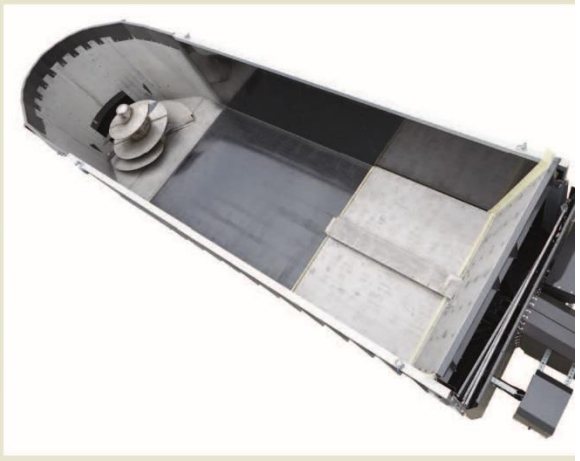
Fliegl AGRARTECHNIK

Operating instructions

PART A **EC1000**

CE



We are Fliegl.

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Formal details of operating instructions

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We are constantly developing and enhancing our products and therefore reserve the right to make changes to them without prior notification.
This may result in differences in the illustrations and descriptions in these operating instructions.

1. Control elements

1.1 Switch cabinet

Fig. 1: Control system switchgear cabinet - "DigiTouch Bio" as a control system

Fig. 2: Weighing machine switchgear cabinet - "DigiTouch Bio" as a weighing machine

1.2 Display elements

Fig. 3: Control elements

Fig. 4: Main switch

2. Weighing technology

2.1 General

Fliegl uses specially developed digital weighing technology.

2.2 Load cells, amplifier, cabling

Depending on the version, the amplifier can be mounted externally on the weighing foot or integrated inside the load cell. Both versions offer the same advantages.

2.2.1 Analogue load cell with amplifier

Fig. 5: Analogue load cell with external amplifier

Check the capacity of the load cell corresponds to the capacity of the amplifier.

Different load cells are used, depending on the version.
In general these are: the K 10 for the "Rondomat" model, and the K 30 for all other containers.

Analogue load cell versions:

Catalogue number	Article number	Designation	Nominal load
HZBXXX600434	451071	Analogue load cell **K 10**	4,685 kg
HZBXXX600435	438648	Analogue load cell **K 30**	13,608 kg

Fig. 6: Weighing foot with integrated load cell;
amplifier mounted on weighing foot

Different amplifiers are installed, depending on the load cell used:
For the K 10 cell, the DigiScale 10 amplifier is used and for the K 30 cell, the DigiScale K 30 amplifier is used.

DigiScale amplifier versions

Catalogue number	Article number	Designation	Voltage range	Nominal load
AGWXXX400507	451319	DigiScale 10, low voltage	5.5 V to 13.5 V	4,685 kg
AGWXXX400506	453085	DigiScale 10, high voltage	7 V to 37 V	4,685 kg
AGWXXX400504	451494	DigiScale 30, low voltage	5.5 V to 13.5 V	13,608 kg
AGWXXX400505	453084	DigiScale 30, high voltage	7 V to 37 V	13,608 kg

Different amplifiers should be preferred depending on the voltage supply of your weighing bus:

Voltage variants of the weighing bus

Bus voltage	Suitable amplifier(s)
6.5 V	Low voltage
12 V	Low voltage & high voltage
24 V	High voltage

Check you have the correct amplifier for your bus voltage.

2.2.2 Digital load cell with integrated amplifier

Fig. 7: Digital load cell, amplifier integrated in load cell

Different load cells are used, depending on the version.
In general these are: the D 50 or D75 for the "Rondomat" model, and the D 150 for all other containers.

Digital load cell versions

Catalogue number	Article number	Designation	Nominal load
HZBXXX600430	456093	Digital load cell **D 50**	5,000 kg
HZBXXX600431	457047	Digital load cell **D 75**	7,500 kg
HZBXXX600437	456093	Digital load cell **D 150**	15,000 kg

2.3 Large display

2.3.1 Large 5-digit display / numbers 60 mm tall

Fig. 8: Large 5-digit display

2.3.2 Large 6-digit display / numbers 125 mm (5 inches) tall

This display features automatic brightness adjustment.

Fig. 9: Large 6-digit display

2.3.3 Large 42-digit display / numbers 80 mm or 160 mm tall

Fig. 10: Large 42-digit display, 160 mm mode

Fig. 11: Large 42-digit display, 80 mm / two-line mode

3. Radio remote control

The remote control can be used to enter the various materials and for switching to automatic or filling mode.

Fig. 12: Remote control with 15 buttons

Fig. 13: Remote control with 12 buttons

4. Motor drives

4.1 Direct drive motors

The direct drive motors are controlled by an integrated contactor/motor protection combination.

4.2 Frequency-controlled motors

The Rondomat Vario features a frequency inverter for the mixer drive.
All other screw conveyors can also be supplied with a frequency converter on request.

5. System control

5.1 On-site touchscreen operation

The simplest and most straightforward way to operate the control system is on-site.
You simply use the touchscreen controls on the switch cabinet.
It is the same as operating your mobile phone or a cash machine.

5.2 Operation via web visualisation

This method of operation requires that you have access to a PC that has a web browser[1], a Java Runtime system[2] and an Ethernet connection to the control system[3].
You can then operate the controls from anywhere in the world in exactly the same way as if you were on site.

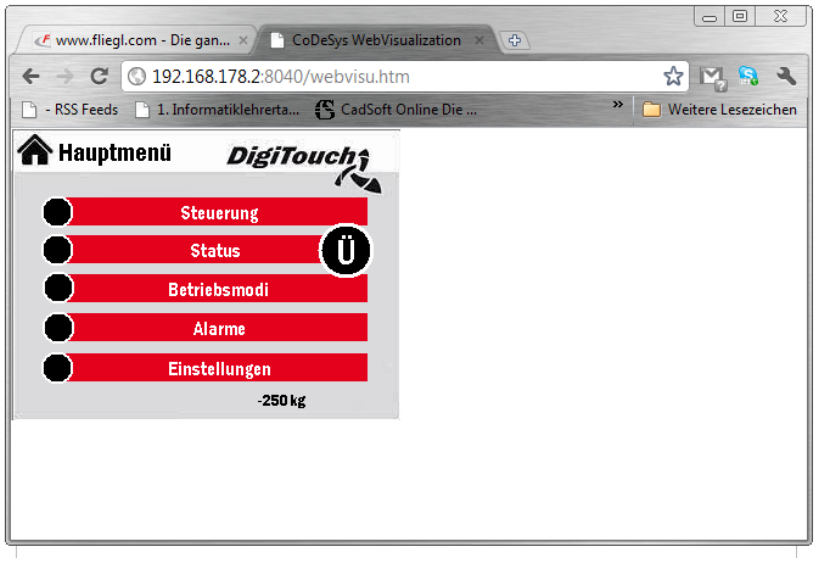


Fig. 14: Operation of the controls via Google Chrome

1 Microsoft Internet Explorer, Mozilla Firefox, Google Chrome
[2] Available free of charge from www.java.com
[3] Access is via the following link: http://192.168.2.2:8040/webvisu.htm
(the IP address may need to be replaced; refer to Part C of these instructions)

5.3 Operation via an iPad, iPhone or iPod Touch

Access is possible via an Apple device in exactly the same way as via web visualisation.

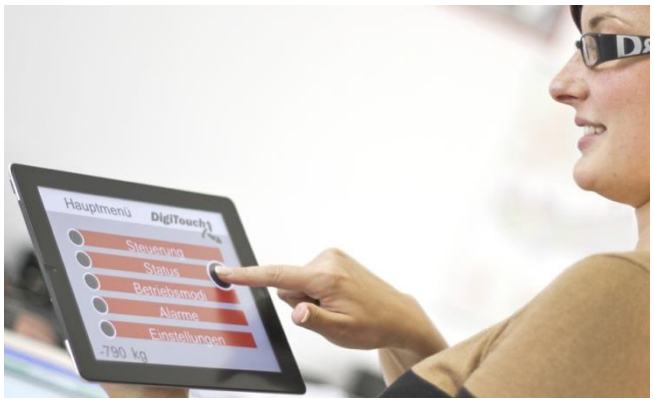


Fig. 15: DigiTouch app on an iPad

App download via:

The DigiTouch app is available from the Apple AppStore:
http://itunes.apple.com/de/app/digitouch/id475709435

5.4 Operation via an external control system

An external control system, such as the plant control system of the biogas plant, can be connected to the control system via a bus system, e.g. PROFIBUS or MODBUS/TCP. PROFINET and EtherCAT may also be available in the near future. Please enquire with us.

6. Load cell cabling

6.1 Numbering

The numbering is such that the low-value cells are next to the output.
Numbering is in accordance with the following diagrams:

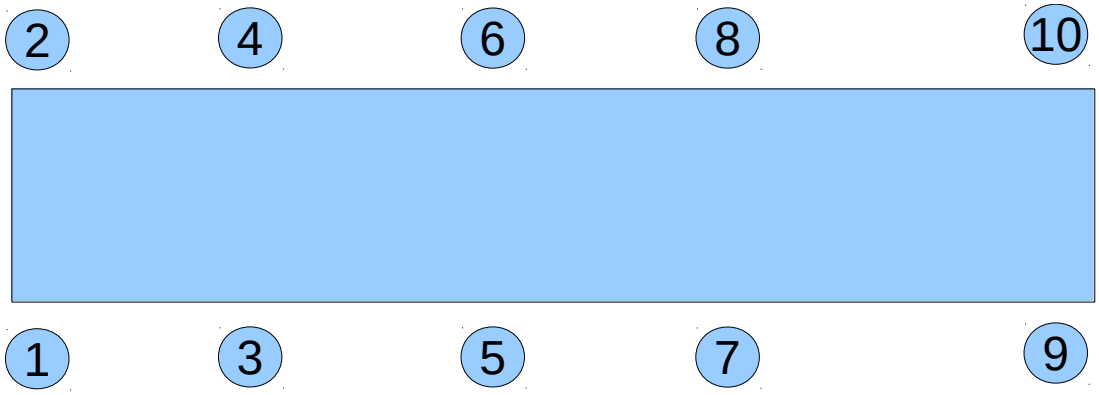


Fig. 16: Biomat numbering

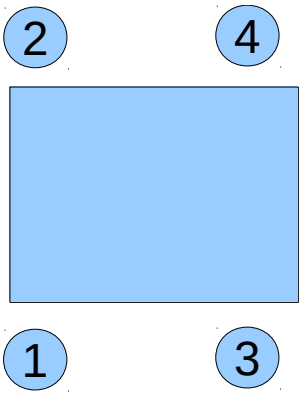


Fig. 17: Rondomat numbering

6.2 Cabling

6.2.1 General

The cables are NOT connected according to the numbering system.
Instead, it is configured so that the smallest amount of cables possible is used.
The individual cables do NOT have to be the same length.

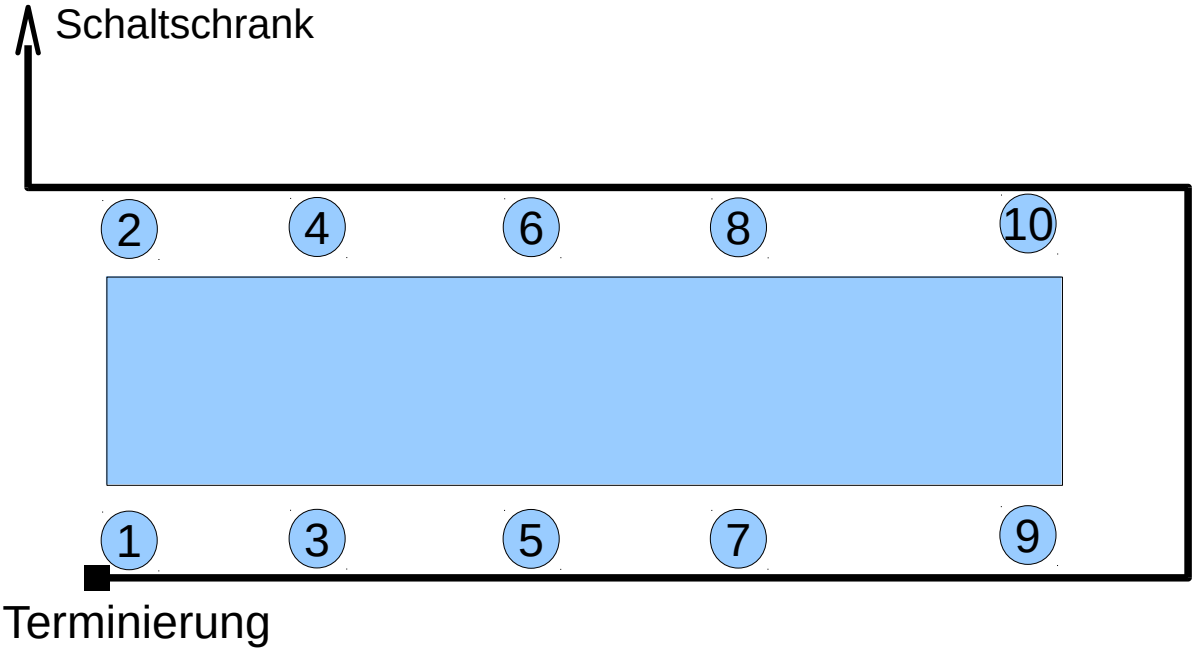


Fig. 18: Cabling

6.2.2 T-pieces

A separate T-piece is used for EACH amplifier.

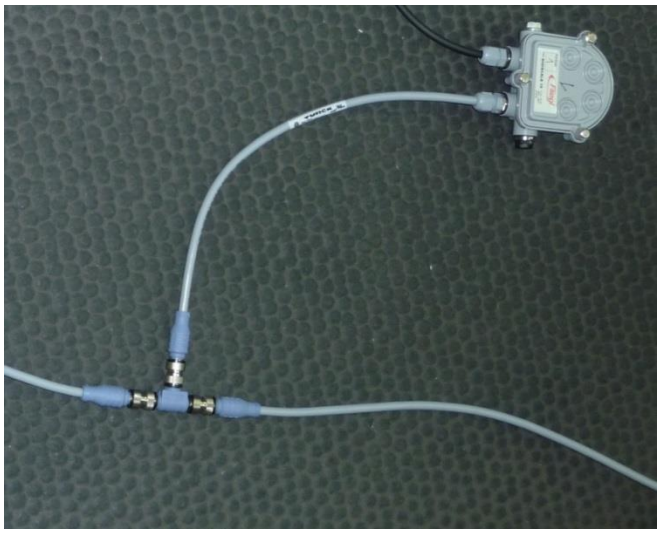


Fig. 19: Amplifier with T-piece

6.2.3 Termination

The last amplifier also has a T-piece as well as a termination.

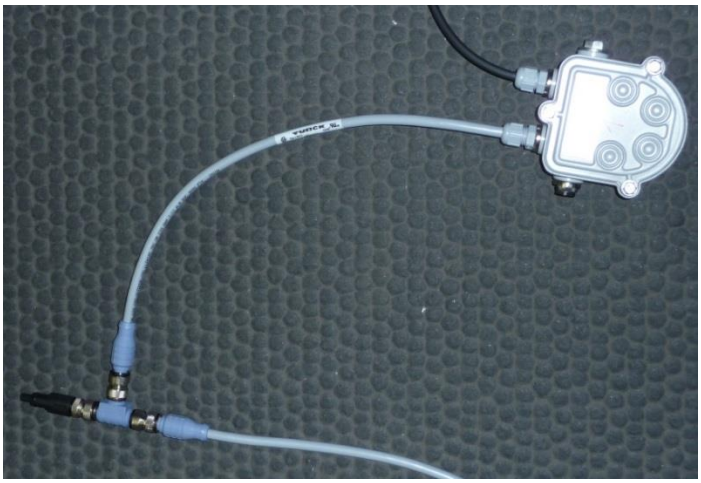


Fig. 20: Termination

The termination cannot be replaced with a dummy cap!
The termination has an electrical function.

7. Setup and connection

The installation of the mechanical components is described in a separate set of instructions.
The brief instructions provided here are not a replacement for the warning and safety instructions provided in the user manual.

7.1 Cables

We use 2 different types of cable:

Fig. 21: Blue – bus signals such as CAN bus and RS485

Fig. 22: Green – all other signals

- Blue for bus signals
  - Used for the cabling of the digital load cells
- Green for other signals (e.g. switches)
  - Large display
  - Limit switch
  - Analogue weighing technology (no longer used in the biogas sector, only for older plants)

7.2 Connecting the M12 cables

One or more M12 plugs are located on the bottom of the switch cabinet.

Do not accidentally connect the load cells to a plug that is not designed to be used for load cells!
There is a risk of the digital circuits being destroyed due to the difference in voltage.

8. Use and operation

8.1 Activation

During normal operation, it is not necessary to turn the system on – simply let the device operate around the clock.
If you do not want to feed one day, you should still leave the system running.
This prevents damage, for example, from condensation and due to other causes. (See Part C of these instructions)
For information on starting up for the first time, please read the previous section.

8.2 Selecting the operating mode

The system has 4 different operating modes.
Only 2 of these are required during normal operation.

The operating mode can be selected in 4 different ways:

a. Via the touchscreen
b. Via the web visualisation
c. By remote control
d. Via a bus connection

There are 4 operating modes:

i. Off
ii. Automatic
iii. Manual
iv. Filling

8.3 Operating modes

The device must be in "Automatic" mode when material is being emptied from the container and it must be in "Filling" mode when filling the container with material.

When the operating mode is changed, various actions are carried out automatically:

- Change to "Filling" mode ➔ a return is requested – the pusher moves back into the end position. **WARNING:** "Filling" mode is only activated when the pusher is in the end position!
- Change to "Automatic" mode ➔ a short movement is carried out towards the dosing unit. This releases the limit switch.

Status indicator: When the device is in "Filling" mode, the green LED on the switch cabinet flashes.

8.3.1 OFF

This operating mode is selected initially when the device is switched on. In this mode, all drives, apart from the hydraulic unit and the sliding floor plates, are switched off.
However, this mode is not permitted for maintenance purposes.
The main switch must also be switched off when carrying out maintenance work.

On the 42-digit display, "Off" mode is indicated by an "X"!

8.3.2 Automatic mode

"Automatic" mode must always be selected when substrate is to be fed into the biogas plant. However, it is also extremely important that nothing enters the solids dispenser when the device is in "Automatic" mode.

Fig. 23: Automatic mode selected

On the 42-digit display, "Automatic" mode is indicated by an "A"!

8.3.3 Manual mode

"Manual" mode is used for manual operation of individual drives. It is normally not needed.

No monitoring of any kind is carried out in "Manual" mode. This means that the operator is personally responsible for ensuring he/she does not do anything to adversely affect the plant.

On the 42-digit display, "Manual" mode is indicated by an "H"!

For example, in "Manual" mode, it is possible to leave the inclined screw conveyor running without the feeder auger also running. This would inevitably lead to a serious blockage.

8.3.4 Filling

In this mode, it is possible to feed the substrate into the container.
It is not permitted to feed substrate into the container in any other operating mode, as this leads to undesirable results!

On the 42-digit display, "Filling" mode is indicated by "R, G, F!

8.4 Mode selection

8.4.1 Via the touchscreen

The easiest way to change the operating mode is to select the required mode directly on the switch cabinet. See PART B, "Operating modes" screen

8.4.2 Via the web visualisation

It is possible to select the operating mode remotely in the same way.

If you are considering this option, it is important to be aware of the following potential problem:
Someone is in the process of filling the container. It is in "Filling" mode.
Another person changes the mode to "Automatic" without the filler noticing and the latter carries on filling. This would result in a massive dosing error!
You must implement the necessary organisational measures to ensure this does not happen!

8.4.3 By remote control

Remote control with 15 buttons:
It is also possible to select the "Automatic" and "Filling" modes via remote control. There are 2 key codes for making this change:

Function	Key code	Shortcut key
Switch to "Filling" mode	100	M1
Switch to "Automatic" mode	900	M2

For safety reasons, the selection of the mode must be confirmed using the "**REST**" and "**FÜLL**" buttons. Please press as follows:

- To change to "Filling" mode:
  - First press the M1 button, followed by both the "**REST**" and "**FÜLL**" buttons together!
- To change to "Automatic" mode:
  - First press the M2 button, followed by both the "**REST**" and "**FÜLL**" buttons together!

Remote control with 12 buttons:

Function	Key combination
Switch to "Off" mode	1 + 2
Switch to "Filling" mode	5 + 6
Switch to "Automatic" mode	2 + 3
Switch to "Manual" mode	4 + 5

No special confirmation is necessary in this case. Simply press the keys at the same time.

8.4.4 Via a bus connection

The operating mode can also be changed via a bus connector; these are available from us.

The problem outlined above also applies here: You must ensure that the operating mode is not accidentally changed to "Automatic" during filling.

8.5 Daily settings

The parameters of the system are configured correctly in the first few days of operation after the initial start-up. It is therefore not necessary to change them later on.
2 points should be checked every day!

8.5.1 Setting the dosing portion

The dosing function should first be explained:
When switching from "**Filling**" to "**Automatic**" or from "**Off**" to "**Automatic**", the amount added is saved.
It is therefore only possible to change the portion size in "**Off**" or "**Filling**" mode.
The current dosing is calculated on the basis of this amount.
This means that any change to the portion size is taken into account in the daily amount.
Example: You are dosing at a rate of 500 kg / hour, so you use 12,000 kg in 24 hours.
The container will become empty at that point.

RECOMMENDATION:
The portion size should only be changed immediately after filling and before changing over to "Automatic" mode.
If you wish to change the portion size during the day, you have to switch back to "Filling" mode and then back to "Automatic" again afterwards.

- The more often this is done, the less accurate the dosing will become.

You can find further information on this, particularly in relation to PROFIBUS,
in section 9.2.

8.5.2 Setting the timer

The timer is set differently, depending on whether feeding is to be initiated by a master control system or by the Fliegl control system itself:
If no master control system is present, set the timer (e.g. for 30 or 60-minute intervals) and switch it on.
Otherwise, leave the timer on "Off".

8.6 Settings

Detailed instructions on operating and configuring the DigiTouch can be found in Part B.

9. General information on bus systems

9.1 MODBUS TCP

The IP address on the panel can be set by the customer if required.
For this, see Part C of these instructions.

9.2 PROFIBUS

9.2.1 Settings

Settings for the Profibus are carried out on the "PROFIBUS" screen:

- Main menu
- Settings
- Other
- Diagnostics
- Bus diagnostics
- Profibus

The following can be set here: bus speed, address and highest network address.

After changing the bus speed, the "Main menu" button must be pressed and the display restarted.

9.2.2 Bus speed

Baud rate is detected automatically.

9.2.3 Address

The address can be set by the customer
(possible addresses: 1 to 125)

9.2.4 Configuration

CAUTION! The GSD file must be called E-IODP-S.gsd.

The data block "**16 byte data in/out**" must be selected once in the GSD file.
The data block "**32 byte data in/out**" must then be selected once in the GSD file.
The data block "**48 byte data in/out**" must then be selected once in the GSD file.
The data block "**64 byte data in/out**" must then be selected once in the GSD file.

The bus only functions correctly if the data block is selected exactly as specified.

Example:

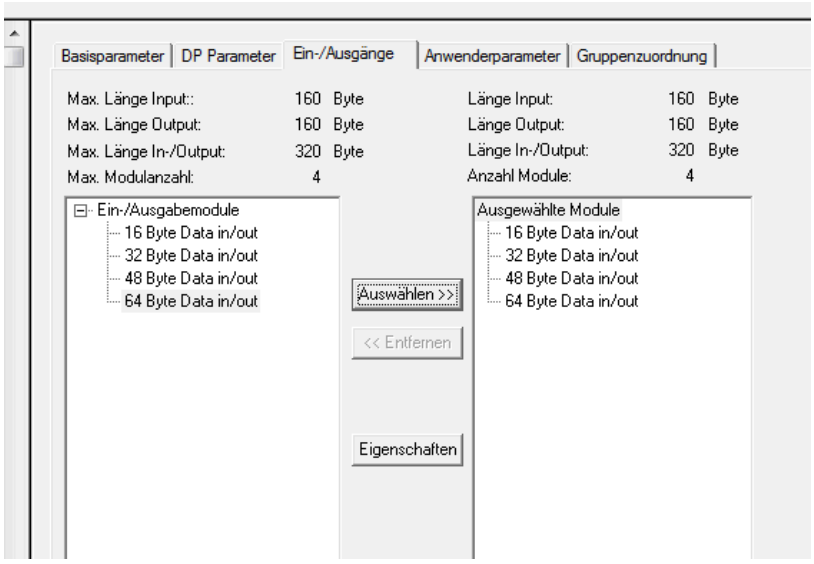


Fig. 24: Configuration

9.2.5 Diagnostics

Diagnostic connector:

The Profibus connector is equipped with a diagnostic connector.

Blue LED: Participant sending
Green LED: Bus traffic active
Orange LED: Terminating resistor is activated

Fig. 25: Diagnostic connector

Status LED:

Orange: No Profibus configuration present.
Green: DP slave is properly connected to the bus. Addressed by the master.
Green, flashing 5 x: DP slave not addressed correctly by the DP master.
Green, flashing 4 x: Communication monitoring error (watchdog). Connection to the master has been lost.

Fig. 26: Status LED

9.2.6 High byte / low byte

Depending on the control system used, the high byte and low byte may have to be swapped.
(Big & little endian problem). One known case in which they have to be swapped is with the Siemens S7.

9.3 Dosing logic

9.3.1 Operation with timer

In this operating mode, the following items can be set on the Fliegl touch panel:

- Portion weight
- Feed interval
- Offset (to move the interval from 11:00, 12:00 to 11:20, 12:20, for example)

Only the portion weight can also be set via a bus system (option).
Feeding is then carried out automatically and the bus system only carries out monitoring.
Thus, the bus system can, for example, continuously monitor and record the weight and, if faults occur (motor protection circuit-breaker), it can inform the operator via SMS.

9.3.2 Impulse request

In this operating mode, the following items can be set on the Fliegl touch panel:

- Portion weight

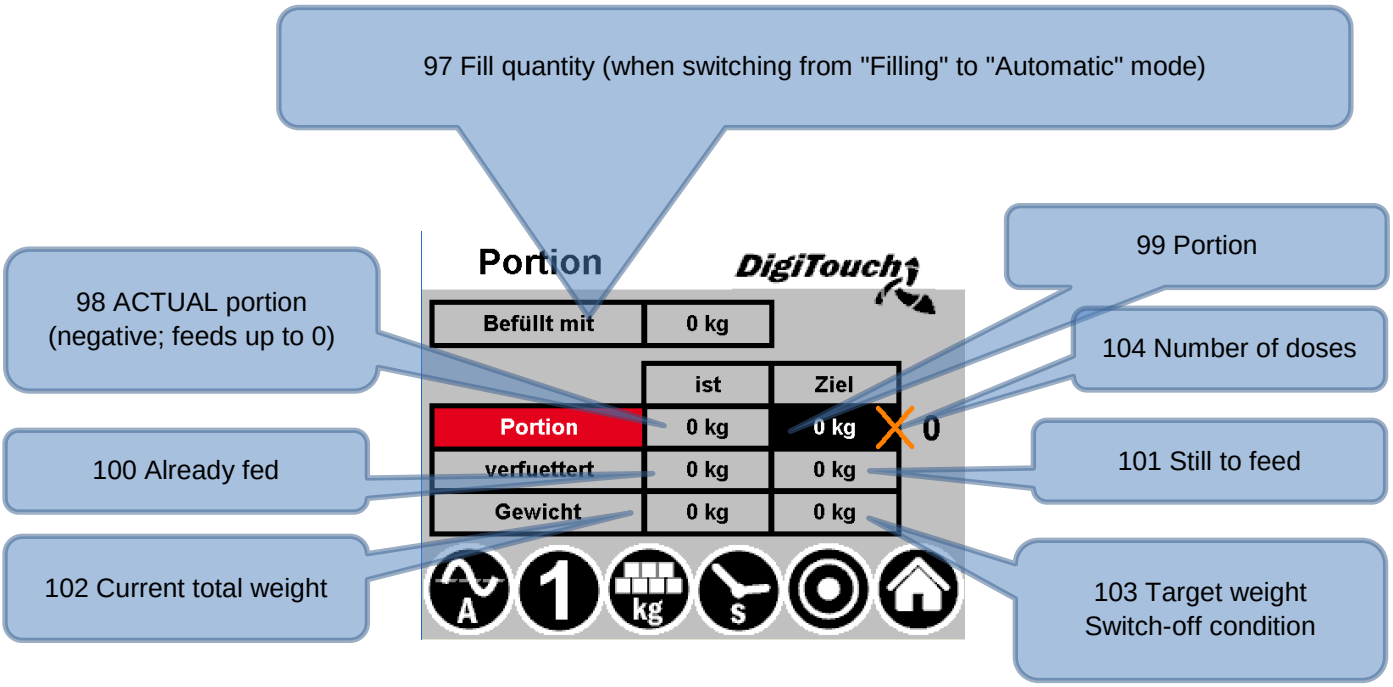
This value can also be set via the bus system (option).
The bus system then initiates feeding if required by an impulse to the signal
EXTERN_EIN_PULS := COMMAND_WORD_1 – Bit2

This begins the feeding process, the required weight is dosed and the following signal is sent:
STATUS_WORD_1 – Bit 9
Feeding is now finished.
The bus system can also monitor the data in this case.

9.3.3 Request with rising/falling edge

In this case, feeding is fully controlled by the bus system.
If
EXTERN_EIN_DAUER := COMMAND_WORD_1 Bit 1
is set to TRUE, feeding is carried out until the signal is reset to FALSE.
Portioning is carried out by the bus system master control.

9.3.4 To be noted (dosing logic)



Calculation formula:

101 To feed = 104 Dose counter x 99 Portion

103 Target weight = 97 Fill quantity – 101 To feed

98 Actual portion = 103 Target weight – 102 Total weight

100 Fed = 97 Fill quantity – 102 Total weight

10. Bus system assignment

10.1 MODUS TCP assignment

10.1.1 MODBUS TCP addresses 0..15

Modbus address	Direction	Granularity	
0	IN	1 bit	COMMAND_WORD_1
1	IN	1 bit	COMMAND_WORD_2
2	IN	16 bit	COMMAND_PORTION Set portion size (nominal value)
3	IN	16 bit	REQUEST_VALUE_NR Number of the value to be requested
4	IN	16 bit	REQUEST_CUSTOM_SUM Bit field, corresponding to load cell 1-16, to request subtotals.
5	IN	16 bit	COMMAND_VALUE_NR Number of the value to be set
6	IN	16 bit	SETPOINT_VALUE Value for the number COMMAND_VALUE_NR
7	IN	16 bit	HAND_WORD_1_LINKS
8	IN	16 bit	HAND_WORD_1_RECHTS
9	IN	16 bit	HAND_WORD_2_LINKS
10	IN	16 bit	HAND_WORD_2_RECHTS
11	IN	16 bit	Reserved
12	IN	16 bit	Reserved
13	IN	16 bit	SET_V_RUERHWERK_TIMER Agitator start-up time
14	IN	16 bit	SET_N_RUEHRWERK_TIMER Agitator run-down time
15	IN	16 bit	SET_MAX_DOS_TIME Maximum dosing time

10.1.2 MODBUS TCP addresses 16..31

Modbus address	Direction	Granularity	
16	OUT	1 bit	STATUS_WORD_1
17	OUT	1 bit	STATUS_WORD_2
18	OUT	1 bit	STATUS_WORD_3
19	OUT	1 bit	STATUS_WORD_4
20	OUT	1 bit	STATUS_WORD_5
21	OUT	16 bit	STROM_1 Mixer current
22	OUT	16 bit	STROM_2 Feeder auger current
23	OUT	16 bit	STROM_3 Inclined screw conveyor current
24	OUT	16 bit	STROM_4 Trough screw conveyor current
25	OUT	16 bit	STROM_5 Dosing conveyor 1 current
26	OUT	16 bit	STROM_6 Dosing conveyor 6 current
27	OUT	16 bit	STATUS_PORTION Request portion size (nominal value)
28	OUT	32 bit	CUSTOM_SUM Load cells subtotal
29	OUT		
30	OUT	32 bit	WEIGHT Current total weight, net without tare
31			

10.1.3 MODBUS TCP addresses 32..47

Modbus address	Direction	Granularity	
32	OUT	16 bit	PRODUCT_INDEX Product currently selected
33	OUT	16 bit	FILL_1 Product 1 -- maize
34	OUT	16 bit	FILL_2 Product 2 -- grass
35	OUT	16 bit	FILL_3 Product 3 -- manure
36	OUT	16 bit	FILL_4 Product 4 -- grain
37	OUT	16 bit	FILL_5 Product 5 -- WPS
38	OUT	16 bit	FILL_6 Product 6 -- CCM
39	OUT	16 bit	FILL_7 Product 7 -- sunflowers
40	OUT	16 bit	FILL_8 Product 8 -- beets
40	OUT	16 bit	FILL_9 Product 9 -- potatoes
42	OUT	16 bit	Reserved
43	OUT	16 bit	
44	OUT	16 bit	GET_V_RUERHWERK_TIMER Agitator start-up time
45	OUT	16 bit	GET_N_RUEHRWERK_TIMER Agitator run-down time
46	OUT	16 bit	GET_MAX_DOS_TIME Maximum dosing time
47	OUT	16 bit	ANSWER_VALUE Value requested in REQUEST_VALUE_NR

10.2 PROFIBUS assignment

First block "**16 byte data in/out**"

10.2.1 PROFIBUS first block INPUTS

Profibus byte no.	Direction	Granularity	
0-1	IN	1 bit	COMMAND_WORD_1
2-3	IN	1 bit	COMMAND_WORD_2
4-5	IN	16 bit	COMMAND_PORTION Set portion size (nominal value)
6-7	IN	16 bit	REQUEST_VALUE_NR Number of the value to be requested
8-9	IN	16 bit	REQUEST_CUSTOM_SUM Bit field, corresponding to load cell 1-16, to request subtotals.
10-11	IN	16 bit	COMMAND_VALUE_NR Number of the value to be set
12-13	IN	16 bit	SETPOINT_VALUE Value for the number COMMAND_VALUE_NR
14-15	IN	16 bit	HAND_WORD_1_LINKS

10.2.2 PROFIBUS first block OUTPUTS

Profibus byte no.	Direction	Granularity	
0-1	OUT	1 bit	STATUS_WORD_1
2-3	OUT	1 bit	STATUS_WORD_2
4-5	OUT	1 bit	STATUS_WORD_3
6-7	OUT	1 bit	STATUS_WORD_4
8-9	OUT	1 bit	STATUS_WORD_5
10-11	OUT	16 bit	STROM_1 Mixer current
12-13	OUT	16 bit	STROM_2 Feeder auger current
14-15	OUT	16 bit	STROM_3 Inclined screw conveyor current

Second block "**32 byte data in/out**"

10.2.3 PROFIBUS second block INPUTS

Profibus byte no.	Direction	Granularity	
0-1	IN	16 bit	HAND_WORD_1_RECHTS
2-3	IN	16 bit	HAND_WORD_2_LINKS
4-5	IN	16 bit	HAND_WORD_2_RECHTS
6-7	IN	16 bit	Reserved
8-9	IN	16 bit	Reserved
10-11	IN	16 bit	SET_V_RUERHWERK_TIMER Agitator start-up time
12-13	IN	16 bit	SET_N_RUEHRWERK_TIMER Agitator run-down time
14-15	IN	16 bit	SET_MAX_DOS_TIME Maximum dosing time
16-17	IN	16 bit	Reserved
18-19	IN	16 bit	Reserved
20-21	IN	16 bit	Reserved
22-23	IN	16 bit	Reserved
24-25	IN	16 bit	Reserved
26-27	IN	16 bit	Reserved
28-29	IN	16 bit	Reserved
30-31	IN	16 bit	Reserved

10.2.4 PROFIBUS second block OUTPUTS

Profibus byte no.	Direction	Granularity	
0-1	OUT	16 bit	STROM_4 Trough screw conveyor current
2-3	OUT	16 bit	STROM_5 Dosing conveyor 1 current
4-5	OUT	16 bit	STROM_6 Dosing conveyor 6 current
6-7	OUT	16 bit	STATUS_PORTION Request portion size (nominal value)
8-11	OUT	32 bit	CUSTOM_SUM Load cells subtotal
12-15	OUT	32 bit	WEIGHT Current total weight, net without tare
16-17	OUT	16 bit	PRODUCT_INDEX Product currently selected
18-19	OUT	16 bit	FILL_1 Product 1 -- maize
20-21	OUT	16 bit	FILL_2 Product 2 -- grass
22-23	OUT	16 bit	FILL_3 Product 3 -- manure
24-25	OUT	16 bit	FILL_4 Product 4 -- grain
26-27	OUT	16 bit	FILL_5 Product 5 -- WPS
28-29	OUT	16 bit	FILL_6 Product 6 -- CCM
30-31	OUT	16 bit	FILL_7 Product 7 -- sunflowers

Third block "**48 byte data in/out**"

10.2.5 PROFIBUS third block INPUTS

Profibus byte no.	Direction	Granularity	
0-1	IN	16 bit	Reserved
2-3	IN	16 bit	Reserved
4-5	IN	16 bit	Reserved
6-7	IN	16 bit	Reserved
8-9	IN	16 bit	Reserved
10-11	IN	16 bit	Reserved
12-13	IN	16 bit	Reserved
14-15	IN	16 bit	Reserved

10.2.6 PROFIBUS third block OUTPUTS

Profibus byte no.	Direction	Granularity	
0-1	OUT	16 bit	FILL_8 Product 8 -- beets
2-3	OUT	16 bit	FILL_9 Product 9 -- potatoes
4-5	OUT	16 bit	Reserved
6-7	OUT	16 bit	Reserved (changed!)
8-9	OUT	16 bit	GET_V_RUERHWERK_TIMER Agitator start-up time
10-11	OUT	16 bit	GET_N_RUEHRWERK_TIMER Agitator run-down time
12-13	OUT	16 bit	GET_MAX_DOS_TIME Maximum dosing time
14-15	OUT	16 bit	ANSWER_VALUE Value requested in REQUEST_VALUE_NR

Fourth block "**64 byte data in/out**"

Reserved!

10.3 PROFIBUS porting

When porting from a DC1000 to an EC1000, you will find valuable information in the following table:

10.3.1 Porting from DC1000 to EC1000

Block EC1000	Byte EC1000	Word DC1000	Block DC1000		Block DC1000	Word DC1000	Byte EC1000	Block EC1000
First block "16 byte data in/out"	0	0	First block "in: 16w / out: 16w"		First block "in: 16w / out: 16w"	16	0	First block "16 byte data in/out"
	1						1	
	2	1				17	2	
	3						3	
	4	2				18	4	
	5						5	
	6	3				19	6	
	7						7	
	8	4				20	8	
	9						9	
	10	5				21	10	
	11						11	
	12	6				22	12	
	13						13	
	14	7				23	14	
	15						15	
Second block "32 byte data in/out"	0	8				24	0	Second block "32 byte data in/out"
	1						1	
	2	9				25	2	
	3						3	
	4	10				26	4	
	5						5	
	6	11				27	6	
	7						7	
	8	12				28	8	
	9						9	
	10	13				29	10	
	11						11	
	12	14				30	12	
	13						13	
	14	15				31	14	
	15						15	

Block EC1000	Byte EC1000	Word DC1000	Block DC1000		Block DC1000	Word DC1000	Byte EC1000	Block EC1000
	16	32	Second block "in: 16w / out: 16w"		Second block "in: 16w / out: 16w"	48	16	
	17						17	
	18	33				49	18	
	19						19	
	20	34				50	20	
	21						21	
	22	35				51	22	
	23						23	
	24	36				52	24	
	25						25	
	26	37				53	26	
	27						27	
	28	38				54	28	
	29						29	
	30	39				55	30	
	31						31	
Third block "48 byte data in/out"	0	40				56	0	Third block "48 byte data in/out"
	1						1	
	2	41				57	2	
	3						3	
	4	42				58	4	
	5						5	
	6	43				59	6	
	7						7	
	8	44				60	8	
	9						9	
	10	45				61	10	
	11						11	
	12	46				62	12	
	13						13	
	14	47				63	14	
	15						15	
	16						16	
	17						17	
	18						18	
	19						19	
	20						20	
	21						21	
	22						22	

Block EC1000	Byte EC1000	Word DC1000	Block DC1000		Block DC1000	Word DC1000	Byte EC1000	Block EC1000
	23						23	
	24						24	
	25						25	
	26						26	
	27						27	
	28						28	
	29						29	
	30						30	
	31						31	
	32						32	
	33						33	
	34						34	
	35						35	
	36						36	
	37						37	
	38						38	
	39						39	
	40						40	
	41						41	
	42						42	
	43						43	
	44						44	
	45						45	
	46						46	
	47						47	
Fourth block "64 byte data in/out"	0						0	Fourth block "64 byte data in/out"
	1						1	
	2						2	
	3						3	
	4						4	
	5						5	
	6						6	
	7						7	
	8						8	
	9						9	
	10						10	
	11						11	
	12						12	

Block EC1000	Byte EC1000	Word DC1000	Block DC1000		Block DC1000	Word DC1000	Byte EC1000	Block EC1000
	13						13	
	14						14	
	15						15	
	16						16	
	17						17	
	18						18	
	19						19	
	20						20	
	21						21	
	22						22	
	23						23	
	24						24	
	25						25	
	26						26	
	27						27	
	28						28	
	29						29	
	30						30	
	31						31	
	32						32	
	33						33	
	34						34	
	35						35	
	36						36	
	37						37	
	38						38	
	39						39	
	40						40	
	41						41	
	42						42	
	43						43	
	44						44	
	45						45	
	46						46	
	47						47	
	48						48	
	49						49	

Block EC1000	Byte EC1000	Word DC1000	Block DC1000		Block DC1000	Word DC1000	Byte EC1000	Block EC1000
	50						50	
	51						51	
	52						52	
	53						53	
	54						54	
	55						55	
	56						56	
	57						57	
	58						58	
	59						59	
	60						60	
	61						61	
	62						62	
	63						63	

10.4 PROFINET assignment

Block "**in: 16w / out: 32w**"

10.4.1 PROFINET first block INPUTS

Profinet word no.	Direction	Granularity	
0	IN	1 bit	COMMAND_WORD_1
1	IN	1 bit	COMMAND_WORD_2
2	IN	16 bit	COMMAND_PORTION Set portion size (nominal value)
3	IN	16 bit	REQUEST_VALUE_NR Number of the value to be requested
4	IN	16 bit	REQUEST_CUSTOM_SUM Bit field, corresponding to load cell 1-16, to request subtotals.
5	IN	16 bit	COMMAND_VALUE_NR Number of the value to be set
6	IN	16 bit	SETPOINT_VALUE Value for the number COMMAND_VALUE_NR
7	IN	16 bit	HAND_WORD_1_LINKS
8	IN	16 bit	HAND_WORD_1_RECHTS
9	IN	16 bit	HAND_WORD_2_LINKS
10	IN	16 bit	HAND_WORD_2_RECHTS
11	IN	16 bit	Reserved
12	IN	16 bit	Reserved
13	IN	16 bit	SET_V_RUERHWERK_TIMER Agitator start-up time
14	IN	16 bit	SET_N_RUEHRWERK_TIMER Agitator run-down time
15	IN	16 bit	SET_MAX_DOS_TIME Maximum dosing time

10.4.2 PROFINET first block OUTPUTS

Profinet word no.	Direction	Granularity	
0	OUT	1 bit	STATUS_WORD_1
1	OUT	1 bit	STATUS_WORD_2
2	OUT	1 bit	STATUS_WORD_3
3	OUT	1 bit	STATUS_WORD_4
4	OUT	1 bit	STATUS_WORD_5
5	OUT	16 bit	STROM_1 Mixer current
6	OUT	16 bit	STROM_2 Feeder auger current
7	OUT	16 bit	STROM_3 Inclined screw conveyor current
8	OUT	16 bit	STROM_4 Trough screw conveyor current
9	OUT	16 bit	STROM_5 Dosing conveyor 1 current
10	OUT	16 bit	STROM_6 Dosing conveyor 6 current
11	OUT	16 bit	STATUS_PORTION Request portion size (nominal value)
12	OUT	32 bit	CUSTOM_SUM Load cells subtotal
13	OUT		
14	OUT	32 bit	WEIGHT Current total weight, net without tare
15	OUT		
16	OUT	16 bit	PRODUCT_INDEX Product currently selected
17	OUT	16 bit	FILL_1 Product 1 -- maize
18	OUT	16 bit	FILL_2 Product 2 -- grass
19	OUT	16 bit	FILL_3 Product 3 -- manure
20	OUT	16 bit	FILL_4 Product 4 -- grain
21	OUT	16 bit	FILL_5 Product 5 -- WPS
22	OUT	16 bit	FILL_6 Product 6 -- CCM
23	OUT	16 bit	FILL_7 Product 7 -- sunflowers
24	OUT	16 bit	FILL_8 Product 8 -- beets
25	OUT	16 bit	FILL_9 Product 9 -- potatoes
26	OUT	16 bit	Reserved
27	OUT	16 bit	Reserved (changed!)
28	OUT	16 bit	GET_V_RUERHWERK_TIMER Agitator start-up time
29	OUT	16 bit	GET_N_RUEHRWERK_TIMER Agitator run-down time
30	OUT	16 bit	GET_MAX_DOS_TIME Maximum dosing time
31	OUT	16 bit	ANSWER_VALUE Value requested in REQUEST_VALUE_NR

11. Description of the individual data

11.1 Input words (IN)

11.1.1 COMMAND_WORD_1

Bit	Function	
0	PAUSE	Pause: e.g. helpful for shredders and Wangen pump systems to interrupt dosing without cancelling the portion.
1	External ON continuous	Signal When 1, the system feeds continuously. For dual entry: continuous operation LEFT
2	External ON pulse	Impulse of 1 sec starts exactly one portion. CAUTION: information in sections 8.5.1 and 0
3	External OFF pulse	Not normally needed as the portion finishes automatically
4	Filling pulse	Impulse of 1 sec: Starts the return of the pushing wall to filling position Then switches to "Filling" mode
5	Retraction pulse	Impulse of 1 sec: Starts the forward travel to release the limit switch Then switches to "Automatic" mode
6		Impulse of 1 sec: Switches to "Manual" mode
7		Impulse of 1 sec: Switches to "Off" mode
8	External ON continuous RIGHT	For dual entry: continuous operation RIGHT For single systems: does not apply; always 0.
9		Reserved
10		Reserved
11		Reserved
12		Reserved
13		Reserved
14		Reserved
15		Reserved

Notes!

For duplex systems:

- Bit 2 (external ON pulse) feeds right/left alternately.
- Bit 1 feeds only left.
- Bit 8 feeds only right.

11.1.2 COMMAND_WORD_2

Bit	
0	Reserved
1	Reserved
2	Reserved
3	Reserved
4	Reserved
5	Reserved
6	Reserved
7	Reserved
8	Reserved
9	Reserved
10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Reserved
15	Reserved

11.1.3 HAND_WORD_1_(LINKS/RECHTS)

Notes!
When this word is used, the creator of the higher-level control system must ensure that there is an appropriate EMERGENCY STOP function.

This should be wired up directly as the bus system cannot transmit any safety-relevant signals.
For individual containers, the word **HAND_WORD_1_LINKS** can simply be used.

Bit	
0	Agitator
1	Feeder auger
2	Inclined screw conveyor
3	Trough screw conveyor
4	Dosing conveyor 1
5	Dosing conveyor 2
6	Dosing conveyor 3
7	Dosing conveyor 4
8	Dosing conveyor 5
9	Dosing conveyor 6
10	Mixer slow
11	Mixer fast
12	Reserved
13	Valve forwards
14	Valve back
15	Reserved

If all the bits in this word are "0", the on-site "Manual" mode is active.
If at least one bit is "1", "Manual" mode via the bus is active.

11.1.4 HAND_WORD_2_(LINKS/RECHTS)

Notes!
When this word is used, the creator of the higher-level control system must ensure that there is an appropriate EMERGENCY STOP function.

This should be wired up directly as the bus system cannot transmit any safety-relevant signals.
For individual containers, the word **HAND_WORD_2_LINKS** can simply be used.

Bit	
0	Reserved
1	Feeder auger anti-clockwise
2	Inclined screw conveyor anti-clockwise
3	Trough screw conveyor anti-clockwise
4	Reserved
5	Reserved
6	Reserved
7	Reserved
8	Reserved
9	Reserved
10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Reserved
15	Reserved

The "anti-clockwise" bits in this word must be set IN ADDITION TO the relevant bits in HAND_WORD_1_(LINKS/RECHTS).

11.1.5 COMMAND_PORTION

Here, the portion size is transmitted as a WORD (unsigned).
Defined as follows:
Master control system sends 0 to Fliegl ➔ on-site adjustment of the portion possible.
Master control system sends value > 0 to Fliegl ➔ on-site adjustment of the portion blocked.
The current portion can always be requested via the output word "**STATUS_PORTION**".

We recommend setting the portion in "Filling" mode only.
Otherwise abrupt changes to the dosing amount can occur.

11.1.6 REQUEST_VALUE_NR

Request for SLAVE ➔ MASTER values
Here, the MASTER can send a number and the corresponding value is then transmitted to ANSWER_VALUE! See section 11.2.2.

11.1.7 REQUEST_CUSTOM_SUM

Bit field, corresponding to load cell 1-16, to request subtotals.

11.1.8 COMMAND_VALUE_NR

Setting of MASTER ➔ SLAVE values
Here, the MASTER can send a number and the corresponding value is then sent to SETPOINT_VALUE! See section 11.2.2.

11.1.9 SETPOINT_VALUE

The value that is to be written.
Value 0 is ignored.
CAUTION: Values are only written once when changes are made. This means that it is possible to write COMMAND_VALUE_NR first, and then SETPOINT_VALUE. Only when SETPOINT_VALUE is written is the value actually changed.

Example:

SETPOINT_VALUE	COMMAND_VALUE_NR	Value in SLAVE
0	0	17
0	5	17
18	5	**18**
0	5	18
0	0	18

11.1.10 SET_V_RUERHWERK_TIMER

For setting the agitator start-up timer. In 1/10 second intervals.

11.1.11 SET_N_RUEHRWERK_TIMER

For setting the agitator run-down timer. In 1/10 second intervals.

11.1.12 SET_MAX_DOS_TIME

For setting the maximum dosing time. In 1/10 second intervals.

11.2 Output words

11.2.1 STATUS_WORD_1

Bit	
0	Is always "1" --- for Profibus monitoring!
1	Toggle bit 2s high / 2s low
2	
3	Agitator outlet is running
4	FC mixer is running (fast stage)
5	FC mixer is running (slow stage)
6	Trough screw conveyor is running
7	Inclined screw conveyor is running
8	Feeder auger is running
9	DUMP (1-sec signal when dosing is finished)
10	Manual operating mode
11	Automatic operating mode
12	Filling operating mode
13	Off mode
14	Transfer mode
15	Automatic pause

11.2.2 STATUS_WORD_2

Bit		Line
0	End position starting point (filling position)	LEFT
1	End position dosing unit	LEFT
2	Small push switch (only for duplex)	LEFT
3	Large push switch (only for duplex)	LEFT
4	Hydraulic unit is running	LEFT
5	"Floor forward" hydraulic valve is activated	LEFT
6	"Floor back" hydraulic valve is activated	LEFT
7	Automatic reverse is in progress	LEFT
8	Requested return is in progress (this is triggered by switching to "Filling" mode)	LEFT
9	LEFT "Automatic" mode active	LEFT
10	LEFT "Manual" mode active	LEFT
11	Mixer is running	LEFT
12		
13		
14		
15	External ON continuous	LEFT

11.2.3 **STATUS_WORD_3**

Bit		Line
0	End position starting point (filling position)	RIGHT
1	End position dosing unit	RIGHT
2	Small push switch (only for duplex)	RIGHT
3	Large push switch (only for duplex)	RIGHT
4	Hydraulic unit is running	RIGHT
5	"Floor forward" hydraulic valve is activated	RIGHT
6	"Floor back" hydraulic valve is activated	RIGHT
7	Automatic reverse is in progress	RIGHT
8	Requested return is in progress (this is triggered by switching to "Filling" mode)	RIGHT
9	RIGHT "Automatic" mode active	RIGHT
10	RIGHT "Manual" mode active	RIGHT
11	Mixer is running	RIGHT
12		
13		
14		
15	External ON continuous RIGHT	RIGHT

Whether LEFT and RIGHT are active is also shown on the display under "Status".

LEFT and RIGHT "Automatic" mode active are mutually exclusive.
LEFT and RIGHT "Manual" mode active are not mutually exclusive.
If only one side exists, the data under "LEFT" must be used.

11.2.4 STATUS_WORD_4

Bit		
0	Fault: hydraulic power unit (inverse, FALSE = fault)	LEFT
1	Fault: hydraulic power unit (inverse, FALSE = fault)	RIGHT
2	Fault: valves (normal, TRUE=fault)	
3	Fault: dosing conveyor 1; (inverse, FALSE = fault)	
4	Fault: dosing conveyor 2; (inverse, FALSE = fault)	
5	Fault: dosing conveyor 3; (inverse, FALSE = fault)	
6	Fault: dosing conveyor 4; (inverse, FALSE = fault)	
7	Fault: dosing conveyor 5; (inverse, FALSE = fault)	
8	Fault: dosing conveyor 6; (inverse, FALSE = fault)	
9	Fault: trough screw conveyor; (inverse, FALSE = fault)	
10	Fault: inclined screw conveyor; (inverse, FALSE = fault)	
11	Fault: feeder auger; (inverse, FALSE = fault)	
12	Fault: EMERGENCY STOP (inverse, FALSE = fault)	
13	Fault: collective fault (normal, TRUE=fault)	
14	Warning: Maximum dosing time exceeded (normal, TRUE=fault)	
15	Fault: FC mixer (normal, TRUE=fault)	

11.2.5 STATUS_WORD_5

Bit	
0	Fault: CAN master (internal CAN bus master faulty) (normal, TRUE=fault)
1	Fault: CAN FC (FC mixer) faulty CAN bus (normal, TRUE=fault)
2	Fault: weighing machine overload of 1 or more cells or entire weighing system (normal, TRUE=fault)
3	Fault: weighing machine underload of 1 or more cells or entire weighing system (normal, TRUE=fault)
4	Fault or timeout of 1 or more cells (normal, TRUE=fault)
5	Dosing conveyor 1 is running
6	Dosing conveyor 2 is running
7	Dosing conveyor 3 is running
8	Dosing conveyor 4 is running
9	Dosing conveyor 5 is running
10	Dosing conveyor 6 is running
11	
12	
13	DUMP (1-sec signal when dosing is finished)
14	Empty or return or in filling position
15	Operating signal

11.2.6 STROM_1.. STROM_6

Current value.
Scaled to 2 decimal places,
i.e. 9115 = 91.15% of rated current.
i.e. 15010 = 150.10% of rated current.

STROM_1	Mixer current
STROM_2	Feeder auger current
STROM_3	Trough screw conveyor current
STROM_4	Inclined screw conveyor current
STROM_5	Dosing conveyor 1 current
STROM_6	Dosing conveyor 6 current

11.2.7 STATUS_PORTION

Here, the current portion is transmitted – whether via bus or touchscreen.

11.2.8 WEIGHT

The weight is transmitted as a 32-bit value.
2 words, each with 16 bits, are transmitted.
The master control system can read the weight as described below:

- If no weights over 65,536 kg are expected:
  - The weight it transmitted in the 2nd word
- If weights over 65,536 kg occur
  - All values up to 65,536 kg are transmitted in the 2nd word
  - Above 65,536 kg, there is an overflow into the 1st word

Notes on implementation:
Copy both words into a 32-bit integer (DINT; signed)
That is, the 1st word to addresses 31..16 and the 2nd word to addresses 15..0
Note:
The following code will carry out the whole process:

In AWL:

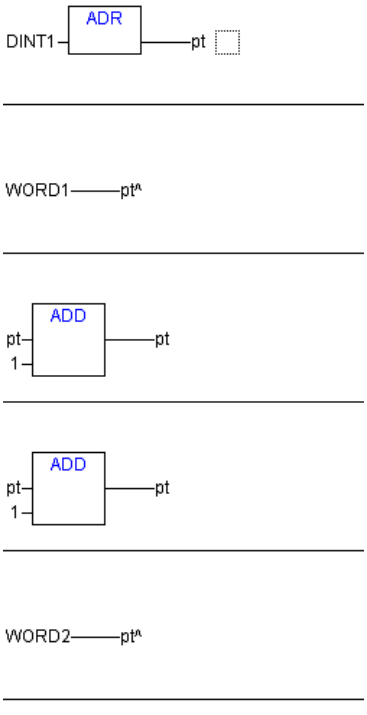
```
FUNCTION_BLOCK TWO_WORD_TO_DINT_AWL
VAR_INPUT
      WORD1: WORD;
      WORD2: WORD;
END_VAR
VAR_OUTPUT
      DINT1: DINT;
END_VAR
VAR
      pt : POINTER TO WORD;
END_VAR
----------------------------------------
LD          DINT1
ADR
ST          pt
LD          WORD1
LD          pt
ADD         1
ST          pt
LD          pt
ADD         1
ST          pt
LD          WORD2
```

In ST / SCL:

```
FUNCTION_BLOCK TWO_WORD_TO_DINT_ST
VAR_INPUT
      WORD1: WORD;
      WORD2: WORD;
END_VAR
VAR_OUTPUT
      DINT1: DINT;
END_VAR
VAR
      pt : POINTER TO WORD;
END_VAR
----------------------------------------
pt := ADR(DINT1);
pt^ := WORD1;
pt := pt + 1;
pt := pt + 1;
pt^ := WORD2;
```

In FUP:

```
FUNCTION_BLOCK TWO_WORD_TO_DINT_FUP
VAR_INPUT
      WORD1: WORD;
      WORD2: WORD;
END_VAR
VAR_OUTPUT
      DINT1: DINT;
END_VAR
VAR
      pt : POINTER TO WORD;
END_VAR
----------------------------------------
```



11.2.9 PRODUCT_INDEX

The number of the product currently selected during the filling operation

11.2.10 FILL_1 .. FILL_9.

Here, the individual materials are transmitted.
While the plant is in "Filling" mode, this value changes constantly.
A falling edge on the bit is therefore recommended.
STATUS_WORD_1 – Bit 12 – Filling mode
To wait and then to store the values.
The figure below shows the assignment of the individual materials to the relevant numbers:

The customer can change this assignment at any time!

Fig. 27: Remote control with 15 buttons

11.2.11 GET_V_RUERHWERK_TIMER

To request the agitator start-up timer. In 1/10 second intervals.

11.2.12 GET_N_RUEHRWERK_TIMER

To request the agitator run-down timer. In 1/10 second intervals.

11.2.13 GET_MAX_DOS_TIME

To request the maximum dosing time. In 1/10 second intervals.

11.2.14 **ANSWER_VALUE**

REQUEST_ VALUE _NR sends a number so that the corresponding value for this word is transmitted.
In 1/10 second intervals.
Assignment of values:

No.	Description	Unit	R/RW[1]
0	DUMMY; always sends 43690	-	R
1	Start-up time: agitator	1/10s	RW
2	Start-up time: feeder auger	1/10s	RW
3	Start-up time: inclined screw conveyor	1/10s	RW
4	Start-up time: trough screw conveyor	1/10s	RW
5	Start-up time: mixer slow	1/10s	RW
6	Start-up time: mixer fast	1/10s	RW
7	Start-up time: dosing conveyor 1	1/10s	RW
8	Start-up time: dosing conveyor 2	1/10s	RW
9	Start-up time: dosing conveyor 3	1/10s	RW
10	Start-up time: dosing conveyor 4	1/10s	RW
11	Start-up time: dosing conveyor 5	1/10s	RW
12	Start-up time: dosing conveyor 6	1/10s	RW
13	Maximum dosing time	1/10s	RW
14	Run-down time: dosing conveyor 6	1/10s	RW
15	Run-down time: dosing conveyor 5	1/10s	RW
16	Run-down time: dosing conveyor 4	1/10s	RW
17	Run-down time: dosing conveyor 3	1/10s	RW
18	Run-down time: dosing conveyor 2	1/10s	RW
19	Run-down time: dosing conveyor 1	1/10s	RW
20	Run-down time: mixer fast	1/10s	RW
21	Run-down time: mixer slow	1/10s	RW
22	Run-down time: trough screw conveyor	1/10s	RW
23	Run-down time: inclined screw conveyor	1/10s	RW
24	Run-down time: feeder auger	1/10s	RW
25	Run-down time: agitator	1/10s	RW
26	Screensaver (not yet implemented)	1/10s	RW
27	Response time: moving small cylinder	1/10s	RW
28	Response time: moving large cylinder	1/10s	RW
29	Hold time: moving small cylinder	1/10s	RW
30	Hold time: moving large cylinder	1/10s	RW
31	Emptying stroke time	1/10s	RW
32	Maximum return time	1/10s	RW
33	Scale settling time	1/10s	RW
34	Finished impulse duration	1/10s	RW
35	Retraction time	1/10s	RW
36	DUMMY; always sends 43690	-	R
37	nr_dos dosing number from scale history (last feed process)	-	R
38	Request portion size (nominal value) from scale history (last feed process)	kg	R
39	Portion size (actual value) from scale history (last feed process)	kg	R
40	Duration of feed process from scale history (last feed process)	1/10s	R

[1] **R = read, RW = read/write**

No.	Description	Unit	R/RW[1]
41	nr_dos dosing number from scale history (penultimate feed process)	-	R
42	Request portion size (nominal value) from scale history (penultimate feed process)	kg	R
43	Portion size (actual value) from scale history (penultimate feed process)	kg	R
44	Duration of feed process from scale history (penultimate feed process)	1/10s	R
45	DUMMY; always sends 43690	-	R
46	Mixer motor speed, nominal value (fast stage)	rpm	RW
47	Mixer motor speed, actual value	rpm	R
48	Switching pressure	bar	RW
49	Actual pressure	bar	R
50	Mixer motor speed, nominal value (slow stage)	rpm	RW
51	Trough screw conveyor motor speed, nominal value	rpm	RW
52	Trough screw conveyor motor speed, actual value	rpm	R
53	Inclined screw conveyor motor speed, nominal value	rpm	RW
54	Inclined screw conveyor motor speed, actual value	rpm	R
55	Feeder auger motor speed, nominal value	rpm	RW
56	Feeder auger motor speed, actual value	rpm	R
57	Feeder auger current limit	%	RW
58	Feeder auger current, actual value	%	R
59	Feeder auger current limit	A	RW
60	Feeder auger current	A	R
61	Inclined screw conveyor current limit	%	RW
62	Inclined screw conveyor current	%	R
63	Inclined screw conveyor current limit	A	RW
64	Inclined screw conveyor current	A	R
65	Trough screw conveyor current limit	%	RW
66	Trough screw conveyor current	%	R
67	Trough screw conveyor current limit	A	RW
68	Trough screw conveyor current	A	R
69	Dosing conveyor current limit	%	RW
70	Dosing conveyor 1 current	%	R
71	Dosing conveyor 2 current	%	R
72	Dosing conveyor 3 current	%	R
73	Dosing conveyor 4 current	%	R
74	Dosing conveyor 5 current	%	R
75	Dosing conveyor 6 current	%	R
76	Dosing conveyor current limit	A	RW
77	Dosing conveyor 1 current	A	R
78	Dosing conveyor 2 current	A	R
79	Dosing conveyor 3 current	A	R
80	Dosing conveyor 4 current	A	R
81	Dosing conveyor 5 current	A	R
82	Dosing conveyor 6 current	A	R
83	Small pusher (shear bolt) current limit	A	RW
84	Large pusher current limit	A	RW
85	Small mixer current limit	A	RW
86	Large mixer current limit	A	RW
87	Mixer current	A	R
88	Emptying strokes, nominal value	1	RW

No.	Description	Unit	R/RW[1]
89	Emptying strokes, actual value	1	R
90	Minimum weight	kg	RW
91	Delay pause (to prevent "peaks")	1/10s	RW
92	Mixer, extra fast	1/10s	RW
93	Mixer, extra slow	1/10s	RW
94	Maximum pushing time	1/10s	RW
95	Change-over delay	1/10s	RW
96	DUMMY; always sends 43690	-	R
97	Fill quantity	10kg	R
98	Portion, actual	1kg	R
99	Portion (same as COMMAND_PORTION)	1kg	RW
100	Fed	10kg	R
101	To feed	10kg	R
102	Total weight (same as WEIGHT)	10kg	R
103	Target weight	10kg	R
104	Dose counter	Qty	RW
105	DUMMY; always sends 43690	-	R

12. **INI file**

The INI file stores all the settings for the entire control system.

```
F47110PeineA57316.ini                                    27.06.2012
  1  [Language]
  2  LanguageLocal="German"
  3  [MachineInfo]
  4  FahrgestellNr="F47110"
  5  AuftragsNr="A57316"
  6  Kurzame="Peine"
  7  [MachineConfig]
  8  Machine-Type=32
  9  [CAN-Bus]
 10  aktiv-CAN=00000000000000000000000000000100
 11  [MachineEquipment]
 12  aktiv-SCHUETZ=00000001100000000111111111011111
 13  [Automatikbetrieb-TIMER]
 14  Vorlauf-Ruehrwerk="5000.0"
 15  Vorlauf-Einbringschnecke="2000.0"
 16  Vorlauf-Hochfoerderschne="2000.0"
 17  Vorlauf-Trogschnecke="2000.0"
 18  Vorlauf-MischerLangsam="0.0"
 19  Vorlauf-MischerSchnell="0.0"
 20  Vorlauf-Dosierschnecke1="2000.0"
 21  Vorlauf-Dosierschnecke2="2000.0"
 22  Vorlauf-Dosierschnecke3="2000.0"
 23  Vorlauf-Dosierschnecke4="2000.0"
 24  Vorlauf-Dosierschnecke5="2000.0"
 25  Vorlauf-Dosierschnecke6="2000.0"
 26  Max-Zeit-Dosierung="600000.0"
 27  Nachlauf-Dosierschnecke6="1000.0"
 28  Nachlauf-Dosierschnecke5="1000.0"
 29  Nachlauf-Dosierschnecke4="1000.0"
 30  Nachlauf-Dosierschnecke3="1000.0"
 31  Nachlauf-Dosierschnecke2="1000.0"
 32  Nachlauf-Dosierschnecke1="1000.0"
 33  Nachlauf-MischerSchnell="0.0"
 34  Nachlauf-MischerLangsam="0.0"
 35  Nachlauf-Trogschnecke="1000.0"
 36  Nachlauf-Hochfoerderschne="1000.0"
 37  Nachlauf-Einbringschnecke="1000.0"
 38  Nachlauf-Ruehrwerk="5000.0"
 39  Zeit-Bildschirmschoner="300000.0"
 40  Ansprechzeit-Schieben-Pause="8000.0"
 41  Nachhaltezeit-Schieben-Klein-Pause="10000.0"
 42  Nachhaltezeit-Schieben-Schub="4000.0"
 43  Nachhaltezeit-Schieben-Klein-Schub="2000.0"
 44  Zeit-Entleerhub="15000.0"
 45  Max-Zeit-Auto-Rueckfahrt="1200000.0"
 46  Waage-Beruhigung="1000.0"
 47  Zeit-Dump="1000.0"
 48  Zeit-Freifahren="10000.0"
 49  Nachlauf-MischerSchnell-Extra="0.0"
 50  Nachlauf-MischerLangsam-Extra="0.0"
 51  OekoMaxtime="5000.0"
 52  OekoUmschaltpause="5000.0"
 53  [Automatikbetrieb-STROM]
 54  StromgrenzeEinbringschnecke_PERCENT="0.95"
 55  StromgrenzeEinbringschnecke_AMPERE="5.0"
 56  StromgrenzeHochfoerderschnecke_PERCENT="0.95"
 57  StromgrenzeHochfoerderschnecke_AMPERE="5.0"
 58  StromgrenzeTrogschnecke_PERCENT="0.95"
 59  StromgrenzeTrogschnecke_AMPERE="5.0"
 60  StromgrenzeDosierschnecke_PERCENT="0.95"
 61  StromgrenzeDosierschnecke_AMPERE="5.0"
                                                          Page 1
```

```
F47110PeineA57316.ini                                    27.06.2012
 62  StromgrenzeSchieberKlein_AMPERE="2.5"
 63  StromgrenzeSchieberGross_AMPERE="8.5"
 64  StromgrenzeMischerklein_AMPERE="9.0"
 65  StromgrenzeMischerGross_AMPERE="12.5"
 66  [Automatikbetrieb-SONST]
 67  Anzahl-Entleerhub=2
 68  minSpeed=1500
 69  workSpeed=3000
 70  workSpeed34=3000
 71  workSpeed35=3000
 72  workSpeed36=3000
 73  Mindestgewicht=500
 74  Maximaldruck="120.0"
 75  PAUSIEREN_VERZ_TIME="5000.0"
 76  [Startzeiten]
 77  Offset="0.0"
 78  Interval1="3600000.0"
 79  Active=0
 80  [Dosieren]
 81  Portion=0
 82  DosierCounter=2
 83  FuellMenge=-790
 84  Mindestgewicht=500
 85  [COM1_Master]
 86  COM1-Baud-Rate=9600
 87  COM1-Parity=0
 88  COM1-Stop-Bits=0
 89  [COM2_Master]
 90  COM2-Baud-Rate=2400
 91  COM2-Parity=0
 92  COM2-Stop-Bits=0
 93  [COM3_Master]
 94  COM3-Baud-Rate=9600
 95  COM3-Parity=0
 96  COM3-Stop-Bits=0
 97  [COM1_Slaves]
 98  aktiv-Displays=00010000000000000000000000000000
 99  night-switch=1
100  night-switch-on="18000000.0"
101  night-switch-off="72000000.0"
102  [COM2_Slaves]
103  aktiv-Funk=00000000000000000000000000000000
104  Funk1-ID=0
105  [COM3_Slaves]
106  aktiv-Load-Cells=11111111000000000000000000000000
107  A0-Teller=1
108  A-Filter=1
109  B-Min-weight-per-Cell=50
110  B-Max-weight-per-Cell=13608
111  C-Filter="1000.0"
112  D-Min-weight-total=200
113  D-Max-weight-total=60000
114  E-Filter="1000.0"
115  F-Tara=1000
116  G-Factor="1.0"
117  H-Steps=10
118  aktiv-Modbus=00000000000000000000000000000000
119  Adresse-ADAM4069_1=1
120  Funk2-ID=0
121  [AnalogOut]
122  MinInputValue="0.0"
                                                          Page 2
```

F47110PaineA57316.ini 27.06.2012

```
123  MaxInputValue="30000.0"
124  [AlarmWrapper]
125  WeighingErrorFreeTime="2000.0"
126  WeighingErrorFree=1
127  [Products]
128  Product0="Null"
129  Target0=3000
130  Product1="Mais"
131  Target1=3000
132  Product2="Gras"
133  Target2=3000
134  Product3="Mist"
135  Target3=3000
136  Product4="Getreide"
137  Target4=3000
138  Product5="GPS"
139  Target5=3000
140  Product6="CCM"
141  Target6=3000
142  Product7="Sonnenblumen"
143  Target7=3000
144  Product8="Rueben"
145  Target8=3000
146  Product9="Kartoffeln"
147  Target9=3000
148  [SystemInfosHardware]
149  Modulename="DCI005M T MP266 00 1131 CLEAN"
150  [SystemInfosNetwork]
151  IP-Address="192.168.2.2"
152  MAC-Address="00 E0 BA 90 5E 2C"
153  Subnet-Mask="255.255.255.0"
154  Gateway-Address="0.0.0.0"
155  DNS-Address="0.0.0.0"
156  [SystemInfosSerial]
157  Serial-Number="270003800-00213"
158  [ProjectInfos]
159  Project="Biogas_Bio+Dup_LEN.pro"
160  Date="DT#2012-05-16-13:14:07"
161  Version="$LastChangedRevision: 5341 $"
162  Project-ID=123939
163  Description="$HeadURL:
     svn://localhost/ENI2/Projects2/DEVELOPMENT/Biogas/Bio+Dup/LEN/WorkspaceIn
     formation.pin $"
164  [SystemInfosFirmware]
165  Firmware-Version="2.21.5"
166  Firmware-Date="02.08.2011"
167  [SystemInfosTime]
168  Time="06:37:55"
169  Date="2012-05-18"
170  stars=
     "*********************************************************************
     *******"
171
```

Page 3

13. USB stick UPDATE

13.1 Preparations

These instructions will enable you to update your DigiTouchBio yourself in a few easy steps.
If you follow the steps exactly, you will be able to install the update successfully.

The update must be installed at a time when the device is not in operation.
In particular, during operation, all drives will switch off and the control system will not function. Also, communication with master systems will not work during the update.

Please follow the steps precisely; in particular, make sure that you adhere to the waiting times specified and do not remove the USB stick too early.
You will need:

- A PC/ laptop, etc. running Windows XP or later;
  (Vista and Windows 7 are also OK)
- A standard USB stick. A basic device with a capacity of 1GB is sufficient
  (available for approx. €10 from almost any electronics shop)
- The file package we send you (usually by e-mail)

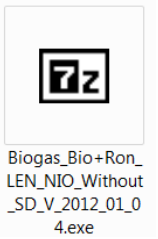
Please be aware that you generally need a different file package for each DigiTouch Bio.

13.2 Receiving the file

You will receive a file from us containing the update.
Normally, the update is sent as a "link".
All links reference the FTP server **srv.fliegl.com**
If a password is required, please use the following:

User name: download
Password: h3rd4m1t

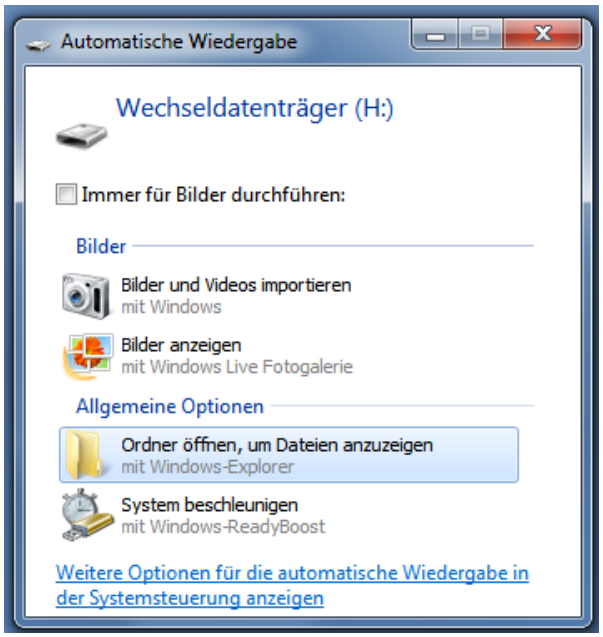
Depending on your operating system, the file will look like this:



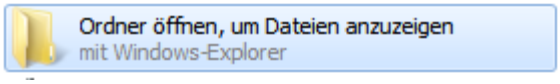
or like this:

13.3 Copying the file onto the USB stick

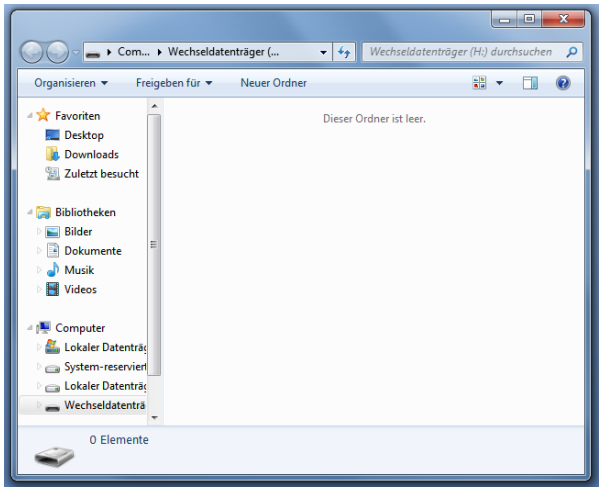
Plug the USB stick into your computer. If the message



appears, select the option:

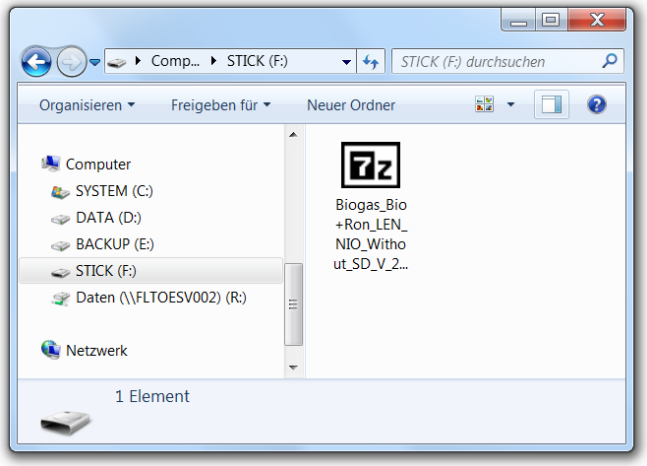


You should now see the USB stick:



If the USB stick already contains other files, these will not interfere with the process. Only if there is already a folder on the USB stick with the name "autoinst" should you now delete it.

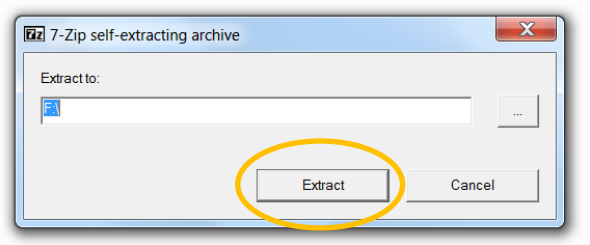
Now save the file you received by e-mail onto the USB stick:



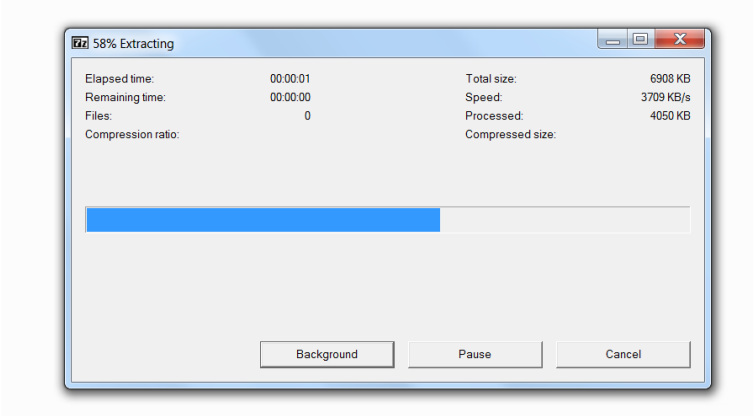
Notes!
The specific way to do this depends on the e-mail program you use. You can usually just click on the link.

13.4 Extracting the file

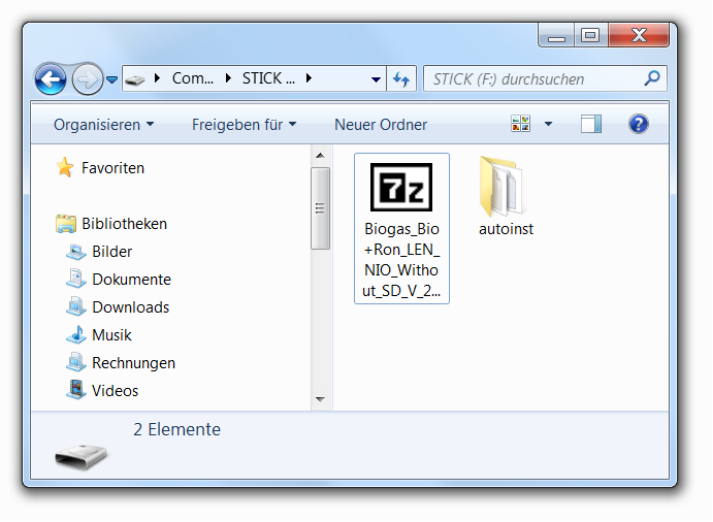
Now double-click on the file with the left mouse button:



Under "Extract To", the drive letter of the USB stick should appear.
Now click on "Extract".



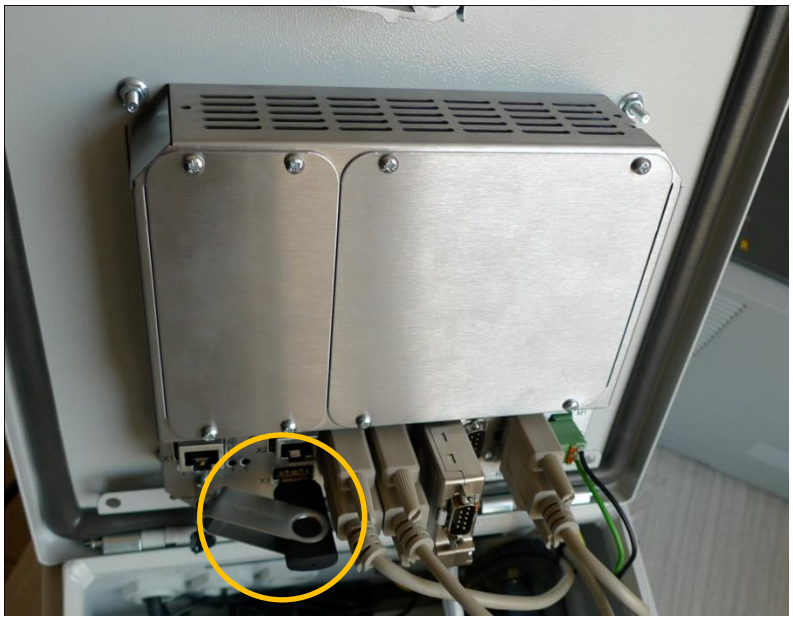
You should now see the following screen:



The part of the process requiring the use of a PC is now complete.

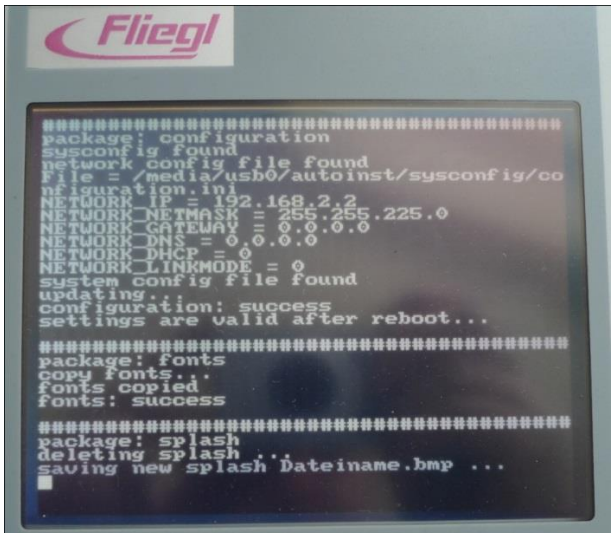
13.5 Installing the update on the DigiTouch

First, switch off the screen[6].
Plug the USB stick into the USB port on the back of the DigiTouch Bio screen:



[6] If there is no switch, pull out the plug

Next, switch the screen back on. You should now see the following text on the screen:



At this stage, please do not remove the USB stick under any circumstances; you must wait until the process is complete.
This can take several minutes.

The screen will then restart:

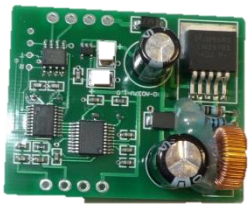
You can now remove the USB stick. The following message will then appear:

The whole control system will now restart and you should see the new program on the screen.
The diagnostics menu should show the new firmware and project status.

14. Main technical index

```
Range of input signal:  -20~+20mV
A/D conversion:         24-bit sigma-delta A/D conversion
A/D sampling frequency: 38,400 kHz
Linear error:           typical value is 0.0015%F.S. max is 0.003%F.S.
Full range drift:       typical value is 1ppm/, max is 3ppm/
Sensor supply voltage:  5V/50mA
Serial communication interface: RS-485(semi-duplex)
Baud rate:              9600bps
Operating temperature:  -40~+85°C
Relative humidity:      ≤90%R.H
Power:                  DC 5.5~13.5V/14mA (first edition)
                        DC 8~38V (second edition)

External dimensions:    diameter 33mm, thickness 7mm
```

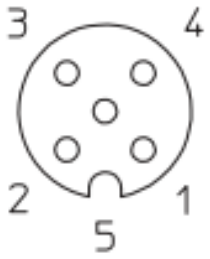


15. Communications protocol

The last protocol used has no more been published since May 1st, 2021.

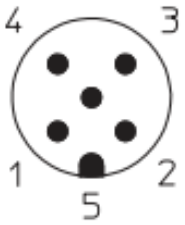
16. A/D model wiring diagram

16.1 Load cell connection



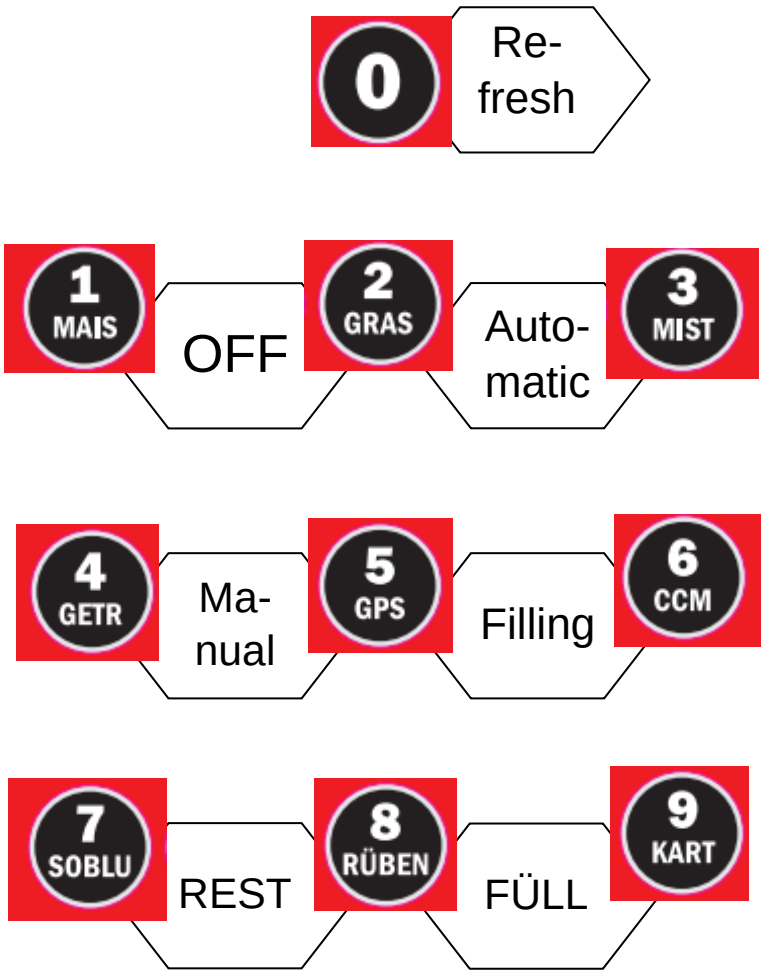
1 = brown = V+ (excitation +)
2 = white = S+ (signal +)
3 = blue = S- (signal -)
4 = black = V- (excitation -)
5 = grey = SHIELD

16.2 Bus connection



1 = bare = shield
2 = red = VCC
Power: DC 5.5~13.5V/14mA (first edition)
DC 8~38V (second edition)
3 = black = GND (0 V)
4 = white = RXTX + (RS-485 A)
5 = blue = RXTX − (RS-485 B)

17. Remote control combination



18. Index

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