

<b>MOLLET</b> Füllstandtechnik GmbH	<b>Parameterisation manual</b>	Manual No.: <b>MWF-PA102</b>
	Microwave level measurement <b>MWF</b>	Index <b>0</b>
Date <b>08.08.18</b>	<b>Adaption of parameters with the MWF2-KIT</b>	Page 1 of 9

**MOLOS**  
**wave**

HART modem with mA-display

**MWF**

# Parameterisation manual



	<h1>Parameterisation manual</h1>	Manual No.: <b>MWF-PA102</b>
	<b>Microwave level measurement MWF</b>	Index <b>0</b>
Date <b>08.08.18</b>	<b>Adaption of parameters with the MWF2-KIT</b>	<b>Page 2 of 9</b>

## 1. Preparation

Requirements: **MOLLET MWF2-KIT**, a Laptop or PC with Microsoft Windows 7, 8, 10 and Excel.

The **MOLLET MWF2-KIT** consists of:

- 1 **MWF-HART-D2** modem with mA-display (see first page)
- 1 **measuring wire A** with blank end of the wire



- 1 **measuring wire B** with crocodile clip



- 1 **USB cable**



- 1 **USB stick with MWF Parameterisation-Tool** based on Excel.



	<h1>Parameterisation manual</h1>	Manual No.: <b>MWF-PA102</b>
	<b>Microwave level measurement MWF</b>	Index <b>0</b>
Date <b>08.08.18</b>	<b>Adaption of parameters with the MWF2-KIT</b>	<b>Page 3 of 9</b>

## 1.1 Connection to the MWF electronic

There are two possibilities to connect the **MWF-HART-D2** modem with the MWF electronic:

### 1.1.1 Connection direct to the device:

1. Separate the MWF electronic temporary from the power supply.
2. Open the lid of the MWF housing.
3. Loosen the wire from the terminal „+“ of the 4-20 mA signal output.
4. Connect the blank end of the **measuring wire A** to the empty „+“ terminal of the 4-20 mA signal output.
5. Connect the loosened wire with crocodile clip of the **measuring wire B**.
6. Put both plugs of the **measuring wires A** and **B** into the sockets **A** and **B** at the front end of the **MWF-HART-D2** modem.
7. Connect the MWF electronic to the power supply again and wait approx. 10 seconds until the electronic is ready for operation.

### 1.1.2 Connection to measuring value display or control device:

1. Separate the MWF electronic temporary from the power supply.
2. Loosen the wire from the signal input „+“ of the measuring value display or control device.
3. Connect the blank end of the **measuring wire A** to the empty „+“ terminal of the measuring value display or control device.
4. Connect the loosened wire with the crocodile clip of the **measuring wire B**.
5. Put both plugs of the **measuring wires A** and **B** into the sockets **A** and **B** at the front end of the **MWF-HART-D2** modem.
6. Connect the MWF electronic to the power supply again and wait approx. 10 seconds until the electronic is ready for operation.

## 1.2 Laptop/PC connection and installation

1. Copy the **MWF Parameterisation-Tool** from the USB stick to the Laptop/PC.
2. Start the program and open register **HOME**.
3. Connect the **MWF-HART-D2** modem and the Laptop/PC with the **USB cable**.
4. Open the Device Manager in the Windows Control Panel of the Laptop/PC. In the list with connections a HART modem is indicated.
5. Enter the number of the COM Port, that is mentioned behind the name of the HART modem (e.g. 4) into the spreadsheet of the **MWF Parameterisation-Tool** and confirm the input with ENTER.
6. Change into the register **Basic configuration** and click in **line 1** on **CONNECT**. After a few seconds the serial number of the connected device is shown in field **variable** and in field **status** is shown „ok“.  
That means the connection between Laptop/PC and MWF device is correctly established.  
If the serial number is not indicated and in field **status** is not „ok“ shown, please check the establishment of the connections and the determining and input of the COM Port number.
7. Close the Device Manager.

	<h1>Parameterisation manual</h1>	Manual No.: <b>MWF-PA102</b>
	<b>Microwave level measurement MWF</b>	Index <b>0</b>
Date <b>08.08.18</b>	<b>Adaption of parameters with the MWF2-KIT</b>	<b>Page 4 of 9</b>

## 2. Parameterisation of the MWF electronic

### 2.1 General information

1. The MWF has been completely parametrised corresponding to your requirements ex works. If the adaption of parameters is required, you should change only these parameters.
2. You find a sheet with all factory settings for the measuring parameters in the appendix of the supplied operation manual of the MWF.
3. All necessary changes can be executed in the register **Basic configuration**.
4. In order to change the value of a parameter, please insert the requested value in the orange colored field in the column **variable**.  
With a click on **SEND** this value will be sent to the MWF electronic.  
After a short time „ok“ is shown in the field **status**.  
The new value has been stored in the MWF electronic. (The previous value has been overwritten)
5. In order to secure your changes please store the Excel-file on the connected PC.  
With it the changed parameters can be checked again at any time or the Excel-file can be sent to MOLLET for support.
6. During the process of parameterisation you can use the display on the **MWF-HART-D2** modem for monitoring the current output (4 – 20 mA). This is done by pressing the red button for switching on the display. After that you can read the actual measured value (filling level).

### 2.2 Parameterisation

#### Line 2 to 5      Setting of measuring range [M]

This is where the lower and upper measuring limits are parameterised. The values correspond to the length at the probe in mm, measured from the reference point [R].

1. Insert in **line 2** the value for the lower measuring limit [**uMG**] **4 mA**.
2. Insert in **line 3** the value for the upper measuring limit [**oMG**] **20 mA**.

#### Line 6 and 7      No input

These values are for factory setting only. Please don't do any changes!

#### Line 8 to 13      Setting of switching output

This is where the switching output is parameterised.

The switch-on and switch-off points of the switching output can be set at different positions within the measuring range [M] (switching hysteresis) by setting different values for lower and upper switch points. By using the same value for lower and upper switch points the least switching hysteresis is 3mm of the probe length.

1. Insert in **line 8** the function of the switching output. The factory setting **NC** can be change to **NO** by setting the value „1“.
2. Insert in **line 10** the value of the lower point of the switching output [**uSA**] and in **line 12** the value of the upper point of the switching output [**oSA**].  
The values correspond to the length at the probe in mm, measured from the reference point [R].

	<h1>Parameterisation manual</h1>	Manual No.: <b>MWF-PA102</b>
	<b>Microwave level measurement MWF</b>	Index <b>0</b>
Date <b>08.08.18</b>	<b>Adaption of parameters with the MWF2-KIT</b>	Page 5 of 9

### Line 14 and 15 Setting of upper dead band [TB]

Dependent on the installation situation of the MWF signal disturbances could occur in the upper area of the measuring probe (e.g. caused by a narrow nozzles). In order to suppress these disturbances, an upper dead band can be determined. Within the entered length, starting from the reference point [R], the measuring probe detects no signal.

1. Read in **line 5** the value for the upper measuring limit [**oMG**] 20 mA.
2. Insert in **line 14** the requested value for the upper dead band [**TB**]. This has to be less than the value for the upper measuring limit from **line 5** but more than the length of the nozzle.

### Line 16 and 17 Adjustment of the sensitivity

Depending on bulk solids characteristics the sensitivity of the MWF has potentially to be adjusted. This can be done by changing the so-called **amplitude threshold**.

1. Insert in **line 16** a new value. Change the value in steps by 10 until you get a stable signal. The lower the value for the amplitude threshold, the higher the sensitivity.

Examples for wrong adjusted sensitivity:

- In case of an instable measuring value the MWF is too sensitive and the amplitude threshold has to be increased.
- In case of no signal in a filled-up silo the MWF is too insensitive and the amplitude threshold has to be decreased.

### Line 18 and 19 Setting of noise filter

The noise filter suppresses external disturbances, e.g. caused by large electric motors. By activating the function „noise filter“, the function “disturbance signal suppression” (line 20) is deactivated at the same time.

1. Insert in **line 18** the value „1“ for activating the function „noise filter“.

### Line 20 and 22 Setting of disturbance signal suppression

Installations (e.g. strut, ladder or measuring devices that cause an echo) near the probe could disturb the measurement and deliver false signals that not correlate with the filling level. The disturbance signal suppression serves to detect, buffer and eliminate these disturbance signals.

**Attention!!!** In order to perform a disturbance signal, scan the MWF must be mounted at the final position prior to this and no bulk material / liquids may reside in the scan area (5,500 mm from top).

1. Insert in **line 20** the value „01“ for activating the disturbance signal suppression. The disturbance signal suppression has to be activated before a disturbance signal scan and elimination can be done.

Start the disturbance signal scan with a click on **START** in **line 22** und wait for the indication „ok“ in the field **status**.

This can last up to one minute.

2. Insert in **line 20** the value „00“ for deactivating the disturbance signal suppression.

	<h1>Parameterisation manual</h1>	Manual No.: <b>MWF-PA102</b>
	<b>Microwave level measurement MWF</b>	Index <b>0</b>
Date <b>08.08.18</b>	<b>Adaption of parameters with the MWF2-KIT</b>	<b>Page 6 of 9</b>

**Line 23 and 24    No input**

Type of probe has to be „1“. Please don't do any changes!

**Line 25 and 26    Adjustment of probe length [L]**

If the probe has been shortened or another probe with a different rope length has been mounted, the probe length [L] has to be adjusted.

1. Insert in **line 25** the value of the probe length [L] in mm, measured from the reference point [R].

**Attention!!!**    After shortening the probe, it could be necessary to adapt the value for the lower measuring limit in **line 2** as well.

**Line 27                Reset to MOLLET factory settings**

Click on **START** in **line 27** and the MWF will be reset to MOLLET factory settings. All individual parameter settings will be overwritten with the primary MOLLET factory settings.

**Line 28                Measuring of filling level**

Click on **START** in **line 28** and the actual filling level will be scanned. The scanned value corresponds to the length at the probe in mm, measured from the reference point [R].

**Line 31 and 32    Recording of signal image**

1. Insert in **line 32**, in the lower, orange colored field the value of the probe length [L] in mm + 1000 mm rounded up to x000 and click on **ADJUST**.  
Example: probe length 8600 mm, please insert value 10000.
2. Click on **START** in **line 31** and the recording of the signal image will be started. The duration of the recording is dependent on the probe length and can last up to 4 minutes.
3. Recording of signal image is finished as soon as „ok“ is permanent shown in the field **status**. Now the signal image can be viewed in the register **Signal**.

	<h1>Parameterisation manual</h1>	Manual No.: <b>MWF-PA102</b>
	Microwave level measurement <b>MWF</b>	Index <b>0</b>
Date <b>08.08.18</b>	<b>Adaption of parameters with the MWF2-KIT</b>	Page 7 of 9

### 3. Reading of parameter settings from the MWF electronic

#### Basic configuration

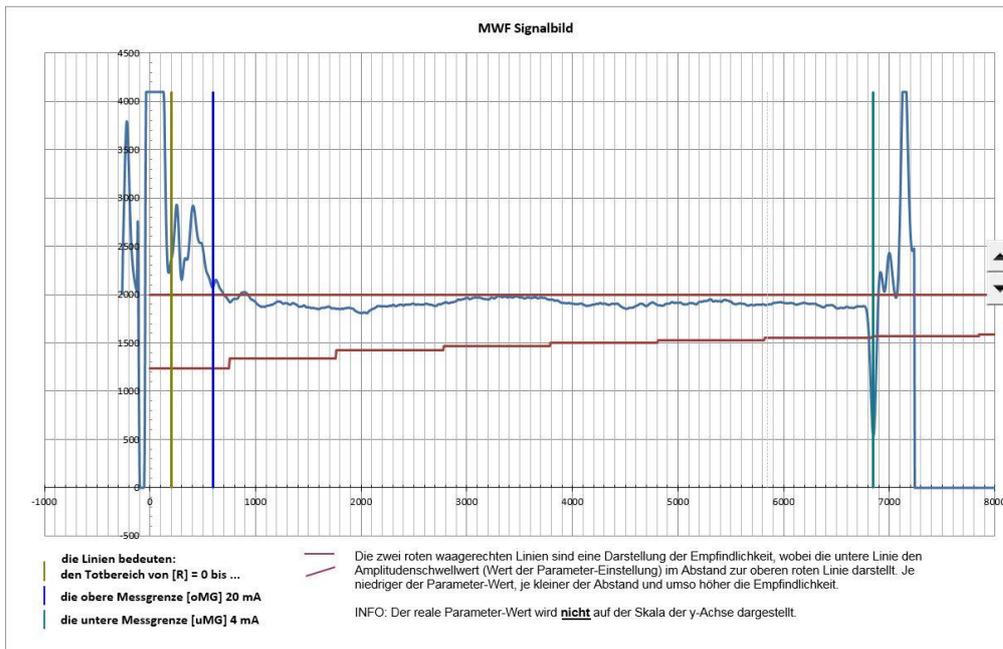
Line 4	Read out lower measuring limit [ <b>uMG</b> ] 4 mA	click <b>READ</b>
Line 5	Read out upper measuring limit [ <b>oMG</b> ] 20 mA	click <b>READ</b>
Line 9	Read out function of the switching output <b>NC/NO</b>	click <b>READ</b>
Line 11	Read out lower point of the switching output [ <b>uSA</b> ]	click <b>READ</b>
Line 13	Read out upper point of the switching output [ <b>oSA</b> ]	click <b>READ</b>
Line 15	Read out upper dead band [ <b>TB</b> ]	click <b>READ</b>
Line 17	Read out amplitude threshold (sensitivity)	click <b>READ</b>
Line 19	Read out noise filter switched <b>ON</b> or <b>OFF</b>	click <b>READ</b>
Line 21	Read out disturbance signal suppression switched <b>ON</b> or <b>OFF</b>	click <b>READ</b>
Line 26	Read out probe length [ <b>L</b> ]	click <b>READ</b>
Line 27	<b>Reset to MOLLET factory settings</b>	click <b>START</b>
Line 29	Read out software version	click <b>READ</b>
Line 30	Read out device status (only for internal use)	click <b>READ</b>

	<h1>Parameterisation manual</h1>	Manual No.: <b>MWF-PA102</b>
	Microwave level measurement <b>MWF</b>	Index <b>0</b>
Date <b>08.08.18</b>	<b>Adaption of parameters with the MWF2-KIT</b>	Page 8 of 9

## 4. Signal images

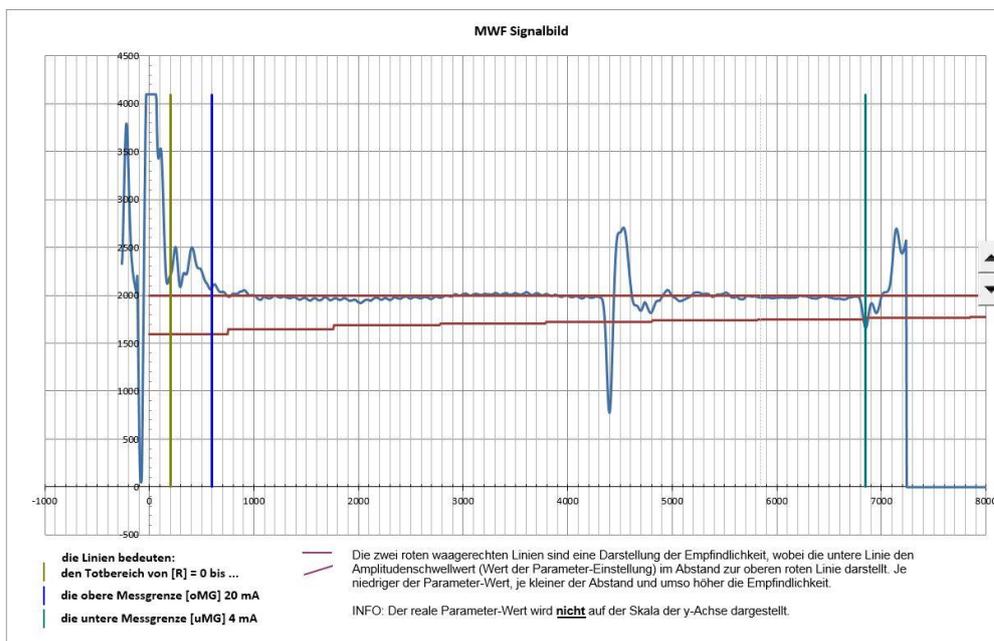
Examples of signal images useful for comparison with recorded signal images from you.

### 4.1 Signal image of an empty silo.



Wave runs through without any significant signal up to the tensioning weight.

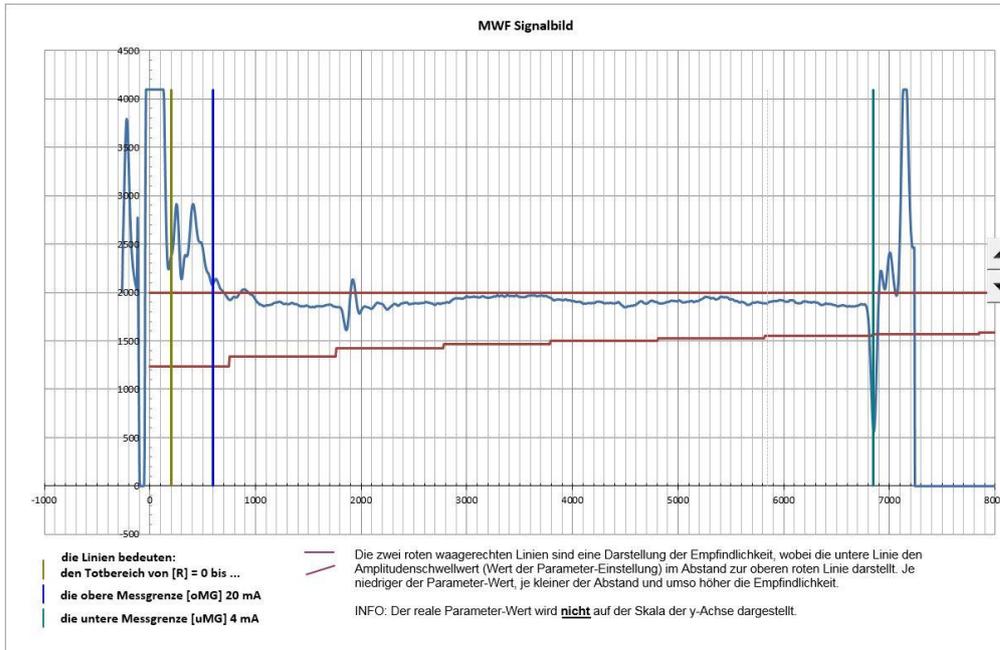
### 4.2 Signal image of a partly filled silo.



Microwave reaches at approx. 4400mm the surface of the bulk goods and generate a significant signal.

	<h1>Parameterisation manual</h1>	Manual No.: <b>MWF-PA102</b>
	Microwave level measurement <b>MWF</b>	Index <b>0</b>
Date <b>08.08.18</b>	<b>Adaption of parameters with the MWF2-KIT</b>	Page 9 of 9

### 4.3 Signal image with weak signal without indication of filling level.



A weak signal is indicated at approx. 1850mm, but no filling level is indicated or the filling level indication varies.

There are two potential reasons for such a situation:

Reason 1: The signal is generated by a disturbing installation in **an empty silo**.

Action: Step back to register **Basic configuration** and follow the instructions in chapter **“Line 20 and 22 – Setting of disturbance signal suppression”**.

Reason 2: The signal is generated by the bulk solids surface, but the value for the parameter amplitude threshold is too high.

Action: Step back to register **Basic configuration** and follow the instructions in chapter **“Line 16 and 17 - Adjustment of the sensitivity”**.