DATA SHEET

MS1-7405 / 02

DEFINITION OF THE MODBUS INTERFACE OF THE TRIAD II TRANSDUCER

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ENERGY

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1. FOREWORD

The information contained in this Data Sheet is intended only for programmers who wish to use the information measured and stored by the TRIAD II transducer in an energy supervision and/or management system using an RS-485 field bus under the Modbus protocol in RTU mode, or an Ethernet network under the Modbus/TCP protocol in RTU mode.

The chapter that follows provides a rapid introduction to the Modbus protocol used by the TRIAD II transducer to configure and use the product.

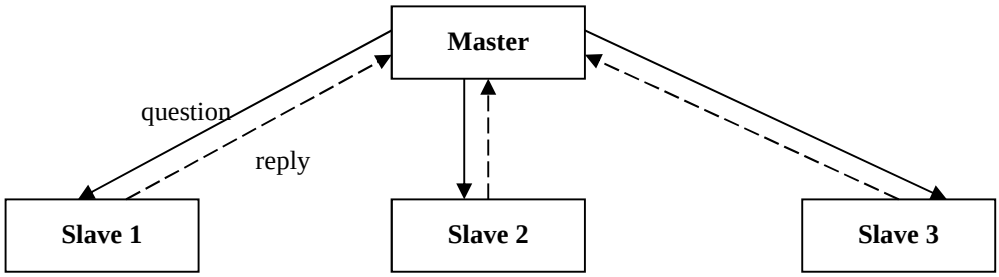
The complete specifications of the protocol are available on the site http://www.modbus.org.

This document is intended for sophisticated users who are familiar with the Modbus protocol and have already worked with Modbus drivers.

2. INTRODUCTION TO MODBUS

2.1 DEFINITIONS

- The Modbus protocol (a trade mark registered by MODICON) is a protocol based on a hierarchical structure of the client/server or master/slave type for dialogue between devices connected by a bus (e.g. RS-485) or a network (e.g. Ethernet).
- In this document, we also refer to the Jbus protocol, the French name for the Modbus/RTU variant (see below).



- The master sends a question and waits for a reply. Two slaves cannot dialogue together. The master/slave dialogue can be represented schematically as a succession of point-to-point links
- Watch out for the terms: the master device is also called Modbus Client and the slave device is called Modbus Server.

2.2 VARIANTS OF THE PROTOCOL

- There are several transmission modes:
  - RTU: (Remote Terminal Unit) in which the data are coded in natural hexadecimal
  - ASCII (American Standard Code for Information Interchange) in which each byte is coded by two ASCII characters.

2.3 PHYSICAL LAYER (TRANSPORT)

2.3.1 On an RS-485 bus

- When we speak of Modbus without further qualification, or of Modbus/ASCII or Modbus/RTU, the physical layer is generally an RS-485 multipoint link. In this case, two rules must be observed:
  - The master speaks to a slave and waits for its reply
  - The master speaks to all slaves, without waiting for a reply (broadcasting).
- Communication is then "half-duplex": transmission and reception cannot take place at the same time.

2.3.2 On an Ethernet network

- In the case of an Ethernet type network, the protocol used is Modbus/TCP, a minor variant of standard Modbus in which the Modbus frames are encapsulated in TCP/IP frames. The slave address is then no longer used, because there is another way to identify the product on the network: the IP address.

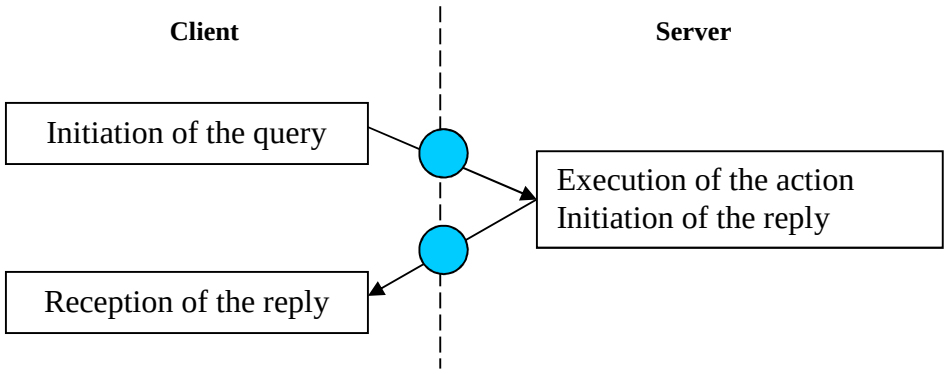
2.3.3 Optical link

- The TRIAD II has an optical USB head that makes it possible to perform exactly the same Modbus operations as by RS-485 or Ethernet. In this case, it is not a bus but a point-to-point link. This makes it possible to use any slave address (see below) to communicate via the optical head.

2.4 DESCRIPTION OF THE PROTOCOL

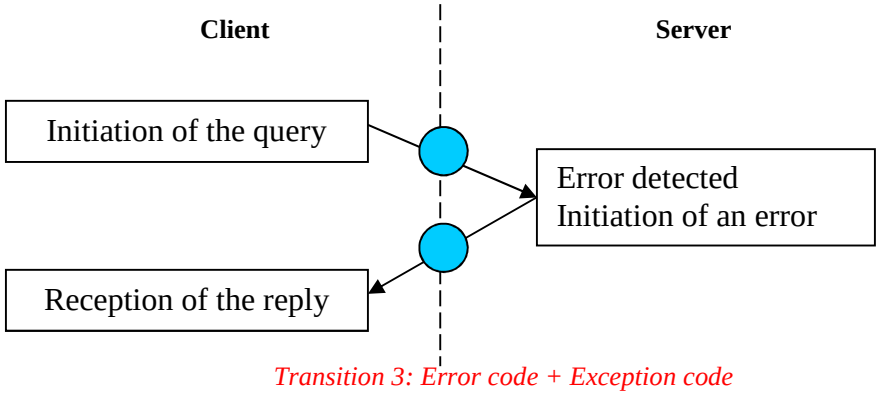
2.4.1 Modbus transactions

- A client sends a query to the server. The server performs the action linked to the query and prepares the reply. The server then returns the reply and the client receives the reply from the server.



Transition 1: Function code + data request
Transition 2: Function code + data response

- The server may detect an error during the reception of the client query or while processing it. In this case, an exception is returned to the client.



Transition 3: Error code + Exception code

2.4.2 Addressing

2.4.21. In Modbus/RTU/ASCII

- The slave address is between 1 and 247.
- Address 0 is reserved for "broadcast" messages (messages sent to several devices on a single bus).
- The addresses from 248 to 255 are reserved.
- Two clients cannot have the same address.

2.4.22. In Modbus/TCP

- The notion of addressing is left to the TCP/IP layer, making it possible to choose a specific slave thanks to its IP address.

2.4.3 Modbus/RTU frames

- The data of the frame are coded in Big Endian format (high-order bits first). The maximum size of a Modbus/RTU frame is 255 bytes. This means that the maximum number of words that can be read (function 3) is 125 and the maximum number of words that can be sent (function 16) is 123.

2.4.31. Query

- The first byte contains the number of the slave to which the frame is sent.
- The second byte contains a function code informing the slave what type of action is requested.
- The data contain complementary information the slave needs to perform this function.
- The check bytes field enables the slave to make sure of the entire content of the question. In Modbus, the error check takes the form of a 16-bit CRC with a polynomial evaluating to 0xA001. Attention: the two check bytes are transmitted in Little Endian.

Slave no.	Function code	Specific information concerning the request	Check bytes
1 byte	1 byte	n bytes	2 bytes

2.4.32. Reply

Slave no.	Function code	Data received	Check bytes
1 byte	1 byte	n bytes	2 bytes

2.4.33. Exception reply

Slave no.	Function code + mask	Exception code	Check bytes
1 byte	1 byte	1 byte	2 bytes

The reply frame contains the function code plus the high-order bit set to 1. Example: if the function code of the query is 0x03, an exception reply returns a function code equal to 0x83.

The standardized exception codes are the following:

Exception code	Modbus name	Remarks
0x01	Illegal Function Code	Function not supported by the product
0x02	Illegal Data Address	Address prohibited
0x03	Illegal Data Value	Incorrect data
0x04	Server Failure	The Modbus server has generated an error
0x05	Acknowledge	Acknowledge
0x06	Server Busy	The server is busy
0x07	No acknowledge	No acknowledge
0x08	Write Error	Write error
0x09	Overlapped Area	Zone overlap
0x0A	Gateway problem	Access to the gateway impossible
0x0B	Gateway problem	Exception generated by the gateway

2.4.4 Modbus/ASCII frames

Modbus/ASCII frames are not described here because the TRIAD II does not support this transmission mode. Refer to the official specification for more details.

2.4.5 Modbus/TCP

In this mode, two CRC bytes are removed from the frames (the integrity of the data is ensured by the TCP/IP layer) and a new header is attached to the beginning of the frame. This header is called MBAP and contains the following information:

MBAP header	Function code + mask	Exception code
7 bytes	1 byte	1 bytes

Field	Size	Description	Client	Server
Transaction Identifier	2 bytes	Identifies the Modbus transaction	Initialized by the client	Transcribed by the server in the reply frame
Protocol Identifier	2 bytes	0 = Modbus protocol	Initialized by the client	Transcribed by the server in the reply frame
Length	2 bytes	Number of bytes that follow	Initialized by the client in the query	Initialized by the server in the reply
Unit identifier	1 byte	Modbus address of a remote slave	Initialized by the client (insert 0xFF as default)	Transcribed by the server in the reply frame

Modbus/TCP uses reserved port number 502 and, which must therefore be freely accessible on the network, but the standard specifies that any Modbus/TCP server must be able to use a second listening port because some security configurations disable port 502.

2.5 MODBUS IN THE TRIAD II

2.5.1 Coding

All data are transmitted in Big Endian (high-order bits first). Floating-point quantities are coded according the IEEE 754 standard, single precision.

2.5.2 Modes supported

- The TRIAD II has two communication channels:
  - Optical communication via the front panel: this is point-to-point communication, with the link being established with the ENERDIS optical head. The communication parameters are fixed (38400 bauds, 8, N, 1), as is the mode (Modbus/RTU), but the slave address is not tested so all slave numbers from 1 to 255 can be used.
  - Remote communication, which depending on the product ordered is characterized as either classical Modbus/RTU, on an RS-485 bus, or Modbus/TCP/RTU, on a TCP/IP network.
- Default parameters of the RS-485 link: 9600 bauds, 8, N, 1
- Modbus/TCP default parameter on Ethernet: IP address 0.0.0.0 (to be configured)

2.5.3 Functions supported

- Refer to the official documentation for details of the functions supported:
  - **Function 3**: function used to read the Modbus mapping, for example to recover measured quantities or curves

    ➔ Request:

Slave no.	3 or 4	Address of first word	Number of words	CRC
1 byte	1 byte	2 bytes	2 bytes	2 bytes

➔ Reply:

Slave no.	3 or 4	Number of bytes read	Value of the first word		Value of the last word	CRC
1 byte	1 byte	2 bytes	2 bytes		2 bytes	2 bytes

- **Function 4**: same as function 3
- **Function 16**: to send the command words described in this document

➔ Request:

Slave no.	16	Address of the first word to be forced	Number of words to be forced	Number of bytes to be forced	Value of the words to be forced	CRC
1 byte	1 byte	2 bytes	2 bytes	1 byte	2 bytes	2 bytes

➔ Reply:

Slave no.	16	Address of first word forced	Number of words forced	CRC
1 byte	1 byte	2 bytes	2 bytes	2 bytes

3. STATUS WORDS

3.1 ANALOGUE OUTPUTS

3.1.1 Out-of-bounds status word

- When the analogue output of channel X reaches the maximum value of the transfer function, then the corresponding DH bit is 1, otherwise this bit is 0. When the analogue output of channel X reaches the minimum value of the transfer function, then the corresponding DL bit is 1, otherwise this bit is 0.
- In the case of cosine types, there is no notion of high and low out-of-bounds; only the high out-of-bounds bit changes.

Bit 15															**Bit 0**
								Channel 4		Channel 3		Channel 2		Channel 1	
								DH	DL	DH	DL	DH	DL	DH	DL

3.1.2 Status Saturation word

- When the analogue output of channel X reaches the authorized high out-of-bounds value of the transfer function, then the corresponding SH bit is 1, otherwise this bit is 0. When the analogue output of channel X reaches the authorized low out-of-bounds value of the transfer function, then the corresponding SL bit is 1, otherwise this bit is 0.
- In the case of cosine types, there is no notion of high and low saturation; only the high saturation bit changes.

Bit 15															**Bit 0**
								Channel 4		Channel 3		Channel 2		Channel 1	
								SH	SL	SH	SL	SH	SL	SH	SL

3.2 PRESENCE OF VOLTAGE/CURRENT

- When a voltage or a current is detected, the corresponding bit is set to 1, otherwise it is 0.

Bit 15															**Bit 0**
							I3	I2	I1	U31	U23	U12	V3	V2	V1

4. COMMAND WORDS

4.1 FOREWORD

- The use of a command word not authorized in a product version entails an exception of the "Data Error" type, 0x03.
- All associated parameters must be within the limits of the defined formats. Any other value entails an exception of the "Data Error" type, 0x03.

4.2 COMMUNICATION PARAMETERS

- Modbus commands concerning access to the communication data all begin with the number 0x02XX.

4.2.1 RS485 type

4.2.11. Slave number

- Command word: 0x0200
- Associated parameter:
  - Type F9

4.2.12. RS485 data rate

- Command word: 0x0201
- Associated parameter:
  - Type F10

4.2.13. RS485 parity

- Command word: 0x0202
- Associated parameter:
  - Type F11

4.2.14. RS485 number of stop bits

- Command word: 0x0203
- Associated parameter:
  - Type F12

4.2.15. Response timeout

- Command word: 0x0204
- Associated parameter:
  - Type F13

4.2.2 Ethernet type

4.2.21. IP address of the device

- Command word: 0x0220
- Associated parameter:
  - Type F66
- E.g. 0x0E07D424 corresponds to the address 14.7.212.36

4.2.22. IP address of the gateway

- Command word: 0x0221
- Associated parameter:
  - Type F66

4.2.23. *Sub-network mask*

- Command word: 0x0222
- Associated parameter:
  - Type F66

4.2.24. *Alternative Modbus/TCP listening port*

- Command word: 0x0223
- Associated parameter:
  - Unsigned 16-bit integer [0..65535]

4.3 METROLOGY

❑ Modbus commands concerning the parameterizing of the Metrology all begin with the number 0x06XX.

TP primary x TC primary x √3 ≤ 2 Gigas.

4.3.1 TP primary

- Command word: 0x0601
- Associated parameter no. 1:
  - Value of the TP primary (uint32), between 100 to 650000 (no. 1).

4.3.2 TP secondary

- Command word: 0x0602
- Associated parameter no. 1:
  - Value of the TP secondary (uint32), between 100 to 480 (no. 1).

4.3.3 TC primary

- Command word: 0x0603
- Associated parameter no. 1:
  - Value of the TP primary (uint32), between 1 to 25000 (no. 1).

4.3.4 TC secondary

- Command word: 0x0604
- Associated parameter no. 1:
  - Value of the TP secondary (uint32), between 1 to 5 (no. 1).

4.3.5 Network frequency (50-60Hz products only)

- Command word: 0x0605
- Associated parameter no. 1:
  - Type F34

4.3.6 Wiring diagram

- Command word: 0x0606
- Associated parameter no. 1:
  - F64

4.3.7 √3 flag

- Command word: 0x0608
- Associated parameter no. 1:
  - F3 (TRUE = √3)

4.4 ANALOGUE OUTPUTS

❑ Modbus commands concerning the parameterizing of the analogue outputs all begin with the number 0x09XX.

4.4.1 Parameterizing of an Analogue output board

- Command word: 0x0900
- Associated parameter no. 1: Selection of the channel
  - F24
- Associated parameter no. 2: Quantity associated with the output
  - F43
- Associated parameter no. 3: Type of transfer function
  - F45
- Associated parameter no. 4: Desired response time
  - F46
- Associated parameter no. 5: Emin
  - Minimum value of the quantity (floating-point)
- Associated parameter no. 6: Emin quadrant (uint32) (quadrant, used only in the case of a quantity of the FP type, otherwise initialize to zero)
  - Inductive or capacitive (F39)
- Associated parameter no. 7: Ecass
  - Breaking point value of the quantity (floating-point). Used only in the case of a transfer function of the "Double slope" type (prerequisite: Ecass > Emin). Leave at zero in the other cases
- Associated parameter no. 8: Ecass quadrant (uint32) (quadrant, used only in the case of a quantity of the FP type, otherwise initialize to zero)
  - Inductive or capacitive (F39)
- Associated parameter no. 9: Emax
  - Maximum value of the quantity (floating-point) (prerequisite: Emax > Ecass > Emin)
- Associated parameter no. 10: Emax quadrant (uint32) (quadrant, used only in the case of a quantity of the FP type, otherwise initialize to zero)
  - Inductive or capacitive (F39)
- Associated parameter no. 11: Smin (float)
  - Minimum value of the analogue output (in mA or V depending on the output). This value must be included in the range of the output.
- Associated parameter no. 12: Scass (float)
  - Value of breaking of the analogue output (in mA or V depending on the output). This value must be included in the range of the output. Used only in the case of a transfer function of the "Double slope" type (prerequisite: Smax > Smin). Otherwise initialize to zero.
- Associated parameter no. 13: Smax (float)
  - Maximum value of the analogue output (in mA or V depending on the output). This value must be included in the range of the output. (prerequisite: Smax > Scass > Smin)

Note: it is necessary to have a minimum difference between the points of the configuration of the analogue outputs. The rule, which depends on the range, is as follows:

Range	Single-slope and quadratic functions	Double-slope function
20 mA	Smax – Smin ≥ 4 mA	Smax – Scass ≥ 2 mA Scass – Smin ≥ 2 mA

5 mA	Smax – Smin ≥ 1 mA	Smax – Scass ≥ 0,5 mA Scass – Smin ≥ 0,5 mA
1 mA	Smax – Smin ≥ 0,2 mA	Smax – Scass ≥ 0,1 mA Scass – Smin ≥ 0,1 mA
10 V	Smax – Smin ≥ 2 V	Smax – Scass ≥ 1 mA Scass – Smin ≥ 1 mA
1 V	Smax – Smin ≥ 0,2 V	Smax – Scass ≥ 0,1 mA Scass – Smin ≥ 0,1 mA

4.4.2 Test of analogue output mode

- Command word: 0x0901
- Associated parameter no. 1: Selection of the channel
  - F24
- Associated parameters no. 2:
  - Value of current to be forced, in mA (floating-point)

Note: Control in Forced mode does not change the configuration of the corresponding output. At the end of 10 minutes, the mode returns to the normal mode.

4.4.3 De-activation of the Test mode

- Command word: 0x0902
- Associated parameter no. 1: Selection of the channel
  - F24

4.4.4 Authorized overflow of the Analogue output

- Command word: 0x0903
- Associated parameter no. 1: Selection of the channel
  - F24
- Associated parameter no. 2: High overflow
  - F35
- Associated parameter no. 3: Low overflow
  - F35

5. APPENDIX 1: STANDARDIZED TYPES

The standardized types are tested by the product during any Modbus query. If they do not correspond to the limits, the TRIAD II returns an error message.

TYPE	DESIGNATION	FORMAT	MIN. LIMIT	MAX. LIMIT
F1	Two ASCII characters in a 16-bit word 0xAABB	Unsigned 16-bit integer	0x2020	0x9F9F
F3	Boolean 0 = FALSE 1 = TRUE	Unsigned 16-bit integer	0	1
F9	Modbus slave number	Unsigned 16-bit integer	1	247
F10	Modbus communication rate 24 = 2400 48 = 4800 96 = 9600 (default) 192 = 19200 384 = 38400 1152 = 115200	Unsigned 16-bit integer	List	
F11	RS485 parity 0 = Without (default) 1 = Odd 2 = Even	Unsigned 16-bit integer	0	2
F12	Stop bits 0 = 1 Stop bit (default) 1 = 2 Stop bits	Unsigned 16-bit integer	0	1
F13	Response timeout, in 50ms steps	Unsigned 16-bit integer	0	500
F14	Software version in the form 0xAABB 0xAA: major version 0xBB: revision	Unsigned 16-bit integer	0x0000	0xFFFF
F15	Date: number of seconds since 1970-01-01 00:00:00	Unsigned 32-bit integer		
F24	Selection of the analogue output channel 0 = Channel 1 1 = Channel 2 2 = Channel 3 3 = Channel 4	Unsigned 16-bit integer	0	3
F31	Current metrology range (all channels) 0 = low range 1 = high range 2 = automatic range	Unsigned 16-bit integer	0	2
F32	Network frequency (for reading) 0 = 50 Hz 1 = 60 Hz 2 = 400 Hz	Unsigned 16-bit integer	0	2
F34	Network frequency (Writing, 50-60Hz configuration) 0 = 50 Hz 1 = 60 Hz	Unsigned 16-bit integer	0	2
F35	Overflow value used for Analogue output, in %	Unsigned 16-bit integer	0	100
F38	Status of the dsPIC 0 = dsPIC problem 1 = dsPIC OK	Unsigned 16-bit integer	0	1
F39	Quadrant 0 = inductive 1 = capacitive	Unsigned 32-bit integer	0	1
F40	Item code in 9 bytes over 5 words, the last byte zero. 0xAABB 0xCCDD 0xEEFF 0xGGHH 0xII00	Unsigned 16-bit integer	0x0000	0xFFFF
F41	Type of communication board 0xB0 = RS485 board 0xB1 = Ethernet board	Unsigned 16-bit integer	List	

TYPE	DESIGNATION	FORMAT	MIN. LIMIT	MAX. LIMIT
F43	Quantity associated with an analogue output 0 = none 1 = V1 2 = V2 3 = V3 4 = U12 5 = U23 6 = U31 7 = I1 8 = I2 9 = I3 10 = Frequency (always zero if F46 = Period) 11 = P1 12 = P2 13 = P3 14 = Pt 15 = Q1 16 = Q2 17 = Q3 18 = Qt 19 = S1 20 = S2 21 = S3 22 = St 23 = FP1 24 = FP2 25 = FP3 26 = FPt 27 = $\cos(\varphi_1)$ 28 = $\cos(\varphi_2)$ 29 = $\cos(\varphi_3)$ 30 = $\cos(\varphi_T)$ 31= Tangent φ_T 32 = Angle between V1 and V2 33 = Angle between V2 and V3 34 = Angle between V3 and V1 35 = Angle between U12 and U23 36 = Angle between U23 and U31 37 = Angle between U31 and U12 38 = φ_1 39 = φ_2 40 = φ_3 41 = φ_T	Unsigned 16-bit integer		
F45	Type of transfer function 0 = Single slope 1 = Double slope 2 = Quadratic	Unsigned 16-bit integer	0	3
F46	Response time 0 = Period 1 = 4 periods 2 = 8 periods 3 = 24 periods 4 = 48 periods	Unsigned 16-bit integer	0	4

TYPE	DESIGNATION	FORMAT	MIN. LIMIT	MAX. LIMIT
F64	Wiring diagram 0x32303120 = TD201 0x32303220 = TD202 0x32303320 = TD203 0x32303420 = TD204 0x32303520 = TD205 0x32303620 = TD206 0x32303720 = TD207 0x32303820 = TD208 0x32303920 = TD209 0x32313020 = TD210 0x32313120 = TD211 0x32313220 = TD212 0x32313320 = TD213 0x32313420 = TD214 0x32313520 = TD215 0x32313620 = TD216 0x32313720 = TD217 0x32313820 = TD218 0x32313920 = TD219 0x32323020 = TD220 0x32323120 = TD221 0x32323220 = TD222 0x32323320 = TD223 0x32323420 = TD224 0x32323520 = TD225 0x32323620 = TD226 0x32323744 = TD227D 0x32323759 = TD227Y 0x32323720 = TD227 0x32323820 = TD228 0x32323920 = TD229 0x32333020 = TD230 0x32333120 = TD231 0x32333144 = TD231D 0x32333159 = TD231Y 0x32333220 = TD232 0x32333244 = TD232D 0x32333259 = TD232Y 0x32333320 = TD233 0x32333344 = TD233D 0x32333359 = TD233Y 0x32333420 = TD234 0x32333520 = TD235 0x32333559 = TD235Y 0x32333620 = TD236 0x32333659 = TD236Y 0x32333720 = TD237 0x32333820 = TD238	Unsigned 32-bit integer	List	
F65	ModBus mode 0= RTU 1= reserved	Unsigned 16-bit integer	0	1
F66	IP address 0xAABBCCDD → AA.BB.CC.DD	Unsigned 32-bit integer	0	0xFFFFFFFF
F67	Type of power supply board 0 = unknown 0xE0 = low level 0xE1 = high level	Unsigned 16-bit integer	List	
F68	Type of analogue output 0x00: no output 0xC0: current output, 20mA range 0xC1: current output, 5mA range 0xC2: current output, 1mA range 0xD0: voltage output, 10V range 0xD1: voltage output, 1V range	Unsigned 16-bit integer	List	
F69	MAC address in 6 consecutive words 0x00AA 0x00BB 0x00CC 0x00DD 0x00EE 0x00FF → AA:BB:CC:DD:EE:FF	Unsigned integer		
F70	Model of the product constituted as follows: 10000 + designation of the product (ex: T324 will give 10324)	Unsigned 16-bit integer		

6. APPENDIX 2: MODBUS ADDRESSING

ADDRESS (DEC)	ADDRESS (HEX)	NAME OF THE MODBUS QUANTITY	FORMAT OR PRECISION	SIZE (WORDS)
Base Register Map (factory Zone)				
0	0000h	Register Map Format	Always 0x0003	1
1	0001h	Subsidiary ID [15..8] and Production ID [7..0]		1
2	0002h	Instrument model	F70	1
3	0003h	Serial number	MSB [31..16]	1
4	0004h	Serial number	LSB [15..0]	1
5	0005h	Calibration site ID		1
6	0006h	Calibration date	F15	2
8	0008h	Next calibration date	F15	2
10	000Ah	Firmware version	F14	1
11	000Bh	Instrument status		1
12	000Ch	Maximum Com. speed	F10	1
13	000Dh	Com. speed	F10	1
14	000Eh	Slave address	F9	1
15	000Fh	System date	Uptime in seconds	2
17	0011h	Language		1
18	0012h	Grouped trigger		1
19	0013h	Hardware version	F14	1
20	0014h	Instrument Com. timeout		1
21	0015h	Device number	F1	5
Factory zone				
48	0030h	Item code, processing board	F40	5
53	0035h	Item code, power supply/analogue outputs board	F40	5
58	003Ah	Item code, measurement inputs board	F40	5
63	003Fh	Item code, communication board	F40	5
68	0044h	MAC address	F69	6
System status zone				
96	0060h	dsPIC status	F38	1
97	0061h	Status word for saturation of the analogue outputs	See coding of status words	1
98	0062h	Status word for overflow of the analogue outputs	See coding of status words	1
100	0064h	Test analogue output 1 mode	F3	1
102	0066h	Forcing value	float	2
104	0068h	Test analogue output 2 mode	F3	1
106	006Ah	Forcing value	float	2
108	006Ch	Test analogue output 3 mode	F3	1
110	006Eh	Forcing value	float	2
112	0070h	Test analogue output 4 mode	F3	1
114	0072h	Forcing value	float	2
116	0074h	Error of phase order (1 = error, 0 = OK)	F3	1
117	0075h	Presence of voltage/current status word	See coding of status words	1
Measurements per period				
256	0100h	V1	Unsigned, 1/100 (V)	2
258	0102h	V2	Unsigned, 1/100 (V)	2
260	0104h	V3	Unsigned, 1/100 (V)	2
262	0106h	U12	Unsigned, 1/100 (V)	2
264	0108h	U23	Unsigned, 1/100 (V)	2
266	010Ah	U31	Unsigned, 1/100 (V)	2
268	010Ch	I1	Unsigned, 1/10000 (A)	2
270	010Eh	I2	Unsigned, 1/10000 (A)	2
272	0110h	I3	Unsigned, 1/10000 (A)	2
274	0112h	-	-	2

ADDRESS (DEC)	ADDRESS (HEX)	NAME OF THE MODBUS QUANTITY	FORMAT OR PRECISION	SIZE (WORDS)
276	0114h	P1	Signed (W)	2
278	0116h	P2	Signed (W)	2
280	0118h	P3	Signed (W)	2
282	011Ah	Pt	Signed (W)	2
284	011Ch	Q1	Signed (var)	2
286	011Eh	Q2	Signed (var)	2
288	0120h	Q3	Signed (var)	2
290	0122h	Qt	Signed (var)	2
292	0124h	S1	Unsigned, (VA)	2
294	0126h	S2	Unsigned, (VA)	2
296	0128h	S3	Unsigned, (VA)	2
298	012Ah	St	Unsigned, (VA)	2
300	012Ch	FP1	Signed 1/10000	1
301	012Dh	FP1 quadrant	F39	1
302	012Eh	FP2	Signed 1/10000	1
303	012Fh	FP2 quadrant	F39	1
304	0130h	FP3	Signed 1/10000	1
305	0131h	FP3 quadrant	F39	1
306	0132h	FPt	Signed 1/10000	1
307	0133h	FPt quadrant	F39	1
308	0134h	cos(φ_1) fundamental	Signed 1/10000	1
309	0135h	Quadrant cos(φ_1)	F39	1
310	0136h	cos(φ_2) fundamental	Signed 1/10000	1
311	0137h	Quadrant cos(φ_2)	F39	1
312	0138h	cos(φ_3) fundamental	Signed 1/10000	1
313	0139h	Quadrant cos(φ_3)	F39	1
314	013Ah	cos(φ_T) fundamental	Signed 1/10000	1
315	013Bh	Quadrant cos(φ_T)	F39	1
316	013Ch	Tan γ, total	Signed 1/10000	2
318	013Eh	Angle between V1 and V2	Unsigned, 1/10000 (rad)	2
320	0140h	Angle between V2 and V3	Unsigned, 1/10000 (rad)	2
322	0142h	Angle between V3 and V1	Unsigned, 1/10000 (rad)	2
324	0144h	Angle between U12 and U23	Unsigned, 1/10000 (rad)	2
326	0146h	Angle between U23 and U31	Unsigned, 1/10000 (rad)	2
328	0148h	Angle between U31 and U12	Unsigned, 1/10000 (rad)	2
330	014Ah	Angle φ_1, fundamental	Unsigned, 1/10000 (rad)	2
332	014Ch	Angle φ_2, fundamental	Unsigned, 1/10000 (rad)	2
334	014Eh	Angle φ_3, fundamental	Unsigned, 1/10000 (rad)	2
336	0150h	Angle φ_T, fundamental	Unsigned, 1/10000 (rad)	2
		Four-cycle measurements		
512	0200h	V1	Unsigned, 1/100 (V)	2
514	0202h	V2	Unsigned, 1/100 (V)	2
516	0204h	V3	Unsigned, 1/100 (V)	2
518	0206h	U12	Unsigned, 1/100 (V)	2
520	0208h	U23	Unsigned, 1/100 (V)	2
522	020Ah	U31	Unsigned, 1/100 (V)	2
524	020Ch	I1	Unsigned, 1/10000 (A)	2
526	020Eh	I2	Unsigned, 1/10000 (A)	2
528	0210h	I3	Unsigned, 1/10000 (A)	2
530	0212h	Frequency	Unsigned, 1/100 (Hz)	2
532	0214h	P1	Signed (W)	2
534	0216h	P2	Signed (W)	2
536	0218h	P3	Signed (W)	2
538	021Ah	Pt	Signed (W)	2
540	021Ch	Q1	Signed (var)	2
542	021Eh	Q2	Signed (var)	2
544	0220h	Q3	Signed (var)	2
546	0222h	Qt	Signed (var)	2
548	0224h	S1	Unsigned, (VA)	2
550	0226h	S2	Unsigned, (VA)	2

ADDRESS (DEC)	ADDRESS (HEX)	NAME OF THE MODBUS QUANTITY	FORMAT OR PRECISION	SIZE (WORDS)
552	0228h	S3	Unsigned, (VA)	2
554	022Ah	St	Unsigned, (VA)	2
556	022Ch	FP1	Signed 1/10000	1
557	022Dh	FP1 quadrant	F39	1
558	022Eh	FP2	Signed 1/10000	1
559	022Fh	FP2 quadrant	F39	1
560	0230h	FP3	Signed 1/10000	1
561	0231h	FP3 quadrant	F39	1
562	0232h	FPt	Signed 1/10000	1
563	0233h	FPt quadrant	F39	1
564	0234h	cos(φ_1) fundamental	Signed 1/10000	1
565	0235h	Quadrant cos(φ_1)	F39	1
566	0236h	cos(φ_2) fundamental	Signed 1/10000	1
567	0237h	Quadrant cos(φ_2)	F39	1
568	0238h	cos(φ_3) fundamental	Signed 1/10000	1
569	0239h	Quadrant cos(φ_3)	F39	1
570	023Ah	cos(φ_T) fundamental	Signed 1/10000	1
571	023Bh	Quadrant cos(φ_T)	F39	1
572	023Ch	Tan γ, total	Signed 1/10000	2
574	023Eh	Angle between V1 and V2	Unsigned, 1/10000 (rad)	2
576	0240h	Angle between V2 and V3	Unsigned, 1/10000 (rad)	2
578	0242h	Angle between V3 and V1	Unsigned, 1/10000 (rad)	2
580	0244h	Angle between U12 and U23	Unsigned, 1/10000 (rad)	2
582	0246h	Angle between U23 and U31	Unsigned, 1/10000 (rad)	2
584	0248h	Angle between U31 and U12	Unsigned, 1/10000 (rad)	2
586	024Ah	Angle φ_1, fundamental	Unsigned, 1/10000 (rad)	2
588	024Ch	Angle φ_2, fundamental	Unsigned, 1/10000 (rad)	2
590	024Eh	Angle φ_3, fundamental	Unsigned, 1/10000 (rad)	2
592	0250h	Angle φ_T, fundamental	Unsigned, 1/10000 (rad)	2
		Eight-cycle measurements		
768	0300h	V1	Unsigned, 1/100 (V)	2
770	0302h	V2	Unsigned, 1/100 (V)	2
772	0304h	V3	Unsigned, 1/100 (V)	2
774	0306h	U12	Unsigned, 1/100 (V)	2
776	0308h	U23	Unsigned, 1/100 (V)	2
778	030Ah	U31	Unsigned, 1/100 (V)	2
780	030Ch	I1	Unsigned, 1/10000 (A)	2
782	030Eh	I2	Unsigned, 1/10000 (A)	2
784	0310h	I3	Unsigned, 1/10000 (A)	2
786	0312h	Frequency	Unsigned, 1/100 (Hz)	2
788	0314h	P1	Signed (W)	2
790	0316h	P2	Signed (W)	2
792	0318h	P3	Signed (W)	2
794	031Ah	Pt	Signed (W)	2
796	031Ch	Q1	Signed (var)	2
798	031Eh	Q2	Signed (var)	2
800	0320h	Q3	Signed (var)	2
802	0322h	Qt	Signed (var)	2
804	0324h	S1	Unsigned (VA)	2
806	0326h	S2	Unsigned (VA)	2
808	0328h	S3	Unsigned (VA)	2
810	032Ah	St	Unsigned (VA)	2
812	032Ch	FP1	Signed 1/10000	1
813	032Dh	FP1 quadrant	F39	1
814	032Eh	FP2	Signed 1/10000	1
815	032Fh	FP2 quadrant	F39	1
816	0330h	FP3	Signed 1/10000	1
817	0331h	FP3 quadrant	F39	1
818	0332h	FPt	Signed 1/10000	1
819	0333h	FPt quadrant	F39	1

ADDRESS (DEC)	ADDRESS (HEX)	NAME OF THE MODBUS QUANTITY	FORMAT OR PRECISION	SIZE (WORDS)
820	0334h	cos(φ_1) fundamental	Signed 1/10000	1
821	0335h	Quadrant cos(φ_1)	F39	1
822	0336h	cos(φ_2) fundamental	Signed 1/10000	1
823	0337h	Quadrant cos(φ_2)	F39	1
824	0338h	cos(φ_3) fundamental	Signed 1/10000	1
825	0339h	Quadrant cos(φ_3)	F39	1
826	033Ah	cos(φ_T) fundamental	Signed 1/10000	1
827	033Bh	Quadrant cos(φ_T)	F39	1
828	033Ch	Tan γ, total	Signed 1/10000	2
830	033Eh	Angle between V1 and V2	Unsigned, 1/10000 (rad)	2
832	0340h	Angle between V2 and V3	Unsigned, 1/10000 (rad)	2
834	0342h	Angle between V3 and V1	Unsigned, 1/10000 (rad)	2
836	0344h	Angle between U12 and U23	Unsigned, 1/10000 (rad)	2
838	0346h	Angle between U23 and U31	Unsigned, 1/10000 (rad)	2
840	0348h	Angle between U31 and U12	Unsigned, 1/10000 (rad)	2
842	034Ah	Angle $\varphi_{1,}$ fundamental	Unsigned, 1/10000 (rad)	2
844	034Ch	Angle $\varphi_{2,}$ fundamental	Unsigned, 1/10000 (rad)	2
846	034Eh	Angle $\varphi_{3,}$ fundamental	Unsigned, 1/10000 (rad)	2
848	0350h	Angle $\varphi_{T,}$ fundamental	Unsigned, 1/10000 (rad)	2
		Twenty-four cycle measurements		
1024	0400h	V1	Unsigned, 1/100 (V)	2
1026	0402h	V2	Unsigned, 1/100 (V)	2
1028	0404h	V3	Unsigned, 1/100 (V)	2
1030	0406h	U12	Unsigned, 1/100 (V)	2
1032	0408h	U23	Unsigned, 1/100 (V)	2
1034	040Ah	U31	Unsigned, 1/100 (V)	2
1036	040Ch	I1	Unsigned, 1/10000 (A)	2
1038	040Eh	I2	Unsigned, 1/10000 (A)	2
1040	0410h	I3	Unsigned, 1/10000 (A)	2
1042	0412h	Frequency	Unsigned, 1/100 (Hz)	2
1044	0414h	P1	Signed (W)	2
1046	0416h	P2	Signed (W)	2
1048	0418h	P3	Signed (W)	2
1050	041Ah	Pt	Signed (W)	2
1052	041Ch	Q1	Signed (var)	2
1054	041Eh	Q2	Signed (var)	2
1056	0420h	Q3	Signed (var)	2
1058	0422h	Qt	Signed (var)	2
1060	0424h	S1	Unsigned, (VA)	2
1062	0426h	S2	Unsigned, (VA)	2
1064	0428h	S3	Unsigned, (VA)	2
1066	042Ah	St	Unsigned, (VA)	2
1068	042Ch	FP1	Signed 1/10000	1
1069	042Dh	FP1 quadrant	F39	1
1070	042Eh	FP2	Signed 1/10000	1
1071	042Fh	FP2 quadrant	F39	1
1072	0430h	FP3	Signed 1/10000	1
1073	0431h	FP3 quadrant	F39	1
1074	0432h	FPt	Signed 1/10000	1
1075	0433h	FPt quadrant	F39	1
1076	0434h	cos(φ_1) fundamental	Signed 1/10000	1
1077	0435h	Quadrant cos(φ_1)	F39	1
1078	0436h	cos(φ_2) fundamental	Signed 1/10000	1
1079	0437h	Quadrant cos(φ_2)	F39	1
1080	0438h	cos(φ_3) fundamental	Signed 1/10000	1
1081	0439h	Quadrant cos(φ_3)	F39	1
1082	043Ah	cos(φ_T) fundamental	Signed 1/10000	1
1083	043Bh	Quadrant cos(φ_T)	F39	1
1084	043Ch	Tan γ, total	Signed 1/10000	2
1086	043Eh	Angle between V1 and V2	Unsigned, 1/10000 (rad)	2

ADDRESS (DEC)	ADDRESS (HEX)	NAME OF THE MODBUS QUANTITY	FORMAT OR PRECISION	SIZE (WORDS)
1088	0440h	Angle between V2 and V3	Unsigned, 1/10000 (rad)	2
1090	0442h	Angle between V3 and V1	Unsigned, 1/10000 (rad)	2
1092	0444h	Angle between U12 and U23	Unsigned, 1/10000 (rad)	2
1094	0446h	Angle between U23 and U31	Unsigned, 1/10000 (rad)	2
1096	0448h	Angle between U31 and U12	Unsigned, 1/10000 (rad)	2
1098	044Ah	Angle φ_1, fundamental	Unsigned, 1/10000 (rad)	2
1100	044Ch	Angle φ_2, fundamental	Unsigned, 1/10000 (rad)	2
1102	044Eh	Angle φ_3, fundamental	Unsigned, 1/10000 (rad)	2
1104	0450h	Angle φ_T, fundamental	Unsigned, 1/10000 (rad)	2
		Forty-eight cycle measurements		
1280	0500h	V1	Unsigned, 1/100 (V)	2
1282	0502h	V2	Unsigned, 1/100 (V)	2
1284	0504h	V3	Unsigned, 1/100 (V)	2
1286	0506h	U12	Unsigned, 1/100 (V)	2
1288	0508h	U23	Unsigned, 1/100 (V)	2
1290	050Ah	U31	Unsigned, 1/100 (V)	2
1292	050Ch	I1	Unsigned, 1/10000 (A)	2
1294	050Eh	I2	Unsigned, 1/10000 (A)	2
1296	0510h	I3	Unsigned, 1/10000 (A)	2
1298	0512h	Frequency	Unsigned, 1/100 (Hz)	2
1300	0514h	P1	Signed (W)	2
1302	0516h	P2	Signed (W)	2
1304	0518h	P3	Signed (W)	2
1306	051Ah	Pt	Signed (W)	2
1308	051Ch	Q1	Signed (var)	2
1310	051Eh	Q2	Signed (var)	2
1312	0520h	Q3	Signed (var)	2
1314	0522h	Qt	Signed (var)	2
1316	0524h	S1	Unsigned, (VA)	2
1318	0526h	S2	Unsigned, (VA)	2
1320	0528h	S3	Unsigned, (VA)	2
1322	052Ah	St	Unsigned, (VA)	2
1324	052Ch	FP1	Signed 1/10000	1
1325	052Dh	FP1 quadrant	F39	1
1326	052Eh	FP2	Signed 1/10000	1
1327	052Fh	FP2 quadrant	F39	1
1328	0530h	FP3	Signed 1/10000	1
1329	0531h	FP3 quadrant	F39	1
1330	0532h	FPt	Signed 1/10000	1
1331	0533h	FPt quadrant	F39	1
1332	0534h	cos(φ_1) fundamental	Signed 1/10000	1
1333	0535h	Quadrant cos(φ_1)	F39	1
1334	0536h	cos(φ_2) fundamental	Signed 1/10000	1
1335	0537h	Quadrant cos(φ_2)	F39	1
1336	0538h	cos(φ_3) fundamental	Signed 1/10000	1
1337	0539h	Quadrant cos(φ_3)	F39	1
1338	053Ah	cos(φ_T) fundamental	Signed 1/10000	1
1339	053Bh	Quadrant cos(φ_T)	F39	1
1340	053Ch	Tan γ, total	Signed 1/10000	2
1342	053Eh	Angle between V1 and V2	Unsigned, 1/10000 (rad)	2
1344	0540h	Angle between V2 and V3	Unsigned, 1/10000 (rad)	2
1346	0542h	Angle between V3 and V1	Unsigned, 1/10000 (rad)	2
1348	0544h	Angle between U12 and U23	Unsigned, 1/10000 (rad)	2
1350	0546h	Angle between U23 and U31	Unsigned, 1/10000 (rad)	2
1352	0548h	Angle between U31 and U12	Unsigned, 1/10000 (rad)	2
1354	054Ah	Angle φ_1, fundamental	Unsigned, 1/10000 (rad)	2
1356	054Ch	Angle φ_2, fundamental	Unsigned, 1/10000 (rad)	2
1358	054Eh	Angle φ_3, fundamental	Unsigned, 1/10000 (rad)	2
1360	0550h	Angle φ_T, fundamental	Unsigned, 1/10000 (rad)	2

ADDRESS (DEC)	ADDRESS (HEX)	NAME OF THE MODBUS QUANTITY	FORMAT OR PRECISION	SIZE (WORDS)
Current and Voltage Unbalances, Energy				
1388	056Ch	Current unbalance	Unsigned, 1 / 10000 (%)	2
1390	056Eh	Voltage unbalance	Unsigned, 1 / 10000 (%)	2
1392	0570h	EP+_1	Unsigned (kWh)	2
1394	0572h	EP-_1	Unsigned (kWh)	2
1396	0574h	EQ1_1	Unsigned (kvarh)	2
1398	0576h	EQ2_1	Unsigned (kvarh)	2
1400	0578h	EQ3_1	Unsigned (kvarh)	2
1402	057Ah	EQ4_1	Unsigned (kvarh)	2
1404	057Ch	ES+_1	Unsigned (kVAh)	2
1406	057Eh	ES-_1	Unsigned (kVAh)	2
1408	0580h	EP+_2	Unsigned (kWh)	2
1410	0582h	EP-_2	Unsigned (kWh)	2
1412	0584h	EQ1_2	Unsigned (kvarh)	2
1414	0586h	EQ2_2	Unsigned (kvarh)	2
1416	0588h	EQ3_2	Unsigned (kvarh)	2
1418	058Ah	EQ4_2	Unsigned (kvarh)	2
1420	058Ch	ES+_2	Unsigned (kVAh)	2
1422	058Eh	ES-_2	Unsigned (kVAh)	2
1424	0590h	EP+_3	Unsigned (kWh)	2
1426	0592h	EP-_3	Unsigned (kWh)	2
1428	0594h	EQ1_3	Unsigned (kvarh)	2
1430	0596h	EQ2_3	Unsigned (kvarh)	2
1432	0598h	EQ3_3	Unsigned (kvarh)	2
1434	059Ah	EQ4_3	Unsigned (kvarh)	2
1436	059Ch	ES+_3	Unsigned (kVAh)	2
1438	059Eh	ES-_3	Unsigned (kVAh)	2
1440	05A0h	EP+_Total	Unsigned (kWh)	2
1442	05A2h	EP-_Total	Unsigned (kWh)	2
1444	05A4h	EQ1_Total	Unsigned (kvarh)	2
1446	05A6h	EQ2_Total	Unsigned (kvarh)	2
1448	05A8h	EQ3_Total	Unsigned (kvarh)	2
1450	05AAh	EQ4_Total	Unsigned (kvarh)	2
1452	05ACh	ES+_Total	Unsigned (kVAh)	2
1454	05AEh	ES-_Total	Unsigned (kVAh)	2
1456	05B0h	SEF	Unsigned, 1/10000 (A)	2
Forty-eight cycle measurements (float)				
5376	1500h	V1	float (V)	2
5378	1502h	V2	float (V)	2
5380	1504h	V3	float (V)	2
5382	1506h	U12	float (V)	2
5384	1508h	U23	float (V)	2
5386	150Ah	U31	float (V)	2
5388	150Ch	I1	float (A)	2
5390	150Eh	I2	float (A)	2
5392	1510h	I3	float (A)	2
5394	1512h	Frequency	float (Hz)	2
5396	1514h	P1	float (W)	2
5398	1516h	P2	float (W)	2
5400	1518h	P3	float (W)	2
5402	151Ah	Pt	float (W)	2
5404	151Ch	Q1	float (var)	2

ADDRESS (DEC)	ADDRESS (HEX)	NAME OF THE MODBUS QUANTITY	FORMAT OR PRECISION	SIZE (WORDS)
5406	151Eh	Q2	float (var)	2
5408	1520h	Q3	float (var)	2
5410	1522h	Qt	float (var)	2
5412	1524h	S1	float (VA)	2
5414	1526h	S2	float (VA)	2
5416	1528h	S3	float (VA)	2
5418	152Ah	St	float (VA)	2
5420	152Ch	FP1	float	2
5422	152Eh	FP1 quadrant	F39	2
5424	1530h	FP2	float	2
5426	1532h	FP2 quadrant	F39	2
5428	1534h	FP3	float	2
5430	1536h	FP3 quadrant	F39	2
5432	1538h	FPt	float	2
5434	153Ah	FPt quadrant	F39	2
5436	153Ch	cos(φ_1) fundamental	float	2
5438	153Eh	Quadrant cos(φ_1)	F39	2
5440	1540h	cos(φ_2) fundamental	float	2
5442	1542h	Quadrant cos(φ_2)	F39	2
5444	1544h	cos(φ_3) fundamental	float	2
5446	1546h	Quadrant cos(φ_3)	F39	2
5448	1548h	cos(φ_T) fundamental	float	2
5450	154Ah	Quadrant cos(φ_T)	F39	2
5452	154Ch	Tan γ, total	float	2
5454	154Eh	Angle between V1 and V2	float (rad)	2
5456	1550h	Angle between V2 and V3	float (rad)	2
5458	1552h	Angle between V3 and V1	float (rad)	2
5460	1554h	Angle between U12 and U23	float (rad)	2
5462	1556h	Angle between U23 and U31	float (rad)	2
5464	1558h	Angle between U31 and U12	float (rad)	2
5466	155Ah	Angle φ_1, fundamental	float (rad)	2
5468	155Ch	Angle φ_2, fundamental	float (rad)	2
5470	155Eh	Angle φ_3, fundamental	float (rad)	2
5472	1560h	Angle φ_T, fundamental	float (rad)	2
		Relative angles for Fresnel diagram		
8192	2000h	Angle V1	float (rad)	2
8194	2002h	Angle V2	float (rad)	2
8196	2004h	Angle V3	float (rad)	2
8198	2006h	Angle U12	float (rad)	2
8200	2008h	Angle U23	float (rad)	2
8202	200Ah	Angle U31	float (rad)	2
8204	200Ch	Angle I1	float (rad)	2
8206	200Eh	Angle I2	float (rad)	2
8208	2010h	Angle I3	float (rad)	2
		Modbus command zone		
53248	D000h	Modbus command	Unsigned,	1
53249	D001h	Arguments		122
		Measurement configurations		
57344	E000h	TP primary	Unsigned,	2
57346	E002h	TP secondary	Unsigned,	2
57348	E004h	TC primary	Unsigned,	2
57350	E006h	TC secondary	Unsigned,	2
57352	E008h	Wiring diagram	F64	2
57354	E00Ah	Network frequency	F32	1
57355	E00Bh	Root3 flag	F3	1

ADDRESS (DEC)	ADDRESS (HEX)	NAME OF THE MODBUS QUANTITY	FORMAT OR PRECISION	SIZE (WORDS)
		RS-485 Modbus command configuration		
57600	E100h	Modbus address	F9	1
57601	E101h	Parity, RS485 COM	F11	1
57602	E102h	Stop bits, RS485 COM	F12	1
57603	E103h	Response time, RS485	F13	1
57604	E104h	Data rate, RS485	F10	1
57605	E105h	ModBus RTU/ASCII mode	F65	1
		Modbus/TCP command configuration		
57856	E200h	IP address of device	F66	2
57858	E202h	Sub-network mask	F66	2
57860	E204h	IP address of the gateway	F66	2
57862	E206h	Alternative Modbus/TCP listening port (default = 502)	Unsigned	1
		Analogue output configurations		
		OUTPUT 1		
58112	E300h	Quantity	F43	1
58113	E301h	Transfer function	F45	1
58114	E302h	Response time	F46	1
58115	E303h	Maximum overflow	F35	1
58116	E304h	Minimum overflow	F35	1
58118	E306h	Min. quantity (E1)	float	2
58120	E308h	Quadrant (E1), zero if quantity different from FP	F39	2
58122	E30Ah	Breaking quantity (E2)	float	2
58124	E30Ch	Quadrant (E2), zero if quantity different from FP	F39	2
58126	E30Eh	Max. quantity (E3)	float	2
58128	E310h	Quadrant (E3), zero if quantity different from FP	F39	2
58130	E312h	Min. current (S1)	float	2
58132	E314h	Breaking current (S2)	float	2
58134	E316h	Max. current (S3)	float	2
		OUTPUT 2		
58136	E318h	Quantity	F43	1
58137	E319h	Transfer function	F45	1
58138	E31Ah	Response time	F46	1
58139	E31Bh	Maximum overflow	F35	1
58140	E31Ch	Minimum overflow	F35	1
58142	E31Eh	Min. quantity (E1)	float	2
58144	E320h	Quadrant (E1), zero if quantity different from FP	F39	2
58146	E322h	Breaking quantity (E2)	float	2
58148	E324h	Quadrant (E2), zero if quantity different from FP	F39	2
58150	E326h	Max. quantity (E3)	float	2
58152	E328h	Quadrant (E3), zero if quantity different from FP	F39	2
58154	E32Ah	Min. current (S1)	float	2
58156	E32Ch	Breaking current (S2)	float	2
58158	E32Eh	Max. current (S3)	float	2
		OUTPUT 3		
58160	E330h	Quantity	F43	1
58161	E331h	Transfer function	F45	1
58162	E332h	Response time	F46	1
58163	E333h	Maximum overflow	F35	1
58164	E334h	Minimum overflow	F35	1
58166	E336h	Min. quantity (E1)	float	2
58168	E338h	Quadrant (E1), zero if quantity different from FP	F39	2
58170	E33Ah	Breaking quantity (E2)	float	2
58172	E33Ch	Quadrant (E2), zero if quantity different from FP	F39	2
58174	E33Eh	Max. quantity (E3)	float	2
58176	E340h	Quadrant (E3), zero if quantity different from FP	F39	2
58178	E342h	Min. current (S1)	float	2
58180	E344h	Breaking current (S2)	float	2
58182	E346h	Max. current (S3)	float	2

ADDRESS (DEC)	ADDRESS (HEX)	NAME OF THE MODBUS QUANTITY	FORMAT OR PRECISION	SIZE (WORDS)
		OUTPUT 4		
58184	E348h	Quantity	F43	1
58185	E349h	Transfer function	F45	1
58186	E34Ah	Response time	F46	1
58187	E34Bh	Maximum overflow	F35	1
58188	E34Ch	Minimum overflow	F35	1
58190	E34Eh	Min. quantity (E1)	float	2
58192	E350h	Quadrant (E1), zero if quantity different from FP	F39	2
58194	E352h	Breaking quantity (E2)	float	2
58196	E354h	Quadrant (E2), zero if quantity different from FP	F39	2
58198	E356h	Max. quantity (E3)	float	2
58200	E358h	Quadrant (E3), zero if quantity different from FP	F39	2
58202	E35Ah	Min. current (S1)	float	2
58204	E35Ch	Breaking current (S2)	float	2
58206	E35Eh	Max. current (S3)	float	2

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