



BMGZ750 and BMGZ750.PNET Operating Manual

Calibratable evaluation unit for conveyor belt scales, with
optional PROFINET interface

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2 Safety instructions

All safety, operating, and installation instructions given here serve to ensure that the device functions properly. They must be observed in all circumstances to ensure the safe operation of systems. Failure to comply with the safety instructions or use of the devices outside of the specified performance characteristics may endanger the safety and health of persons.

Work relating to the operation, maintenance, conversion, repair, or configuration of the device described may only be performed by qualified personnel.

2.1 Representations of safety instructions

2.1.1 Risk that may result in minor or moderate injury



Danger, warning, caution

Type and source of danger

Possible consequence of disregarding the instruction

Measures to prevent the danger

2.1.2 Instructions to ensure proper functionality



Instruction

Instruction regarding proper operation

Simplification of operation

Ensuring functionality

2.2 General safety instructions



The functionality of the conveyor belt scales is only guaranteed if the components are installed in the recommended configuration. If not, there is a risk of serious malfunction. The installation instructions on the following pages must therefore always be followed.



The on-site installation regulations serve to ensure the safety of electrical systems. These regulations are not taken into consideration by this operating manual. However, they must always be observed nonetheless.



Improper earthing may cause electric shocks to people, malfunctions of the entire system, or damage to the evaluation unit! It must always be ensured that the housing is properly grounded.

3 Product information

3.1 System configuration

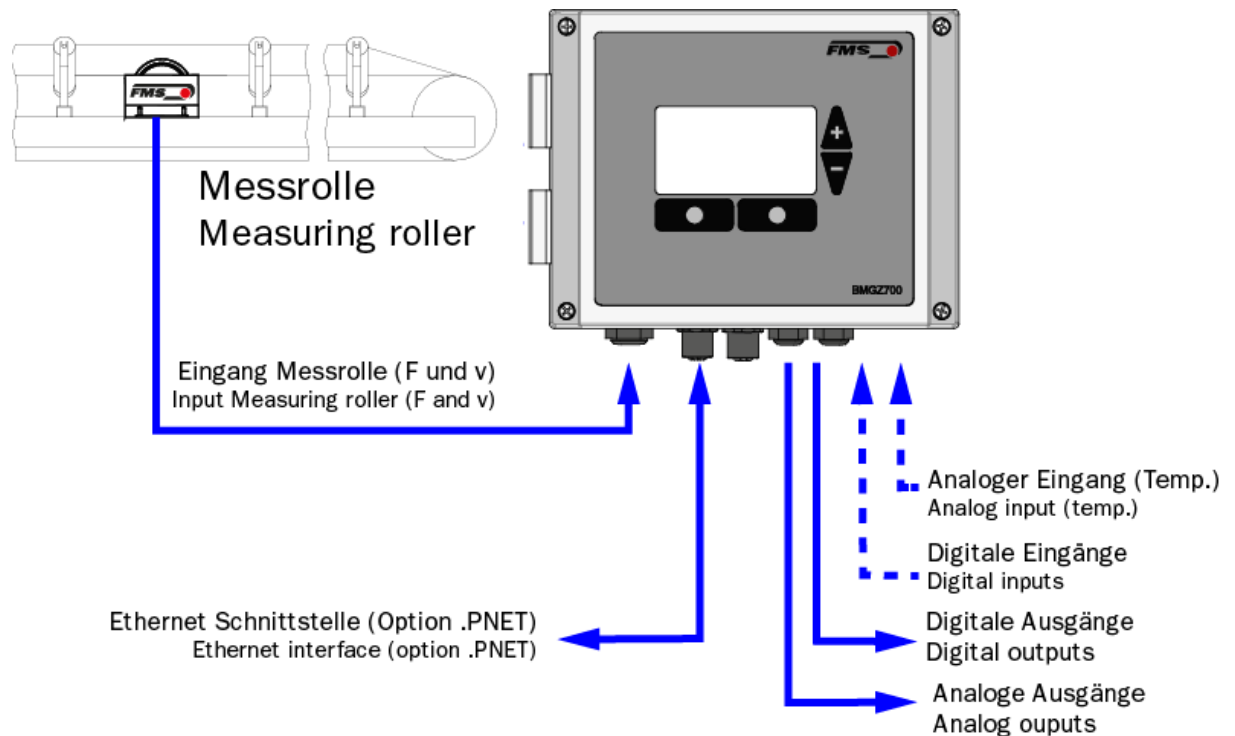


Illustration 1: Measuring roller and evaluation unit

3.2 Product description

The evaluation units in the BMGZ750 series are designed to meet the demanding conditions of applications in stationary conveyor systems. The illuminated graphical display shows the current delivery rate, the daily amount, the total amount, and the belt speed. Additional display devices and controls can be connected via the configurable analogue and digital outputs. The web browser, included by default, allows the measuring roller to be quickly configured, e.g., with any PC or laptop, or by remote access. The calibratable version allows you to bill the customer directly via the measurement data of the FMS measuring roller.

An integrated PROFINET IRT interface is available as option.

3.3 Functional description

The evaluation units in the BMGZ750 series convert the measuring signals from the measuring roller into digital form. The weight of the measuring roller and the load from the belt (taring) are subtracted from the measured value, and the resulting difference is multiplied with the belt speed. The evaluation units in the BMGZ750 series have an auto-taring program that automatically determines the tare value over two belt revolutions by pressing a button.

3.4 Scope of supply

Included in the scope of supply:

Evaluation unit; for the .K version, the evaluation unit is preinstalled in the control cabinet

Not included in the scope of supply:

Power supply unit, installation materials

Also available:

Measuring roller, connection cable from evaluation unit to measuring roller (specify length), M12 d-coded Ethernet cable, or RJ45 patch cable for web browser.

3.5 Order code for evaluation unit

BMGZ750.PNET : Order code	
BMGZ7	5 0 .W .PNET
	Profinet IRT ethernet interface
	Housing (.W wall mount; .S. panel mount; K. in cabinet)
	Additional functionality (none)
	Variation (1: Single-channel; 5: calibratable)
	Series

Illustration 2: Order code for evaluation unit

4 Special features of the calibratable version



Calibration by a gauger

The operating company alone is responsible for recalibration and for calling in the gauger.

4.1 EU Type-examination Certificate

According Annex II Module B of the Directive 2014/32/EU

4.2 Accuracy class 2

The BMGZ750 is approved for accuracy class 2.

Error limits for flow rates from 20% to 100%:

- a) Max. Error during calibration test (during commissioning / calibration): +/- 1 % of the respective flow rate.
- b) Max. Error in operation (traffic error): +/- 2 % of the respective flow rate.

The test quantity for the adjustment and the official calibration acceptance corresponds to the "smallest delivery quantity".

4.2.1 Limitations

Accuracy class 2 scales may only be used for weighing sand, gravel, waste and demolition material.

4.3 Requirements, guidelines, standards, verification test

This compilation contains a summary of the most important requirements, guidelines of applicable standards and manufacturer recommendations for the construction, testing and operation of calibratable belt scales BMGZ750.

4.4 Procedure of the calibration test



Verification by verification officer

The operator alone is responsible for recalibration and for calling in the verification officer.

The customer applies for the calibration to be carried out. The calibration costs are borne by the customer. FMS recommends that customers clarify the entire test procedure and the necessary precautions / resources with the verification engineer in advance.

During the verification test, check weighing of the weighed material is carried out. It must be possible to load or unload the material without loss. The check weighing must be carried out on a suitable test scale. This must be clarified in advance with the verification officer.

4.5 Calibration conditions, calibration test

The test quantity is the "**smallest delivery quantity**" (OIML R50-1, No. 2.3). It must not be larger than the quantity that can still be handled with reasonable effort during the verification test. The local conditions regarding the available check scale as well as the capacity of the usual transport containers and vehicles must be taken into account.

The "smallest delivery quantity" is equal to the largest quantity, which is calculated from the following three conditions:

- Full belt circulation at maximum conveying rate or
- 2 % of the quantity weighed in one hour at maximum conveying speed or
- 200 digit increments of the measured value display, see OIML 2.3.

It must be possible to adjust and calibrate the belt scale at the installation site easily and safely using original bulk material. A check scale must be available in the vicinity of the belt scale to be tested. The error limit of this scale may be max. 1/5 of the error limit of the belt scale. No bulk material may be lost during the removal and transport of the test quantity. The tests are to be carried out under normal conditions of use between 20% and 100% of the maximum conveying rate. At least two values within the error limit shall be obtained for each conveying rate value. The bulk material quantity used in the test must correspond at least to the "smallest delivery quantity". The weight check of the bulk material quantity can be carried out before or after passing through the belt scale. The conditions for testing with material shall be provided on site.

4.6 Location, maintenance of the conveyor belt scale

The conveyor must be installed on a solid and, if necessary, frost-proof foundation, either stationary or mobile on rails, in order to ensure vibration-free operation of the belt scale.

(OIML R50-1 / regulation test center).

4.6.1 Installation location

The belt scale must be installed as far away as possible from the drive drum in order to minimize belt tension influences. The belt scale may only be installed in a straight belt section with constant troughing.

(FMS recommendation).

4.6.2 Belt alignment and material skirting

The belt alignment must prevent the belt from moving sideways. Any lateral guide rollers that may be necessary must not be installed around the measuring section, nor must infeed skirting.

(Recommendation FMS)

4.6.3 Material transition length

The measuring section should be as close as possible to the material feed, but it must be ensured that the material has settled before the measuring section, i.e. the material must no longer slip or shift on the belt.

(Regulation FMS)

4.6.4 Distance between idler roller stations on the measuring section

The distance between the idlers for the measuring section is specified by FMS based on the specifications and must be observed. This distance is usually in the range of 0.5 to 2 m.

(Specification FMS)

The measuring section must be at least 3 to 4-times of the belt widths away from belt transition length.

(Recommendation FMS)

4.6.5 Change of installation site

If the installation location of the conveyor belt is changed, the belt scale must be checked and recalibrated if necessary.

(Regulation test center)

4.6.6 Protection against the environment

If the conveyor belt is installed outdoors, protection against the effects of weather must be provided by the customer around the belt scale.

(Recommendation FMS)

4.6.7 Modifications to the conveyor belt or the scale

The following changes to the conveyor belt or the scale require calibration of the conveyor belt scale:

- Replacement of adjacent idler stations.
- Replacing the conveyor belt
- Change of the inclination

4.6.8 Belt tensioning device

The belt tension must be constant and kept free from temperature, wear, and load effects, among others. The conveyor belt must be equipped with a tensioning device. The wrap angle of the tensioning roller on the conveyor belt must be at least 90°.

(OIML R50-1 / regulation test center)

4.6.9 Maximum belt length

The overall belt length should not exceed 100m.

(FMS recommendation).

4.6.10 Belt cleaning

The conveyor belt must be provided with an effective cleaning device (e.g. scraper) in case of adhering bulk material, whereby no influence on the weighing operation must occur.

(OIML R50-1)

4.6.11 Adjacent idler stations

At least two idlers each before and after the measuring roller must be in the same plane as the measuring roller. The measuring roller and in each case the first idler roller before and after the measuring roller must be secured against displacement and marked with the serial number of the scale. If the diameters of the mentioned rollers are not the same, these rollers must be secured against disassembly.

(Regulation test center)

4.6.12 Concentricity of adjacent idlers

The adjacent idler rollers must have a precise concentricity to prevent vibrations of the conveyor belt.

(FMS regulation)

4.6.13 Inclination of the conveyor belt

The conveyor belt must run horizontally or with a constant inclination. The maximum slope depends on the material and must not be too large to prevent the material from moving.

(OIML R50-1, calibration requirement)

4.6.14 Belt emptying

Each weighing must start and end with an empty belt.

(OIML R50)

4.6.15 Taring, zeroing the scale

The conveyor belt scale must be zeroed after switching on and then at least every 3 hours. This procedure is fully automatic on the BMGZ750 at the press of a key during two belt cycles.

4.6.16 Reversible conveyor belts

With reversible belts, the calibration of the scale is only valid for the conveying direction for which the calibration was carried out. Calibration may only be carried out for one direction.

(Calibration requirement).

4.6.17 Error signal

If the belt scale is switched off or fails, the conveyor belt must be stopped or an acoustic or optical signal must be emitted.

(Regulation of the test center).

FMS provides a digital output (BMGZ OK) on the electronics for this purpose. The "BMGZ OK" output is active if the evaluation electronics are switched on and no error is present. The operator must ensure that if this relay drops out, the conveyor belt is stopped or an acoustic or optical signal is emitted.

5 Installation

Several versions of the evaluation unit are available.

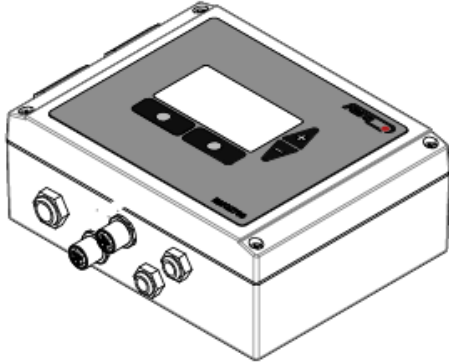


Illustration 3: BMGZ710.W Wall mount

- Unscrew the 4 screws on the cover with the membrane control panel and display
- The cover can now be opened
- The housing is screwed on through the 4 holes in the bottom of the housing



Illustration 4: BMGZ710.S Panel mount

- The panel must be prepared with a suitable recess and holes. See 10 Dimensions, page 46
- The housing is clamped to the sheet metal

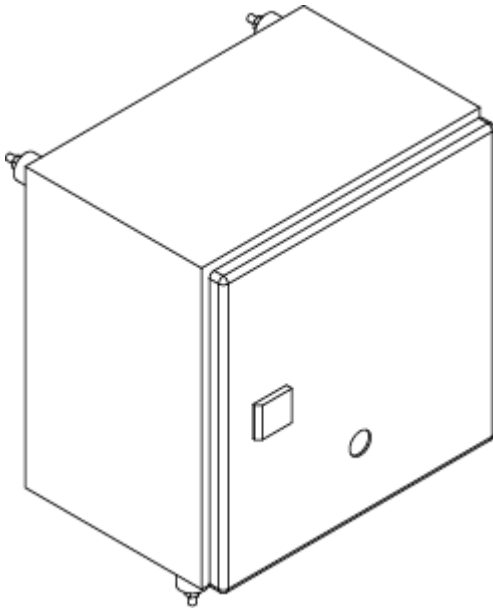


Illustration 5: BMGZ710.K Cabinet

- The cabinet is screwed on through the 4 holes in the back wall
- Use the rubber mounts if the system experiences vibrations

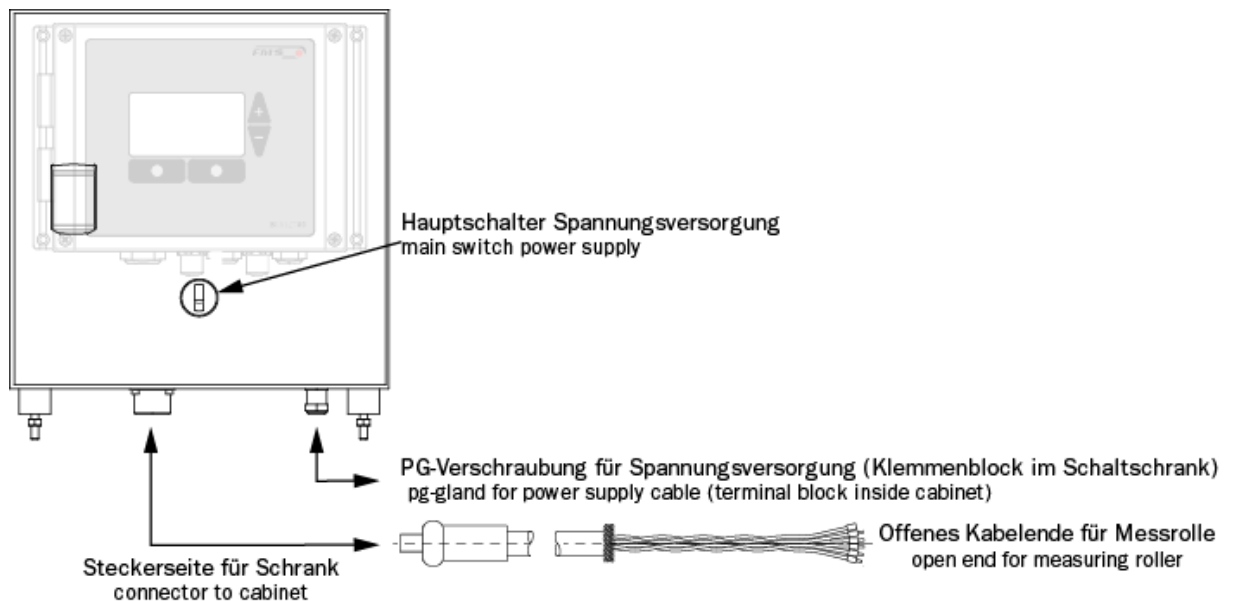


Illustration 6: Speciality BMGZ710.K

5.1 Electrical connection (see installation instructions for the FMS measuring roller)

The connection between the measuring roller and the evaluation unit must use the 10-core twisted-pair cable (5x2x0.75 mm²) provided.

The cable must be laid away from any power cables to ensure that no interference is induced in the measurement signal. On the measuring roller side, remove the plastic sheath of the cable over a length of approx. 14 cm.

The white wire is not required. Connect the shield to the earth terminal.

On the evaluation unit side, remove the plastic sheath over a length of approx. 25-54 cm. The white wire is not required. The shield has to have contact with the pg-gland.

The cable shield must be connected on both sides.

For the K version of the housing (cabinet), feed the cable with the 8-pin plug through the cabinet wall.

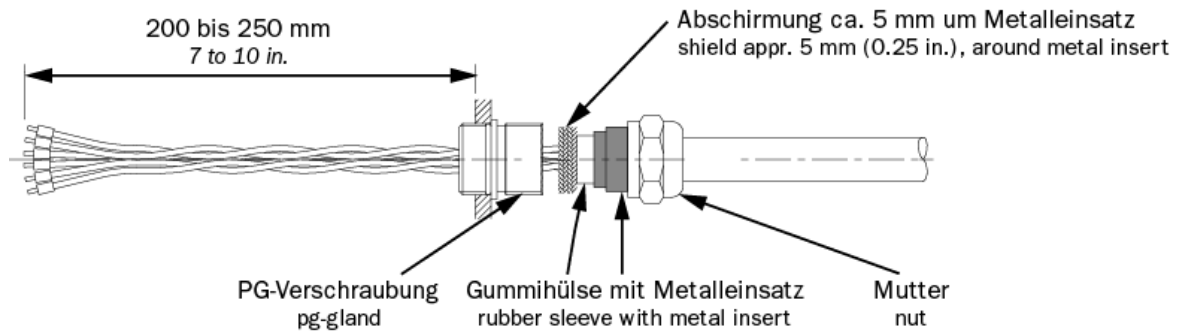


Illustration 7: Connection cable, evaluation unit side

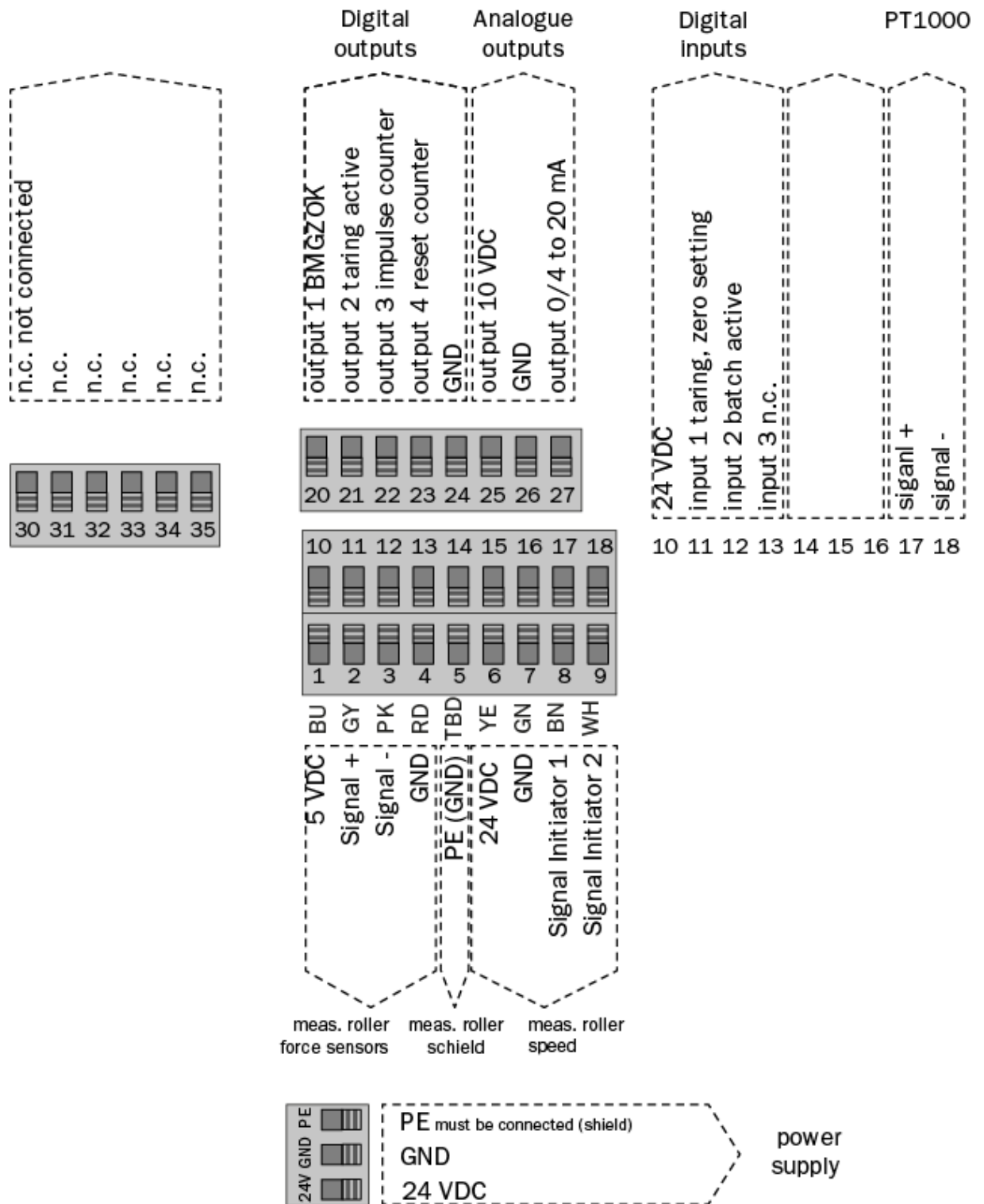


Illustration 8: Terminal assignment, BMGZ750

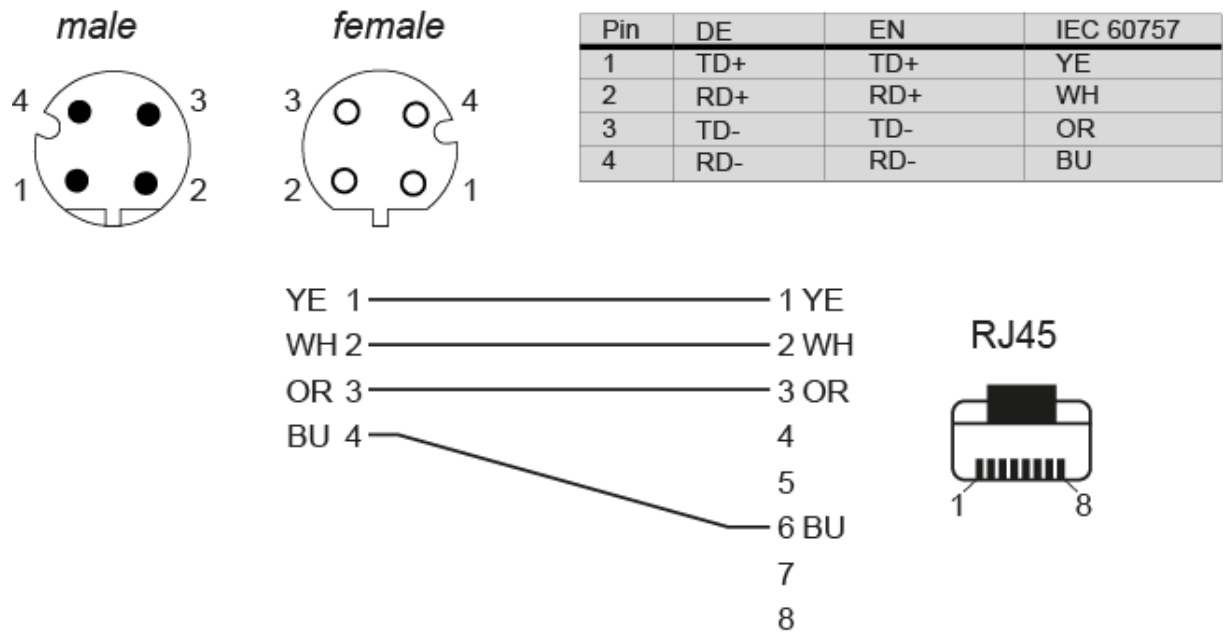


Illustration 9: ethernet connector M12, D-coded

Measuring roller

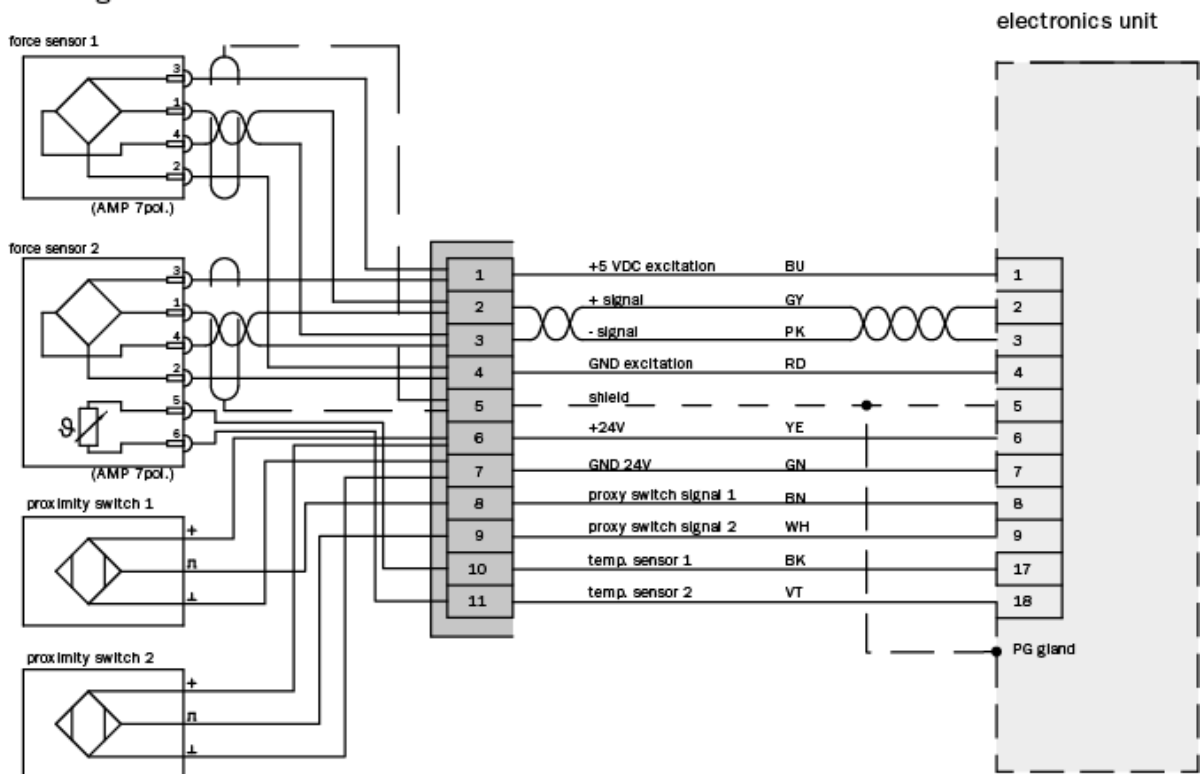


Illustration 10: Connection cable, calibratable measuring roller side, BMGZ061

6 Operation and interface

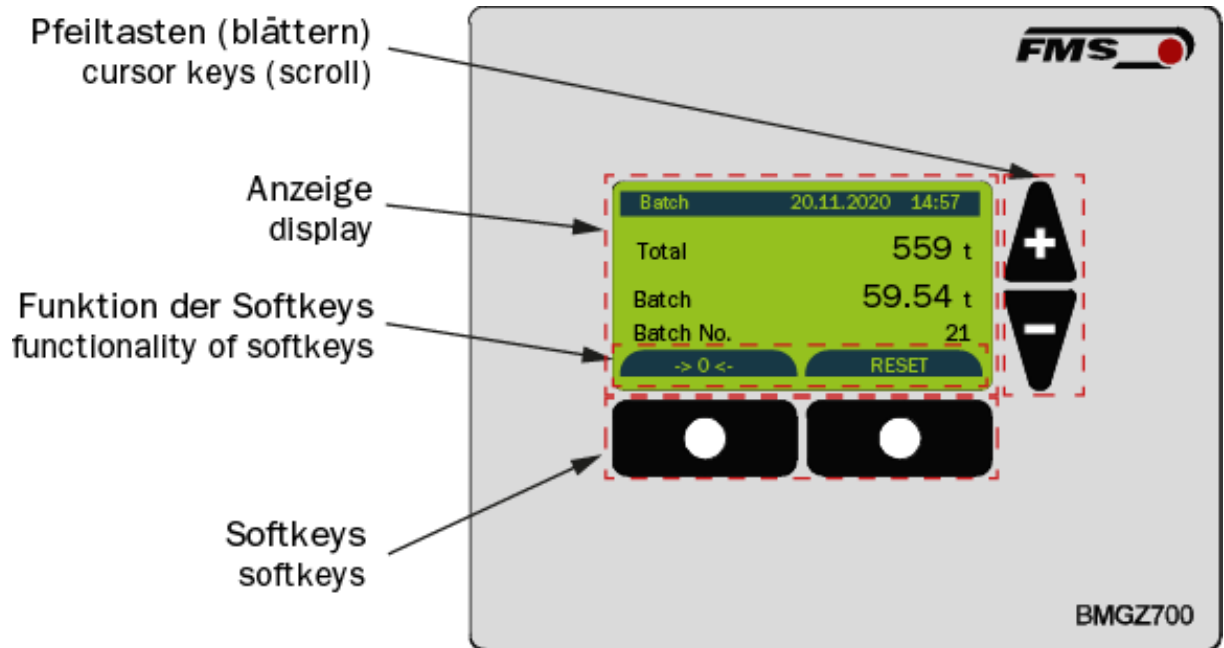



Illustration 11: Device view

6.1 Navigation, quick start

The menu is divided into two levels

To navigate between levels, use the softkeys (menu) or 

Level 1: Display of current system data with different representations

Level 2: CONFIGURATION

To enter the configuration level, press the softkey (menu) in the Home level

Machine parameters – One-time set-up of conveyor belt and measuring roller

System parameters – Country-specific parameters


Operating parameters – One-time configuration; inputs and outputs

Calibration – Input of correction factors

Alibi protocol – Fail-safe storage of batch data

Service – Access to system status and detailed display of error messages

Use the navigation keys  to select individual parameters

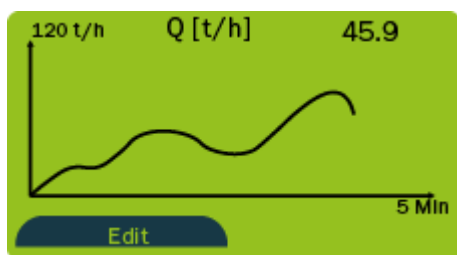
To select, press 

Levels, navigation		
Level	Navigation	Display
HOME		<p style="text-align: center;">Home</p>
		<p style="text-align: center;">Histogram</p>
		<p style="text-align: center;">Batch</p>
		<p style="text-align: center;">Zero setting</p>
		<p style="text-align: center;">Detail</p>

		Press "Menu"
CONFIGURATION		
		↩ Press
PARAMETER		

Table 1: Levels, display

6.2 Histogram



Pressing "Edit" takes you to the configuration of the display.

The "Scaling" parameter allows you to adjust the division of the vertical axis. The "Recording" parameter allows you to set the recording time in the horizontal axis.

7 Configuration

7.1 Machine parameters

The machine parameters directly affect the weighing results.

This parameter set is blocked by a seal in the calibratable version. This is implemented by a switch inside the housing that switches the digital input 3 “Seal”. To change the values, the switch must be set to “off”. A new official calibration must then be carried out.

The temperature reference values (see 7.2 Additional machine parameters for the calibratable version, page 23) are also protected by the switch and should not be changed.

Machine parameters						
Parameters	Unit	Selection	Default	Min.	Max.	No.
Offset	[Digit]		0	-32768	32767	1
Gain	[-]		1	0.1	10	2
Belt length	[m]		10	1	5000	3
Diameter	[mm]		108	10	1000	4
Pulse	[-]		4	1	100	5
Distance	[mm]		2000	100	5000	6
Nominal force	[N]		1000	1	5000	7
Max. Q	[t/h]		0	1	5000	54

Table 2: Machine parameters

7.1.1 Description of machine parameters

Machine parameters	
Name	Description
Offset	<p>The evaluation unit saves the value determined during taring / zero setting in [Digit].</p> <p>Unit Digit</p> <p>Min. -32768</p> <p>Max. 32768</p> <p>Default 0</p> <p>Increment 1</p>
Gain	<p>The value determined during calibration is saved under this parameter. If the automatic calibration cannot be used, a manually determined value can also be entered here.</p> <p>Unit -</p> <p>Min. 0100</p> <p>Max. 10000</p> <p>Default 1,000</p> <p>Increment 0,001</p>
Belt length	<p>The unrolled length of the conveyor belt is saved under this parameter. This value is required for taring.</p> <p>Unit m</p> <p>Min. 1</p> <p>Max. 5000</p> <p>Default 10</p> <p>Increment 1</p>
Diameter	<p>The diameter of the centre roller is saved under this parameter (see measuring roller nameplate).</p> <p>Unit mm</p> <p>Min. 10</p> <p>Max. 1000</p> <p>Default 108</p> <p>Increment 1</p>

Machine parameters	
Name	Description
Pulse	<p>The number of blades of the pulse generator is stored under this parameter, see measuring roller nameplate. This value corresponds to the number of pulses per revolution of the measuring roller.</p> <p>Unit -</p> <p>Min. 1</p> <p>Max. 100</p> <p>Default 4</p> <p>Increment 1</p>
Distance	<p>The distance between adjacent idlers is saved under this parameter. This value corresponds to the sum of the distances between the measuring roller and the preceding and following idler stations.</p> <p>Unit mm</p> <p>Min. 100</p> <p>Max. 5000</p> <p>Default 2000</p> <p>Increment 1</p>
Nominal force	<p>Nominal force of the used force measuring bearing. This value is indicated on the name plate of the measuring roller and the name plate of each force sensor.</p> <p>Unit N</p> <p>Min. 1</p> <p>Max. 5000</p> <p>Default 1000</p> <p>Increment 1</p>

Machine parameters	
Name	Description
Max. Q	<p>The maximum delivery rate Q of the belt scale can be stored in this parameter.</p> <p>If the current delivery rate falls below 5% of this value, the electronics no longer integrates. The measurement “pauses”, so to speak, until the delivery rate increases above the 5 % again. Batch counter and totalizer are not increased during this time. An error is displayed.</p> <p>Unit t/h</p> <p>Min. 0</p> <p>Max. 5000</p> <p>Default 1000</p> <p>Increment 1</p>

Table 3: Description of machine parameters

7.2 Additional machine parameters for the calibratable version

Parameters for the calibratable version					
Parameters	Unit	Default	Min.	Max.	No.
Direction of movement	-	Standard	inverse		44
Corr. offset -10	Digit	0	-32768	32767	32
Corr. offset -5	Digit	0	-32768	32767	33
Corr. offset 0	Digit	0	-32768	32767	34
Corr. offset +5	Digit	0	-32768	32767	35
Corr. offset +10	Digit	0	-32768	32767	36
Corr. offset +15	Digit	0	-32768	32767	37
Corr. offset +20	Digit	0	-32768	32767	38
Corr. offset +25	Digit	0	-32768	32767	39
Corr. offset +30	Digit	0	-32768	32767	40
Corr. offset +35	Digit	0	-32768	32767	41
Corr. offset +40	Digit	0	-32768	32767	42
Corr. offset +45	Digit	0	-32768	32767	43
Corr. gain -10	-	1,000	0,500	2,000	20
Corr. gain -5	-	1,000	0,500	2,000	21
Corr. gain 0	-	1,000	0,500	2,000	22
Corr. gain +5	-	1,000	0,500	2,000	23
Corr. gain +10	-	1,000	0,500	2,000	24
Corr. gain +15	-	1,000	0,500	2,000	25
Corr. gain +20	-	1,000	0,500	2,000	26
Corr. gain +25	-	1,000	0,500	2,000	27
Corr. gain +30	-	1,000	0,500	2,000	28
Corr. gain +35	-	1,000	0,500	2,000	29
Corr. gain +40	-	1,000	0,500	2,000	30
Corr. gain +45	-	1,000	0,500	2,000	31

Table 4: Parameters for the calibratable version

7.3 Description of the additional machine parameters for the calibratable version

System parameters	
Name	Description
Direction of movement	<p>The direction of rotation of the measuring roller is defined here.</p> <p>“Standard” definition: clockwise as seen from the connection side.</p> <p>Unit -</p> <p>Selection Standard, inverse</p> <p>Default Standard</p>
Corr. Offset xy °C	<p>Here the offset temperature drift of the measuring roller at xy °C is corrected.</p> <p>The value is entered at the factory at FMS.</p> <p>Unit Digit</p> <p>Min. -32768</p> <p>Max. 32768</p> <p>Default 0</p> <p>Increment 1</p>
Corr. Gain xy °C	<p>Here the gain temperature drift of the measuring roller at xy °C (see list) is corrected.</p> <p>The value is entered at the factory at FMS.</p> <p>Unit -</p> <p>Min. 0500</p> <p>Max. 2000</p> <p>Default 1,000</p> <p>Increment 0,001</p>

Table 5: Description of the additional parameters for the calibratable version

7.4 Operating parameters

Operating parameters						
Parameters	Unit	Selection	Default	Min.	Max.	No.
Pulse output	[kg]		100	1	1000	50
Current output		0 to 20; 4 to 20 mA	4 to 20 mA			51
Filter output	[Hz]		10.0	0.1	20.0	52
Scaling	[t/h]		1000.0	1.0	5000.0	53

Table 6: Operating parameters

7.4.1 Description of operating parameters

Operating parameters	
Name	Description
Pulse output	<p>This output emits a pulse each time the defined weight has passed the measuring roller. The weight corresponding to one pulse is stored under this parameter.</p> <p>Pulse duration 1 to 1000 ms, depending on delivery rate</p> <p>Unit kg</p> <p>Min. 1</p> <p>Max. 1000</p> <p>Default 100</p> <p>Increment 1</p>
Current output	<p>Two proportional analogue outputs are available for the delivery rate.</p> <p>The type of current output signal is selected here.</p> <p>Current and voltage outputs can be used independently.</p> <p>Unit -</p> <p>Selection 0 to 20 mA, 4 to 20 mA</p> <p>Default 4 to 20 mA</p>
Filter output	<p>First-order low-pass filter for the analogue output to filter out undesirable fluctuations.</p> <p>The threshold frequency is configured here.</p> <p>This filter is independent of the other filters.</p> <p>Unit Hz</p> <p>Min. 0.1</p> <p>Max. 20.0</p> <p>Default 10.0</p> <p>Increment 0.1</p>

Operating parameters	
Name	Description
Scaling (output)	<p>Here, you can define the delivery rate that generates the maximum output signal (10 V or 20 mA) at the analogue outputs.</p> <p>The resolution is 12 bits.</p> <p>Unit t/h</p> <p>Min. 1.0</p> <p>Max. 5000.0</p> <p>Default 1000.0</p> <p>Increment 0.1</p>

Table 7: Description of operating parameters

7.5 System parameters

System parameters						
Parameters	Unit	Selection	Default	Min.	Max.	No.
Language	-	German, English	German			1
Filter display	Hz		1.0	0.1	1.0	2
Date format	-	DD.MM.Y YYY, MM.DD.Y YYY	DD.MM.YYYY			3
Time/date	-			00:00 01.01.202 0	23:59 31.12.2099	4
IP address	-		192.168.0.90	0	255	5
Subnet mask	-		255.255.255.0	0	255	6

Table 8: System parameters

7.5.1 Description of system parameters





System parameters	
Name	Description
Language	<p>This parameter allows the display language to be selected. Either German or English can be selected.</p> <p>Unit -</p> <p>Selection German, English</p> <p>Default German</p>
Filter display	<p>First-order low-pass filter to filter out undesirable fluctuations from the display. The threshold frequency of the filter is configured here.</p> <p>Unit Hz</p> <p>Min. 0.1</p> <p>Max. 10</p> <p>Default 1.0</p> <p>Increment 0.1</p>
Date format	<p>Here, the format of the displayed date can be configured.</p> <p>Unit -</p> <p>Default DD.MM.YYYY</p> <p>Increment DD.MM.YYYY, MM.DD.YYYY</p>

System parameters	
Name	Description
Time/date	<p>The evaluation unit has a built-in real-time clock (RTC). To configure the time, the current time and date can be entered into this parameter.</p> <p>This information is stored in the alibi memory with the corresponding batch.</p> <p>Unit -</p> <p>Min. 00:00 01.01.2020</p> <p>Max. 23:59 31.12.2099</p>
IP address	<p>Static IP address of the evaluation unit</p> <p>The IP address is entered in four blocks.</p> <p>Unit -</p> <p>Min. 0</p> <p>Max. 255</p> <p>Default 192.168.0.90</p>
Subnet mask	<p>The subnet mask is entered in four blocks.</p> <p>Unit -</p> <p>Min. 0</p> <p>Max. 255</p> <p>Default 255.255.255.0</p>

Table 9: Description of system parameters

7.6 Service

Service		
Parameters	Unit	Display
A/D values, raw	Digit	Raw value
Strain gauge, raw	mV	Raw value
Travel	mV	Raw value minus offset
Force	N	Calculated
Belt	Kg/m	Weight
Digital inputs:	-	Status: 0 = inactive; 1 = active Taring Batch active Seal Pulse (input, initiator 1) Pulse check (input, initiator 2)
Digital outputs	-	Status: 0 = inactive; 1 = active BMGZ ok Taring active Remote counter pulse Remote counter reset
PT1000	°C	BMGZ750 and BMGZ750.PNET only Current temperature in the measuring roller in °C
Temperature	°C	Temperature value in the measuring roller in °C
Temperature offset		Factory setting: Please do not change!
CRC	-	Cyclic redundancy check: Monitoring of transmission errors and changes in metrologically relevant parameters.
Error code	-	0 no error 1 Measuring roller overloaded Check measuring roller cable. Check for short circuit → strain gauge input (ADC) is over limit (> +/- 32000 Digits) → reduce load on measuring roller. 2 Analog output overloaded

		<p>Q [t/h] > scaling >10V or >20mA. Check scaling The analog output (DAC) is limited (> 4095 Digits), which would lead to more than 10V or 20mA. → check scaling</p> <p>3 Analog output < minimum Q [t/h] < 0 <0V or <0/4mA Check Zeroing The analog output (DAC) shows 0 Digits. There is a small hysteresis that as Q < -0.2 to indicate the error. → start zero setting or adjust offset manually.</p> <p>4 Impulse output too fast. The impulse output is no longer correct. The load is higher that the output can indicate. → Reduce load or enhance the parameter of the impulse output [kg] so that more weight per pulse can be outputted.</p> <p>5 false pules (from proximity switches) Detection of incorrect direction of rotation. → Check proximity switches or connection cables</p> <p>6 CRC Error → In the service menu under the CRC, the currently calculated CRC can be declared as valid. In the unsealed state, the "Enter" key and the "+" key must be pressed together for 3 seconds.</p> <p>7 Memory full → Contact FMS</p>
<p>Device offset</p>		<p>Factory setting: Please do not change! Can be changed in case of replacement or repair.</p> <p>Press and hold the  and  keys simultaneously for > 5 sec. to access this parameter.</p>
<p>Device gain</p>		<p>Factory setting: Please do not change! Can be changed in case of replacement or repair.</p> <p>Press and hold the  and  keys</p>

		simultaneously for > 5 sec. to access this parameter.
Totalizer		<p>Can be changed in case of replacement or repair.</p> <p>Press and hold the ← and ▲ keys simultaneously for > 5 sec. to access this parameter.</p>

Table 10: Service

7.7 Digital inputs

The functions of the digital inputs are preconfigured and cannot be changed.

7.7.1 Digital input 1 (taring/zero setting)

Setting this input begins the procedure for zero setting. Setting the input to inactive aborts the ongoing procedure.

Another activation aborts the ongoing procedure.

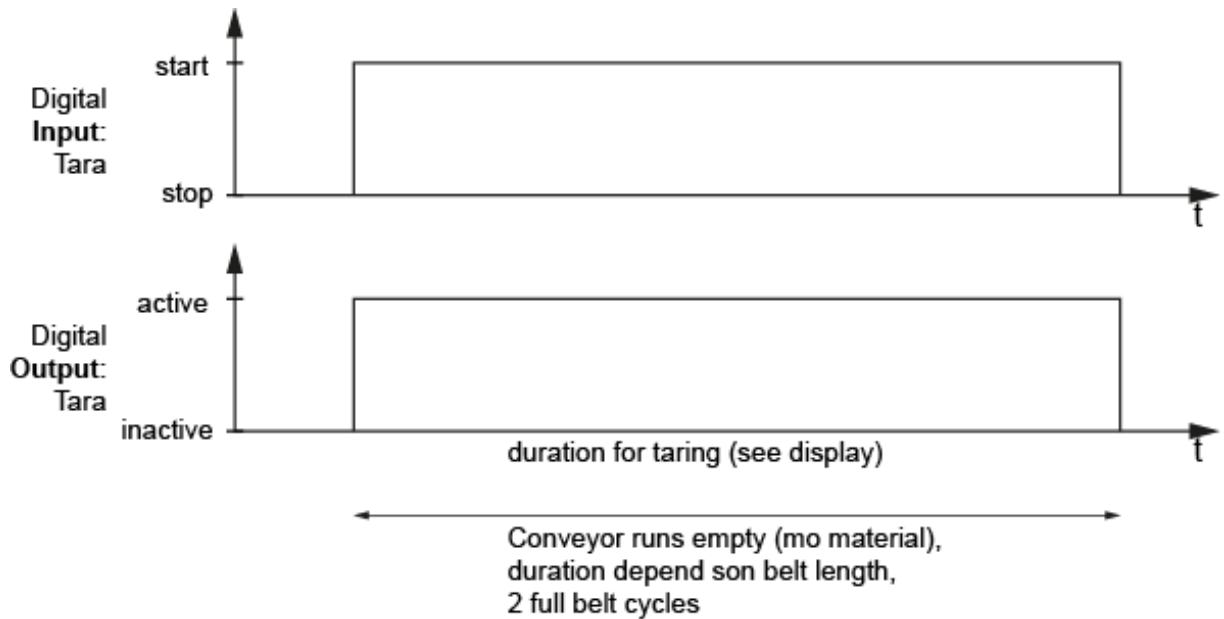


Illustration 12: context dig. in- and output

7.7.2 Digital input 2 (batch active)

Setting this input starts the weighing of a new batch. The batch counter is incremented, and the batch weight is set to zero.

If the digital input 'Batch active' is set, the batch counter (quantity) is zeroed (identical to when the Reset softkey is pressed) and the batch no. is increased by 1. While this input is active, a batch is weighed. If the input becomes passive, the batch no., the weighed quantity (batch counter), date and time are saved in the alibi memory. This ensures that the weighed quantities are traceable.

The batch counter may only be reset if the delivery rate is $> 5\%$ of the max. delivery rate. Otherwise, an error message “Batch counter cannot be zeroed because the delivery rate is $< 5\%$ of the max. delivery rate” is output. While this input is active, a batch is weighed. If the input becomes passive, the weighed quantity (batch counter), the totaliser, date and time are saved in the alibi memory. This ensures that the weighed quantities are traceable.

7.7.3 Digital input 3 (seal)

In the calibratable version, this digital input is used as a seal. If this digital input is active via the switch in the housing, then the calibratable parameters can be accessed, otherwise not.

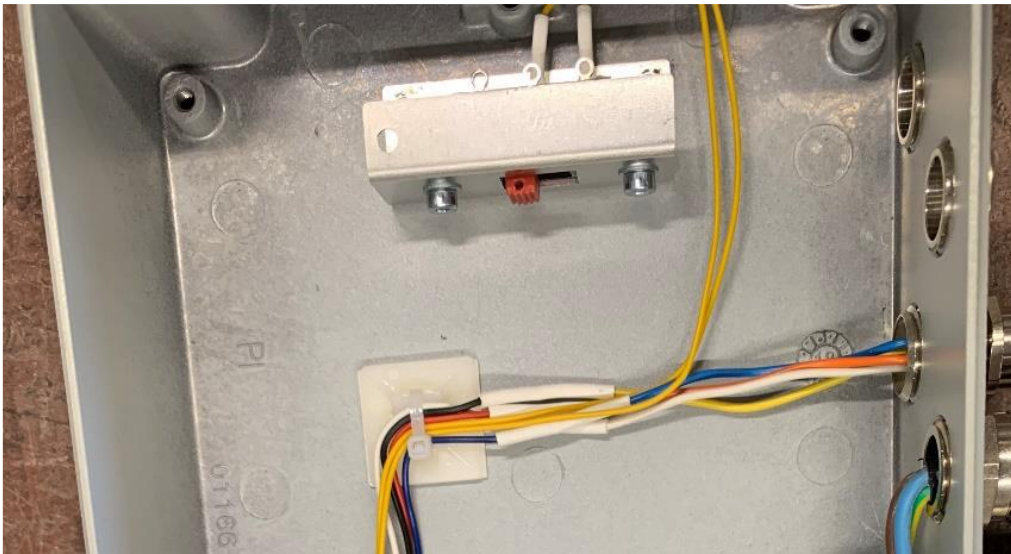


Illustration 13: “Seal” switch in the housing

7.8 Digital outputs

The functions of the digital outputs are pre-configured and cannot be changed.

7.8.1 Digital output 1 (BMGZ OK)

24 VDC, max. 100 mA

This output is always “active” if the evaluation unit is switched on and there is no error. Any error deactivates the output (e.g., “belt not running”, “negative delivery rate”, or “overload”). An error message is also shown on the display. An error message is also shown on the display.



Audible or visual warning

The operator must ensure that if this digital output switches off, the conveyor belt is stopped, or an audible or visual signal is given.

7.8.2 Digital output 2 (taring active)

24 VDC, max. 100 mA

If taring (zero setting) has been started, this output is activated until the procedure is completed or cancelled. As long as the output is active, no material shall be fed over the conveyor.

See 8.1 Taring (zero setting)35

7.8.3 Digital output 3 (remote counter pulse)

24 VDC, max. 100 mA, pulse duration 1 to 1000 ms, depending on the delivery rate.

After a defined delivery rate, a pulse is output here. The delivery rate is defined in the “pulse output” operating parameter.

The pulse can for example be used for a remote counter or as a PLC input.

The pulse duration is symmetric (duty cycle 50 %).

7.8.4 Digital output 4 (remote counter reset)

24 VDC, max. 100 mA, 100 ms

Activation resets the remote counter to zero.

This can also be performed directly through the controls on the device via “Reset” batch.

If the “Reset” softkey is pressed and confirmed with the “Yes” softkey, the batch counter is deleted, and a pulse is emitted on the “remote counter reset” digital output for 100 ms. This allows a remote counter to also be reset to zero, for example.

8 Standard procedures

8.1 Taring (zero setting)

Taring ensures that no weight is integrated when the belt is idling to avoid weighing errors. The weight of the belt and the measuring roller are subtracted from the measurement.

The “Taring” procedure can be started via the “Taring” digital input or on the home screen via “→0←”.

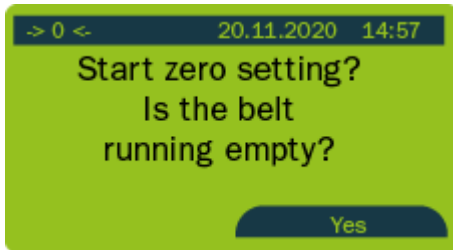


Illustration 14: Taring home screen

The taring procedure calculates the taring time from the “belt length” parameter and the speed and ensures that the A/D value is determined, averaged, and the offset value calculated over two belt revolutions. This value is then saved under the “Offset” parameter.

To do this, proceed as follows:

- Switch to the “->0<-” screen
- Start the conveyor belt without any load
- Start the procedure by pressing the “Yes” softkey
- The remaining time is shown on the display. The procedure can be stopped at any time by pressing the “Cancel” softkey.
- When the procedure is stopped, the newly calculated offset value is displayed and saved under the “Offset” parameter.

Multiple taring throughout the day

The belt tension directly affects the measurement results.

Strong temperature variations throughout the day will affect the belt tension, which will be directly reflected in the measurement results.

Check the belt tension regularly, and perform taring in the morning and early afternoon, for example.



Measurement accuracy

Errors or inaccurate work during taring and calibration will directly affect the accuracy of the conveyor belt scales.

Ensure that taring is performed carefully.



Setting the “Taring” digital input begins the recalculation of the offset. The “Taring active” digital output is set until the procedure is completed or aborted. If the “Taring” input is reset before the remaining time has elapsed, the procedure is aborted, the “Taring active” digital output is reset, and the offset value is not changed.

8.2 Calibrating

The belt scale must be calibrated at start-up to ensure that the evaluation unit can correctly calculate the flow rate.

- Open housing
- Set calibration switch S1 inside the housing (digital input 3 “Seal”) to “on”.
- Check or enter the belt length, diameter, pulse, distance, nominal force, max. delivery rate parameters
- Run the conveyor belt until empty
- Press “Reset” on the home screen
- The batch amount is set to 0 t and the batch counter is incremented by 1.
- Load batch onto truck with known tare weight.
- Stop conveyor
- Weigh truck on platform or truck scale
- Compare the currently displayed batch quantity with the actual weight as weighed on the truck
- To adjust, select the “Calibration” menu item in the configuration (menu)

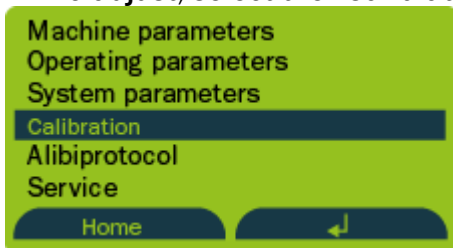


Illustration 15: Calibration

- Pressing “←” activates the input
- You can use the cursor keys to enter the actual weighed quantity under “Reference value”.
- Press “Calculate”
- The display will show: “Calibration complete”. The newly calculated gain factor “Gain” will be displayed and saved in the background under the “Gain” parameter.
- Compare the determined value with the display of the conveyor belt scale (batch quantity). If the deviation is greater than $\pm 1\%$, the actual weight must be communicated to the conveyor belt scale. This is done through the Calibration parameter function.
- Set calibration switch S1 inside the housing (digital input 3 “Seal”) to “off”.
- Close the housing and seal it in the presence of the official calibration supervisor.

8.3 Manual weighing of a batch - with saving in the alibi protocol

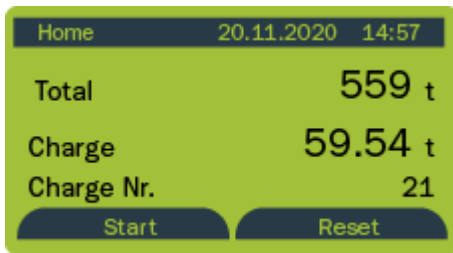


Illustration 16: Manual weighing of a batch with saving in the alibi protocol

- Start the conveyor belt without any load
- Press the “Start” softkey on the “Batch” home screen
- The batch amount is set to zero
- The batch counter is incremented
- Run the desired amount over the conveyor system.
- End loading and run the belt until empty
- The display will now show the quantity that has just been conveyed under “Batch”
- To end the batch, press the “Stop” softkey.

After the measurement is complete, the values (start time, end time, batch amount, and batch number) are automatically and securely saved in the so-called alibi protocol.

You can retrieve data from the alibi protocol via the web browser or in the configuration under the “Alibi protocol” menu item.

9 Configuration via web interface

9.1 Peer-to-peer connection

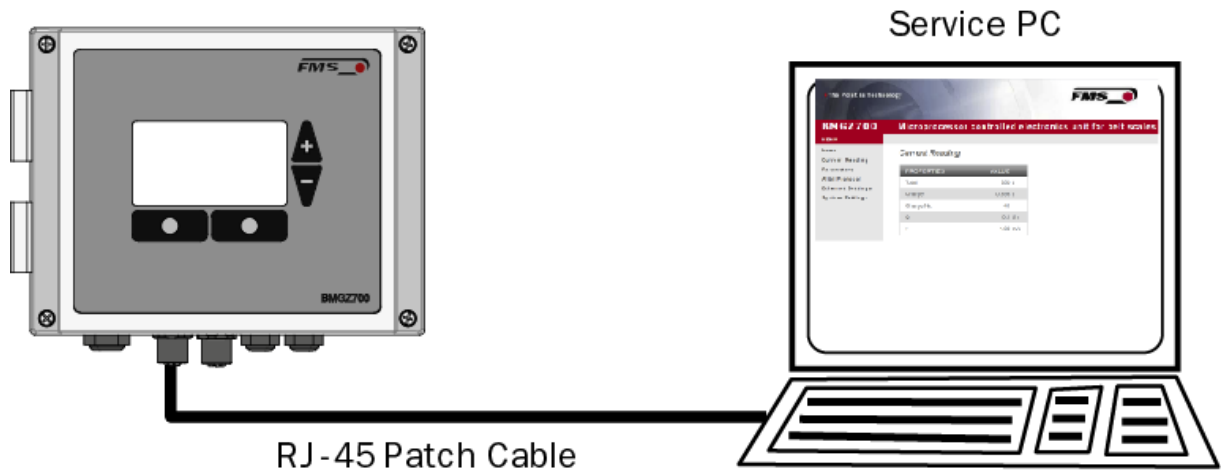


Illustration 1: Peer-to-peer connection

Before you connect the computer to the evaluation unit with the patch cable, you must assign a static IP address to your PC. The two devices can then communicate via web browser.

If the web guiding controller is already connected to a network (e.g., LAN) via a switch, you can skip the following instructions.

Settings for MS Windows 7:

- Connect the PC and evaluation unit with a patch cable
- Start up the PC and evaluation unit
- Click the start button on the PC (bottom left corner of screen)
- Click on "Control Panel"
- Double-click on LAN connection

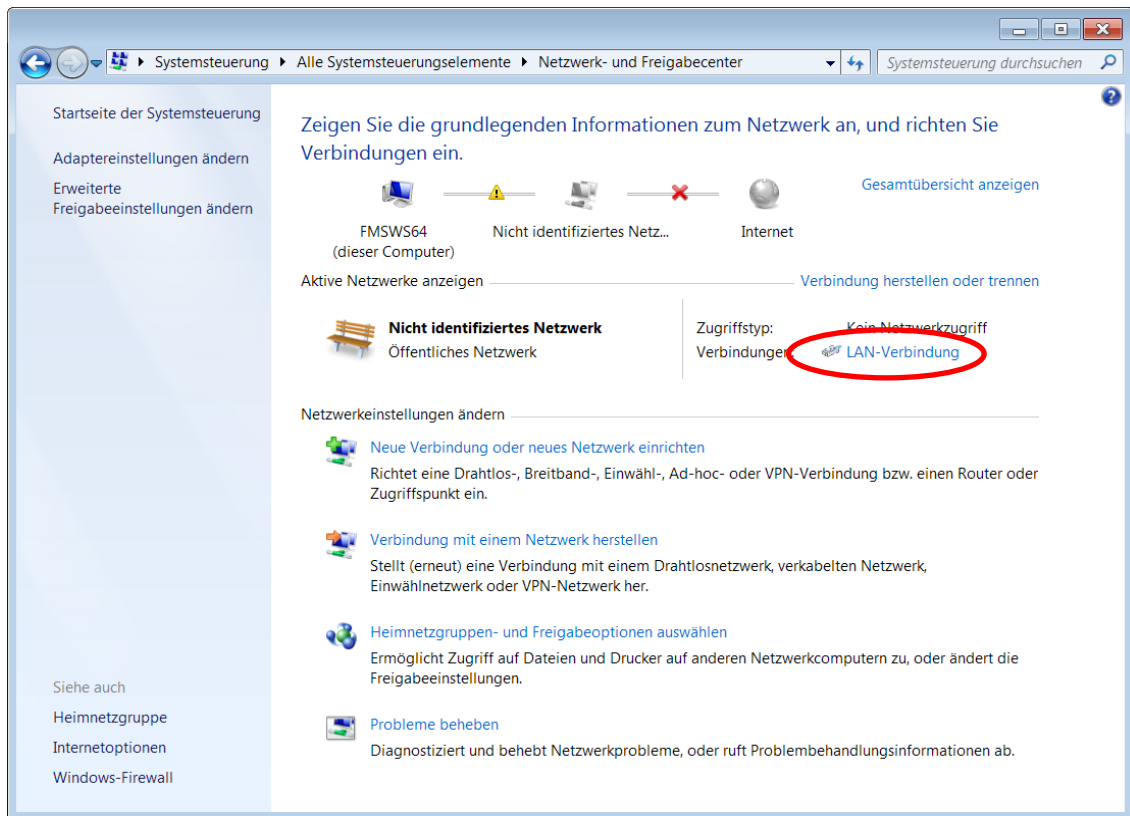


Illustration 17: Status of LAN connection

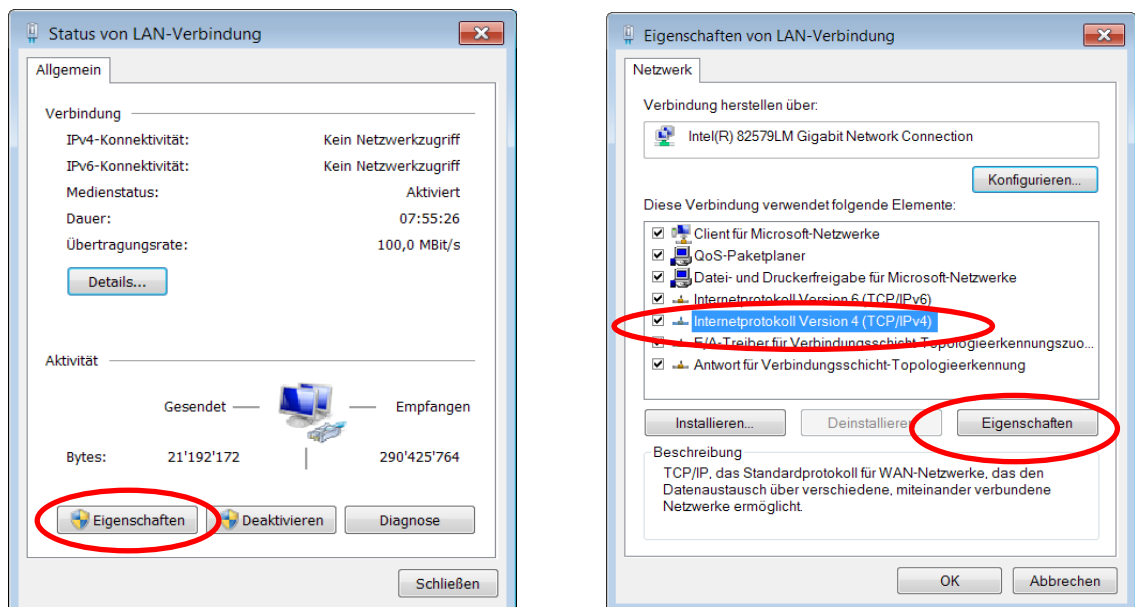


Illustration 18: Status of LAN connection

- Select "Properties"
- The "Local Area Connection Properties" window will open
- Select "Internet Protocol Version 4 (TCP/IPv4)".
- Select "Properties". The corresponding window will open.

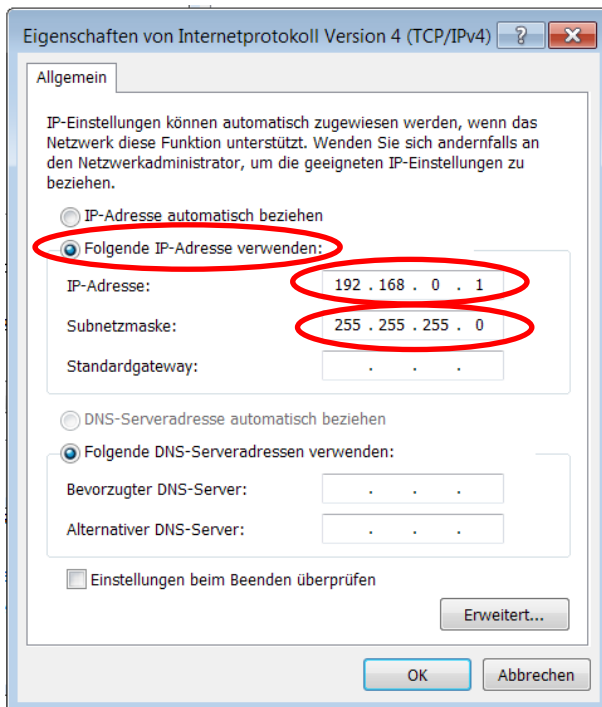


Illustration 19: Internet protocol properties

- Select “Use the following IP address:”
- Enter the PC address (e.g., 192.168.000.1)
- In the subnet mask, enter: 255 255 255 000 255 255 255 000
- Close the window with “OK”.
- Close all other windows

The computer is now ready to communicate with the evaluation unit:

- Open a web browser (Microsoft Internet Explorer, Mozilla Firefox, etc.)
- The factory default setting of the IP address of the evaluation unit is 192.168.000.090.
- Enter this IP address in the format 192.168.0.90 into the input field and confirm with “Enter”.
- The home screen will open.

9.2 Home screen



Illustration 20: Homepage with device information

The homepage provides information about general device properties, such as serial number and software version.

The menu on the left side of the screen allows navigation on the page.

9.3 Current Reading

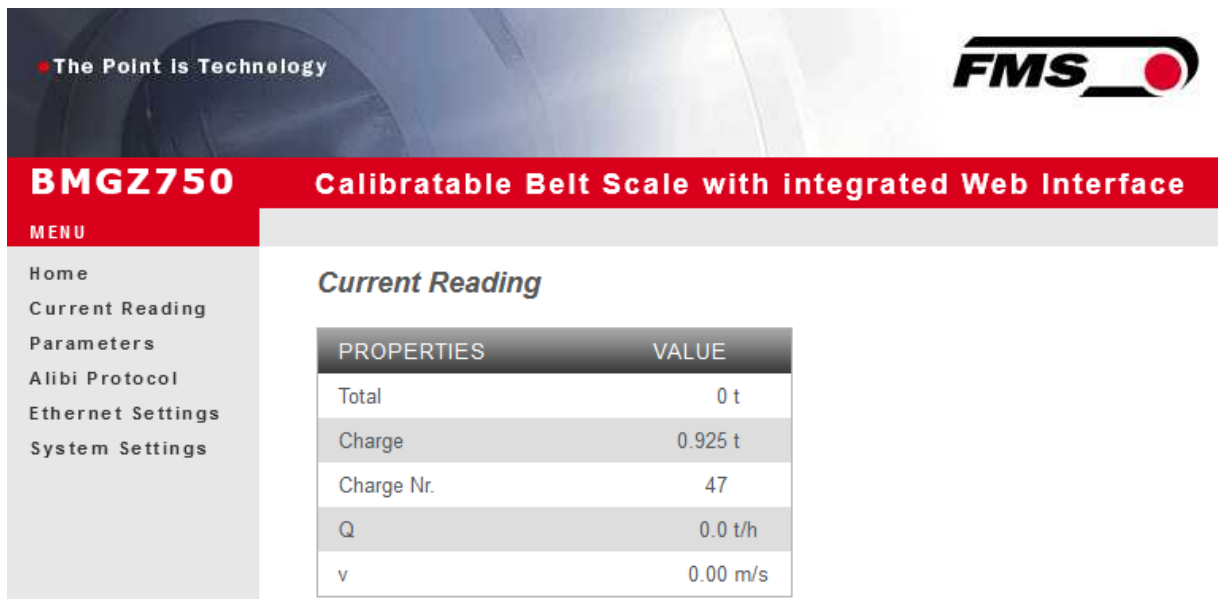


Illustration 21: Current Reading (current measured values)

The current reading website shows all current values

9.4 Parameters

The Parameters page allows you to modify the parameters.

In the PROFINET environment, this is usually done from the PLC.

Parameters

MACHINE	
PROPERTIES	VALUE
Offset	<input type="text" value="5194"/>
Gain	<input type="text" value="1.000"/>
Band length	<input type="text" value="10"/> m
Diameter	<input type="text" value="108"/> mm
Impulses	<input type="text" value="4"/>
Distance	<input type="text" value="2000"/> mm
Nominal Force	<input type="text" value="1000"/> N
Max. Q	<input type="text" value="0"/> t/h
Direction	<input type="text" value="Standard"/> ▾

OPERATING	
PROPERTIES	VALUE
Impulse output	<input type="text" value="100"/> kg
Current output	<input type="text" value="4..20mA"/> ▾
Filter frequency output	<input type="text" value="10.0"/> Hz
Scaling output	<input type="text" value="1000.0"/> t/h

SYSTEM	
PROPERTIES	VALUE
Display language	<input type="text" value="English"/> ▾
Display filter	<input type="text" value="1.0"/> Hz
Date format	<input type="text" value="DD.MM.YYYY"/> ▾
Recording time	<input type="text" value="1"/> Min
Histogram scaling	<input type="text" value="20"/> t/h

DIAGRAM	
PROPERTIES	VALUE
Recording time	<input type="text" value="1"/> Min
Histogram scaling	<input type="text" value="20"/> t/h

Illustration 22: Parameters sealed, view with sealed / calibrated electronics

• The Point Is Technology

BMGZ750 **Calibratable Belt Scale with integrated Web Interface**

MENU

- Home
- Current Reading
- Parameters
- Alibi Protocol
- Ethernet Settings
- System Settings

Parameters

M A C H I N E	
PROPERTIES	VALUE
Offset	5194
Gain	1.000
Band length	10 m
Diameter	108 mm
Impulses	4
Distance	2000 mm
Nominal Force	1000 N
Max. Q	0 t/h
Direction	Standard

O F F S E T C O R R .	
PROPERTIES	VALUE
Corr. Offset -10 °C	0
Corr. Offset -5 °C	0
Corr. Offset 0 °C	0
Corr. Offset +5 °C	0
Corr. Offset +10 °C	0
Corr. Offset +15 °C	0
Corr. Offset +20 °C	0
Corr. Offset +25 °C	0
Corr. Offset +30 °C	0
Corr. Offset +35 °C	0
Corr. Offset +40 °C	0
Corr. Offset +45 °C	0

G A I N C O R R .	
PROPERTIES	VALUE
Corr. Gain -10 °C	1.000
Corr. Gain -5 °C	1.000
Corr. Gain 0 °C	1.000
Corr. Gain +5 °C	1.000
Corr. Gain +10 °C	1.000
Corr. Gain +15 °C	1.000
Corr. Gain +20 °C	1.000
Corr. Gain +25 °C	1.000
Corr. Gain +30 °C	1.000
Corr. Gain +35 °C	1.000
Corr. Gain +40 °C	1.000
Corr. Gain +45 °C	1.000

O P E R A T I N G	
PROPERTIES	VALUE
Impulse output	100 kg
Current output	4...20mA
Filter frequency output	10.0 Hz
Scaling output	1000.0 t/h

S Y S T E M	
PROPERTIES	VALUE
Display language	English
Display filter	1.0 Hz
Date format	DD.MM.YYYY
Recording time	1 Min
Histogram scaling	20 t/h

D I A G R A M	
PROPERTIES	VALUE
Recording time	1 Min
Histogram scaling	20 t/h

Illustration 23: Parameters unsealed, view with electronics not sealed / uncalibrated.

In this state, the parameters shown above can be changed.

Press “Save changes” to save any modifications, or they will be lost.

9.5 Alibi protocol

BMGZ750 Calibratable Belt Scale with integrated Web Interface

MENU

- Home
- Current Reading
- Parameters
- Alibi Protocol
- Ethernet Settings
- System Settings

Alibi Memory

INDEX	START	END	CHARGE NR	CHARGE	TOTAL	MODE
46	12.04.2021 13:17:12	12.04.2021 13:17:13	46	0.000 t	874 t	0
45	08.04.2021 12:23:59	19.10.2021 16:44:14	44	0 t	0 t	255
44	08.04.2021 11:54:20	19.10.2021 16:14:35	43	0 t	0 t	255
43	01.02.2021 10:04:25	01.02.2021 10:04:38	42	0.495 t	551 t	0
42	18.01.2021 08:53:05	18.01.2021 08:53:10	39	0.000 t	549 t	0
41	14.01.2021 16:01:49	14.01.2021 16:02:26	38	0.052 t	549 t	0
40	28.10.2020 17:37:43	10.05.2021 21:57:58	36	0 t	0 t	255
39	28.10.2020 17:35:41	28.10.2020 17:36:05	35	0.064 t	547 t	0
38	28.10.2020 17:34:05	28.10.2020 17:34:13	33	0.000 t	547 t	0
37	28.10.2020 17:17:50	28.10.2020 17:18:05	32	0.045 t	547 t	0

Navigation: |< << < 46 > >> >|

Illustration 24: Alibi protocol

Index – consecutive numbering

Start – start time and date of the batch measurement

End – end time and date of the batch measurement

Batch no. – saved batch number; missing batch numbers correspond to measurements made with “Reset” that were not saved in the alibi protocol.

Batch – batch amount

Total – value of totalizer at the end time

Mode – validity of measurement; invalid measurements are shown crossed out.

9.6 Ethernet settings

BMGZ750 Calibratable Belt Scale with integrated Web Interface

MENU

- Home
- Current Reading
- Parameters
- Alibi Protocol
- Ethernet Settings
- System Settings

Ethernet Settings

PROPERTIES	VALUE
Device MAC address	00-02-a2-4c-02-15
Device IP address	192.168.0.93
Subnet Mask	255.255.255.0
Gateway IP address	192.168.0.1

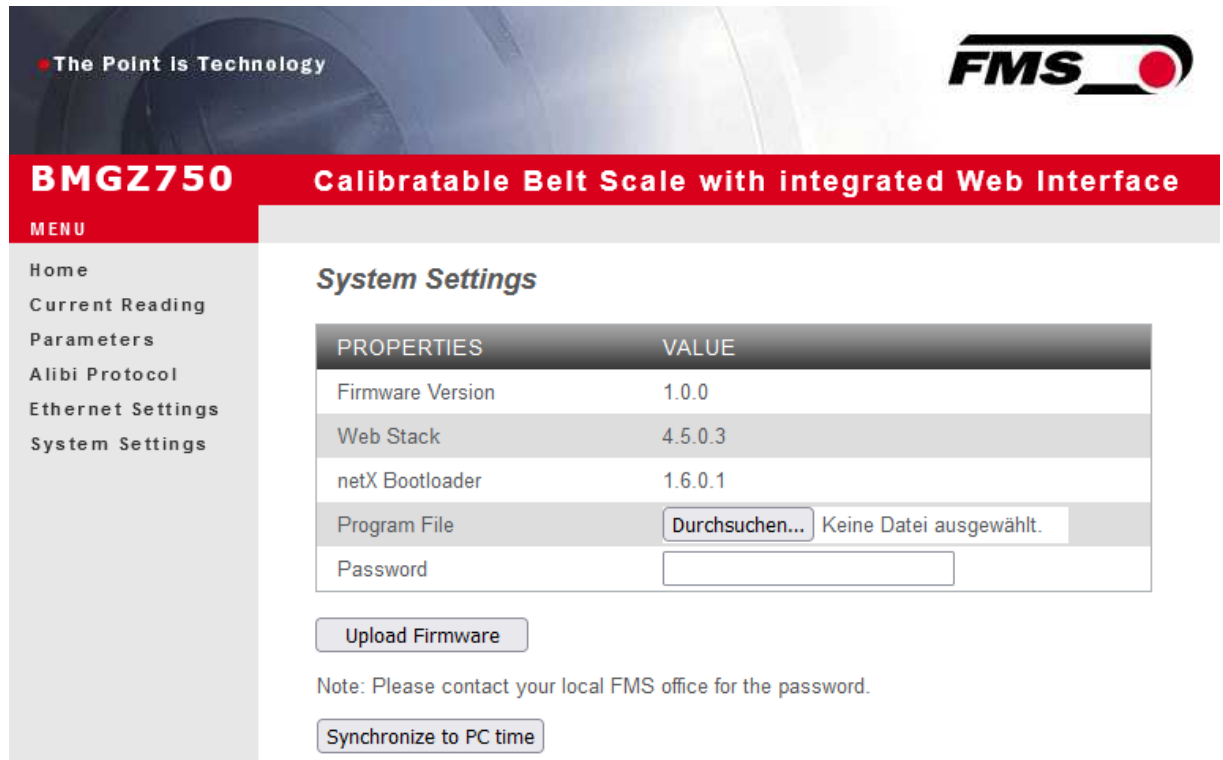
Save changes

Note: Saving of new settings causes an immediate reset and must be validated within a period of 3 minutes otherwise the original settings will be returned. This ensures that invalid settings do not render a device unreachable.

Illustration 25: Ethernet settings

9.7 System settings

The internal firmware version can be seen on the system settings page. New firmware can also be loaded here.



BMGZ750 Calibratable Belt Scale with integrated Web Interface

MENU

- Home
- Current Reading
- Parameters
- Alibi Protocol
- Ethernet Settings
- System Settings

System Settings

PROPERTIES	VALUE
Firmware Version	1.0.0
Web Stack	4.5.0.3
netX Bootloader	1.6.0.1
Program File	<input type="button" value="Durchsuchen..."/> Keine Datei ausgewählt.
Password	<input type="text"/>

Note: Please contact your local FMS office for the password.

Illustration 26: System settings

The latest firmware files can be found in the download section of our website.

Use the “Synchronize to PC time” button to transfer the time and date set in the connected PC to the evaluation unit.

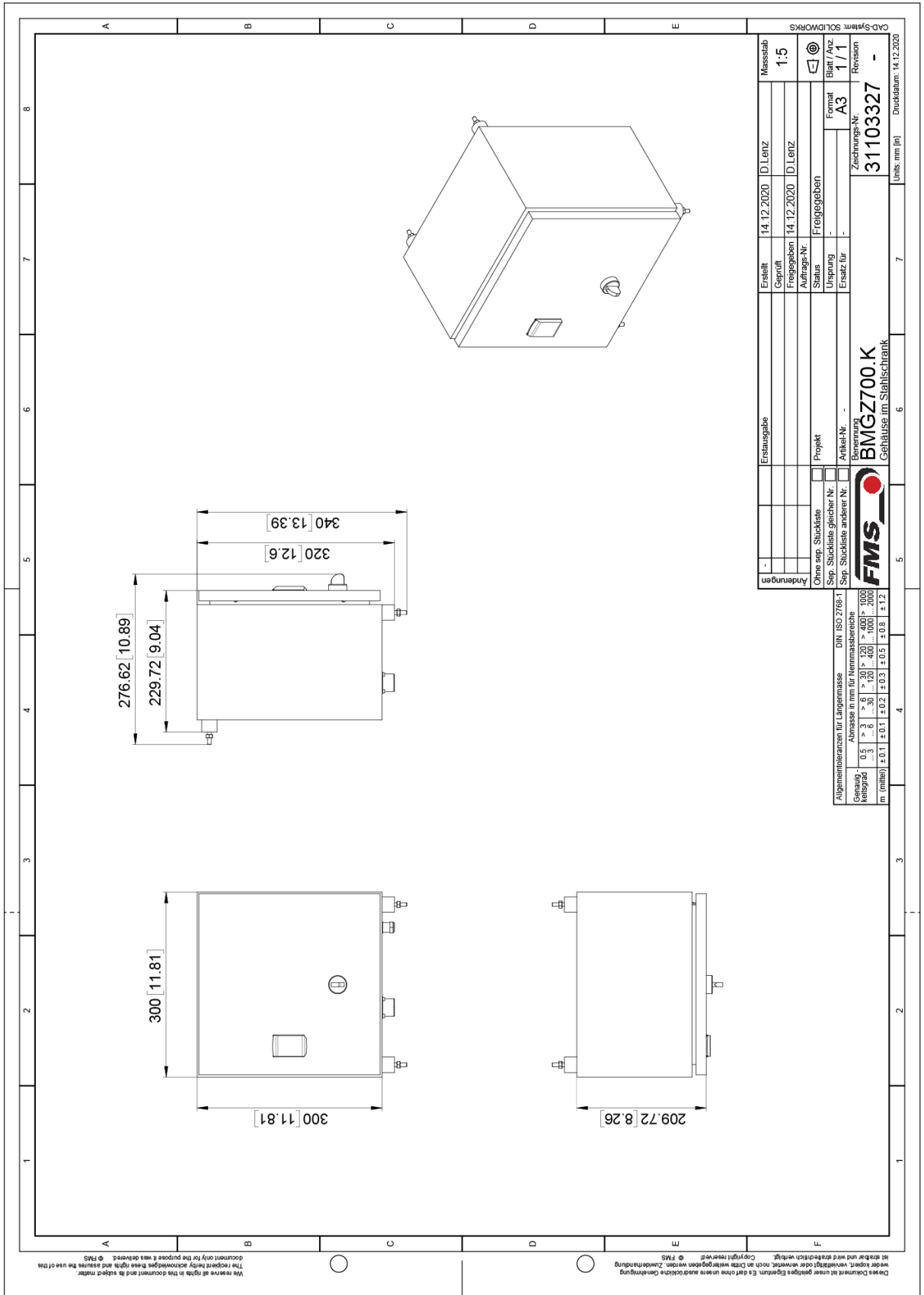


Illustration 29: Dimensions, BMGZ710.K

11 Optional Ethernet interface – PROFINET

A PROFINET interface is available for the evaluation units of the BMGZ700 series with the .PNET option.

BMGZ710.PNET - standard version, not calibratable, see separate operating manual

BMGZ750.PNET – calibratable version

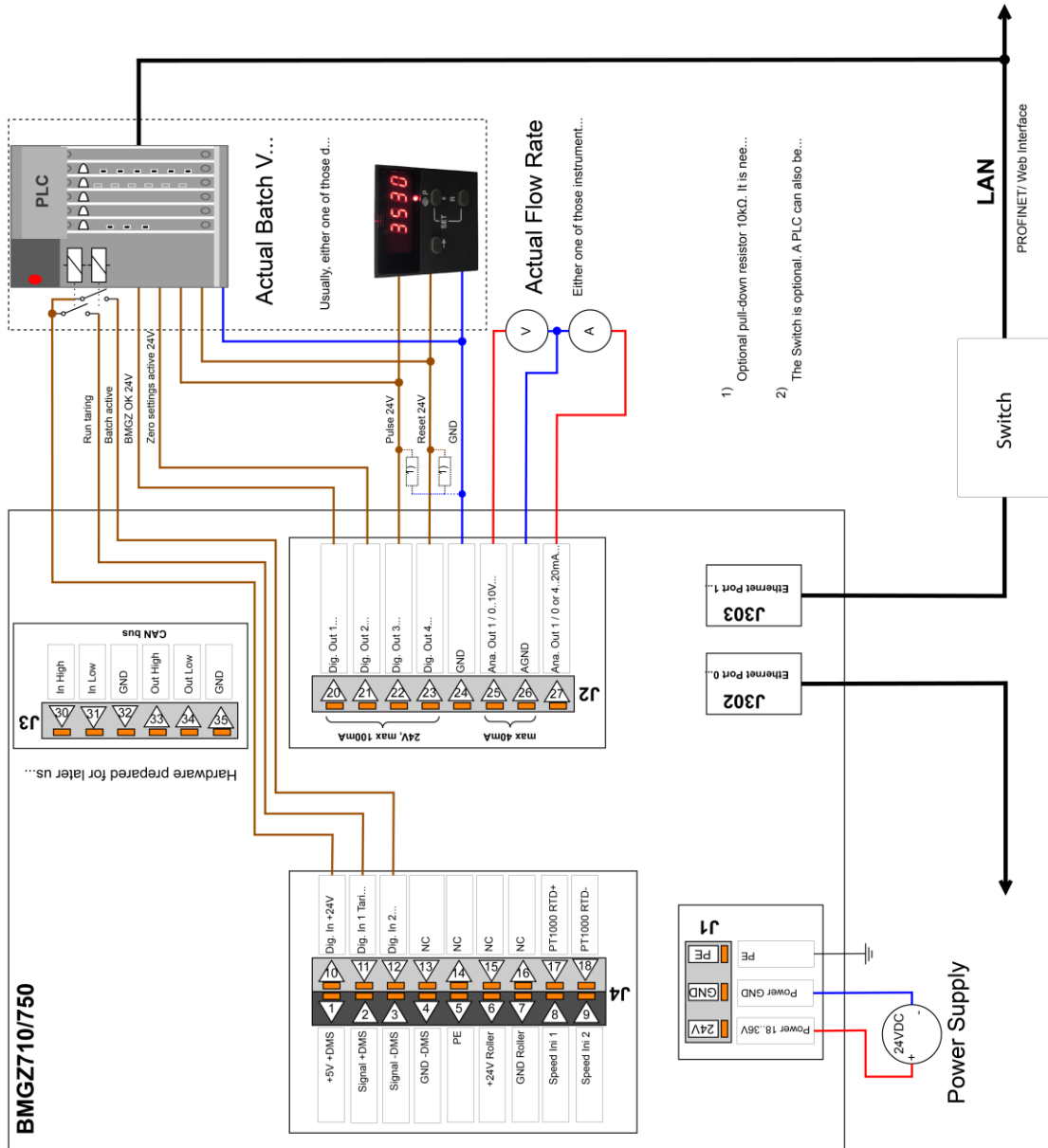
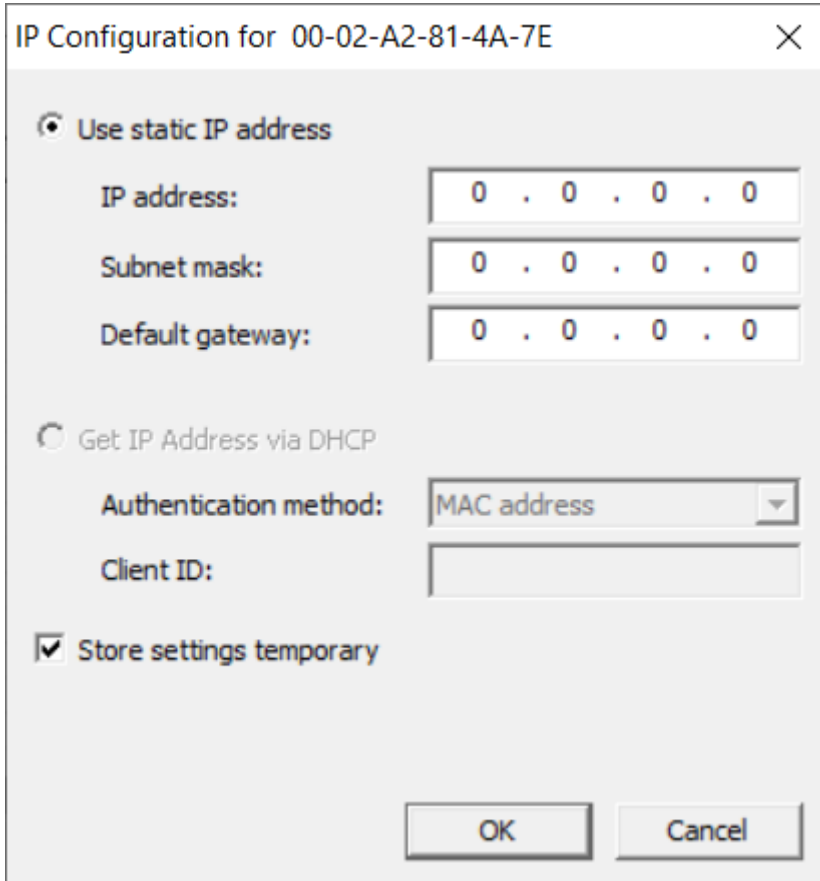


Illustration 30: peripheral devices

11.1 Ethernet Configuration Device – FOR PROFINET DEVICE ONLY

The IP address of the measuring amplifier is preset to 0.0.0.0. To modify the adress, you can use the «Ethernet Device Configuration Tool». It is available for free download on <https://www.fms-technology.com/en/downloadcenter/profinet>



The image shows a dialog box titled "IP Configuration for 00-02-A2-81-4A-7E". It has two radio button options: "Use static IP address" (selected) and "Get IP Address via DHCP". Under the static IP option, there are three input fields: "IP address:", "Subnet mask:", and "Default gateway:", each containing "0 . 0 . 0 . 0". Under the DHCP option, there is a dropdown menu for "Authentication method:" set to "MAC address" and an empty "Client ID:" field. A checked checkbox "Store settings temporary" is at the bottom left. "OK" and "Cancel" buttons are at the bottom right.

Figure 33: Ethernet Device Configuration – IP Configuration

Enter the desired IP address and also set the subnet mask to 255.255.255.0

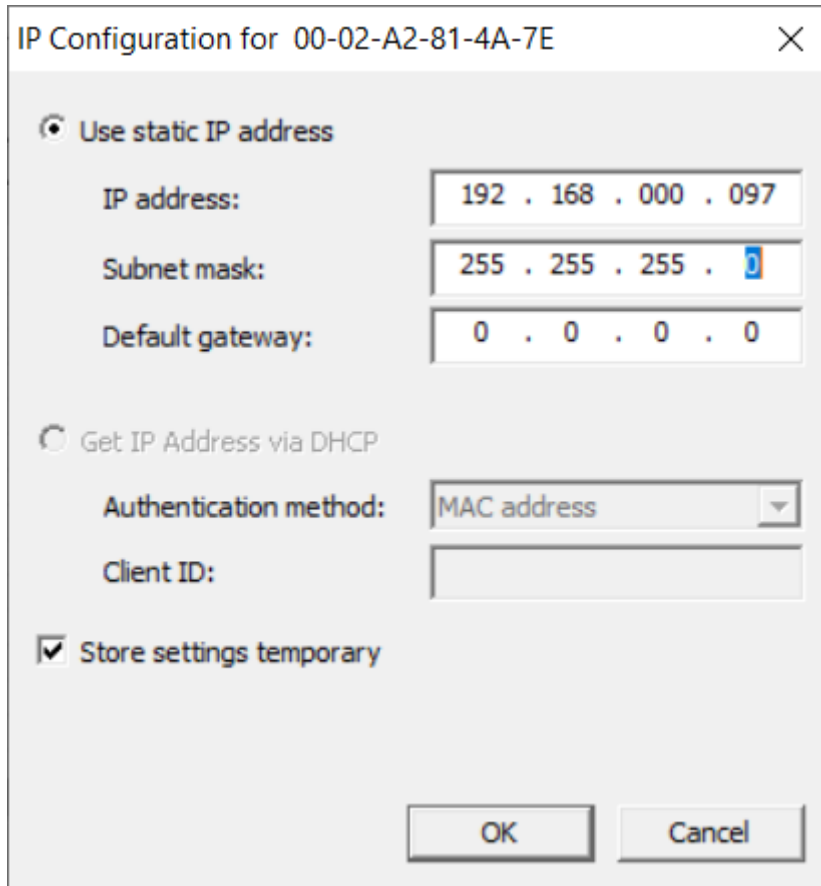


Figure 34: Ethernet Device Configuration – IP Adresse geändert

Press «OK» to store the settings.

11.2 Communication

With the acyclic data exchange, IO devices (slaves) can be parametrized, configured or status information can be read out. This is accomplished with the read/write frames via the standard IT services using UDP/IP.

11.2.1 General function

The read/write commands can be triggered if there is a connection between the controller and the IO device, i.e., “Connect” has taken place.



Illustration 35: Read/Write cycle

A computer with the corresponding application can now request a “read” or “write” to a data model of the controller. The controller executes the read/write command via PROFINET and returns status and data to the computer.

11.2.2 Services and protocols

The following services and protocols are used:

- RTC Real Time Cyclic Protocol
- RT_CLASS_1 (unsynchronized)
- R TA Real Time Acyclic Protocol
- DCP Discovery and Configuration Protocol
- DCE /RPC Distributed Computing Environment /Remote Procedure Calls, Connectionless RPC
- LLDP Link Layer Discovery Protocol
- PTP Precision Transparent Clock Protocol
- SNMP Simple Network Management Protocol

All other services required for PROFINET are permissible as well.

The evaluation unit can be loaded with the above services at any time.

In addition, other services can be used if they do not exceed the network load according to Netload Class III for Normal Operation.

11.3 Cyclic data traffic

After a successful system start, IO controller and the assigned IO devices can exchange cyclic process data. The table below shows the measured data and how they are transmitted.

From Tom:

Cyclic data traffic reads the operating status of the evaluation unit in a defined time cycle and updates it in the PLC. The PLC defines the cycle time for its protocol. The operating status is used to monitor the operation of the evaluation unit.

The following table shows which data is available and how it must be interpreted.

Sub-slot	Type	Parameters	Unit	Valid range and number format	Description
2	INT32	Last Error		0 1 2 3 4 5 6	No Error A taring is not allowed while a batch runs. The taring cannot be started while a batch runs. The taring cannot be stopped when not a taring is running. A reset of the batch cannot be executed while a batch runs. Taring cannot be started when the belt stands still. Not permitted when the device is sealed (750 only).
3	UINT32	Status			

Sub-slot	Type	Parameters	Unit	Valid range and number format	Description
		Bit 0 State of Digital Input 1 Taring belt scale		True False	Taring belt scale (edge triggered ↑) No action
		Bit 1: State of Digital Input 2 Start batch		True False	Start batch (edge triggered ↑) No action
		Bit 2: State of Digital Input 3		True False	Conveyor belt runs (BMGZ710.PNET) Sealed (BMGZ750.PNET) Conveyor belt stands still (BMGZ710.PNET) Unsealed (BMGZ750.PNET)
		Bit 3: State of Digital Output 1 BMGZ OK		True False	BMGZ runs ok The BMGZ has encountered a hardware problem. Consult the status bits 7 to 10 for more information.
		Bit 4: State of Digital Output 2 Taring Active		True False	Taring is active Taring is inactive
		Bit 5: State of Digital Output 3 Remote Counter Pulse		True False	Remote Counter counts up one digit (edge triggered ↑) No action
		Bit 6: State of Digital Output 4 Remote Counter Reset		True False	Remote Counter is reset (edge triggered ↑) No action
		Bit 7: Load cell overload		True	The load cell is loaded with too much weight and reached the mechanical stop.
		Bit 8: Analogue output overflow		True	The analogue output is in overflow. This happens when the parameter Scaling is set too high.
		Bit 9: Analogue output underflow		True	The analogue output is in the underflow state. This happens when the system is not correctly calibrated.
		Bit 10: Pulse output too fast		True	The pulse output frequency is too fast.
		Bit 12 to 31:			Not used
4		Total	t	0 to 2 ³¹ -1 #	Overall total
5	INT32	Batch	t	0 to 4,000,000,000 #.###	Batch
6	INT32	Batch Number		0 to 2 ³¹ -1 #	Batch number

Sub-slot	Type	Parameters	Unit	Valid range and number format	Description
7	INT32	Q	t/h	0 to 5,000,000 #.###	Delivery rate
8	INT32	v	m/s	0 to 10,000,00 #.##	Conveyor belt speed
9	INT32	Raw ADC value	Digit s	-32,768 to 32,767	Read ADC input value without signal processing.
10	INT32	Load cell raw voltage	mV	-20,000 to 20,000 #.###	Read load cell input voltage without any signal processing.
11	INT32	Load cell force voltage	mV	-20,000 to 20,000 #.###	Offset corrected load cell input voltage.
12	INT32	Force	N	- 999,999,99 9 to 999,999,99 9 #.###	
13	INT32	Belt	kg/ m	0 to 999,999,99 9 #.###	
14	INT32	Taring countdown time	s	0 to 600	Remaining time until the taring is over.
15	INT32	Temperature	°C	-9,999 to 9,999 #. #	The temperature at the weighing device (BMGZ750.PNET only).

Table 11: PROFINET cyclic data

11.4 Acyclic data traffic

After a successful system start, IO controller and the assigned IO devices can exchange acyclic demand data. The following table shows the parameters and commands and how they are transmitted using acyclic data traffic.

For addressing the parameters 0x01 to 0x08, slot 1, Feedback module, “Parameter Access Point” is to be used.

Steckplatz	Baugruppe	Bestellnummer	E-Adresse	A-Adresse	Diagnoseadresse	Komm
U	BMGZ750	BMGZ750			2039*	
X1	PROFINET-IO				2042*	
P1 R	Port 1				2041*	
P2 R	Port 2				2040*	
0.1	Identification/Maintena...				2038*	
0.10	Parameter Access Point				2036*	
1	Feedback				2037*	
1.1	Parameter Access Point				2037*	
1.2	Last Error		256...259			
1.3	Status		0...3			
1.4	Total (t)		260...263			
1.5	Batch (t)		264...267			
1.6	Batch Number		268...271			
1.7	Q (t/h)		272...275			
1.8	v (m/s)		276...279			
1.9	Raw ADC value		280...283			
1.10	Load cell raw voltage [V]		284...287			
1.11	Load cell force voltage [V]		288...291			
1.12	Force (N)		292...295			
1.13	Belt (kg/m)		296...299			
1.14	Taring countdown time [s]		300...303			
1.15	Temperature [°C]		304...307			

Illustration 36: PLC configuration

A PLC can exchange acyclic data with the evaluation unit. This data is used for configuration and remote control of the evaluation unit.

The following table shows all commands for parameter configuration. The parameters can be read and written.

For the remote-control commands, only writing is useful. Note, however, that it is possible to write the same value again. This causes the command to be executed again.

Sub-slot	Type	Parameters	Unit	Valid range and number format	Description
Machine parameters					
1	INT16	Offset		-32,768 to 32,767 #	
2	UINT16	Gain		100 to 20,000 #.###	
3	UINT16	Belt length	m	1 to 5,000 #	
4	UINT16	Diameter	mm	10 to 1,000 #	
5	UINT16	Pulses		1 to 100 #	
6	UINT16	Distance	mm	100 to 5,000 #	
7	UINT32	Nominal force	N	1 to 200,000 #	
8	UINT16	Max. Q	t/h	0 to 5,000 #	
9	UINT16	v-acquisition (BMGZ710.PNET) Direction BMGZ750.PNET		0 1	None (BMGZ710.PNET) Inverse (BMGZ750.PNET) Auto (BMGZ710.PNET) Standard (BMGZ750.PNET)
Operating parameters					
10	UINT16	Pulse output	kg	1 to 1,000 #	
11	UINT16	Current output mode		0 1	0 to 20mA 4 to 20mA
12	UINT16	Filter output	Hz	1 2,000 #. #	

Sub-slot	Type	Parameters	Unit	Valid range and number format	Description
13	UNIT16	Scaling	t/h	10 to 50,000 #. #	Manual Automatic
System parameters					
14	UINT16	Language		0 1	German English
15	UINT16	Filter display	Hz	1 to 100 #. #	
16	UINT16	Date format		0 1	DD.MM.YYYY MM/DD/YYYY
17	INT32	Device Time of day	ms	0 to 86,399,999 #	Current device time. The value represents the number of ms since midnight.
18	UINT16	Device Date		4018 to 42404 #	Current device date. The value represents the number of days since 1990-1-1 (4018 = 2001-1-1 / 42404 = 2106-02-06)
19	UINT16	Recording Time	Min	1 to 600 #	Histogram recording duration of the x-axis.
20	UINT16	Histogram Scaling	t/h	0 to 5,000 #	Histogram scaling of the y-axis.
Allbi protocol					
21	INT32	Request batch log by number		0 to $2^{31}-1$ #	Request batch log by the batch number. If the number is zero, then the latest batch is read.
22	INT32	Log Index		0 to $2^{31}-1$ #	Log Index indicates the index of the actual read data record. This can be different from the requested index when the requested doesn't exist. If the index is negative, then the data record is corrupt.
23	INT32	Logged Batch number		0 to $2^{31}-1$ #	
24	INT32	Logged Batch	t	0 to 4,000,000,000 #.###	
25	UINT16	Logged start date	Date	4018 to 42404 #	Start date of the logged batch. The value represents the number of days since 1990-1-1 (4018 = 2001-1-1 / 42404 = 2106-02-06)

Sub-slot	Type	Parameters	Unit	Valid range and number format	Description
26	UINT32	Logged start time	ms	0 to 86,399,999 #	Start time of the logged batch. The value represents the number of ms since midnight.
27	UINT16	Logged end date	Date	4018 to 42404 #	End date of the logged batch. The value represents the number of days since 1990-1-1 (4018 = 2001-1-1 / 42404 = 2106-02-06)
28	UINT32	Logged end time	ms	0 to 86,399,999 #	End time of the logged batch. The value represents the number of ms since midnight.
29	INT32	Total	t	0 to $2^{31}-1$ #	Overall total at the end time
30	UINT16	Logged Mode		0 to 255	0: Ok 1: Q < 20% or Q > 100% >= 2: Data record corrupt.

Table 12: PROFINET acyclic data, parameter configuration

The following table shows the commands for remote control. For the remote-control commands, only writing is useful.

Note, however, that it is possible to write the same value again. This causes the command to be executed again.

Sub-slot	Type	Parameters	Unit	Valid range and number format	Description
50	UINT16	Start Batch		0 1	Do nothing Starts the batch
51	UINT16	Stop Batch		0 1	Do nothing Stops the batch
52	UINT16	Reset Batch		0 1	Do nothing Resets the batch weight
53	UINT16	Start belt scale taring		0 1	Do nothing It starts a taring of the belt scale until the taring status gets inactive or it is stopped.
54	UINT16	Stop belt scale taring		0 1	Do nothing It stops a running taring of the belt scale.
55	INT32	Calibrate belt scale	t	0 to 4,000,000,000 #.###	Calibrate the belt scale with the reference weight and the last batch weight.
56	UNIT16	Reset Last Error		0 1	Do nothing Reset register last error in the operating status area. That ensures that an occurrence of an error is new.

Table 13: PROFINET acyclic data, remote control

12 BMGZ750 technical data

BMGZ750.PNET : Technical data	
Accuracy class electronics	0.05 %
Number of channels	1, for one measuring roller
Displayed values	total amount [t], daily amount or batch [t], actual performance [t/h], belt speed [m/s] as absolute value or histogram
Daily amount, batch counter	0 to 1,000 t (resolution 5 kg); 1,000 to 10,000 t (resolution 10 kg); 10,000 to 100,000 t (resolution 100 kg); 100,000 to 1,000,000 t (resolution 1000 kg)
Operation and display	4 buttons, graphical, illuminated 128 x 64 px STN LCD, alternatively via web browser
Total amount	0 to 1 Mio. t (resolution 1000 kg)
Digital outputs	Tare active, 24 VDC, max. 100 mA; Belt scale o.k., 24 VDC, max. 100 mA; Remote counter, impulse 1 to 1000 ms, 24 VDC, max. 100 mA; Reset remote counter, 24 VDC, max. 100 mA
Digital inputs	start tare procedure, production batch active, speed probe, 24 VDC
Analogue output	Current output: 0/4 to 20 mA, min. 500 Ω or power output: 1 to 10 VDC, min. 1000 Ω
Cycle time	1 ms
Temperature range	-10 to +50 °C (14 to 122 F)
Power supply	24 (18 to 36) VDC
Power consumption	5 W
Weight	1.5 kg (2.2 lbs.)
Analogue outputs	Actual performance, 0 to 10 VDC or 0/4 to 20 mA
Ethernet interface	Profinet RT

Table 14: BMGZ750 technical data

12.1 PROFINET interface specification (optional)

BMGZ750.PNET : PROFINET Features	
Cycle time	0.5 ms for RT_CLASS_3, 1 ms for RT_CLASS_1
Media redundancy	Media Redundancy Protocol (MRP) – Client
IRT Support	Yes, RT_CLASS_3, synchronous with network clock
Integrated Switch	2 Port
PROFINET IO specification	V 2.3, legacy startup of specification V 2.2 is supported
Certification	PNIO version V 2.35, net load class: CLASS III, conformance class (CC-C)

Table 15: PROFINET properties







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