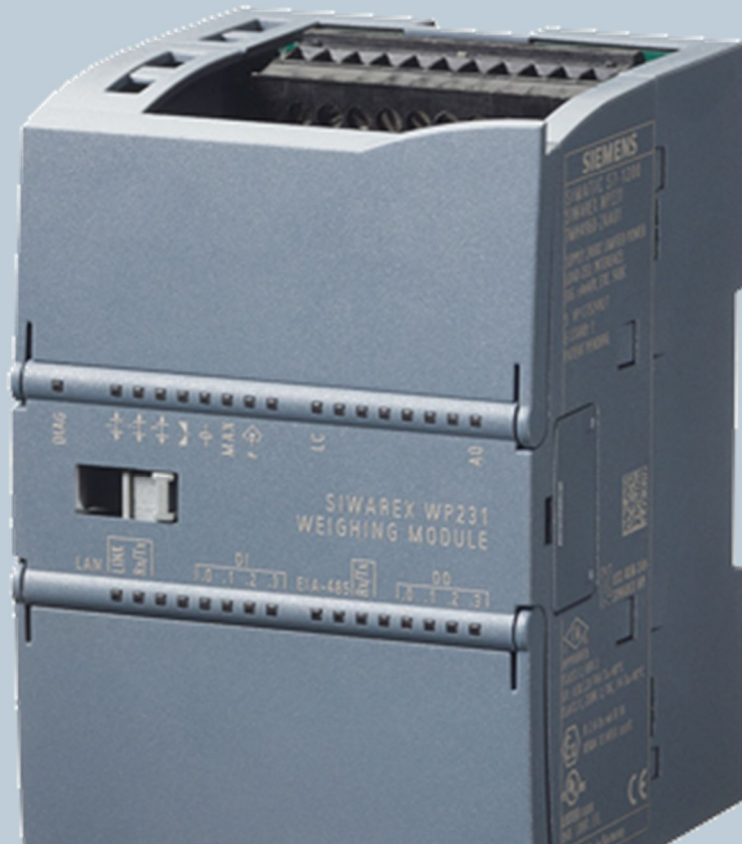


**SIEMENS**



Weighing technology

# FAQs SIWAREX WP231

“How does the Modbus-Communication of the WP231 work?”

Version 1.0 - 15.07.2013

[Siemens.com/weighing](http://Siemens.com/weighing)

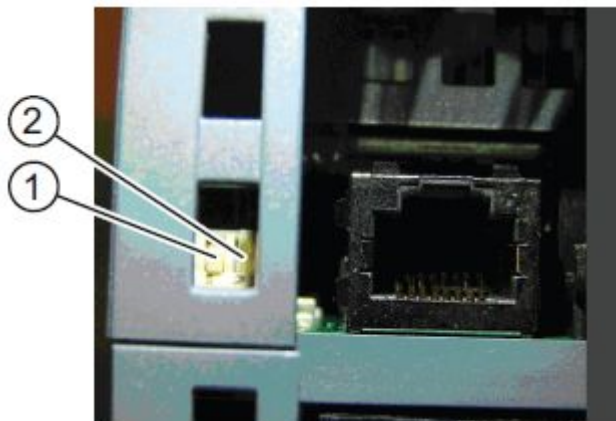
**Answer:** The SIWAREX WP231 weighing modules offer a Modbus-TCP/IP and Modbus-RTU (RS485) communication. Please follow this FAQ in order to understand the mechanisms of the Modbus communication.

This FAQ is based on the manual of the WP231, which is available online on: <http://support.automation.siemens.com/WW/view/en/65621196>

Basic knowledge in weighing systems and Modbus communication is required to be able to use this FAQ.

Before using this document, please check the manual of the WP231 for the right wiring of the 24V DC power supply, the loadcells, I/O's and communication interfaces.

If you run the WP231 without a SIMATIC S7-1200 CPU, please check the position of the "Stand-Alone-Mode" switch of the module:



DIP-switch 1 has currently no function. Switch number 2 needs to be in the lower position for the Stand-Alone-Mode without PLC.

The factory default is the upper position for PLC-integrated mode!

The factory default settings of the Ethernet and Modbus-RTU interface of the WP231 are the following:

<b><u>Ethernet-Port:</u></b>  <b>IP-address: 192.168.0.21</b> <b>Subnet-Mask: 255.255.255.0</b> <b>Standard-Gateway: 192.168.0.21</b>	<b><u>RS485 port:</u></b>  <b>Protocol: Modbus RTU</b> <b>Baud rate: 19200 Bits/s</b> <b>Parity: Even</b> <b>Data Bits: 8</b> <b>Stop Bits: 1</b> <b>Modbus Address: 20</b>
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For the Modbus TCP/IP communication the Port 502 is used.

All parameters of the WP231 weighing module are integrated in data records. It's possible to read or write a complete data record only! It's not possible to read or write one single parameter within a data record.

Except the data records 30, 31, 32 and 34 (automatically refreshed) all data records need to be read/written into the Modbus-Registers by using special command codes.

Please use the following syntax, in order to generate the right command code for reading a data record from the WP231 into the Modbus-Register or for writing data records from the Modbus-Registers into the WP231:

- Read a data record from the WP231 into the Modbus-Registers:

**command code = 2000 + x**

**x = number of the desired data record**

- Write a data record from the Modbus-Registers into the WP231:

**command code = 4000 + x**

**x = number of the desired data record**

For all other commands like "Zero", "Tare", "Service Mode On", "Service Mode off" and so on, please check the command list in the WP231 manual in order to find the right command codes!

# Modbus-Registers

(detailed information about the data records can be found in the WP231 manual)

# SIWAREX WP231 data



\* = data are refreshed automatically

## **Example:**

You want to change the parameter “Adjustment Weight 1” which is included in the data record 3:

**1.)** As data record 3 is accessible with active “Service Mode” only, you have to activate the “Service Mode”. You can find the right command code for this operation in the command list in the manual. “Service Mode On” → Command Code “1”

→ In our example we use command 2, with the medium priority.

Command 2 has the following structure (see page 6):

“Command\_2\_Code”

“Command\_2\_Trigger”

“Command\_2\_Finished”

“Command\_2\_FinishedError”

In order to switch on the “Service Mode” you have to write “1” into the “command code 2” (=Modbus Register 920) and to set the “command trigger 2” “TRUE” (=Modbus Register 921).

After that, the Service Mode should be active (DIAG led is flashing).

**2.)** If you don’t know, whether the data of data record 3 in the Modbus Registers are up-to-date, you should read the record 3 from the WP231 into the Modbus-Registers first:

As you want to read data record 3, you have to use the command code 2003 (see page 3).

Therefore you have to write “2003” into the “command code 2” (=Modbus Register 920) and to set the “command trigger 2” “TRUE” (Modbus Register 921=“1”).

The data of data record 3 in the Modbus-Registers are up-to-date now!

**3.)** Now you can edit the “Adjustment Weight 1” (=Modbus Register 1024).

After that, you have to send the modified data record 3 from Modbus-Registers into the WP231 → you have to use the command code 4003 now (see page 3)!

Therefore you have to write “4003” into the “command code 2” (=Modbus Register 920) and to set the “command trigger 2” “TRUE” (Modbus Register 921=“1”).

The modified data record 3 with your new Adjustment weight 1 is written into the WP231 now!

4.) At the end we have to switch off the Service Mode again.

“Service Mode Off” → Command Code “2” (see command list in the manual)

Therefore you have to write “2” into the “Command Code 2” (=Modbus Register 920) and to set the “Command Trigger 2” “TRUE” (Modbus Register 921=“1”).

The Service Mode should be off now (DIAG led shouldn't be flashing anymore)!

## Modbus-Command-Code Structures

Tag	Type	Modbus Register (Holding)	Length (Bytes)
Command_1_Code	USHORT	910	2
Command_1_Trigger	USHORT	911	2
Command_1_Finished*	USHORT	912	2
Command_1_FinishedError*	USHORT	913	2
Command_2_Code	USHORT	920	2
Command_2_Trigger	USHORT	921	2
Command_2_Finished*	USHORT	922	2
Command_2_FinishedError*	USHORT	923	2
Command_3_Code	USHORT	930	2
Command_3_Trigger	USHORT	931	2
Command_3_Finished*	USHORT	932	2
Command_3_FinishedError*	USHORT	933	2

\* = read only