kg/h
200 -    1999 kg/h  =     1 kg/h
2.00 -  19.99 t/h   = 0.010 t/h
20.00 - 199.9 t/h   = 0.100 t/h
200.0 - 10000 t/h   = 1.000 t/h
```

· **Indication unit of counting:**

```
up to      2999 kg/h=   0.1 kg
3.00 -  29.99 t/h   =     1 kg
30.00 - 299.9 t/h   =    10 kg (.01t)
300 -    2999 t/h   =   100 kg (0.1t)
3000 -  10000 t/h   =     1 t  (1.0t)
```

The adjustments calculated at „**SETUP**“ can be changed in „**KUK-SETUP**“. It is, however, not meaningful, to choose too high resolutions.

· **The limiting value „Min-Load“:**
The adjustment is done to the minimal value for „**g**“ indicated at „**Integrat.range**“ plus a safety reserve of 5%.

· **The limiting value „Control lim“:**
The adjustment is done to the minimal value for „**g**“ indicated at „**Integrat.range**“.

· **The limiting value „Taration Err.“:**
The adjustment is done to 50% of parameter „**TestWeight TW**“. This ensures, that the laying-on of the test weight during taration is recognized as „**Taration Err.**“.

· **The feeder-limiting value „Min-Limit“:**
The adjustment depends on parameter „**Integrat.range**“.

„**Integrat.range**“ **= 10:**
Adjustment = **20%**, „**Funct. at off**“ = „**Outp.setval**“

„**Integrat.range**“ **= >10:**
Adjustment = **50%**, „**Funct. at off**“ = „**MEAN VALUE**“

```
 Min Load
 Value
 in per mille
  38.3% =  333

    383
     ^
MAX    100.0%
MIN      0.0%
 == exit <F4>==
```

The limiting value „**Min Load**“ can be changed here or in „**KUK-SETUP**“ (see page 64).

```
 INTERN
 <F3>
 Display

□□□□<ENTER>□□□□

 Display


 == exit <F4>==
```

Selection of source of set value „**INTERN**“.
With „F3“ in row 3 the possible adjustments are offered successively.
With key „ENTER“ the desired source of set value is transferred to row 7 and thus effective.
At the sources of set value „**INTERN**“ the indication „**g/m2**“ etc. is not possible.
But the analog output „**Scaling2**“ also here delivers the production-actual value at multiplied set value („**g/m2**“ etc.). At **not** multiplied set value the analog output „**Scaling2**“ is zero.

· **Display**
As source of set value the adjustment „**Cap.set value**“ under „**Pre-sets/ LOG**“ in selection MODE of the normal operating mode is used.
100% set value at:
„**Cap.set value**“ = „**Nom. capacity**“

· **Disp.+/-**
Like „**Display**“, but the adjustment can also be changed via the binary inputs „**Mot.Poti +/-**“ (see page 47).
100% set value at:
„**Cap.set value**“ = „**Nom. capacity**“

· **BCD 1(2)**
The data inputs „**BCD 1**“ resp. „**BCD 2**“ (see page 74) are used as source of set value.
100% set value at:
„**BCD 1(2)**“ = „**Nom. capacity**“

· **BCD 1*BCD 2**

The set value is calculated by multiplication of „**BCD 1**“ and „**BCD 2**“.
Set value = „**Nom. capacity**“ (100%) at:
„**BCD 1**“ = „**Scaling1**“ and
„**BCD 2**“ = „**Scaling2**“.

· **A/D 1(2)**
The analog inputs „**A/D 1**“ resp. „**A/D 2**“ (see page 55) are used as source of set value.
Set value = „**Nom. capacity**“ (100%) at:
„**A/D 1(2)**“ = 100%

· **A/D 1(2)*Disp.+/-**
The set value is calculated by multiplication of analog input „**A/D 1(2)**“ and of the adjustment at „**Pre set**“.
Set value = „**Nom. capacity**“ (100%) at:
„**A/D 1(2)**“ = 100%
„**Cap.set value**“ = „**Scaling2**“
„**Scaling1**“ = 10 000
Attention: „**Cap.set value**“ is limited with „**Nom. capacity**“.

· **A/D 1*A/D 2**
The set value is calculated by multiplication of the analog inputs „**A/D 1**“ and „**A/D 2**“.
Set value = „**Nom. capacity**“ (100%) at:
„**A/D 1**“ = 100%
„**A/D 2**“ = 100%
„**Scaling1(2)**“ = 10 000

· **A/D 1(2)*BCD 1(2)**
The set value is calculated by multiplication of the analog input „**A/D 1(2)**“ and of the adjustment at the input „**BCD 1(2)**“.
Set value = „**Nom. capacity**“ (100%) at:
„**A/D 1(2)**“ = 100%
„**BCD 1(2)**“ = „**Scaling2**
„**Scaling1**“ = 10 000

· **ProfibusDP**
The set value delivered by the Profibus-connection is used.
Set value = „**Nom. capacity**“ (100%) at:
„**ProfibusDP**“ = „**Nom. capacity**“

· **ProfibusDP %**
The Profibus-connection delivers a percentage.
Set value = „**Nom. capacity**“ (100%) at:
„**ProfibusDP %**“ = 10 000

· **A/D 1(2) * V1**
The set value is calculated by multiplication of analog input „**A/D 1(2)**“ and adjustment „**INTERN**“ resp. „**EXTERN**“ under „**Pre-sets/LOG**“.
Set value = „**Nom. capacity**“ (100%) at:
„**A/D 1(2)**“ = 100%
„**INTERN/EXT.**“ = „**Scaling2**“

· **A/D 1(2) * %1**

The set value is calculated by multiplication of analog input „**A/D 1(2)**“ and adjustment „**INTERN**“ resp. „**EXTERN**“ under „**Pre-sets/LOG**“.

Set value = „**Nom. capacity**“ (100%) at:
„**A/D 1(2)**“ = 100%
„**INTERN/EXT.**“ = 100%
„**Scaling1(2)**“ = 10 000

· **A/D 1(2) * T1**

The set value is calculated by multiplication of analog input„**A/D 1(2)**“ and the value of „**TransValue1**“ .

Set value = „**Nom. capacity**“ (100%) at:
„**A/D 1(2)**“ = 100%
„**Transfer1**“ = „**Scaling2**“
„**Scaling1**“ = 10 000

· **CV 0**

The calculating value „**CV 0**“ is used as set value.
The calculating value - at corresponding adjustment - is formed in the two calculating modules „**PLC1**“ resp. „**PLC2**“ (see page 58).

Set value = „**Nom. capacity**“ (100%) at:
„**CV 0**“ = „**Scaling1**“

· **CV 0 * CV 1**

The set value is calculated by multiplication of „**CV 0**“ and „**CV 1**“.

Set value = „**Nom. capacity**“ (100%) at:
„**CV 0**“ = „**Scaling1**“
„**CV 1**“ = „**Scaling2**“

· **A/D 1(2) * CV 0(1)**

The set value is calculated by multiplication of analog input „**A/D 1(2)**“ and the value of „**CV 0(1)**“.

Set value = „**Nom. capacity**“ (100%) at:
„**A/D 1(2)**“ = 100%
„**CV 0(1)**“ = „**Scaling2**“
„**Scaling1**“ = 10 000

```
EXTERN
 <F3>
 BCD 1

□□□□<ENTER>□□□□

 BCD 1


 == exit <F4>==
```

At „**EXTERN**“ the same adjustments of set value are possible as at „**INTERN**“.

At the adjustment „**g/m2**“ etc. at „**Area weight**“ and „**FLEECE**“ at „**DISPLAY**“ (see page 56/57) the indication in the graphic screen is done in „**g/m2**“ etc. (see page 11).

```
 FEEDER 1
® Min-Limit
  Max-Limit
  DeadLength
  Readj.fact.
  Funct. at off
  Feeder free
□not active
  active
  active > MIN
```

At a weigh feeder with controlled feeder „**active**“ or „**active > MIN**“ has to be adjusted.

active
The feeder control works if the binary input „**Enable regu**“ is activated.

active > MIN
The feeder control works if the load of the measuring length (**g1**) is greater than the limiting value „**Feeder free**“ (see page 45).

If the feeder is activated, subsequently the parameters

- **Funct. at off** and
- **DeadLength**

as well as the selection picture for the source of load set value are offered.

```
 Nominal load
 <F3>
 not active

□□□□<ENTER>□□□□

 not active



 == exit <F4>==
```

Of the sources offered only the following ones are reasonable for „**Nominal load**“:

- **BCD 1(2)**
- **Profibus1(2)**
- **%Pre set1(2)**
- **%FixedVal**
- **A/D 1(2)**
- **CV 0(1-3)**

```
Min-Limit
 Value
 in per mille
  50.0% =  500

    500
      ^
MAX    120.0%
MIN     10.0%
 == exit <F4>==
```

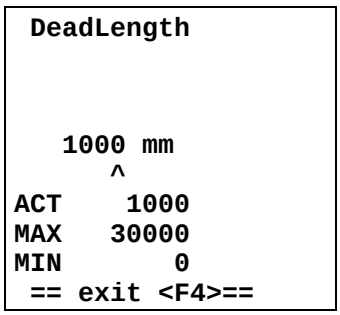
Can be called in picture „**FEEDER 1**“.

At „**DOSING**“ and „**Integrat.range**“ >10 the feeder variable always is put out proportionally to the weighing belt variable
If the load of the measuring length does not correspond to the „**Nominal load**“ adjusted, the feeder regulator changes the ratio between weighing belt variable and feeder variable.
„**Min-Limit**“ limits the ratio between weighing belt variable and feeder variable downwards.

```
 Max-Limit
 Value
 in per mille
 100.0% = 1000

   1000
      ^
MAX    120.0%
MIN      0.0%
 == exit <F4>==
```

Can be called in picture„**FEEDER 1**“.

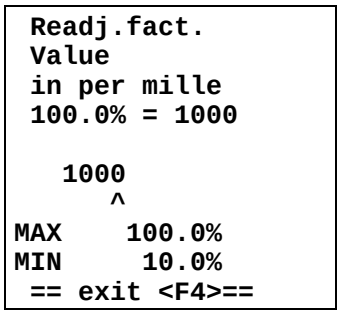
Like „**Min-Limit**“, but limiting the ration between weighing belt variable and feeder variable upwards.



Can be called in picture „**FEEDER 1**“.

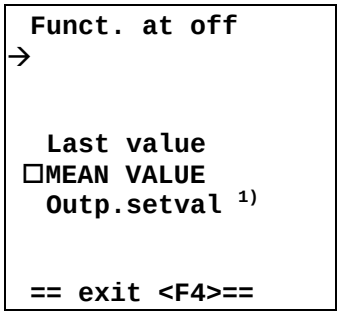
The feeder regulator always carries out a re-calculation after run-down of the dead length.
At „**DOSING**“ and „**Integrat.range**“ = 10 the feeder variable is calculated.
At „**DOSING**“ and „**Integrat.range**“ > 10 (weigh feeder) the ratio between weighing belt variable and feeder variable is calculated.
In order to avoid an overswing of the control, the latest correction for the feeder at the load of the measuring length must be fully effective, before another calculation is carried out.

Adjustment for „**DeadLength**“:
Distance feeder to limiting of the measuring length in discharge-direction, plus approx. 10%. For a more exact averaging of the weighing signal „**DeadLength**“ has to be adjusted correspondingly longer.



Can be called in picture „**FEEDER 1**“.

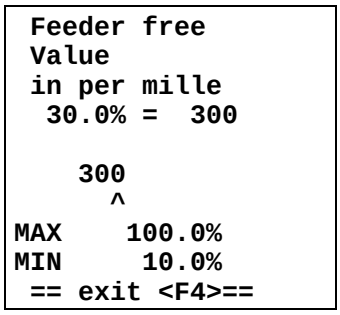
At adjustment 100% at each control process the whole control deviation reduced. If the feeder does not behave linearly to the feeder variable (e.g. a conveying trough), an improvement of the control behaviour can be achieved by a reduction of the readjustment factor.



Can be selected in picture „**FEEDER 1**“.

In case of missing feeder release in the standard adjustment the ratio for the feeder variable is set to the MEAN VALUE between „**Min-Limit**“ and „**Max-Limit**“ (e.g. at 50% and 100% to 75%).

Alternatively the keeping of the latest calculated ratio is possible.
If feeder control is activated, after the picture „**FEEDER**“ the parameters „**Funct. at off**“, „**DeadLength**“ and the selection picture „**Nominal load**“ for the source of set value of the load control are offered for adjustment.



Can be selected in picture „**FEEDER 1**“.

If in picture „**FEEDER**“ „**active > MIN**“ is adjusted, the feeder control at a load of the measuring length (**g1**) greater than the value adjusted here is released.

[1] Nur bei „**DOSIERUNG**“ und „**Integrat.range**“ = 10.

```
ChargeIntern
<F3>
not active

□□□□<ENTER>□□□□

not active


== exit <F4>==
```

For batch operation two sources of set values can be used. the source „**ChargeIntern**“ is activated, if the binary input „**ChargeExtern**“ is not activated.

Only the sources mentioned in the following are suitable for „**Charge**“:

- **BCD 1(2)**
  Maximal adjustment value 99990 (in case of adjustment of „***10**“ (see page 74).
- **Profibus1(2)**
  Maximal pre-set-value 65 000.
- **FixedVal**
  Maximal adjustment value 50 000
- **A/D 1(2)**
  100% Analog signal = maximal 20 000 (Scaling by „**Scaling1**“).
- **Pre set 1(2)**
  Maximal adjustment value 50 000.
- **CV 0(1-3)**

```
ChargeExtern
<F3>
not active

□□□□<ENTER>□□□□

not active


== exit <F4>==
```

The source of batch set value „**ChargeExtern**“ is activated by binary input „**ChargeExtern**“.
Possible sources as described at „**ChargeIntern**“ .

```
OPTO IN     1-5
<+>1  <->
Fault motor

□□□□ENTER>□□□□
U1  Fault motor
U2  Belt runs
U3  INTERN/EXT.
U4  Delete err.
U5  ----free
```

Adjustment of the binary inputs „**U1 - U4**“ and of the internal marker „**U5**“.
Which of the adjustments shall be treated, is adjusted with key „+“ in row two (1 - 5).
With key „-“ beside the channel number the sign „**x**“ (inverting) is switched on/off. The possible functions for the binary inputs are selected with key „F3“ in row three.
If „**x**“ is switched on, at the transfer of the adjustment for the binary channel with key „ENTER“ also the inverting is switched on.
The marker „**U5**“ makes possible the permanent connection of a function. The inverting thereby must not be used.

The hexadecimal number in figure „**CONTROL**“ under „**OPTO**“ (see page 21) indicates the activated OPTO-functions.

Possible functions of the binary inputs:

- **>0< Start (00000001)**
  A taring process is started.

- **INTERN/EXT. (00000002)**
  Switching-over of the source of set value for the dosing-capacity (see page 77).

· **Mis-Run(00000008)**

Message from the monitoring device at the conveying belt (normal active).

· **Belt runs (00000010)**

Activates the monitoring „**Drive/ Tacho**“ (see page 13).

· **----free (00000020)**

No function.

· **Delete err. (00000040)**

Deletes stored error messages.

· **Fault motor (00000080)**

If the input is activated, the error message „**Drive /Tacho**“ comes.

· **Fuse (00000100)**

If the input is activated, the error message„**Fuse**“ comes.

· **Enable regu (00000200)**

With this input the feeder regulator is released if „**active**“ is parameterized.

· **Start batch (00000400)**

At activated batch operating mode the batch discharge starts.

· **Break batch (00000800)**

The batch pre-selection (batch remainder) is set to zero.

· **Emptying (00001000)**

Effects different functions of the contact outputs „**Batch mode**“ and „**Batch drive** “ at batch operation (see page 9).

· **Mot.Poti + (00002000)**

Raises the set value „**Disp.+/-**“. Variable speed of adjustment. At short pulse (less than 0.3s) the set value is raised by one indication step. At permanent pulse the speed of adjustment is increasing after some steps.

· **Mot.Poti - (00004000)**

Reduces the set value „**Disp.+/-**“. As for the rest like „**Mot.Poti +**“.

· **B=>0 print (00008000)**

The counter „**B**“ is put out via serial interface and then set to zero.
Is done automatically at step 1 at batch operation.

· **ChargeExtern (00010000)**

Switching-over of the source of set value for the batch quantity (see page 46).

· **Select 1 (00020000)**

Selection for batch silo (see page 16) and multi range (see page 55).

· **Select 2 (00040000)**

Selection for batch silo (see page 16) and multi range (see page 55).

· **Fine streamCh (00080000)**

Batch operation with fine stream circuit (not at batch with emptying).
At achieving the fine-stream-switching-over the binary output „**Coarse str.**“ is switched off and „**Fine stream**“ is switched on until achieving the total batch quantity. The batch remainder, at which the switching-over from Coarse str. to Fine stream is done, is adjusted under „**MODE-Pre-sets/LOG-CHARGE**“ at „**PreSwitchOff0**“ at normal operation.
„**Batch drive** “ and „**Batch mode**“ remain switched on during the whole batch run-down.

The analog output „**Charge fine**“ goes from the switch-off-point for Coarse str. after a ramp from 100% to 10% at batch end.
At „**DOSING**“ and „**Integrat.range**“ >10 the adjusted set value is decreasing from the switch-over-point „**Fine stream**“ to „**Min Set value**“ (see page 76) (also after a ramp).

· MOISTURE (00100000)

If this input is activated, at the load of the measuring length the moisture adjusted or measured is deducted (see page 57).

· LoSpeTach (00200000)

With the help of this binary input the conducting speed of a plant can be measured by means of a low-frequency signal (also see page 62).

· t-FIFO (00400000)

Controls the shifting register „**t-FIFO**“.
(also see page 62).

```
 Relay
 <+>1  <->
<F3> Error
□□□□<ENTER>□□□□
K1  Ready to op
K2  Error
K3  Batch drive
K4  Feeder on
K5  Belt slip
K6  Lay on TW
```

Adjustment of the contact outputs **K1** to **K6**.
The handling is the same as described at binary inputs („**OPTO**“).

The hexadecimal number in picture „**CONTROL**“ under „**Relay**“ (see page 19) indicates the activated relays (also those, which are not used at relay output, but nevertheless can be interrogated via Bus-connection).

At the weighing electronics DWC-5A only 4 contact outputs exist. K5 and K6 are designed as LED- displays H5 (red) and H6 (green) on the main board.

Possible functions at the contact outputs:

· Error (00000001)

The contact output is switched on, if one of the errors registered in list „**Error**“ is activated (see page 52).

· Ready to op (00000002)

The contact output is switched off, if one of the errors registered in list „**Ready to op**“ is activated (see page 67).

· Batch mode (00000004)

At batch operation without emptying:
The contact output closes at activating binary input „**Start batch**“, if a batch-set value is adjusted. Opens, if the adjusted batch quantity is achieved.

At batch operation with emptying:
The contact output closes at activating binary input „**Start batch**“, if a batch-set value is adjusted. Opens, if the adjusted batch quantity less the pre-switch-off-quantity (see page 17) is achieved.

· Feeder on (00000008)

Switches off, if taring or test with test weight is carried out.

· MinLoad(00000010)

Is activated, if the measured value „**g3**“ falls under the limiting value „**K-MIN**“ .

· MaxLoad(00000020)

Is activated, if the measured value „**g3**“ goes above the limiting value „**K-Max**“ .

· Lay on TW (00000040)

Controls the laying-on and lifting of the test weight, if a remote controllable test-weight-lay-on-device is provided.

· Test/TARE (00000080)

Is activated, if a test routine or the taring process is running.

· **Belt empty (00000100)**

Is activated, if the measured value „**g3**“ is under the limiting value „**K-0**“ .

· **Belt slip (00000200)**

Is activated, if after the adjusted number of tacho pulses no control pulse comes (see page 66).

· **Batch drive (00000400)**

Controls the weighing belt drive at batch operation.
At batch operation without emptying:
The contact output closes at activating binary input „**Start batch**“, if a batch set value is adjusted. Opens, if the adjusted batch quantity is achieved.

At batch operation with emptying:
The contact output closes at activating binary input „**Start batch**“, if a batch set value is adjusted, Opens, if after switching off „**Batch mode**“ the measured value „**g3**“ has fallen under the limiting value „**Belt empty**“ and „**Post-Runtime**“ has run down.

· **MinLoad ML (00000800)**

Is activated, if the load of the measuring length („**g1**“) falls under the limiting value „**K-MIN**“.

· **MaxLoad ML (00001000)**

Is activated, if the load of the measuring length („**g1**“) goes above the limiting value „**K-MAX**“.

· **FieldRelay1 (00002000)**
· **FieldRelay2 (00004000)**

Two contact outputs, which can be switched via the Bus-connection.

· **Deviation (00008000)**

Is activated by error „**Control deviation**“ .

· **Coarse str. (00010000)**

Is switched on at batch operation with fine stream control until achieving the fine stream quota.

· **Fine stream (00020000)**

Is switched on at batch operation with fine stream control from switching over to „**Fine stream**“ until achieving the batch set quantity.

· **Belt stopped (00040000)**

Is activated, if the tacho frequency is below 1Hz.

· **FD-directi. (00080000)**

Controls the sense of rotation at the feeder regulator with continuously working motor actuator (see page 32).

· **Feeder OPEN (00100000)**

Switches the motor operator at the feeder regulator with step regulator (see page 30).

· **FeederCLOSE (00200000)**

Switches the motor operator at the feeder regulator with step regulator (see page 30).

· **BeltemptyML (00400000)**

Is activated, if the measured value „**g1**“ is under the limiting value „**K-0**“.

```
 WeighChannel
→ No
  Yes




 == exit <F4>==
```

Here it is possible to decide whether the adjustment picture resp. calibration picture shall be called or not.
In case of „**NO**“ the weigh channel adjustment is skipped.
If „**YES**“ is chosen, the percentile load with the test weight (parameter „**TestWeight TW**“) is offer as reference at the calibration of the weighing bridge.
Attention: In case of a test weight less than 50% it is recommended to use approximately the full load of the measuring length for raising the accuracy at the calibration of weigh channel. Then the corresponding value has to be adjusted.

```
 WeighChannel

- 2.1 %   18360
OFFSET 0  20000
            ^
SPAN 100  30000
====== 7500
act >   0%  <F6>
act > 100%  <F5>
 == exit <F4>==
```

In this picture the pre-load and the weighing range of the weighing bridge can be calibrated.

For calibrating the pre-load (is stored in parameter „**OFFSET**“) at unloaded weighing belt key „F6“ must be pressed.
After that the weighing bridge has to be loaded with the test weight. At motoric test-weight-lay-on-device the test weight is laid on with key „ENTER“ (the cursor jumps to „**SPAN**“). The calibration of the weighing range („**SPAN**“) is done with key „F5“.
The number in row 7 (7500 = 75.00%) informs about the adjustment value at „**TestWeight TW**“.

„**OFFSET**“ and „**SPAN**“ can also be changed by input of figures. The switching-over of the cursor from „**OFFSET**“ to „**SPAN**“ is done with key „ENTER“, as already described above.
If the cursor is at „**SPAN**“, after „ENTER“ again the picture for adjustment of the calibration load is called (the contact output „**LAY ON TESTW.!**“ is switched off).
In the picture for adjustment of the calibration load the value adjusted in parameter „**TestWeight TW**“ is indicated. Also then, if this adjustment has been changed for calibration before.
At leaving the weigh channel adjustment with key „F4“ at motoric test-weight-lay-on-device the test weight is lifted automatically.

```
 PB-DP Address



    126
      ^
ACT     126
MAX     126
MIN       2
 == exit <F4>==
```

Address of the weighing computer at employment in a Profibus-DP net.
The address 126 means, that no employment in a Profibus-DP net is adjusted.

```
 Fabric.number



        0
        ^
ACT       0
MAX   19999
MIN       0
 == exit <F4>==
```

With this input the weighing computer is related to a certain scale.

The number adjusted can be read at „**ActualParamet**“ in picture 1 right at the bottom.
Additionally this number is indicated at the parameter printout.

```
Set clock


    11:24:32
           ^
   Wednesday

 20.Jan.2001

 == exit <F4>==
```

Adjustment of the net fail safe clock with date indication.

The selection of the adjustment to be changed is done with key „F3“. The change is carried out with keys „F1“ (+) and „F2“ (-). At kept-pressed key the speed of adjustment is raised.

The clock also can be adjusted in normal operation mode under „**Pre-sets/LOG**“.

6.4 Serial interfaces

```
 COMMUNICATION
→ _1200,8,N,1
  _2400,8,N,1
 □_9600,8,N,1
  19200,8,N,1
  CANopen
  PROFIBUS DP


 == exit <F4>==
```

Under „**COMMUNICATION**“ the RS232 interface „**COM 1**“ for parameter printout and printer output can be adjusted.

The adjustments for BUS-connections are described in a separate manual.

6.5 CONTROL

In the sub menus of „**CONTROL**“ no parameters can be changed (exception „**COMMUNICATION**“ and „**SIMULATION**“). It is, however, possible to read actual measured values, signal statuses, output values and internal information.

```
 CONTROL
→ AD/SYS
  DA
  RELAY
  OPTO/BCD
  COMMUNICATION
  SIMULATION
  ANALYSIS
  FLASH-PROM
 == exit <F4>==
```

Selection picture „**CONTROL**“.
The indication pictures are described on page 18 to 20.

At „**SIMULATION**“ the sources for simulation of the analog channels 1 and 2, of the weigh channel
(**g-SIMU**) and of the speed measuring (**v-SIMU**) can be adjusted.

The pictures of „**ANALYSIS**“ are described on page 22.

Additionally there is the picture „**FLASH-PROM**“ in parameterizing mode (see page 52).

6.5.1 Sources for simulation of the analog channels, of the belt load and of the speed measuring

```
 g(v)-SIMU
 <F3>
 not active

□□□□<ENTER>□□□□

not active


 == exit <F4>==
```

```
 A/D-Channel  1(2)
 <F3>
 not active

□□□□<ENTER>□□□□

not active


 == exit <F4>==
```

Not all sources offered are meaningful for the simulation.

There should also be considered if the simulation shall be used for operation (e.g. for „**v-SIMU**“ at belt scale without tacho „**%FixedVal**“ is the correct adjustment) or for tests.
For tests the adjustment „**BCD1(2)**“ is recommended if a BCD-adjuster is connected, apart from that „**%Preset1(2)**“.
After „**v-SIMU**“ has been activated or finished, after leaving the parameterizing mode absolutely a „RESET“ has to be carried out (see page 81).

6.5.2 Flash-Prom

```
FLASH-PROM
→ ID    0 CUI  0
  Erase Flash
  Prog Flash

  Prog Nenn
  RA1558 FP1580
  X 7002


 == exit <F4>==
```

In row 2 and 8 internal information is indicated.
In row 7 the check sums of the parameter memory (**RA**) and of the back-up memory (**FP**) can be read.

When calling one of the texts in row 3 - 6 and pressing key „ENTER“ the following functions are actuated:

- **Erase Flash**
  Deletes the back-up memory.
  Attention: Thereby also the registrations in the log book are deleted!
- **Prog Flash**
  Carries out a data securing (transfer of the parameter memory into the back-up memory).
- **Prog Nenn**
  Copies all data of the back-up memory into the parameter memory (Re-charging, see page 81).

6.6 Kuk-Setup

In „**KUK-SETUP**“ all parameters can be adjusted.
Here it is not possible to adjust the real-time-clock, which, however, can be adjusted in normal operating mode under „**Pre-sets/LOG**“ and at „**Data input**“.

```
 -KUK-SETUP-
→ ActualParamet
  SYSTEM 1
  SYSTEM 2
  SCALE DATA
  I/O CARDS

  DOSING DATA
  CONTROL
 == exit <F4>==
```

The menus „**ActualParamet**“ (see page 23) and „**CONTROL**“ (see page 51) are equal to those in „**MAINMENUE**“.

6.6.1 SYSTEM 1

```
 SYSTEM 1
→ INTEGRATION
  DISPLAY
  MultiScaleW
  CHARGE
  FLEECE
  MOISTURE
  LINEARIZTN.
  KW-PAR
 == exit <F4>==
```

Under „**SYSTEM 1**“ adjustments can be selected, which for the most part are not offered at „**Data input**“ and mostly are not required for standard applications.

6.6.1.1 Mean value formings

```
 INTEGRATION
→

  ITG - AD/DA
  ITG-Speed
  ITG-Display

  SV-Integr.

 == exit <F4>==
```

In menu „**INTEGRATION**“ the adjustment pictures for mean value formings resp. signal dampings can be selected.

```
 ITG - AD/DA
     s/10
→ AD1    -30 <
  AD2     30 S
  DA1      3 S
  DA2    -10 <
  DA3    -20 <
  DA4     30 S
  g1     -50 INT
 == exit <F4>==
```

The analog channels „**AD1**“ to „**DA4**“ are adjusted in 1/10 second.
The adjustment is done after selecting the channel via key „F3“ (the selected channel is marked by „→“) with keys „F1“ (+) and „F2“ (-). At kept-pressed key the speed of change is increasing.
Maximal adjustment values: -1000
+10 000
The adjustment „0“ is not admissible.

< = The speed of change of the signal is limited after a ramp. The time adjusted (-xxx) corresponds to a signal change from 0% to 100%, resp. 100% to 0%.
In case of a signal jump of more than 33% of the total range the averaging is set out of function.

S = Via the time adjusted the arithmetic mean value/ average is formed. Thereby the signal change is done in the form of a staircase.

The averaging of the load of the measuring length is done via the adjustment at „**g1**".
The adjustment „0" is not admissible.

INT with negative number (maximal -10 000).
The averaging is done after a degressive curve. At the adjustment „**-100**" about 65% of the signal change are reduced after a running distance of the weighing belt, which corresponds to the maximal belt speed.

INT with positive number (maximal 10 000).
The measured value of the belt load is averaged via the adjusted number of tacho pulses. Thus the load signal is provided in the form of a staircase. Thereby the distance used for the averaging keeps constant, not the time.

Example:
Maximal belt speed = 500mm/s
Maximal tacho frequency = 400Hz
Adjustment „**g1**" = 1000
Averaging is done over 1250mm
(500/400x1000)

```
 ITG-Speed



     12
      ^
ACT      12
MAX   10000
MIN       1
 == exit <F4>==
```

The speed measuring is averaged via the number of tacho pulses adjusted here.
At „**DOSING**" with „**Integrat.range**" >10 only low mean values may be adjusted, as otherwise an instability in control behaviour occurs (preferably one revolution of the digital tacho is averaged).

```
 ITG-Display



     50 s/10
      ^
ACT      50 s/10
MAX     120
MIN       1
 == exit <F4>==
```

Averaging of the conveying capacity indication resp. Of the production indication (xx/m2 etc.) in GraphScreen and in the text screens.
Maximal value = 120 (12s)

```
 SV-Integr.



   2500
     ^
ACT    2500
MAX   10000
MIN      10
 == exit <F4>==
```

Set value integrator.
The speed of change of the set value after jump-change can be reduced.
The adjustment indicates, which change per 0,1s in per cent (10000 = 100%) of the set value range (0-100%) is carried out.
Adjustment 2500 = 25% per each 0,1s = 0,4s for 100%.
If the set value is lowered jumping to a lower value than the adjustment at the parameter „**SetValueNull**", the set value integrator is not effective (no time-retardation).

6.6.1.2 Selection of the display screen (GraphScreen)

```
 DISPLAY
→☐BELT SCALE
   CHARGE
   FLEECE
   Actual load




 == exit <F4>==
```

For the several operating modes different display screens can be selected. The display screens are describes from page 8 on.

6.6.1.3 Multi range design

```
 MultiScaleW
→ Nom. capacity 1
  Nom. capacity 2
  Nom. capacity 3
  EXTERN
  D/A-Channel__1
  D/A-CHANNEL__2
  D/A-CHANNEL__3
  D/A-CHANNEL__4
 == exit <F4>==
```

The ranges „**Nom. capacity 1/2/3**“ (ranges 2-4) can be used only, if the source of set value „**EXTERN**“ is activated.
The marking of „**EXTERN**“ and „**D/A-Channel__x**“ is done after selection with key „F3“ with key „ENTER“.
The same process deletes a set mark.
4 different measuring ranges can be established. The weighing electronics has be informed by binary inputs „**Select 1**“ and „**Select 2**“, which measuring range is being used.
At the selection of one of the ranges 2 - 4 at 100% speed the rated frequency is supposed in the same extent, as „**Nom. capacity x**“ against „**Nom. capacity**“.

Measuring range	Binary contact	Remark
Nom. capacity	-	Basic range, param. „**Nom. capacity**“. Must always be the highest range.
Nom. capacity 1	**Select 1**	Range 2
Nom. capacity 2	**Select 2**	Range 3
Nom. capacity 3	**Select 1 + Select 2**	Range 4

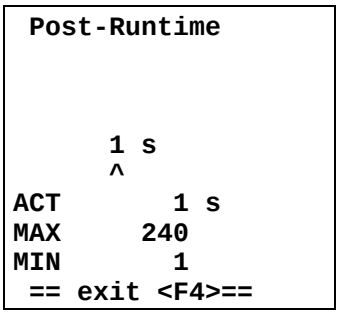
EXTERN
If „**EXTERN**“ is marked, at the analog set values 100% set value signal is equal to the maximal capacity in the respective range. If „**EXTERN**“ is not marked, the range 1 is valid for 100% set value signal.

D/A-CHANNEL
If a D/A-Channel is marked, the output value is decreasing proportionally with the range selected in the ratio to range 1. At the D/A-Channel, which is not marked, in each range up to 100% is put out.

6.6.1.4 Batch operating mode

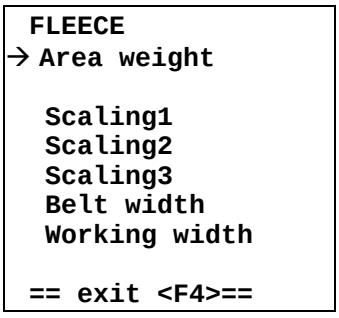
```
 CHARGE
→ ChargeIntern
  ChargeExtern

  Post-Runtime




 == exit <F4>==
```

Batch operating mode is activated, if at a source of set value another adjustment than „**not active**“ is selected.
The adjustment pictures for the batch/charge set values are described on page 46.

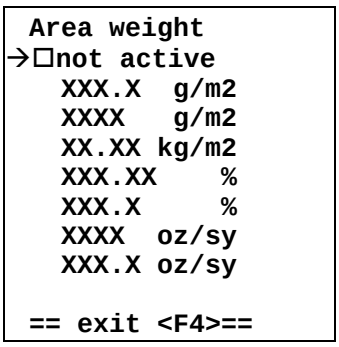


At batch operating mode „**Emptying**“ the contact output „**Batch drive**“ at batch end remains switched on for the time adjusted from „**Belt empty**“ on.
For recognition of „**Belt empty**“ the limiting value „**K-0**“ is used. The measuring is done at point „**g3**“.

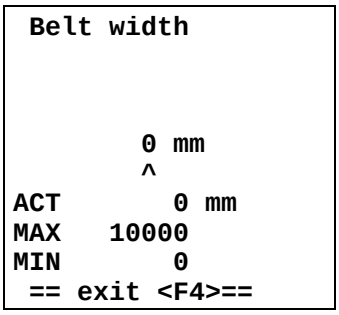
6.6.1.5 Special operating mode „FLEECE“



The function of the scaling parameters „**Scaling1(2)**“ is described on page 39.
„**Scaling3**“ serves for scaling the display in „**g/m2**“ etc. at the set values „**A/D1*A/D2**“ and „**A/D1(2)*%1**“



At „**not active**“ the indication unit is used - as described on page 8.
The adjustment selected here is used at „**Picture for fleece plants**“ (see page 11), if one of the multiplying set values (see page 42/43) is active .



For dosings with adjustable working width.
It is possible to reduce the set value „**EXTERN**“ proportionally to the reduction of the working width.
At the set value „**INTERN**“ the reduced working width is not considered!
At „**Belt width**“ the maximal working width has to be adjusted (not the belt width!). At adjustment „O“ no set value change is done due to the working width.

```
 Working width
 <F3>
 not active

□□□□<ENTER>□□□□

 not active


 == exit <F4>==
```

The set value „**EXTERN**“ is calculated as follows:
Pre-set value / „**Belt width**“ * „**Working width**“.
At the calculation of the production indication („**g/m2**“ etc.) the set value change is re-calculated backward. Thus a correct indication is effected related to the working width.
The actual working width has to be signalled to the weighing electronics. Thereto several sources are available.

If the source delivers the same value as „**Belt width**“, the set value is not changed.

Only the sources indicated in the following are reasonable for the „**Working width**“ :

- **BCD 1(2)**
- **Profibus 1(2)**
- **Pre-set 1(2)**
- **%Pre-set1(2)**
- **AD1(2)**
- **CV 0 (1,2,3)**
  If at „calculating value“ the result is calculated to %, at „**Belt width**“ = 10 000 must be adjusted. At calculation to millimetres also „**Belt width**“ has to be adjusted in mm.

6.6.1.6 Consideration of the material moisture

```
 MOISTURE
→□ MOISTURE

   MOISTURE  0%
   MOISTURE100%




 == exit <F4>==
```

At the load of the measuring length measured by the weighing channel a moisture correction can be done.

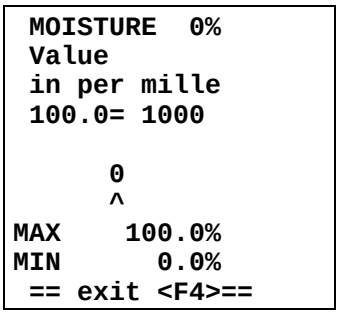
```
 MOISTURE
 <F3>
 not active

□□□□<ENTER>□□□□

 not active


 == exit <F4>==
```

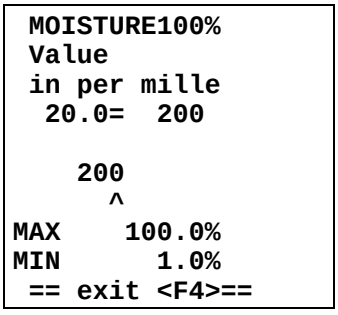
Selection for the source for dry weight calculation.
Only the following sources are reasonable for the dry weight calculation :

- **BCD 1(2)** 100% = 10.000
- **Profibus1(2)** 100% = 10.000
- **%Pre-set1(2)** 100% = 100,0
- **%FixedVal** 100% = 100,0
- **A/D 1(2)** 100% = 100,0% [1)]
- **CV 0(1,2,3)** 100% = 10.000

The dry weight calculation works only if the binary input „**MOISTURE**“ is activated.

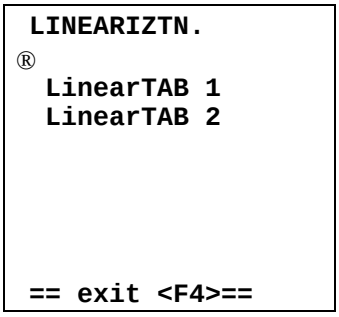
[1)] E.g. at the analog pre-set (A/D x) for 4-20mA a moisture range of 8% (moisture 0%) up to 16% (moisture 100%) can be determined. This limiting is also effective at the other sources. Then, however, the allocation of the percentage is not clearly represented and therefore not recommendable.





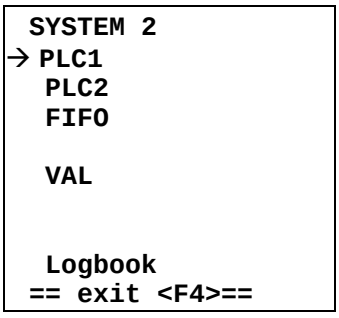
In these pictures the moisture range can be allocated (e.g. 0% AD1 corresponds to 10% moisture, 100% AD1 corresponds to 20% moisture).

6.6.1.7 Linearization of the weighing channel



In table 1 and 2 altogether17 linearization points for the load measured value „**Gross-g**“ are offered (**LW00 - LW16**).
The distance between the linearization points is 8%.
Linearization point 0 (**LW00**) is allocated to 0% „**Gross-g**“, Linearization point 16 (**LW16**) corresponds to 136% of „**Gross-g**“.
The maximal adjustment value is +/-50.0% ((-)500).
The percentages are related to the appertaining measured value but not to 100% of the load.

6.6.2 SYSTEM 2



The following adjustments are possible under „**SYSTEM 2**“:

- Formulas for the calculations with the results „**CV 0 - 5**“ and „**RL0**“ / „**RL1**“
- Selection of the source for the net weight calculation at series feeding
- Freely programmable shifting register
- Value input for the fixed values [1)]
- Measuring of the conducting speed by the slowly running transmitter [1)]
- Selection of the sources for the transfer values [1)]

6.6.2.1 Programmable calculating unit (PLC1/2)

The calculating unit works similar to the program-run-off of an SPS/PLC.
With the help of the calculating unit maximally 6 calculating results can be formed („**CV 0 - CV 5**“).
For provisional results over 32000 the two Long-Values „**RL0**“ and „**RL1**“ are available.

The results „**CV 0 - CV 3**“ can be used at the following adjustments:

- **ChargeIntern/Extern**
- **Nominal load**
- **Moisture**
- **TransValue1**
- **TransValue2**
- **Working width**
- **g-SIMU**
- **v-SIMU**
- **Sub-g**
- **s-FIFO**
- **t-FIFO**
- Set values „**INTERN**“ and „**EXTERN**“ (only „**CV 0**“ and „**CV 1**“)

[1)] in picture „**VAL**“

Example of a calculation:

```
 CALC1
→L  00026
  *  00064
  / #10000
  =  00090
  NOP
  NOP
  NOP
  NOP
 == exit <F4>==
```

Load variable 26 (BCD1 Value)
x Variable 64 (Transfer value 1)
/ Constant (10000)
Result = Variable 90 (**CV 0**)

For the input of the calculation the following pictures are available:

```
→ Variable
  Constant

  + - * / % C
  IF/Jump
  L
  =
  NOP
 == exit <F4>==
```

After the row marking had been set to the row to be processed, press key „ENTER“. The opposite selection picture appears.
First of all a value must be loaded. This may be a measured value or the value of variable from the list mentioned below or even constant.
Thereto select „**L**“ and press „ENTER“.
The row marking jumps to „**Variable**“.
This is OK in our example. If the begin shall be done with a constant, then „**constant**“ has to be selected.
With „**IF/Jump**“ conditional jumping commands can be executed.

```
 VAR



   26
    ^
ACT      26
MAX   32767
MIN       0
 == exit <F4>==
```

Press key „ENTER“. The opposite input picture for the number of the variable appears.

Adjust the number of the variable and transfer it with „ENTER“ to „**ACT**“.

With „MODE“ again the picture „**PLC1(2)**“ is shown, along with the adjustment carried out.

The further proceeding for the other operands of the calculation corresponds to that described at the load command.

In order to program arithmetic functions, in selection picture „**+ - * / % C**“ has to be selected and to be called with „ENTER“. After the selection of the arithmetic function and „ENTER“ return with „MODE“ into the selection picture and select there - according to the demand - „**Variable**“ or „**constant**“.
The result of the calculation is written in the variable, which has been selected at the end of the calculation with the adjustment „=“ (**CV 0 - 5,** resp. **RL 0** and **RL 1**).
The calculating values „**CV 4**“ and „**CV 5**“ as well as „**RL 0**“ and „**RL 1**“ are usable only for provisional results.
The 16 rows in all for the calculation(s) in both pictures „**PLC1/2**“ are to be considered one page.
With the help of the adjustment „C“ high-Bit and low-Bit can be changed at the variables. This is necessary at the transmission with CanBUS.

Usable variables at the calculations:

No.	Variable	Z = Number value % = Percentage (100% = 10 000)		No.	Variable	Z = Number value % = Percentage (100% = 10 000)
21	AD1	%		90	CV 0	Z / %
22	AD2	%		91	CV 1	Z / %
26	BCD1	Z		92	CV 2	Z / %
27	BCD2	Z		93	CV 3	Z / %
60	P3-Capacity	%		94	CV 4	Z / %
61	Feeder SV	%		95	CV 5	Z / %
62	Drive WB	%		96	Long calc.value 0	Z / %
64	TransValue 1	%		97	Long calc.value 1	Z / %
65	TransValue 2	%		100	Nom. capacity	Z
66	Actual load	%		101	Nom. capacity 1	Z
67	Delay load	%		102	Nom. capacity 2	Z
68	Speed	%		103	Nom. capacity 3	Z
69	Scaling2	%		360	Pre-set 1	Z
70	Set value	%		361	Pre-set 2	Z
71	P2 Capacity	%				
72	P1 Capacity	%				
73	Deviation	%				
74	Charge fine	%				
75	FeederDevia	%				
76	s-FIFO	%				
77	t-FIFO	%				

6.6.2.1.1 Examples calculating unit:

At production weight pre-set in g/m2 via input „**BCD1**“ the capacity set value for the weigh feeder shall be calculated with the help of a pulse generator, which is measuring the speed of the production plant.

For the speed measuring the function „**LoSpeTach**“ is used.

Maximal production speed: 12m/min
Working width: 2200mm
Nom. capacity of the scale: 1500kg/h
Maximal production weight: 2000g/m2
Tacho pulses at 12m/min: 25Imp/min

2000g/m2 at 2200mm width and 12m/min effect a dosing capacity of 3168kg/h.
As the scale has only a nominal capacity of 1500kg/h, the pre-set-value of 2000g/m2 can only be used at maximal 5.68m/min. At 12m/min maximally a production of 947g/m2 can be achieved. Over 1500kg/h the error message „**Bad set value**“ is activated.

Adjustments for the speed measuring:
OPTO x: **LoSpeTach**
LoSpeTach: 36 (see calculation for the adjustment on page 62).

The measured value is transferred into the transfer value 1 (**TransValue1 = LoSpeTach**)

Adjustment of the calculating unit:

L 00064 (TransValue1))

=	**00090**	(CV 0)
L	**00026**	(BCD1)
=	**00091**	(CV 1)

The source of set value is „**CV 0 x CV 1**“

Adjustment scaling factors:
Scaling1 = 4735 (10 000 x 1500 / 3168)
Scaling2 = 2000
Scaling3 = 10000

Example of a set value calculation with the analog channels AD1 and AD2:
The sum of both AD-channels shall form the capacity set value.
AD1-Channel: 100% (10 000) = 1800kg/h
AD2-Channel: 100% (10 000) = 900kg/h
The weigh feeder has a nominal capacity of 2500kg/h.

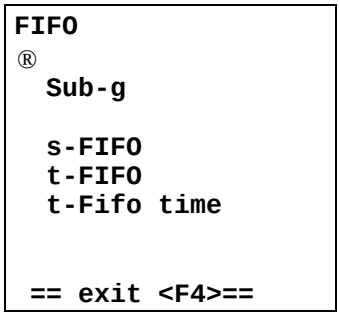
In case of 100% signal on both AD-channels a set value of 2700kg/h would arise. The set value, however, is limited to 102% of the nominal capacity. The weigh feeder therefore works with maximally 2550kg/h. Over 2500kg/h the error message „**Bad set value**“ is activated.

L	**00021**	(AD1)
x	**#01800**	(Scaling signal AD1)
/	**#02500**	(Scaling weigh feeder)
=	**00094**	(CV 4)
L	**00022**	(AD2)
x	**#00900**	(Scaling Signal AD2)
/	**#02500**	(Scaling weigh feeder)
=	**00095**	(CV 5)
L	**00094**	(CV 4)
+	**00095**	(CV 5)
=	**00090**	(CV 0)

Adjustment scaling factors:

Scaling1 = 10000
Scaling2 = 10000
Scaling3 = 10000

6.6.2.2 Net calculation at series feeding



In picture „**FIFO**“ the source for the net calculation at series feeding can be selected (also see page 33).
The signal delivered by the source is deducted from the gross measured value of the scale (after the tare).
The deduction is done in per cent, whereby the number inputs 10 000 correspond to 100%.

Of the possibilities offered only the use of the following sources is meaningful:

- **A/D 1(2)**
- **Profibus1(2)**
- **s(t)-FIFO**
- **CV 0 - 3**

6.6.2.3 Freely usable shifting registers

```
FIFO
®
  Sub-g

  s-FIFO
  t-FIFO
  tFIFO time


 == exit <F4>==
```

The shifting register „**s-FIFO**“ is controlled by the tacho pulse and has a length of 256 storage values (like the discharge shifting register). The output is determined by „**g2-Length**“ and may be adjusted maximally as long as „**g3-Length**“.

The delayed value is available as value „**s-FIFO**“.

The shifting register „**t-FIFO**“ is time controlled (Steptime is 1/3 second), the maximal running time is 600 seconds.
With „**tFIFO time**“ the running time is adjusted.
The shifting register is released by the binary input „**t-FIFO**“.

The delayed value is available as value „**t-FIFO**“.

The following sources can be delayed by the shifting registers:

- **P3-Capacity**
- **BCD1(2)**
- **Profibus1(2)**
- **Pre-set 1(2)**
- **%Pre-set1(2)**
- **FixedVal**
- **%FixedVal**
- **A/D 1(2)**
- **CV 0(1,2,3)**
- **Gross-g**
- **Set value**
- **LoSpeTach**

6.6.2.4 Selection picture for fixed values, speed measuring and transfer values

```
 VAL
→ FixedVal
  %FixedVal

  LoSpeTach

  TransValue1
  TransValue2

 == exit <F4>==
```

The adjustment pictures are selected in selection picture „**VAL**“.

6.6.2.4.1 Fixed values

The sources adjustable at several possibilities of application „**FixedVal**“ and „**%FixedVal**“ can be selected under „**System 2**“ in picture „**VAL**“ and loaded with number value up to 50 000 („**FixedVal**“) resp. With a percentage up to 300% („**%FixedVal**“).

6.6.2.4.2 Measuring of the plant speed via pulse generator

```
 LoSpeTach



      100
        ^
ACT     100
MAX    1000
MIN       0
 == exit <F4>==
```

With the help of a pulse generator fitted at the working machine and of binary input „**LoSpeTach**“ the plant speed can be measured and processed.

The speed pulses are evaluated with a resolution of 15,26 Hz. This means that in case of a pulse series of 1 pulse in 10 seconds the adjustment 153 has to be selected. The measuring uncertainty then is 0.65%.
At 1 pulse per second 15 must be adjusted. Then the measuring uncertainty is 6,5%.

„**LoSpeTach**“ is used for set value calculation in case of multiplied set values (in indirect route via „**TransValue1(2)**“ and „**CV 0 * CV 1**“).

6.6.2.4.3 Transfer values 1 and 2

The variables adjustable at several possibilities for application „**TransValue1**“ and „**TransValue2**“ can be provided under „**System 2**“ in picture „**VAL**“ with following sources.

- **P3-Capacity**
- **BCD1(2)**
- **Profibus1(2)**
- **Pre-set 1(2)**
- **%Pre-set1(2)**
- **FixedVal**
- **%FixedVal**
- **A/D 1(2)**
- **CV 0(1,2,3)**
- **Gross-g**
- **Set value**
- **LoSpeTach**
- **s-FIFO**
- **t-FIFO**

6.6.2.5 Log book

```
 Logbook
®
 □notactive
  active

  Logbook

  Erase Log

 == exit <F4>==
```

In the log book about 6000 data sets can be stored. The storage always is done with date and time.

The following activities can be stored („**active**“):

- Taring with tare mean value
- Test with test weight with test result
- Material test with correction factor (1000 = no correction)
- Area weight test with correction factor (1000 = no correction)
- Leaving of the parameterizing mode with check sum „**RA**“ and „**FP**“

Always stored are:

- Cold start with indication, which type of scale had been charged.

  V1 = Belt scale

  V3 = Weigh feeder

- Data loss with indication, how often re-charging had taken place.

If „**Logbook**“ is selected with key „F3“and key „ENTER“ is pressed, the log book registrations can be read The data sets are selected with keys „F1“ (+) and „F2“ (-).
If „**Erase Log**“ is selected and key „ENTER“ is pressed, the data in the log book are deleted.

6.6.3 SCALE DATA

```
 SCALE DATA
® RATED DATA
  LIMIT VALUES
  Tarat.mode
  TEST
  ERRORHANDLING

  Display-Unit
  Slip tacho
 == exit <F4>==
```

Main menu for the weigh feeder scaling and other important adjustments.

6.6.3.1 RATED DATA

```
RATED DATA
® TYPE SCALE
  Nom. capacity
  Rated freque.
  Rated speed
  BELT DATA
  Fabric.number


 == exit <F4>==
```

In this selection picture it is possible to select and adjust directly parameters, which are also offered at „**Data input**“ see from page 38 on).
Under „**BELT DATA**“ the parameters „**Belt length**“, „**g3-Length**“ and „**g2-Length**“ are offered.

6.6.3.2 LIMIT VALUES

```
 LIMIT VALUES
→ Min Load
  K_MIN
  Max Load
  K_MAX
  Belt empty
  K_0
  DisableCount
  Taration Err.
 == exit <F4>==
```

There are separate adjustments for the error messages and relays at the load limiting values.

The limit values „**K_xx**“ are competent for the relays.

```
 Min Load
 Value
 in per mille
  38.3% =  333

    383
     ^
MAX    100.0%
MIN      0.0%

 == exit <F4>==
```

Adjustment picture MIN-error message (belt load).
At „**SETUP**“ an automatic determination is done (see page 40).

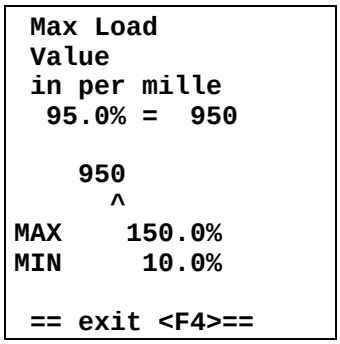
The limiting value „**Min Load**“ activates the error message „**Min Load**“ (measured at point „**g1**“)

```
K_MIN
 Value
 in per mille
  38.3% =  333

    383
     ^
MAX    100.0%
MIN      0.0%

 == exit <F4>==
```

Adjustment picture for MIN-switch point depending on the belt load.
At „**SETUP**“ an automatical determination is done (see page 40).

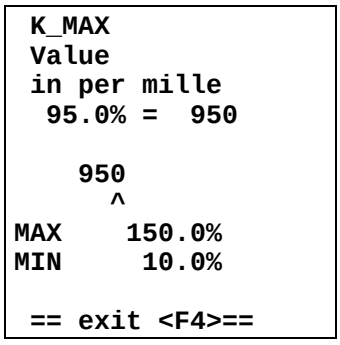
The limiting value „**K_MIN**“ is used as follows:

- Activation of contact output „**Min-Load**“ (MIN at point „**g3**“)
- Activation of contact output „**Min-Load MS**“ (MIN at point „**g1**“)



Adjustment picture MAX-error message (Belt load).

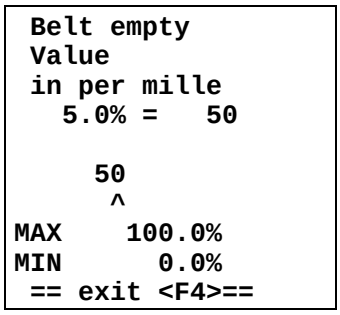
The limiting value „**Max Load**“ activates the error message „**Max Load**“ (measured at point „**g1**“)



Adjustment picture for MAX-switch point depending on the belt load.

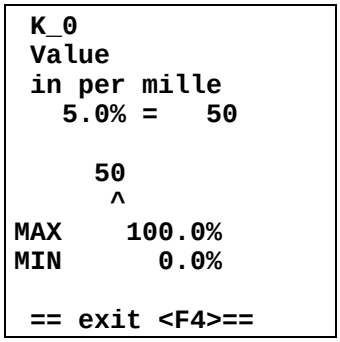
The limiting value „**K_MAX**“ is used as follows:

- Activation of contact output „**MAX-Load**“.
  (MAX at point „**g3**“)
- Activation of contact output „**MAXLoad ML**“.
  (MAX at point „**g1**“)



The limiting value „**Belt empty**“ controls the following activities:

- Symbol „**Belt empty**“ in GraphScreen (measured at point „**g1**“)
- Release of the taring process (measured at point „**g3**“)
- Release of „**LAY ON TESTW.!**“ at the test load (measured at point „**g3**“)
- Start of the Post-Runtime at Charge with emptying (measured at point „**g3**“) .



The limiting value „**K_0**“ is used as follows:

- Activation of contact output „**K_0**“.
  (Measured value „**g3**“ below adjusted value)
- Activation of contact output „**K_0 MS**“.
  (Measured value „**g1**“ below adjusted value)

```
 DisableCount
 Value
 in per mille
   2.5% =   25

     25
      ^
MAX    100.0%
MIN      0.0%
 == exit <F4>==
```

Blocks the counters „**A**“ and „**B**“, the batch quantity counter and the counting pulse output, if the weight „**g3**“ is falling under this value.
The material test counter is not blocked!

```
 Taration Err.
 Value
 in per mille
  37.5% =  375

    375
      ^
MAX    100.0%
MIN      2.0%
 == exit <F4>==
```

The message „**Taration Err.**“ is put out, if at taring a greater deviation of the weight measured value (+/-)is occurring than the tolerance adjusted here compared to the value „**WC-OFFSET**“ - - .
At „**SETUP**“ an automatical determination is done (see page 40).

6.6.3.3 Selection of the taring (taration) mode

```
 Tarat.mode
→
☐ MEAN VALUE
  ABSOLUTE TARE




 == exit <F4>==
```

Determination of the taration mode. The taring is described on page 24/25.

6.6.3.4 Adjustments for the test with test weight

```
 -TEST   -

→ TestWeight TW
  Lim.of correc.
```

```
 TestWeight TW



     7500
       ^
ACT    7500
MAX   12000
MIN    1000
 == exit <F4>==
```

Load value simulated by the test weight. The value indication is in 1/100 % (7500 = 75.00%).

```
 Lim.of correc.
 Value
 in per mille
   10.0% =  100

     100
      ^
MAX     80.0%
MIN      0.0%
 == exit <F4>==
```

Limiting of the possibility for correction at the test with test weight and at the material test (see page 26/27).

The limiting is related to the value „**UR-SPAN**“ determined at the calibration. This makes impossible that in case of several corrections in succession with deviations below the correction limit an adjustment greater than the correction limit would be obtained.

6.6.3.5 Error handling

```
 ERRORHANDLING
→ Ready to op
  Error

  Memory
  Errortime   1
  Errortime   2
  Errortime   3

 == exit <F4>==
```

In this picture the adjustments for the contact outputs „**Ready to op**“ and „**Error**“ as well as for the error memories and the three error adjustment pictures can be selected.

6.6.3.5.1 The contact output „Ready to op“

```
 Ready to op
ON    <+> <->
Drive/Tacho
□□□□<ENTER>□□□□



  Mis-Run
  A/D-Error
  Drive/Tacho
```

Error messages, at which the contact output „**Ready to op.**“ is switched off.
For taking an error into the contact output bring to display the error with key „F3“ in row 3 and record it in the list with key „ENTER“
An error is deleted in the list, if at pressing key „ENTER“ in row two „**OFF**“ is indicated.
The switching over between „**ON**“ (record) and „**OFF**“ (delete) is done with keys „F2“ („**OFF**“) and „F1“ („**ON**“).

If more than six error messages are selected, this is indicated by „+“ before and after the uppermost error record.
At „**ActualParamet.**“ all error messages selected at „**Ready to op.**“ are represented in altogether in 3 pictures.

6.6.3.5.2 Contact output „Error“

```
 Error
ON    <+> <->
Drive/Tacho
□□□□<ENTER>□□□□
  programmFLASH
  Deviation
  Bad set value
  Overheat
  A/D-Error
  Drive/Tacho
```

Error messages which lead to switching on contact output „**Error**“.
As for the rest as described at „**Ready to op.**“.

6.6.3.5.3 Error memory

```
 Memory
ON    <+> <->
Drive/Tacho
□□□□<ENTER>□□□□



  Belt slip
  A/D-Error
  Drive/Tacho
```

Error messages recorded here remain stored after elimination of the error reason. In the error picture (normal operating mode) stored errors, which are no longer acute, are identified by the addition „**M**“.
,If more than 6 errors are recorded in the memory list, this is indicated by „**+**“ before and after the uppermost error.
At „**ActualParamet.**“ all error messages selected for the memory are represented.

Deletion of stored errors is done with key „F2“ or by binary input „**Delete err.**“. Deleting with key „F2“, however, is possible only if the error picture is indicated (also see page 13).

6.6.3.5.4 Adjustment pictures „Error“

```
Errortime   1
<F5>disable
→Fuse     0
 Drive/Tacho 5
 A/D-Error    5
 Overheat   10
 Speed    X
 Feeder limit. X
 Mis-Run    5
 Min Load 10
```

```
Errortime   2
<F5>disable
→Max Load  X
 GurtBelt slip   0
 Test wrong   0
 Taration Err.  0
 Belt stopped    X
 Bad set value 5
 Belt empty    0
 Deviation10
```

```
Errortime   3
<F5>disable
→programmFLASH    0
 ParameterInp. 0
 Data lost  0
```

Release/disabling of error messages and delaying times.
The error message to be processed is marked by the arrow at the left screen margin with key „F3“.
The error message is disabled/blocked with key „F5“ (display by „X“).
The delay time until the response of the error message (0-60 seconds) is adjusted with the keys „+“ and „-“. At kept-pressed key the speed of adjustment is increasing.
Description of the error messages see from page 13 on.

6.6.3.6 Display-Unit of capacity

```
 Display-Unit
→ ____0.1 kg/h
  ____1_  kg/h
 □0.010_  t /h
  0.100_  t /h
  1.000_  t /h



 == exit <F4>==
```

Adjustment of the display-unit for the conveying capacity. It is not meaningful to select a resolution higher than 2000.

At „**SETUP**“ of „**Data input**“ an automatical determination of the display-unit is done (see page 40).

```
up to          199.9 kg/h  =    0.1 kg/h
200 -         1999 kg/h  =      1 kg/h
2.00 -       19.99 t/h   =  0.010 t/h
20.00 -      199.9 t/h   =  0.100 t/h
200.0 t/h - 10000 t/h   =  1.000 t/h
```

6.6.3.7 Monitoring with pulse generator at not driven belt drum

```
 Slip tacho



        0
        ^
ACT       0
MAX10000000
MIN       0%
 == exit <F4>==
```

With the help of binary input „**SYNC**“ a monitoring of the running can be realized, if „**ABSOLUTE TARE**“ is not used at „**Tarat.mode**“.

At „**Slip tacho**“ the number of tacho pulses is adjusted, after which a control pulse (**SYNC**) has to arrive.
If more tacho pulses are counted than are adjusted here, the following activities are done:

- Error message „**Belt slip**“
- Contact output „**Belt slip**“

The monitoring is activated only if an adjustment greater than „0“ is done.

6.6.4 I/O CARDS

```
 I/O CARDS
→ WeighChannel
  A/D-Channel 1 / 2
  D/A_Channel_1 - 4
  Opto IN
  Relay
  BCD 1 / 2
  Counterpulse

 == exit <F4>==
```

Selection menu for the adjustments of the inputs/outputs on the I/O-cards.

6.6.4.1 Weigh channel

```
 WeighChannel



     7500
       ^
ACT    7500
MAX   12000
MIN       1
 == exit <F4>==
```

The weigh channel adjusting can also be carried out at data input (see page 50).
In the first picture the calibrating load is offered in 1/100% at the calibration of the load of the measuring length with the help of the test weight.

```
 WeighChannel

  2.1 %   18360
OFFSET 0% 20000
             ^
SPAN 100% 30000
====== 7500
akt >   0%  <F6>
akt > 100%  <F5>
 == exit <F4>==
```

In this picture pre-load and weighing range of the weighing bridge can be calibrated.
For calibrating the pre-load (is stored in parameter „**OFFSET**“) at unloaded weighing belt key „F6“ has to be pressed.
Then the weighing bridge is to be loaded with the test weight. At motoric test-weight-lay-on-device the test weight is laid on with key „ENTER“ (the cursor jumps to „**SPAN**“).
The calibration of the weighing range („**SPAN**“) is done with key „F5“.
At the calibration „**UR SPAN**“, „**SICHAD**“ and „**SPAN 100%**“ are adjusted to the actual measured value (corrections executed at the test programs before are deleted!).
„**OFFSET**“ and „**SPAN**“ can also be changed by input of figures.
The switching over of the cursor from „**OFFSET**“ to „**SPAN**“ is done with key „ENTER“.
If the cursor is at „**SPAN**“, after „ENTER“ again the picture for adjusting the calibration load is called (the contact output „**Lay on TW**“ is switched off).
In the picture for adjusting the calibration load the value adjusted in parameter „**TestWeight TW**“ is indicated. Even if this adjustment has been changed before for calibration.

At leaving the weigh channel adjustment with key „F4“ the test weight is lifted automatically at motoric test-weight-lay-on-device.

6.6.4.2 Analog input channels 1 and 2

```
 A/D-Channel  1(2)
 Value
 in per mille
 100.0% = 1000

   1000
      ^
MAX    120.0
MIN      0.0
 == exit <F4>==
```

As at the weigh channel, also at the two analog input channels calibration with a partial range of the signal is possible.

```
 A/D-Channel 1(2)

 53.6 %    3375
OFFSET 0%     2
              ^
SPAN 100%  6300
======
act >   0%  <F6>
act > 100%  <F5>
 == exit <F4>==
```

Also here the calibration is done with keys „F6“ (zero point) and „F5“ (range).
Always calibrate zero point („**OFFSET**“) before range („**SPAN**“).
The adjustment can also be done by direct input of numbers (switch-over from „**OFFSET**“ to „**SPAN**“ with key „ENTER“).

The values for „**OFFSET**“ and „**SPAN**“ must have approximately the following adjustment:

Signal range	OFFSET	SPAN
0-10V / 0-20mA	2	6300
2-10V / 4-20mA	1262	5040

The employment of the inputs for tension or current is determined by the adjustment of the jumpers J1-3 and J5-7.

	0(2) -10V	0(4)-20mA
A/D-Channel 1	J2	J1 + J3
A/D-Channel 2	J6	J5 + J7

Employment of the analog channels 1 and 2:
The employment of the analog inputs is adjusted at the corresponding pre-sets.
There must not be programmed any multiple employment.

Pre-sets, at which the employment of the analog channels is meaningful:

- **Capacity pre-set value** (see page 41-43)
- **Nominal load** (see page 78)
- **Working width** (see page 56)
- **Moisture measured value** (see page 57)
- **Batch set value**
- **Transfer value** (see page 72)
- **Simulation of the belt load** (see page 78)
- **Net calculation at series feeding** (see page 78)
- **Shifting register** (see page 78)

(see page 46)

6.6.4.3 Analog outputs 1 - 4

```
 D/A-Channel___1
□□□□<ENTER>□□□□
<F3> P3 Capacity



DA1 P3 Capacity
OFFSET   40
SPAN   3400
 == exit <F4>==
```

Adjustment possibility for the analog outputs 1- 4.
The value to be put out is selected with key „F3“ in row 3 and recorded in row 7 with key „ENTER“

The analog output 1 has 8-Bit resolution (256).
The analog outputs 2 - 4 have 12Bit resolution (4096).

At output value „**Drive WB**“ also the precision regulator is indicated (also see page 75).

The following values can be put out:

· **P3 Capacity**
Discharge capacity, which is calculated at point „**g3**“. At „**DOSING**“ with „**Integrat.range**“ >10 the capacity, which is controlled corresponding to the set value.
100% = „**Nom. capacity**“.

· **Feeder SV**
Variable for the feeding aggregate at separately driven material feeding also see page 43/46).

· **Drive WB**
Variable for the weighing belt drive.

· **0% output**
Only for adjustments.

· **TransValue11**
The value deposited at „**TransValue1**“ is put out.
100% = 10 000
The source for „**TransValue1**“ is adjustable (see page 63).

· **100% output**
Only for adjustments.

· **Actual load**
The value of „**g1**“ indicated in the text screen is put out.

· **Delay load**
The value of „**g3**“ indicated in the text screen is put out..

· **Speed**
Speed of the weighing belt.
100% = „**Rated speed**“

· **Scaling2**
Output of the production value („**g/m2**“ etc.)
The output value is 100%, if the production indication is equal to the parameter „**Scaling 2**“ (at „**A/D1*A/D2**“ and at „**A/D1*%1**“ equal „**Scaling 3**“).
Is working also at set value „INTERN“ (also see page 42/43).

· **Outp.setval**
The actually effective set value is put out.
100% = „**Nom. capacity**“

· **P2 Capacity**
Discharge capacity, which is calculated at point „**g2**“.
100% = „**Nom. capacity**“.

· **P1 Capacity**

Actual conveying capacity on the measuring length (calculated with „**g1**“). At „**DOSING**“ with „**Integrat.range**“ >10 and „**g3-Length**“ >0 „**P1 Capacity**“ is not stable, as the dosing capacity controlled correspondingly to the set value is calculated with weight „**g3**“.
100% = „**Nom. capacity**“ (see page 38).

· **Deviation**

If between set value and actual value no control deviation is measured, the DA-channel puts out 50% .
At 100% control deviation related to „**Nom. capacity**“ of the scale, the DA „**Deviation**“ is adjusted to 0% (at set value = 100% and actual capacity = 0). If the actual capacity is 200% of „**Nom. capacity**“ (at set value 100%) the DA „**Deviation**“ goes to 100%.

Examples:
„**Nom. capacity**“ = 12.00t/h
Set value = 6.00t/h
a) Actual value = 8.00t/h
b) Actual value = 4.00t/h

DA-output „**Deviation**“ =

a) 50% + (50% / 12t/h * (8t/h - 6t/h)) = 58.3%
b) 50% - (50% / 12t/h * (6t/h-4t/h)) = 41.7%

· **Charge fine**

At batch operation with „Coarse/Fine“ discharge the analog output is reducing linearly from 100% to10% at batch end from the switch-over-point to „Fine stream“ on (also see page 21).

· **FeederDevia**

Variable for the adjusting device of the feeder at continuous control as described on page 32.

· **s-FIFO**

Value delivered by the shifting register „**s-FIFO**“.

· **t-FIFO**

Value delivered by the shifting register „**t-FIFO**“.

```
 D/A-Channel___1
□□□□<ENTER>□□□□
<F3> P3 Capacity

   40 OFFSET
    ^
ACT      40 OFFS
MAX    1200
MIN       0
 == exit <F4>==
```

```
 D/A-Channel___1
□□□□<ENTER>□□□□
<F3> P3 Capacity

 3400 SPAN
    ^
ACT    3400 SPAN
MAX   10000
MIN     400
 == exit <F4>==
```

Adjustment possibility for the output value zero resp. 100%

The change to signal form 4-20mA is done with „**OFFSET**“ and „**SPAN**“.

Signal range	OFFSET	SPAN
0-10V / 0-20mA	40	3400
2-10V / 4-20mA	715	2720

6.6.4.4 Binary inputs U1 - U5

```
 Opto IN
 <+>1  <->
 Fault motor

□□□□<ENTER>□□□□
U1  Fault motor
U2  Belt runs
U3  INTERN/EXT.
U4  Delete err.
U5     ----free
```

Adjustment possibilities for the binary inputs „**U1 - U4**“ and for the marker „**U5**“.
Possible adjustments see page 46/47.
The marker „**U5**“ makes possible the permanent switching-on of a function. The inverting thereby must not be used.

6.6.4.5 Contact outputs 1 - 6

```
 Relay
 <+>1  <->
<F3> Error
□□□□<ENTER>□□□□
K1  Ready to op
K2  Error
K3  Batch drive
K4  Feeder on
K5  Belt slip
K6  Lay on TW
```

Adjustment possibilities for the binary outputs 1 - 6.
Possible adjustments see page **Fehler! Textmarke nicht definiert./Fehler! Textmarke nicht definiert.**.

Attention:
The weighing electronics DWC-5A has only 4 contact outputs.

6.6.4.6 BCD-inputs 1 and 2

```
 BCD 1
→ *0.1
 □*1
  *10
  BCD 2
  *0.1
 □*1
  *10

 == exit <F4>==
```

The number value memorized at the BCD-inputs seized with a factor.

At the indication under „**CONTROL**“ the factor adjusted here is considered (see page 21).

Attention:
At the weighing electronics DWC-5A the BCD input 2 is adjustable with the 4 rotary switches (SW1 - SW4) in the left area of the main board.

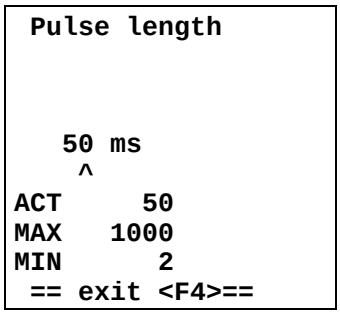
6.6.4.7 Counting pulse output

```
 Counterpulse
→ ____ 0.1 kg
 □____1_  kg
  0.010_  t
  0.100_  t
  1.000_  t

  Pulse length

 == exit <F4>==
```

The allocation of the counting step to „**Nom. capacity**“ is done automatically at „**SETUP**“ (see page 40).

```
up to      2999 kg/h  =   0.1 kg
3.00 -   29.99 t/h    =     1 kg
30.00 -  299.9 t/h    =    10 kg    (0.010 t)
300 -     2999 t/h    =   100 kg    (0.100 t)
3000 -   10000 t/h    =     1 t     (1.000 t)
```

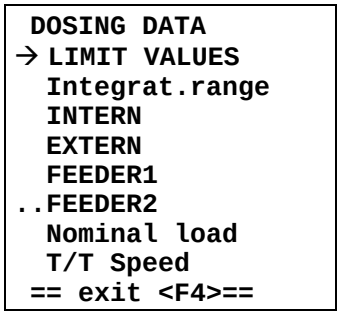
The internal counters „**A**“, „**B**“ and the batch counting always correspond to the adjustment at „**Counterpulse**“.



If in picture „**Counterpulse**“ the row „**Pulse length**“ is selected and key „ENTER“ is pressed, the adjustment of the length of the counting pulse output is provided.

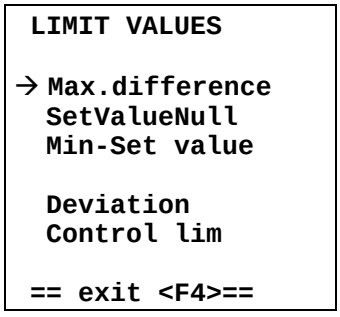
Do not select a pulse length, which effects a pulse pause shorter than the pulse duration at „**Nom. capacity**“.

6.6.5 DOSING DATA

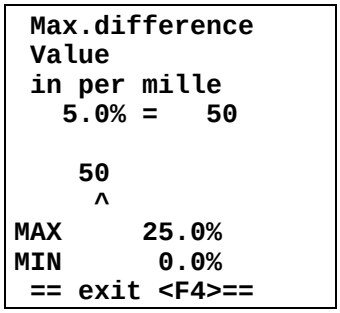


Adjustments, which can be selected under menu point „**DOSING DATA**“ .

6.6.5.1 Limit values of the dosing function



Selection picture for the limiting values which are important at „**DOSING**“.



Adjustment for the precision regulator. Determines, up to which deviation from the variable calculated the pilot signal for the weighing belt drive is corrected.

The deviation from 100% should be below 1% at all dosing set values (see „**Text screen 1**“ on page 12 and D/A channel „**Drive WB**“ on page72).

<u>The precision regulator is set to 100.0%, if:</u>

1. a „RESET“ is carried out.
2. the tacho frequency is lower than 1Hz.
3. the load „**g3**“ is under the minimal value. The minimal value is determined by „**Integrat.range**“ resp. by „**Control lim**“ (see page 77).

```
 SetValueNull
 Value
 in per mille
   2.0%     20

     20
      ^
MAX     30.0%
MIN      0.0
 == exit <F4>==
```

If the set value is below the value adjusted here, set value = Null is used.

```
 Min-Set value
 Value
 in per mille
  10.0%    100

    100
      ^
MAX     50.0%
MIN      0.0
 == exit <F4>==
```

At a set value greater than „**Set value-Null**“ and the value adjusted here the error message „**Bad set value**“ comes (see page 16).

```
 Deviation
 Value
 in per mille
   5.0%     50

     50
      ^
MAX    500.0%
MIN      0.5
 == exit <F4>==
```

If the difference between set value and actual value is greater than the value adjusted here, the error message „**Deviation**“ comes (page 15).

```
 Control lim
 Value
 in per mille
  33.3%    333

    333
      ^
MAX     60.0%
MIN      0.3
 == exit <F4>==
```

Indication, up to which minimal load of the der measuring length („**g3**“) the speed of the driving motor is re-adjusted for keeping the set value.
If here a lower value is adjusted than the minimal value admissible by „**Integrat.range**“ (is automatically determined at „**SETUP**“; see page 40), at capacities under „**Nom. capacity**“ even at minor weight „**g3**“ the set value can be kept (until achieving the „**Rated speed**“ of the weighing belt).

6.6.5.2 Integration range

```
 Integrat.range



       30 X/10
        ^
ACT      30 X/10
MAX     100
MIN      10
 == exit <F4>==
```

Explanations to „**Intergrat.range**“ see on page 38.

6.6.5.3 Sources of set value „Intern“ and „Extern“

```
 INTERN (EXTERN)
 <F3>
 Display

□□□□<ENTER>□□□□

 Display


 == exit <F4>==
```

Selection of the sources for the set values „**INTERN**“ resp. „**EXTERN**“. Description see page 42/43.

6.6.5.4 Feeder parameters

```
 FEEDER1
→ Min-Limit
  Max-Limit
  DeadLength
  Funct. at off
  Feeder free
 □not active
  active
  active > MIN
 == exit <F4>==
```

At a weigh feeder with controlled feeder „**active**“ or „**active > MIN**“ has to be adjusted.

The feeder parameters are offered also at data input and are described there (see page 43).

6.6.5.5 Adjustments for 3-point-step controller and continuous control device

```
 FEEDER2

→ FeederActVal
  Steptime100%
  Feeder Area

  Readj.fact.


 == exit <F4>==
```

From page 30 on the possibilities of feeding control at a scale with „**DOSING**“ and „**Integrat.range**“ > 10 are described. In picture „**FEEDER2**“ the parameters necessary thereto can be adjusted.

```
 FeederActVal
 <F3>
 not active

□□□□<ENTER>□□□□

 not active


 == exit <F4>==
```

At continuously controlled dosing device a response synchro is required. Of the sources offered here can be employed:

- **BCD 1(2)**
- **Profibus1(2)**
- **A/D 1(2)**
- **CV 1 - 4**

The response by BCD-signal is complicated and therefore not recommendable.

By selecting a source of actual value for the positional response the control functions for continuously controlled dosing device and in text screen 2 the display „**ZI**“ are activated.

```
 Steptime100%



        0
        ^
ACT       0
MAX     400
MIN       0
 == exit <F4>==
```

„Steptime“ indicates the duration of the controlling pulse at the 3-point-step controller at 100% control deviation (related to the weighing range). The duration of the controlling pulse reduces proportionally with the control deviation.

Scaling: 150 corresponds to 10 seconds.

```
 Feeder Area
 Value
 in per mille
   3.0% =   30

     30
      ^
MAX     60.0%
MIN      0.1%
 == exit <F4>==
```

Percentage of the deviation, under which no controlling pulses are put out.

Scaling: 100% = 100% weighing range.

6.6.5.6 Source of set value for the feeder

```
 Nominal load
 <F3>
 not active

□□□□<ENTER>□□□□

 not active


 == exit <F4>==
```

Of the sources offered in the selection the following ones can be used for the load set value:

- **BCD 1(2)** 100% = 10.000
- **Profibus1(2)** 100% = 10.000
- **%FixedVal** 100% = 10.000
- **%Pre-set1(2)** 100% = 100,0
- **CV 0 - 3** 100% = 10 000
- **A/D 1(2)** 100% = 100,0%

If the load set value shall be adjusted via the „**MODE**“-selection under „**Nominal load**“, „**%Pre-set1(2)**“ has to be selected as source of set value.

6.6.5.7 The weighing belt speed at taring and at the test with test weight (test load)

```
 T/T Speed
 Value
 in per mille
  60.0% =  600

    600
      ^
MAX     75.0%
MIN     10.0%
 == exit <F4>==
```

The speed at taring and test load is determined by this parameter. The switching over from the operational speed to the speed adjusted here is done, if the load value „**g3**“ is less than the limiting value „**Belt empty**“.
If the weigh feeder is switched on and the set value is zero, the weighing belt stops.
At empty weighing belt after the start of taring or test load - if the weigh feeder is switched on - the weighing belt begins to run with the speed adjusted here.

6.7 Priming charge

The weighing computer can be charged with the data of the factory-setting in parameterizing mode.
This adjustment has to be charged in any case after a software-exchange.
After that the application-specific adjustments at „**Data input**“ and „**KUK-SETUP**“ have to be put in.

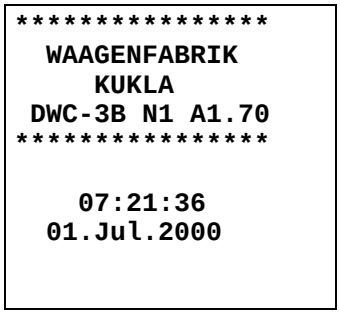
Proceedings at priming charge:

The driving motor of the scale must not be switched on.
Depending on the type of scale which shall be charged, different key-combinations have to be pressed.

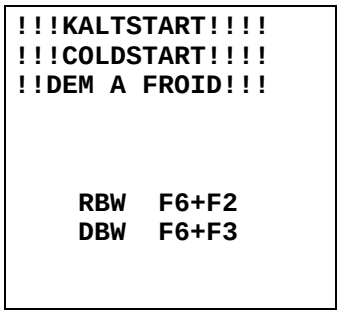
Belt scale: F6 + F2
Weigh feeder: F6 + F3

While the key combination is pressed, press key „RESET“ at the rear of the device for about one second.
At releasing key „RESET“ the initialization picture appears with indication of the software version and date and time.

Attention:
At the weighing electronics DWC-5A the tumbler switch SW6 has to be pressed to position „Res“ for at least one second in order to carry out a reset of the system.



After about 4 seconds the picture changes.



If an admissible key combination has been pressed and is still being pressed, the picture disappears after about one second and upper left in the display an indication is done according to the selected key combination.

R at belt scale
D at weigh feeder

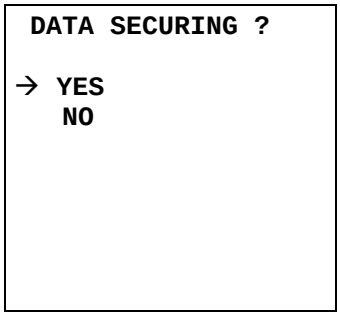
The key combination must not be released before this indication is visible. The indication remains visible. Only by actuating key „RESET“ the proceeding of priming charge is terminated. For a short period the initialization picture is indicated and after that „**MAINMENUE**“.

If at the priming charge a key combination not admissible had been pressed or the run-off has not been kept correctly, after releasing the key combination not the empty screen - excepted the fade-in upper left - is remaining, but one of the pictures described above or „**MAINMENUE**“ is remaining at the display.
In this case no priming charge has been carried out and the proceeding of priming charge has to be repeated adhering to the proceeding described.

6.8 Data securing/RESET

The weighing computer has a back-up memory, which has to be charged with the actual parameters after a parameter change. b

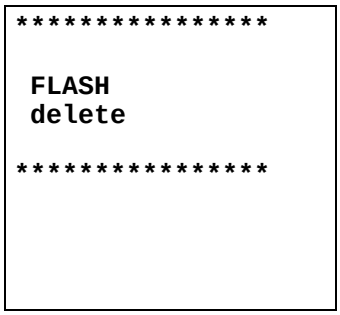
In order to be able to start the data securing, in „**MAINMENUE**“ key „F4“ has to be pressed.



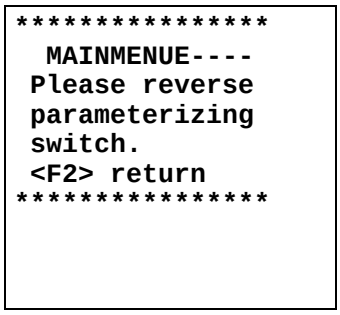
This picture can only be left if one of the two possibilities is selected with key „F3“ and confirmed with key „ENTER“.

If parameters had been changed and no data securing has been carried out, at normal operation the error message „**programmFLASH**“ comes.

If „**YES**“is selected, the data securing is carried out.



Deleting FLASH PROM lasts about 2s. After that for about 1s „**FLASH programming**“ is indicated.
During the data securing the functions of the scale are blocked.



By reversing the parameterizing switch downwards the normal operation mode is achieved.
By pressing key „F2“ it is possible to return to „**MAINMENUE**“.

6.8.1 RESET

The weighing electronics carries out a „RESET“ , if either

- the mains supply is switched on (after an interruption) or
- key „RESET“ at the rear of the device is pressed.

6.9 Re-charge

In case of a data loss the data deposited in the back-up memory are transferred into the main (parameter) memory. Thereby the re-charge counter „**NC**“ in picture „**AD/SYS**“ (callable under „**CONTROL**“) +1 is counting and the error message „**Data lost**“ is activated (see page 16).
The error message „**Data lost**“ can be deleted - like all the other stored error messages - by the binary input „**Delete err.**“ or in picture „**Error**“ (normal operation mode, key „F2“).

In picture „**FLASH-PROM**“ under „**CONTROL**“ (only in parameterizing mode) it is possible to transfer the data deposited in the back-up memory into the main memory. This is meaningful if after „priming charge“ the adjustment of the scale shall be brought to the previous state.

In order to transfer the adjustment of the back-up memory into the main memory, „**Prog Nenn**“ has to be selected and then key „ENTER“ has to be pressed.

That the transfer has taken place, can be seen thence that the check sum „**RA**“ has been adjusted equal to that of „**FP**“.
The re-charge counter „**NC**“ is set to zero at the manual re-charge.

„Re-charging“ is not admissible after a software exchange. In this case it is not ensured, that the parameters are transferred correctly from the back-up memory to the parameter memory.

6.10 Marker for the weigh channel adjustment:

The calibrated value of the weigh channel remains even then, if at the material test or at the test load in case of a deviation the possibility for correction is used.

At the area weight correction both the calibration adjustment and the change carried out in course of a correction at material test or test load are remaining.
Thus it is possible to put the correction limits in relation to the basic calibration. An adjustment of the working-Span („**SPAN 100%**“) against the calibration value („**UR SPAN**“) over the limits indicated therefore is not possible.

Under „**ActualParamet**“ in picture 5 the weigh channel adjustments are indicated.

```
<WeighChannel
>



OFFSET 0%    18568
SPAN 100%    29242
SEC AD       29242
BASIC AD     29242
```

SPAN 100% actually used WC-SPAN (working span)
SEC AD Marker for changes at the area weight correction
BASIC AD Value of the basic calibration

The correction possibility at test load and material test is limited with „**Lim.of correc.**“.

At the area weight correction „**SPAN 100%**“ is limited to 50% up to 200% related to „**UR SPAN**“.

The change carried out at the area weight correction of „**SPAN 100%**“ against „**SICHAD**“ is cancelled at the material test and test load.

7 Technical data

DISPLAY : LCD-graphic display with112*128 dots, background-lighted

Keyboard : 7 pcs. foil keys with multiplexing

Control inputs

Number : 4
Design : 12-28VDC, ca. 10mA at 24V, galvanically isolated.
Application : Freely parameterizable (I/O-CARD 1, U1-U4)

Interruption inputs

Number : 2
Design : 12-28VDC, ca. 10mA at 24V, galvanically isolated.
Application: STRINT = tacho pulse (10 .... 1000Hz)
SYNCH = control pulse for ABSOLUTE TARE and belt slip monitoring (min. 10ms).

BCD-data inputs

Number : 2 (only with I/O-CARD 2)
Design : 4-digit; 4 data lines, 4 Scan-lines. Decoupling via diodes.
maximal cable length 300m
Application: pre-set values.

Control outputs

Number : 2 (with I/O-CARD 2 altogether 6)
Design : Relay- make contact
max 60V/150mA
I/O-CARD 1 (K1/K2)
I/O-CARD 2 (K3-K6)
Application: Freely parameterizable

Counting pulse output

Design : Potential free electronic make-contact, max. 60VDC/150mA

Load cell supply

Design : 10VDC with SENCE-input for 5-conductor-wiring.
Maximal load 120mA

Weighing signal conversion

Design : 24Bit A/D-converter, used range about 73.000,
about 12.000 of them OFFSET.

Analog inputs

Number : 2
Design : 16Bit A/D-converter, parameterizable 0(4)...20mA or 0(2)...10V
Application: Analog pre-set value.

Analog outputs

Number : 1, with I/O-CARD 2 altogether 4
Design : 1 pce. 8Bit D/A-converter on the I/O-CARD 1, 3 pcs. 10Bit D/A-converter on the I/O-CARD 2.
mA and voltage output usable at separate connections at the same time
parameterizable 0...20mA/0...10V or 4...20mA/2...10V.
Application: Freely parameterizable

Reference voltage

+10V, max. 30mA

Voltage supply for external devices

+5V, max. 100mA
+15V, Max 30mA
-15V, Max 30mA

RS232 interface

Application: Printer output counter „**B**“ (is put out automatically at batch operation).

Parameter output

WeighChannel

Profibus DP-Interface

Application : Transfer of all operation data and of the most important parameters.

Battery-RAM

Write/read memory (32K) with integrated battery (SRAM) and real-time-clock. The durability of the battery is at least 10 years. Then the SRAM should be re-newed.
A battery which is working no longer can be recognized, if after an interruption of supply tension the error message „**`Data lost`**“ comes and the counters were re-set to zero.

Mains voltage failure

Parameterizing, count of counters and zero reset remain unlimited in case of a working battery in the SRAM.

Mains connection

Voltage:	115-230VAC, 50/60Hz;
.	110-250VDC.
Consumption:	0.39/0.2A
Inrush current:	approx. 20A
Fuse:	2Atr. (5x20mm)

Ambient conditions

Temperature:	0 - 40°C
Storage :	-20 to 70°C
Air moisture:	Class F (DIN 40 040)
Immunity from interference.:	acc. to prEN 50082-2:1992
Radio shielding:	acc. to EN 55011:1991 Class B, Group 1

Type of protection

Front unit:	IP50
with protective window:	IP55
Housing:	IP 20
Terminals:	IP 20

Dimensions

Front unit:	144 x 144mm (width x height)
Installation depth:	maximal 230mm
Switchboard cut-out	138 x 136mm (width x height)

8 Catchwords

9 Parameter index

The most important parameters are offered for adjustment at „**Data input**“ (see page 38).
Access to all parameters is provided in „**KUK-SETUP**“ (see from page 53 on).

The following list shows in which sub-menus of „**KUK-SETUP**“ the parameters can be found. ,

Parameter	Remark	1st level	2nd level	Page
COMMUNICATION	Ser. interface	CONTROL	COMMUNICATION	21 / 51
Lim.of correc.	Test with test weight	SCALE DATA	TEST	66
LinearTAB 1(2)	Linearization WC	SYSTEM 1	LINEARIZTN.	58
Log book		SYSTEM 2		63
Max Load	limiting value	SCALE DATA	LIMIT VALUES	64
Max.difference	Fine regulator	DOSING DATA	LIMIT VALUES	77
Max-Limit	Feeder controller	DOSING DATA	FEEDER 1	44 / 77
MultiScaleW	max. 4 rated ranges	SYSTEM 1		55
Min Load	limiting value	SCALE DATA	LIMIT VALUES	64
Min-Limit	Feeder controller	DOSING DATA	FEEDER 1	44 / 77
Min-Set value	Dosing range	DOSING DATA	LIMIT VALUES	76
Post-Runtime	Batch operation	SYSTEM 1	CHARGE	55
Readj.fact.	Feeder controller	DOSING DATA	FEEDER 1	45 / 77
Rated freque.	Hz at n-max.	SCALE DATA	RATED DATA	39 / 48
Rated speed	v at n-max.	SCALE DATA	RATED DATA	31 / 64
Nom. capacity	Scale range	SCALE DATA	RATED DATA	38 / 64
OPTO IN	Binary inputs	I/O-CARDS		46 / 74
PB-DP Address	Profibus address (not in KUK-SETUP)	MAINMENUE/ COMMUNICATION	PROFIBUS DP	50 / 53
PLC1/2	Calculating unit	SYSTEM 2		58
TestWeight TW	%-indication	SCALE DATA	TEST	66
Deviation	Tolerance dosing	DOSING DATA	LIMIT VALUES	61
Control lim	Range enlargement	DOSING DATA	LIMIT VALUES	75
Relay	Contact outputs	I/O-CARDS		48 / 74
Slip tacho	Monitoring	SCALE DATA		69
s-FIFO	Shifting register distance	SYSTEM 2	FIFO	62
SIMULATION		CONTROL		52
Scaling 1-2-3	FLEECE	SYSTEM 1	FLEECE	56
Nominal load	Source selection	DOSING DATA		78
SetValueNull	Dosing range	DOSING DATA	LIMIT VALUES	75
Memory	Error marker	SCALE DATA	ERRORHANDLING	68
Language/LANG	Selection of language (not in KUK-SETUP)	MAINMENUE		37
Error	Contact output	SCALE DATA	ERRORHANDLING	67
Sub-g	Net calc. series feeding	SYSTEM 2	FIFO	61
SV-Integr.	Set value integrator	SYSTEM 1	INTEGRATION	54
T/T Speed	Speed set value	DOSING DATA		79
Steptime100%	3-point-step controller	DOSING DATA	FEEDER 2	78
Tarat.mode	Mean Value/ Absolute Tare	SCALE DATA		66
Taration Err.	Admissible tolerance	SCALE DATA	LIMIT VALUES	66
t-FIFO	Shifting register time	SYSTEM 2	FIFO	62

Parameter	Remark	1st level	2nd level	Page
DeadLength	Feeder controller	DOSING DATA	FEEDER 1	45 / 77
TransValue1(2)	Prog. data sources	SYSTEM 2	VAL	63
Belt empty	Limiting value belt load for messages	SCALE DATA	LIMIT VALUES	64
WC-OFFSET	WeighChannel	I/O-CARDS	WeighChannel	50 / 69
WC-SPAN	WeighChannel	I/O-CARDS	WeighChannel	50 / 69
Counterpulse	Valency	I/O-CARDS		33
DisableCount	A, B, Pulse output	SCALE DATA	LIMIT VALUES	77
Feeder Area	Feeder controller(3-P-S)	DOSING DATA	FEEDER 2	77
Feeder free	Feeder controller	DOSING DATA	FEEDER 1	45/76
FeederActVal	Feeder controller	DOSING DATA	FEEDER 1	77