

Handbuch | Messverstärker DAD 141.1

Modbus

The logo for SOEMER, featuring the word "SOEMER" in a bold, red, sans-serif font with a black outline. Below the text is a reflection effect.

Ideen & Messtechnik.

1. How to use Modbus in DAD 141.1

1.1. Implemented functions for Modbus RTU and Modbus TCP.

- 0x03 Read holding registers: Used for reading 16 or 32bit values.
- 0x04 Read input registers: Same as above.
- 0x06 Write single register: Used for writing 16bit values.
- 0x10 Write multiple registers: Used for writing 32bit values.

1.2. Modbus RTU

- The baudrate must be set in menu 8.1.
- In multidrop or 2 wire applications the user must select "**485**" in menu 8.2 or "**422**" for point to point 4 wire applications.
- A Modbus address between 1 and 247 must be set in menu 8.3.
- The parity used in the actual Modbus network must be selected in menu 8.7 (select **no** or **o** = odd or **e** = even).
- The Modbus RTU mode must be selected in menu 8.8 (select **RTU**).
Note: The DAD141.1 must be restarted before this setting take effect.

1.3. Modbus Protocols

1.3.1. Modbus RTU via Serial Port

- binary data protocol

1.3.2. Modbus TCP via Ethernet Port:

- binary data protocol, embedded in TCP/IP packages
- Modbus TCP port: 502
- IP address is 192.168.0.100 (factory default)

1.4. Modbus Index Tables

See the following pages.

Notes in the tables: Hint for different meaning of a command in the firmware types.

1.5. General Informations

The DAD 141.1 is a very powerful and complex device. Let's explain some basics for an easy use and quick success with the right setup / settings.

- In any case, please read the basic manual and if you use one of the firmware types 1, 2 or 3, the associated application manual, too. The manual(s) together with the Modbus communication manual, describe the DAD141.1 with all the features.
- You can use this device as a simple weighing transmitter or indicator, using the front panel display for reading a weight value including the right decimal point position.
- While calibration procedure, you have to define the decimal point position for a digit correct display in the proper unit. The command is DP (index 2214).
- Please read in the basic manual the chapter 10.2 Calibration Commands. Depending on how you execute the calibration procedure, you have to support some of these commands in your Modbus system.
- ... and please don't forget to store all the calibration data with the command CS (index 2066).
- A reading of the commands like f.e. GG, GN, GA and some others is displayed with decimal point.
- Commands like f.e. PDx or PLx, these are special commands for the applications 'Filling In', 'Filling Out' or 'Loss in Weight' must be set (write) in increments, which means without decimal point. A reading of such a value has no decimal point, too.
- Depending on your used firmware type, you have to use the right command Sx for saving setup changes, see the different manuals.
- The eight "Dose Info" bits (index 206E) shall be interpreted differently in firmware type 1 and 3 (index 2228), see below:

Firmware type 1

Bit 0 = Coarse valve open
Bit 1 = Fine valve open
Bit 2 = Dose program running
Bit 3 = Medium valve open
Bit 4 = Not used
Bit 5 = Filling cycle timeout
Bit 6 = Tare out of range
Bit 7 = Zero out of range

Firmware type 3

Bit 0 = Coarse valve open
Bit 1 = Fine valve open
Bit 2 = Dose program running
Bit 3 = Refilling valve open
Bit 4 = Not used
Bit 5 = Filling cycle timeout
Bit 6 = Not used
Bit 7 = Not used

Index (hex)	Type	Size	Access	Function	
2000	Float	2	R	Gross Weight	This Index returns the latest Gross value obtained from a DAD141. The format is IEEE754 Single precision floating point format. The 32 bit data is obtained by reading 2 16-bit registers from index 2000. The Gross Weight are also sent when reading multiple DAD141 data at index 3500. see also command description: GG get gros value
2002	Float	2	R	Net Weight	This Index returns the latest Netto value obtained from a DAD141. The format is IEEE754 Single precision floating point format. The 32 bit data is obtained by reading 2 16-bit registers from index 2002. The Netto Weight are also sent when reading multiple DAD141 data at index 3500. see also command description: GN get net value
2004	Float	2	R	Get Tare or Dosed Tare	This Index returns the Tare weight used in the latest filling cycle. The format is IEEE754 Single precision floating point format. The 32 bit data is obtained by reading 2 16-bit registers from index 2004. see also command description: GT Get Tare or DT Dosed Tare (Note: firmware type 1 and 3 only)
2006	Float	2	R	Dosed Weight	This Index returns the last dosed weight value obtained from a DAD141. The format is IEEE754 Single precision floating point format. The 32 bit data is obtained by reading 2 16-bit registers from index 2006. see also command description: GD Dosed value (Note: firmware type 1 and 3 only)
2008	Float	2	R	Average Weight	This Index returns the latest average weight value obtained from a DAD141. The format is IEEE754 Single precision floating point format. The 32 bit data is obtained by reading 2 16-bit registers from index 2008. see also command description: GA get average value
2020	Int32	2	R	Gross Weight	This Index returns the Gross weight value obtained from a DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 2020. The Gross Weight are also sent when reading multiple DAD141 data at index 3300. see also command description: GG get gros value
2022	Int32	2	R	Net Weight	This Index returns the Netto weight value obtained from a DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 2022. The Netto Weight are also sent when reading multiple DAD141 data at index 3300. see also command description: GN get net value
2024	Int32	2	R	Get Tare or Dosed Tare	This Index returns the Tare weight used in the latest filling cycle. The 32 bit integer data is obtained by reading 2 16-bit registers from index 2024. see also command description: GT Get Tare or DT Dosed Tare (Note: firmware type 1 and 3 only)

Index (hex)	Type	Size	Access	Function	Description
2026	Int32	2	R	Dosed Weight	This Index returns the last dosed weight value obtained from a DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 2026. see also command description: GD Dosed value (Note: firmware type 1 and 3 only)
2028	Int32	2	R	Average Weight	This Index returns the latest average weight value obtained from a DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 2028. see also command description: GA get average value
202A	Int32	2	R	A/D Sample	This Index returns the current ADC value obtained from a DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 202A. see also command description: GS get sample
202C	Int32	2	R	Device ID	This Index returns the current ID of a DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 202C. The the high word (202C) are 0(zero) and the low word (202D) should be split into two bytes: 1. Byte is the minor ID, normally 10h (16d). 2. Byte is the major ID, normally 14h (20d). see also command description: ID identification device
202E	Int32	2	R	Firmware Version	This Index returns the current Firmware version of a DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 202E. The the high word (202E) are 0 (zero) and the low word (202F) should be split into two bytes: 1. Byte is the minor IV, e.g. 02h (02d). 2. Byte is the major IV, e.g. 17h (23d). see also command description: IV Firmware Version
2030	Int32	2	R	Device Status	This Index returns the current Status for a DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 2030. see also command description: IS Device Status
2034	Int32	2	R	Serial Number	This Index returns the serial number of the DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 2034. see also command description: RS Read Serial Number

Index (hex)	Type	Size	Access	Function	Description
2060	Int16	1	R	Qualifier	<p>This Index returns the latest Qualifier value obtained from a DAD141. The 16 bit integer data is obtained by reading one 16-bit registers at index 2060. The Qualifier bit values are: 0001h - Under range 0002h - Over range 0004h - n.a. 0008h - n.a. 0010h - No motion, still stand, steady state 0020h - Tare set 0040h - n.a. 0080h - n.a. 0100h - Set-point 0 (source>limit) 0200h - Set-point 1 0400h - Set-point 2 0800h - n.a. 1000h - Filling in progress 2000h - Filling complete 4000h – Average data ready 8000h - n.a. The Qualifier word are also sent when reading multiple DAD141 data at index 3300 or 3500.</p>
2061	Int16	1	W	Bit Commands	<p>This Index is used to set or reset Zero, Tare or Max / Valley / Peak to Peak. The 16 bit integer data is accessed by writing one 16-bit register at index 2061. see also command description: 01h: RZ Reset Zero 02h: SZ Set Zero 04h: RT Reset Tare 08h: ST Set Tare 10h: RM Reset Max 20h: TH Trigger Hold</p>
2062	Int16	1	W	Trigger	<p>This Index is used to trigger measurements in the DAD 141.1. The 16 bit integer data is accessed by writing one 16-bit register at index 2062. The value 0080h starts the triggered measurement. see also command description: TR Software Trigger</p>

Index (hex)	Type	Size	Access	Function	Description
2065	Int16	1	W	Start Fill	This Index is used to Start or Stop the filling application in a DAD141. The 16 bit integer data is accessed by writing one 16-bit register at index 2065. A non-zero starts the filling application, and the value 0(zero) arborts filling. see also command description: SC Start Cycle or AC Abort Cycle
2066	Int16	1	W	Save in EEPROM	This Index is used to Initiate writing to the DAD141 EEPROM. The 16 bit integer data is accessed by writing one 16-bit register at index 2066. The values are: 0001h: AS Save analog parameters 0002h: CS Save calibration – Note: Command is TAC protected, open with CE "n" (index 2204) 0004h: WP Save general setup parameters 0008h: SD – Save dosing parameters (Note: firmware type 1 and 3 only) 0010h: SS Save set-point parameters 0020h: SL - Save Mass flow parameters (Note: firmware type 2 only) 8000h: FD Factory default - Note: Command is TAC protected, open with CE "n" (index 2204)
2067	Int16	1	RW	Set Point Selection	This Index is used to select Setpoint in a DAD141. The 16 bit integer data is accessed by writing one 16-bit register at index 2067. The values are 0 (zero) to 2 and selects the setpoint acted upon by indexes: 2068h,206Ah, 206Ch and 2070h. This index act as the 'n' parameter for the A'n' , H'n' , S'n' and P'n' commands see also command description: A'n' Assign action, H'n' Hysteresis, S'n' Setpoint, P'n' Polarity
2068	Int32	2	RW	Set Point Source	This Index is used to select Setpoint Source in a DAD141. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2068. 0 = Gross weight as setpoint source 1 = Net weight as setpoint source 2 = Peak value (Max) as setpoint source 3 = Average value as setpoint source 4 = Hold value as setpoint source 5 = Peak to Peak value as setpoint source 6 = Valley value (Min.) as setpoint source 7 = Error 4 or 5 as setpoint source 8 = Mass flow (Note: firmware type 2 only) 9 = Batch Loss In Weight (Note: firmware type 2 only) 10 = Bit from LIW control (Note: firmware type 2 only) 11 = Average ready see also command description: A'n' (n = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11)

Index (hex)	Type	Size	Access	Function	Description
206A	Int32	2	RW	SetPoint Hysteresis	This Index is used to get or set Setpoint Hysteresis in a DAD141. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 206A. see also command description: H'n' (n = 0, 1, 2)
206C	Int32	2	RW	SetPoint Value	This Index is used to get or set Setpoint limit in a DAD141. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 206C. see also command description: S'n' (n = 0, 1, 2)
206E	Int16	1	R	DoseInfo	This Index returns the Dosed Info obtained from a DAD141. The 16 bit integer data is obtained by reading one 16-bit registers from index 206E. see also: DI Dose Info (Note: different in firmware type 1 and 3, see page 3)
2070	Int32	2	RW	SetPoint Polarity	This Index is used to get or set Setpoint polarity in a DAD141. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2070. The values of switch logic are 0 or 1. see also command description: P'n' (n = 0, 1, 2)
2074	Int16	1	RW	Logic Input Select	This Index is used to get or set Logic Input Function in a DAD141. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2074. The values of the function are 0 or 1. see also command description: AI'n' (n = 0 or 1) Assign Input .
2076	Int16	1	RW	Assign Logic Input	This Index is used to get or set Logic Input Function in a DAD141. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2074. The values of the function are 00 to 18. see also command description: AI'n' , where 'm' describes the function (m = 0 ... 18)
2080	Float	2	R	Peak Value	This Index returns the latest peak value obtained from a DAD141. The format is IEEE754 Single precision floating point format. The 32 bit data is obtained by reading 2 16-bit registers from index 2080. See also command description: GM Get Peak Value
2082	Int32	2	R	Peak Value	This Index returns the peak value of the DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 2082. see also command description: GM Get Peak Value

Index (hex)	Type	Size	Access	Function	Description
2084	Float	2	R	Hold	This Index returns the latest hold value obtained from a DAD141. The format is IEEE754 Single precision floating point format. The 32 bit data is obtained by reading 2 16-bit registers from index 2084. See also command description: GH Get Hold Value
2086	Int32	2	R	Hold	This Index returns the hold value of the DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 2086. see also command description: GH Get Hold Value
2088	Float	2	R	Valley Value	This Index returns the latest valley value obtained from a DAD141. The format is IEEE754 Single precision floating point format. The 32 bit data is obtained by reading 2 16-bit registers from index 2088. See also command description: GV Get Valley Value
208A	Int32	2	R	Valley Value	This Index returns the valley value of the DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 208A. see also command description: GV Get Valley Value
208C	Float	2	R	Peak to Peak Value	This Index returns the latest valley value obtained from a DAD141. The format is IEEE754 Single precision floating point format. The 32 bit data is obtained by reading 2 16-bit registers from index 208C. See also command description: GO Get Peak Value
208E	Int32	2	R	Peak to Peak Value	This Index returns the peak value of the DAD141. The 32 bit integer data is obtained by reading 2 16-bit registers from index 208E. see also command description: GO Get Peak Value
2100	Int32	2	RW	Analog Action	This Index is used to select Analog Output Source. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2100. The values of the analog action are 0 to 9 (0 = Gross, 1 = Net, 2 = Peak, 3 = Average, 4 = Hold, 5 = Peak to peak, 6 = Valley, 7 = Actual display value, 8 = Off, 9 = Mass flow). see also command description: AA Analog output source
2102	Int32	2	RW	Analog High	This Index defines the weight value for the high analog output. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2102. see also command description: AH Analog High
2104	Int32	2	RW	Analog Low	This Index defines the weight value for the low analog output. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2104. see also command description: AL Analog Low

Index (hex)	Type	Size	Access	Function	Description
2106	Int32	2	RW	Filter Setting	This Index is used to select the filter setting. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2106. The values of the low pass filters are 0 to 8. see also command description: FL Filter Value
210A	Int32	2	RW	Logic Output	This Index Reads/Modify the status of the physical output signals. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 210A. see also command description: IO Status of the logic Output
210C	Int32	2	R	Logic Input	This Index reads the status of the physical input signals. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 210C. see also command description: IN Read status of logic Input
210E	Int32	2	RW	Measuring Time	See index 2410
2110	Int32	2	RW	Filter Mode	This Index chooses the filter mode, permitted values are "0" for IIR and "1" for FIR. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2110. see also command description: FM Filter Mode
2112	Int32	2	RW	No Motion Range	This Index Reads/Modify the maximum number of counts allowed as no motion. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2112. see also command description: NR No Motion Range
2114	Int32	2	RW	No Motion Time	This Index Reads/Modify the minimum time the weight must stay within NR to be no motion. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2114. see also command description: NT No MotionTime
2116	Int32	2	RW	Logic Output Mask	This Index Reads/Modify the mask of the logic Outputs. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2116. see also command description: OM Control of logic Outputs
2118	Int32	2	R	Tare Value	This Index Reads the Tare value. The 32 bit integer data accessed by reading 2 16-bit registers from index 2118. see also command description: GT Get tare value
211A	Int32	2	RW	Start Delay	See also index 2412
211C	Int32	2	RW	Trigger Edge	See also index 2402
211E	Int32	2	RW	Trigger Level	See also index 2400
2120	Int32	2	RW	Update Rate	This Index chooses Average after the filter by 2 exp. UR samples. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2120. The values of the update rate are 0 to 7 (2 exp 0 = 1, 2 exp 7 = 128). see also command description: UR Update Rate

Index (hex)	Type	Size	Access	Function	Description
2122	Int32	2	RW	Zero Tracking	This Index enables or disables the zero tracking (TAC protected). The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2122. The values of Zero Tracking function are 0 to 255. see also command description: ZT Zero Tracking
2128	Int32	2	RW	Analog Output Mode	This Index is used for set the analog output mode. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2128. The values of the output mode are 0 to 5 (0 = 4-20mA, 1 = 0-20mA, 2 = 0-5V, 3 = 0-10V, 4 = -5 to 5V, 5 = -10 to 10V) see also command description: AM Analog Output Mode
212A	Int32	2	RW	Pre-Filter	Turns analog pre filter ON or OFF. see also command description: PF Pre Filter
2200	Int32	2	RW	Absolute Gain Calibration	This Index Reads/Modify the absolute gain point (TAC protected). The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2200. see also command description: AG Absolute Gain
2202	Int32	2	RW	Absolute Zero Calibration	This Index Reads/Modify the absolute zero point (TAC protected). The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2202. see also command description: AZ Absolute Zero
2204	Int32	2	RW	Calibrate Enable	This Index sets the calibration functions to the enabled state. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2204. see also command description: CE Calibrate Enable
2206	Int32	2	RW	Calibrate Gain	This Index sets the calibration gain (span) value (TAC protected). The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2206. see also command description: CG Calibrate Gain
220C	Int32	2	RW	Calibrate Max	This Index Reads/Modify the maximum allowable output value (TAC protected). The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 220C. see also command description: CM Maximum Output
220E	Int32	2	RW	Calibrate Min	This Index Reads/Modify the minimum allowable output value (TAC protected). The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 220E. see also command description: CI Minimum Output
2212	Int32	2	W	Calibrate Zero	This Index sets the calibration zero point (TAC protected). The 32 bit integer data accessed by writing 2 16-bit registers from index 2212. see also command description: CZ Calibrate Zero
2214	Int32	2	RW	Decimal Point	This Index Reads/Modify the decimal point position (TAC protected). The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2214. see also command description: DP Decimal Point

Index (hex)	Type	Size	Access	Function	Description
2216	Int32	2	RW	Display Step Size	This Index Reads/Modify the display step size (TAC protected). The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2216. see also command description: DS Display Step Size
2218	Int32	2	RW	Select Multi Range	This Index Reads/Modify Multi Range (TAC protected). see also command description: MR Multi Range
221A	Int32	2	RW	CM2 max display value	see also command description: CM2 Maximum2 (TAC protected).
221C	Int32	2	RW	CM3 max display value	see also command description: CM3 Maximum3 (TAC protected).
221E	Int32	2	RW	Initial Zero @ Power ON	This Index enables or disables the initial zero function @ power ON. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 221E. see also command description: ZI Initial Zero ON/OFF (TAC protected).
2220	Int32	2	RW	Zero Range	This Index selects the zero range. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 221E. A value of 0 enables the standard zero range of $\pm 2\%$ of maximum. see also command description: ZR Zero Range (TAC protected).
2222	Int32	2	RW	Tare Mode	see also command description TM Tare Mode
2224	Int32	2	RW	Store Tare value @ Power OFF	This Index enables or disables the tare storing in EEPROM @ power OFF. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2224. see also command description: TN Store Zero Value
2226	Int32	2	RW	Store Zero Value @ Power OFF	This Index enables or disables the zero storing in EEPROM @ power OFF. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2226. see also command description: ZN Store Zero Value
2228	Int32	2	RW	Firmware Type	see also command description: FT Firmware Type (TAC protected)
2300	Int32	2	RW	Pre-Fill Mode	This Index Reads/Modify the Pre-filling mode. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2300. see also command description: PD1 Pre-Fill Mode (Note: firmware type 1 and 3 only)
2302	Int32	2	RW	In-Flight Correction	This Index Reads/Modify the Correction factor for in-flight value in percent. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2302. see also command description: PD2 Inflight Correction (Note: firmware type 1 and 3 only)
2304	Int32	2	RW	Zero Check Time	This Index Reads/Modify the time over which the zero check average will be build. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2304. see also command description: PD3 Zero Check Time (Note: firmware type 1 only)

Index (hex)	Type	Size	Access	Function	Description
2306	Int32	2	RW	Tare Delay	This Index Reads/Modify the Tare delay from trigger to tare averaging start. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2306. see also command description: PD4 Tare Delay (Note: firmware type 1 and 3 only)
2308	Int32	2	RW	Tare Average Time	This Index Reads/Modify the time over which the tare average will be build. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2308. see also command description: PD5 Tare Average Time (Note: firmware type 1 only)
230A	Int32	2	RW	Delay After Pre-fill	This Index Reads/Modify the Delay after pre-fill. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 230A. see also command description: PD6 Delay After Prefill (Note: firmware type 1 and 3 only)
230C	Int32	2	RW	Blanking Time	This Index Reads/Modify the blanking time after coarse valve has been shut off. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 230C. see also command description: PD7 Blanking Time (Note: firmware type 1 and 3 only)
230E	Int32	2	RW	In-Flight Delay Time	This Index Reads/Modify the In-flight delay time after fine valve has been shut off. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 230E. see also command description: PD8 In-Flight Delay Time (Note: firmware type 1 and 3 only)
2310	Int32	2	RW	Fill Weight Average Time	This Index Reads/Modify the time over which the filling weight average will be build. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2310. see also command description: PD9 Fill Weight AverageTime (Note: firmware type 1 and 3 only)
2312	Int32	2	RW	Zero Tolerance	This Index Reads/Modify the allowable deviation from calibrated zero. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2312. see also command description: PD10 ZeroTolerance (Note: firmware type 3: hopper weight Lower Limit)
2314	Int32	2	RW	Tare Reference	This Index Reads/Modify the allowable deviation from calibrated zero. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2312. see also command description: PD11 Tare Reference (Note: firmware type 3: hopper weight Upper Limit)
2316	Int32	2	RW	Tare Tolerance	This Index Reads/Modify the allowable deviation from nominal bottle weight. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2316. see also command description: PD12 Tare Tolerance (Note: firmware type 3: Refill Tolerance)
2318	Int32	2	RW	Pre-Fill level	This Index Reads/Modify the Set-point for end of pre-filling. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2318. see also command description: PD13 Pre-Fill Level 1 (Note: firmware type 1 and 3 only)

Index (hex)	Type	Size	Access	Function	Description
231A	Int32	2	RW	Fine-Fill Weight	This Index Reads/Modify the Fine-fill weight. Part of the total filling weight done by the fine filling valve. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 231A. see also command description: PD14 Fine Fill Weight (Note: firmware type 1 and 3 only)
231C	Int32	2	RW	Filling Weight	This Index Reads/Modify the Filling weight. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 231C. see also command description: PD15 Filling Weight (Note: firmware type 1 and 3 only)
231E	Int32	2	RW	In-Flight Value	This Index Reads/Modify the In-flight value. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 231E. see also command description: PD16 In-Flight Value (Note: firmware type 1 and 3 only)
2320	Int32	2	RW	2nd Pre-Fill Level	This Index Reads/Modify the Set-point for end of Secondary pre-filling. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2320. see also command description: PD17 Pre-Fill Level 2 (Note: firmware type 1 and 3 only)
2322	Int32	2	RW	Time Out	This Index Reads/Modify the Fill cycle timeout. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2322. see also command description: PD18 Filling cycle Timeout Value (Note: firmware type 1 and 3 only)
2324	Int32	2	RW	Underweight Post Fill Time	This Index Reads/Modify the Time for fine fill valve to open if underweight. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2324. see also command description: PD19 Underweight Post Fill Time (Note: firmware type 1 only)
2326	Int32	2	RW	Tare Intervall	This Index Reads/Modify the number of cycles to pass before next tare. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2326. see also command description: PD20 Tare Interval (Note: firmware type 1 only)
2328	Int32	2	RW	Bag Rapture Blanking	This Index Reads/Modify the Time before monitoring weight increase. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2328. see also command description: PD21 Bag Rapture Blanking (Note: firmware type 1 only)
232A	Int32	2	RW	Medium Fill Weight	This Index Reads/Modify the Medium-fill weight. Part of the total filling weight done by the medium filling valve. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 232A. see also command description: PD22 Medium Fill Weight (Note: firmware type 1 only)
232C	Int32	2	RW	Production Counter	This Index Reads/Modify the Production Counter. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 232C. See also command description: PD23 Production Counter (Note: firmware type 1 & 3 only).

Index (hex)	Type	Size	Access	Function	Description
2400	Int32	2	RW	Trigger Level	This Index selects the trigger level. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2400. see also command description: TL Trigger Level
2402	Int32	2	RW	Trigger Edge	This Index selects rising or falling slope trigger. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2402. see also command description: TE Trigger Edge
2408	Int32	2	RW	Hold Time	This Index Reads/Modify the Hold time of setpoint S0. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2408. see also command description: HT Hold Time
240A	Int32	2	RW	Tare Window	This Index Reads/Modify the tare window. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 240A. see also command description: TW Tare Window
240C	Int32	2	RW	Tare Time	This Index Reads/Modify the tare time. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 240C. see also command description: TI Tare Time
2410	Int32	2	RW	Measuring Time	This Index Reads/Modify the time over which the average value will be built. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2410. see also command description: MT Measure Time
2412	Int32	2	RW	Start Delay	This Index Reads/Modify the delay between falling/rising edge of the trigger pulse and start of the measurement. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2412. see also command description: SD Start Delay
2500	Int32	2	RW	Decimal Point Flow	This Index Reads/Modify the Flow decimal point. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2500. see also command description: PL1 Flow Decimal Point (Note: firmware type 2 only)
2502	Int32	2	RW	Scale Values	This Index Reads/Modify the Flow scale. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2502. see also command description: PL2 Flow Scale (Note: firmware type 2 only)
2504	Int32	2	RW	Flow dTime	This Index Reads/Modify the flow measure timeslot length. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2504. see also command description: PL3 Flow dTime (Note: firmware type 2 only)
2506	Int32	2	RW	Flow DWeight	This Index Reads/Modify the flow measure window. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2506. see also command description: PL4 Flow dWeight (Note: firmware type 2 only)

Index (hex)	Type	Size	Access	Function	Description
2508	Int32	2	RW	Delay after Refill	This Index Reads/Modify the delay time after refill. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 2508. see also command description: PL5 Refill Delay Time (Note: firmware type 2 only)
250A	Int32	2	RW	P constant	see also command description: PL6 KP Constant (Note: firmware type 2 only)
250C	Int32	2	RW	I constant	see also command description: PL7 KI Constant (Note: firmware type 2 only)
250E	Int32	2	RW	D constant	see also command description: PL8 KD Constant (Note: firmware type 2 only)
2510	Int32	2	RW	Feed setpoint	see also command description: PL9 Feed Setpoint (target mass flow) (Note: firmware type 2 only)
2512	Int32	2	RW	Setpoint Tolerance	see also command description: PL10 Feed Setpoint Tolerance (Note: firmware type 2 only)
2514	Int32	2	RW	NMR Flow	see also command description: PL11 No Motion Range Flow (Note: firmware type 2 only)
2516	Int32	2	RW	NMT Flow	see also command description: PL12 No Motion Time Flow (Note: firmware type 2 only)
2600	Int32	2	RW	Flow Control	This Index Controls the mass flow measurement. The 32 bit integer data accessed by reading or writing one 16-bit register from index 2600. see also command description: LS Loss Control (Note: firmware type 2 only)
2601	Int32	2	RW	Flow Status	This Index Reads the mass flow status. The 32 bit integer data accessed by reading one 16-bit register from index 2601. see also command description: LI Loss Info (Note: firmware type 2 only)
2602	Int32	2	RW	Volumetric Freeze	see also command description: VF Volumetric Freeze (Note: firmware type 2 only)
2700	Int32	2	RW	Mass Flow Value	This Index Reads the mass flow. The 32 bit integer data accessed by reading 2 16-bit registers from index 2700. see also command description: GF Flow (Note: firmware type 2 only)
2702	Int32	2	RW	Mass Flow Trend	This Index Reads the trend. The 32 bit integer data accessed by reading 2 16-bit registers from index 2702. see also command description: GR Trend (Note: firmware type 2 only)
2704	Int32	2	RW	Total Mass	This Index Reads the Total accumulated mass. The 32 bit integer data accessed by reading 2 16-bit registers from index 2704. see also command description: GM Mass value (Note: firmware type 2 only)
2706	Int32	2	RW	Actual Mass Flow	This Index Reads the actual mass flow. The 32 bit integer data accessed by reading 2 16-bit registers from index 2706. see also command description: GD Flow Rate (Note: firmware type 2 only)

Index (hex)	Type	Size	Access	Function	Description
3004	Int32	2	R	Last Error	See Basic Manual in chapter 9.1.2 - Error List
3006	Int32	2	R	MAC Hi	This Index reads the four most significant bytes of the MAC address. The 32 bit integer data accessed by reading 2 16-bit registers from index 3006.
3008	Int32	2	R	MAC Lo	This Index reads the two least significant bytes of the MAC address. The 32 bit integer data accessed by reading 2 16-bit registers from index 3008.
300C	Int32	2	RW	IP Address	This Index reads/Modify the IP Address. A change will take effect after reset. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 300C. see also command description: NA Network Address
3300	Int32 Int32 Int16	5	R	Combined result, integer	This index reads the gross weight, the net weight and the qualifier. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 3300. see also command description: GW Get data string "net, gross and status"
3500	Float Float Int16	5	R	Combined result, floating point	This index reads the gross weight, the net weight and the qualifier. The 32 bit integer data accessed by reading or writing 2 16-bit registers from index 3500. see also command description: GW Get data string "net, gross and status"

Note to the tables:

A marked line with a different background colour means, this index / command belongs to a special command group (f.e. index 2500 to 2706).