Automated Precision Weighing
SIWAREX WP231

PBK9/PFK9-APW Weigh Platforms with SIWAREX WP231

METTLER TOLEDO

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Engineering Note

1 Introduction

1.1 Field of application

PBK9/PFK9-APW weigh platforms from METTLER TOLEDO (hereafter referred to as "weighing sen-sors") were developed especially for operation in automated plants. The weighing sensors profides an option for direct connection to the SIWAREX WP231 weighing system by Siemens (hereafter referred to as "Si-warex"). This document describes the steps for commissioning and optimizing this kind of connection.
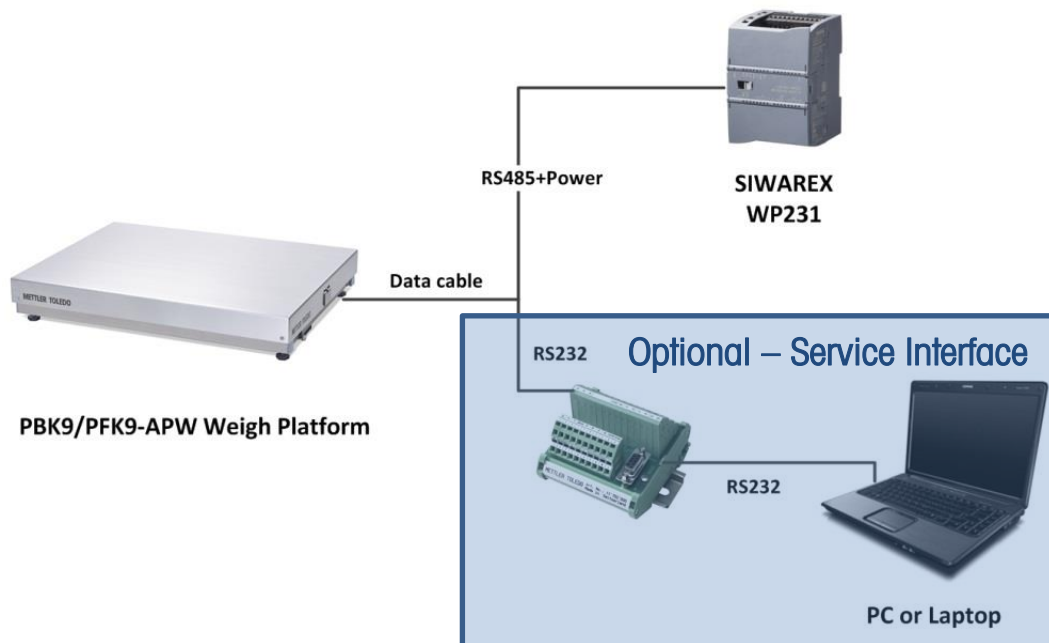
Figure 1: Connection to Siwarex via RS485

2   Commissioning

This chapter summarizes, in form of a list, the steps required for commissioning PBK9/PFK9-APW weigh platforms at Siwarex.

2.1   Connecting to Siwarex WP231

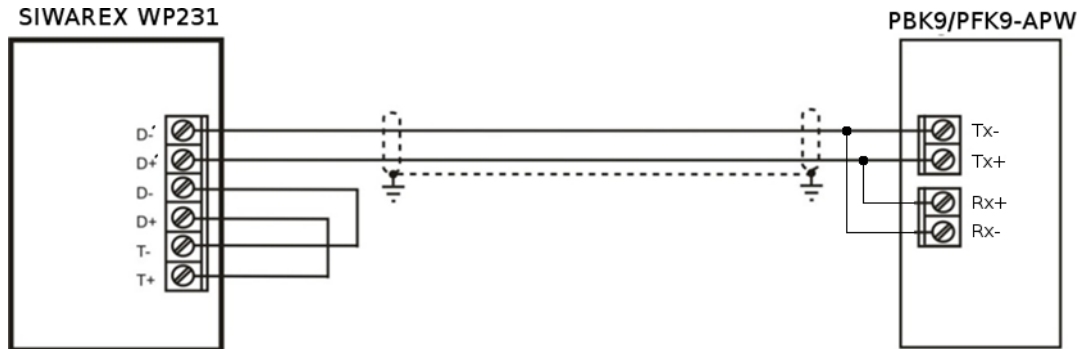The following diagram shows the connection of the PBK9/PFK9-APW weigh platforms to Siwarex WP231.

Figure 2: Connection diagramm

Assignment of the connections at SIWAREX WP231for the connection with PBK9/PFK9-APW weigh platform:

SIWAREX			PBK9/PFK9-APW	
Terminal No.	EIA-485		Cable Color	Signal
0	T+	Connected to D+ (4)		
1	T-	Connected to D- (5)		
2	D+'		Orange & Black	TX+ / RX+
3	D-'		Purple & Violet	TX- / RX-
4	D+	Connected to T+ (0)		
5	D-	Connected to T- (1)		
	L1+		White	VDC
	M1		Brown & Green	GND

2.2 Configuring Siwarex WP231

The following sections describe the steps required to configure the Siwarex when using Siwatool PC Software. Service mode must be activated before the records can be sent from Siwatool to the Siwarex: service commands-> Service Mode ON. When the service mode is activated, the corresponding icon (open-end wrench on red background) appears in the status bar.

For SIWAREX WP231 as of firmware V3.0.4, parameters in the data record 3 and 13 must be adjusted as follows:

DR3:

Weight unit:	gr
Loading cell type:	Digital load cell Mettler Toledo PBK
Maximum weight:	capacity of the weighing sensor (unit: gr)
Calibration weight 0:	0
Calibration weight 1:	capacity of the weighing sensor (unit: gr)
Calibration weight 2:	0
Calibration digits 0 (measured):	0
Calibration digits 1 (measured):	(capacity of the weighing sensor (unit: gr)) / (resolution) e.g.: 1 kg / 0.1 g = 1000 gr / 0.1 gr = 10,000
Calibration digits 2 (measured):	0

DR13:

RS485 Protocol:	Mettler Toledo PBK/PFK9 (Code 4)
RS485 Baudrate:	38400
RS485 Parity:	even
RS485 Data Bits:	7
RS485 Stop Bits:	1
Delay:	2000 ms

2.3 Configuring PBK9/PFK9 Weigh Platform

The steps are described below to configure the weighing sensor such that it operates with Siwarex.

2.3.1 Connecting the weighing sensor to a PC

The RS232 interface of the weighing sensor should be connected to a PC (using APW-Link[TM] - Free Configuration Tool – www.mt.com/apw-link) via the SubD9 connector of the ConBlock. The interface parameters are configured in factory settings as follows: 9,600 baud, 8 data bits, no parity and1 stop bit. These settings shall NOT be modified.

2.3.2 RS422/485 interface

For the weighing platform, following parameters need to be configured:

Parameter Value	Description
M103 1 2	Configure the communication interface of the weighing platform as "RS485 mode (half-duplex)"
COM 1 8 0 0	Configure the communication interface of the weighing platform as follows: ▪ 38400 bits per second ▪ 7 data bits / even parity / 1 stop bit ▪ No handshake
M68 0	Keep the parameters of the communication interface permanently stored, such that they are not reset to factory defaults after a power cycle

2.3.3 Weight output

For seamless communication with the Siwarex, the update rate must be configured as follows:
Update rate (UPD):   UPD 92

2.3.4 User mode

The weighing sensors are automatically set to zero at power on. This might be undesirable in certain applications, particularly for larger platforms when a weight value shall be recovered after power off. When selecting the mode described below, the weight values refer to a fix reference point (as per production setting) and the zeroing at start up is disabled.
Start-up with fix reference point: M35 1

2.4 Weight transmission with Siwatool

After successfully configuring the Siwarex and the weighing sensor, Siwatool can be used to weigh for control purposes.
The "Start Send" command (code 905) is used to send the individual records to the Siwarex. To confirm, a record with "Receive" can be read out from the Siwarex. The communication can be stopped with the "Stop Send" command (code 906).
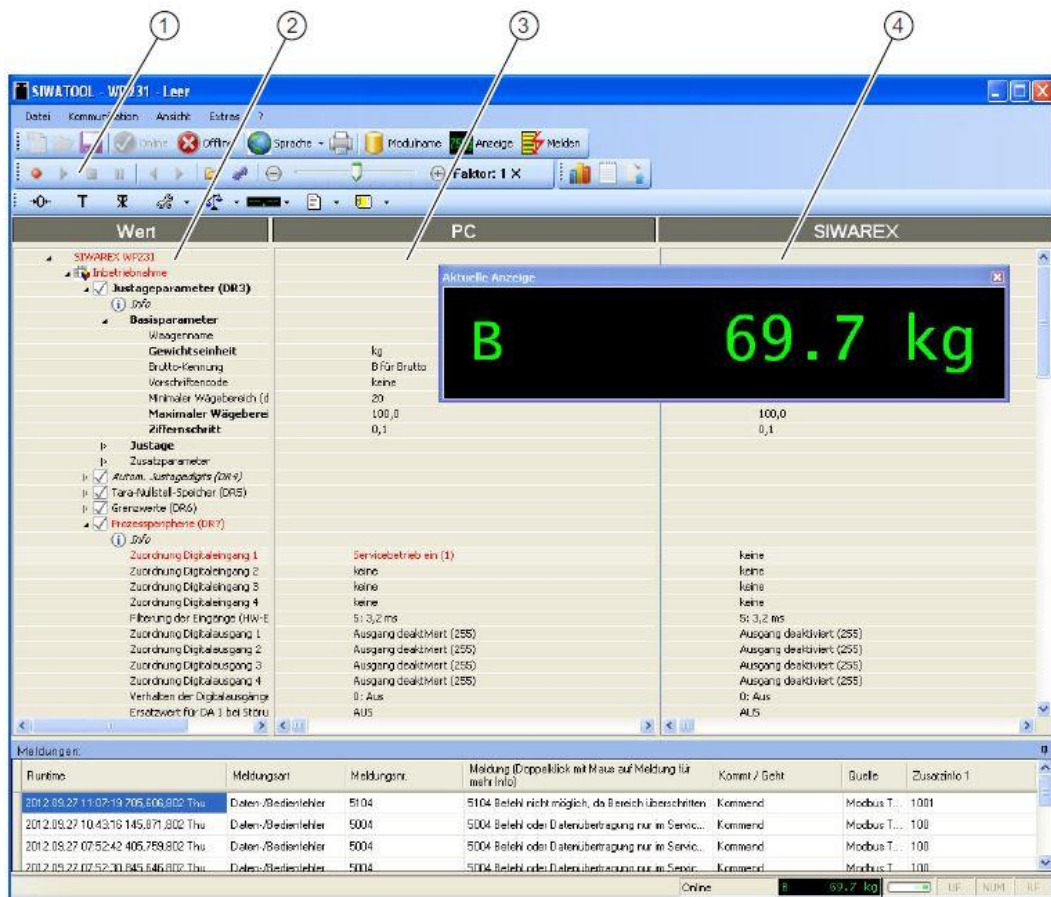Below in the picture, you can see the overview of the SIWATOOL:

Figure 3: Siwatool

(1) Control elements for SIWATOOL and the for the operation of the weighing sensor
(2) Parameter list of the SIWATOOL module
(3) Offline values of the SIWATOOL module
(4) Online values of the connected SIWAREX module

3 Supported METTLER TOLEDO Products

Product Picture	Product Name	Firmware Version	SIEMENS SIWAREX WP231 V3.0.4	SIEMENS SIWAREX FTA V9.5.2
	WMS www.mt.com/WMS	V1.31 and higher		✔
	PBK9-APW www.mt.com/PBK9	V2.4.0 and higher	✔	✔
	PFK9-APW www.mt.com/PFK9	V2.4.0 and higher	✔	✔
	SLF6 www.mt.com/SLF6	V2.4.0 and higher	✔	✔

4 Appendix

4.1 Other Applicable Documents

[1]   METTLER TOLEDO, Reference Manual, Standard Interface
        Command Set (11781363G)
[2]   METTLER TOLEDO, Installation Manual PBK9 bench scales
        (30233012A)
[3]   METTLER TOLEDO, Installation Manual PFK9 floor scales
        (30233015A)
[4]   Siemens, Siwarex WP231, Device Manual, version 06/2014
        (or later)

4.2 Figures

www.mt.com

For more information