



REGISTER TABLE FOR THE MODBUS SERIES CONTAX D-BUS

Specifications for the Modbus RTU protocol

The meter adopts the Modbus RTU as its communications protocol.

The meter leaves the factory configured with: **9600, 8 N 1** (configurable)

Each transmission byte contains 11 bits: 1 start bit. 8 data bits. 1 parity bit and 1 stop bit

Bit Start	1	2	3	4	5	6	7	8	Bit Parity	Bit Stop
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Bit parity: none, odd, even

Transmission speed (baud-rate): 1200,2400, 4800, 9600 bps

Correction mode: Type: CRC (Cyclic Redundancy Check)

Message format:

Start	Address	Function	Data	CRC	End
≥ 3.5 characters	1 Byte	1 Byte	N Byte	2 Byte	≥ 3.5 characters

Address range: the meter does not accept the *broadcast* address (0)

Function Code

The meter only supports the following *function codes*:

Function Code (hex)	Function
03/04H	Read (R)
10H	Write (W) / Delete (C)

Data information

Most address registers contain two data bytes. The high byte is transmitted before the low byte on the communications line. Furthermore, some data occupy several registers. For example: date and time, energy data, etc.

Message format ((*Information Format*))

Function Code 03/04. Read data registers

The PC transmits:

Meter address		01H
Function code		03H
Initial register address	High	00H
	Low	46H
Number of registers	High	00H
	Low	02H
CRC-16	High	25H
	Low	

Address of first register to be read
 Number of registers: (0046H - 0047H)

Normal meter response:

Meter address		01H
Function code		03H
Number of bytes		04H
First register data	High	09H
	Low	04H
Second register data	High	00H
	Low	00H
CRC-16	High	B8H
	Low	6EH

Number of bytes = Number of registers x 2
 Voltage L1 = 230.8 V
 Voltage L2 = 0 V

Function Code 10. Preset multi-register
 Example: Modify meter address

The PC transmits:

Meter address		01H
Function code		10H
Register address	High	02H
	Low	10H
Number of registers	High	00H
	Low	01H
Number of bytes		02H
Data	High	00H
	Low	02H
CRC-16	High	06H
	Low	C1H

Changes meter address from 01 to 02
 Normal meter response:

Meter address		01H
Function code		10H
Register address	High	02H
	Low	10H
Number of registers	High	00H
	Low	01H
CRC-16	High	01H
	Low	B4H

Warning: Before writing/deleting any register, the meter password must be written (by default 9999 = 0x270F) to the corresponding register (0x200).

For example:

01 10 02 00 00 01 02 27 0F DE 64 (password: 9999 = 0x270F)

The registers can then be written during the following twenty minutes.

Responses to meter exceptions

The meter supports three exception code classes. The MSB of the *function code* is 1 when the meter responds with an exception (*function code* + 80H)

Code Error	When
01	Function code error (the transmitted function code is not allowed)
02	Invalid register address
03	Invalid data

For example: The PC reads register 0004 of meter 2. The meter responds with the following error message:

Meter address	02H	
Function code + 80H	83H	
Error code	High	02H
CRC-16	High	30H
	Low	F1H

The meter cannot respond to the following situations:

- Attempting to communicate with to non-existing meter address
- Communications line failure
- Parity or CRC error
- An interval exceeding 3.5 characters in to character sequence that must be transmitted in to continuous fashion.

MEMORY MAP FOR THE SERIES CONTAX D BUS

INSTANTANEOUS VALUES

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643
Voltage Phase L1	0x0046	XXXX	0.1 V	R	1	0x0000 - 0xFFFF (0.0 V to 6553.5 V)	230.0 V (0x08FC)	*	*	*	*
Voltage Phase L2	0x0047	XXXX	0.1 V	R	1				*	*	*
Voltage Phase L3	0x0048	XXXX	0.1 V	R	1				*	*	*
Voltage Phase L1-L2	0x0049	XXXX	0.1 V	R	1				*	*	*
Voltage Phase L2-L3	0x004A	XXXX	0.1 V	R	1				*	*	*
Voltage Phase L3-L1	0x004B	XXXX	0.1 V	R	1				*	*	*
Current Phase L1	0x004C	XXXX	0.01 A	R	1	0x0000 - 0xFFFF (0.00 to a 655.35 A)	10.00 A (0x03E8)	*	*	*	
Current Phase L2	0x004D	XXXX	0.01 A	R	1				*	*	
Current Phase L3	0x004E	XXXX	0.01 A	R	1				*	*	
Current Phase L1	0x004C	XXXX	0.001 A	R	1	0x0000 - 0xFFFF (0.000 to a 65.535 A)	1.00*Rel A (0x03E8)				*
Current Phase L2	0x004D	XXXX	0.001 A	R	1						*
Current Phase L3	0x004E	XXXX	0.001 A	R	1						*
Active Power Phase L1	0x004F	XXXX	0.01 kW	R	1	0x0000 - 0xFFFF (signed int : -327.68 kW to 327.67 kW)	10.00 kW (0x03E8)	*	*	*	
Active Power Phase L2	0x0050	XXXX	0.01 kW	R	1				*	*	
Active Power Phase L3	0x0051	XXXX	0.01 kW	R	1				*	*	
Active Power Total	0x0052	XXXX	0.01 kW	R	1				*	*	
Active Power Phase L1	0x004F	XXXX	1 W	R	1	0x0000 - 0xFFFF (signed int : -32768 W to 32767 W)	1000*Rel MW (0x03E8)				*
Active Power Phase L2	0x0050	XXXX	1 W	R	1						*
Active Power Phase L3	0x0051	XXXX	1 W	R	1						*
Active Power Total	0x0052	XXXX	1 W	R	1						*
Reactive Power Phase L1	0x0053	XXXX	0.01 kvar	R	1	0x0000 - 0xFFFF (signed int : -327.68 kvar to 327.67 kvar)	10.00 kvar (0x03E8)	*	*	*	
Reactive Power Phase L2	0x0054	XXXX	0.01 kvar	R	1				*	*	
Reactive Power Phase L3	0x0055	XXXX	0.01 kvar	R	1				*	*	
Reactive Power Total	0x0056	XXXX	0.01 kvar	R	1				*	*	
Reactive Power Phase L1	0x0053	XXXX	1 var	R	1	0x0000 - 0xFFFF (signed int : -32768 var to 32767 var)	1000*Rel Mvar (0x03E8)				*
Reactive Power Phase L2	0x0054	XXXX	1 var	R	1						*
Reactive Power Phase L3	0x0055	XXXX	1 var	R	1						*
Reactive Power Total	0x0056	XXXX	1 var	R	1						*
Apparent Power Phase L1	0x0057	XXXX	0.01 kVA	R	1	0x0000 - 0xFFFF (0 kVA to 655.35 kVA)	10.00 kVA (0x03E8)	*	*	*	
Apparent Power Phase L2	0x0058	XXXX	0.01 kVA	R	1				*	*	

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643
Apparent Power Phase L3	0x0059	XXXX	0.01 kVA	R	1				*	*	
Apparent Power Total	0x005A	XXXX	0.01 kVA	R	1				*	*	
Apparent Power Phase L1	0x0057	XXXX	1 VA	R	1	0x0000 - 0xFFFF (0 VA to 65535 VA)	1000*Rel MVA (0x03E8)				*
Apparent Power Phase L2	0x0058	XXXX	1 VA	R	1						*
Apparent Power Phase L3	0x0059	XXXX	1 VA	R	1						*
Apparent Power Total	0x005A	XXXX	1 VA	R	1						*
Power Factor Phase L1	0x005B	XXXX	0.001	R	1	0x0000 - 0x03E8 (+ 0.000 to + 1.000) 0xFC19 - 0xFFFF (- 1.000 to - 0.001)	L0.99 (0x03E7) C1.00 (0xFC19)	*	*	*	*
Power Factor Phase L2	0x005C	XXXX	0.001	R	1				*	*	*
Power Factor Phase L3	0x005D	XXXX	0.001	R	1				*	*	*
Power Factor Total	0x005E	XXXX	0.001	R	1				*	*	*
Frequency	0x005F	XXXX	0.01 Hz	R	1	0x0000 - 0xFFFF (0.00 Hz to 655.35 Hz)	50.00 Hz (0x0032)	*	*	*	*
Angle between phases L1- L2	0x0060	XXXX	0.1°	R	1	0x0000 - 0x0E10 (0.0° to 360.0°)	/		*	*	*
Angle between phases L2- L3	0x0061	XXXX	0.1°	R	1				*	*	*
Angle between phases L3- L1	0x0062	XXXX	0.1°	R	1				*	*	*

EVENTS (MAXIMUMS)

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643
Maximum Voltage L1	0x0410	XXXX	0.1 V	R/C ¹	1	0x0000 - 0xFFFF (0.0 V to 6553.5 V)	230.0 V (0x08FC)	*2	*	*	*
Maximum Voltage Date L1	0x0411	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Voltage L2	0x0420	XXXX	0.1 V	R/C ¹	1	0x0000 - 0xFFFF (0.0 V to 6553.5 V)	230.0 V (0x08FC)	*2	*	*	*
Maximum Voltage Date L2	0x0421	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Voltage L3	0x0430	XXXX	0.1 V	R/C ¹	1	0x0000 - 0xFFFF (0.0 V to 6553.5 V)	230.0 V (0x08FC)	*2	*	*	*
Maximum Voltage Date L3	0x0431	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Current L1	0x0440	XXXX	0.01 A	R/C ¹	1	0x0000 - 0xFFFF (0.00 to a 655.35 A)	10.00 A (0x03E8)	*2	*	*	
Maximum Current L1	0x0440	XXXX	0.001 A	R/C ¹	1	0x0000 - 0xFFFF (0.00 to a 65.535 A)	1.00*Rel A (0x03E8)				*
Maximum Current Date L1	0x0441	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Current L2	0x0450	XXXX	0.01 A	R/C ¹	1	0x0000 - 0xFFFF (0.00 to a 655.35 A)	10.00 A (0x03E8)	*2	*	*	
Maximum Current L2	0x0450	XXXX	0.001 A	R/C ¹	1	0x0000 - 0xFFFF (0.00 to a 65.535 A)	1.00*Rel A (0x03E8)				*
Maximum Current Date L2	0x0451	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Current L3	0x0460	XXXX	0.01 A	R/C ¹	1	0x0000 - 0xFFFF (0.00 to a 655.35 A)	10.00 A (0x03E8)	*2	*	*	
Maximum Current L3	0x0460	XXXX	0.001 A	R/C ¹	1	0x0000 - 0xFFFF (0.00 to a 65.535 A)	1.00*Rel A (0x03E8)				*

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643
Maximum Current DateL3	0x0461	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Active Power L1	0x0470	XXXX	0.01 kW	R/C ¹	1	0x0000 - 0xFFFF (0.00 kW to 655.35 kW)	10.00 kW (0x03E8)	*2	*	*	
Maximum Active Power L1	0x0470	XXXX	1 W	R/C ¹	1	0x0000 - 0xFFFF (0 W to 65535 W)	1000*Rel MW (0x03E8)				*
Maximum Active Power Date L1	0x0471	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Active Power L2	0x0480	XXXX	0.01 kW	R/C ¹	1	0x0000 - 0xFFFF (0.00 kW to 655.35 kW)	10.00 kW (0x03E8)	*2	*	*	
Maximum Active Power L2	0x0480	XXXX	1 W	R/C ¹	1	0x0000 - 0xFFFF (0 W to 65535 W)	1000*Rel MW (0x03E8)				*
Maximum Active Power Date L2	0x0481	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Active Power L3	0x0490	XXXX	0.01 kW	R/C ¹	1	0x0000 - 0xFFFF (0.00 kW to 655.35 kW)	10.00 kW (0x03E8)	*2	*	*	
Maximum Active Power L3	0x0490	XXXX	1 W	R/C ¹	1	0x0000 - 0xFFFF (0 W to 65535 W)	1000*Rel MW (0x03E8)				*
Maximum Active Power Date L3	0x0491	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Active Power L1+L2+L3	0x04A0	XXXX	0.01 kW	R/C ¹	1	0x0000 - 0xFFFF (0.00 kW to 655.35 kW)	10.00 kW (0x03E8)	*2	*	*	
Maximum Active Power L1+L2+L3	0x04A0	XXXX	1 W	R/C ¹	1	0x0000 - 0xFFFF (0 W to 65535 W)	1000*Rel MW (0x03E8)				*
Maximum Active Power Date L1+L2+L3	0x04A1	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643
Maximum Reactive Power L1	0x04B0	XXXX	0.01 kvar	R/C ¹	1	0x0000 - 0xFFFF (0.00 kvar to 655.35 kvar)	10.00 kvar (0x03E8)	*2	*	*	
Maximum Reactive Power L1	0x04B0	XXXX	1 var	R/C ¹	1	0x0000 - 0xFFFF (0 var to 65535 var)	1000*Rel Mvar (0x03E8)				*
Maximum Reactive Power Date L1	0x04B1	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Reactive Power L2	0x04C0	XXXX	0.01 kvar	R/C ¹	1	0x0000 - 0xFFFF (0.00 kvar to 655.35 kvar)	10.00 kvar (0x03E8)	*2	*	*	
Maximum Reactive Power L2	0x04C0	XXXX	1 var	R/C ¹	1	0x0000 - 0xFFFF (0 var to 65535 var)	1000*Rel Mvar (0x03E8)				*
Maximum Reactive Power Date L2	0x04C1	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Reactive Power L3	0x04D0	XXXX	0.01 kvar	R/C ¹	1	0x0000 - 0xFFFF (0.00 kvar to 655.35 kvar)	10.00 kvar (0x03E8)	*2	*	*	
Maximum Reactive Power L3	0x04D0	XXXX	1 var	R/C ¹	1	0x0000 - 0xFFFF (0 var to 65535 var)	1000*Rel Mvar (0x03E8)				*
Maximum Reactive Power Date L3	0x04D1	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Maximum Reactive Power L1+L2+L3	0x04E0	XXXX	0.01 kvar	R/C ¹	1	0x0000 - 0xFFFF (0.00 kvar to 655.35 kvar)	10.00 kvar (0x03E8)	*2	*	*	
Maximum Reactive Power L1+L2+L3	0x04E0	XXXX	1 var	R/C ¹	1	0x0000 - 0xFFFF (0 var to 65535 var)	1000*Rel Mvar (0x03E8)				*
Maximum Reactive Power Date L1+L2+L3	0x04E1	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/	*	*	*	*
Number of Voltage Drops	0x04F0	NNNN		R/C ¹	1	0x0000 - 0Xffff	/		*	*	*
Date of last voltage drop in the three phases	0x04F1	AA.MM. DD.hh. mm.ss		R	3	YYMMDDhhmmss(HEX)	/		*	*	*

1. The registers have to be individually deleted
2. No visible on Display in this model

ENERGY TOTALISERS (MONTHLY CLOSURES)

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643 ¹
Active Energy Import (Actual)	0x2100	XXXXXXXX	1 Wh	R	2	0x00000000 - 0x3B9AC9FF (0Wh to 999.999.999Wh)	000000kWh a 999.999kWh	*	*	*	*
Active Energy Import T1 (Actual)	0x2102	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import T2 (Actual)	0x2104	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import T3 (Actual)	0x2106	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import T4 (Actual)	0x2108	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import (Last month)	0x2110	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import T1 (Last month)	0x2112	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import T2 (Last month)	0x2114	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import T3 (Last month)	0x2116	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import T4 (Last month)	0x2118	XXXXXXXX	1 Wh	R	2			*	*	*	*
T1,T2,T3,T4 Active Energy Import (months 2 to 11)	0x2120 ~ 0x2128 ... 0x21B0 ~ 0x21B8	XXXXXXXX	1 Wh	R				*	*	*	*
Active Energy Import (12 months ago)	0x21C0	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import T1 (12 months ago)	0x21C2	XXXXXXXX	1 Wh	R	2			*	*	*	*
Energía Activa Importación T2 (12 months ago)	0x21C4	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Import T3 (12 months ago)	0x21C6	XXXXXXXX	1 Wh	R	2			*	*	*	*
Energía Activa Importación T4 (12 months ago)	0x21C8	XXXXXXXX	1 Wh	R	2			*	*	*	*

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643 ¹
Active Energy Export (Actual)	0x2200	XXXXXXXX	1 Wh	R	2	0x00000000 - 0x3B9AC9FF (0 Wh to 999.999.999 Wh)	000000 kWh to 999.999 kWh	*	*	*	*
Active Energy Export T1 (Actual)	0x2202	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T2 (Actual)	0x2204	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T3 (Actual)	0x2206	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T4 (Actual)	0x2208	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export (Last month)	0x2210	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T1 (Last month)	0x2212	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T2 (Last month)	0x2214	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T3 (Last month)	0x2216	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T4 (Last month)	0x2218	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T1,T2,T3,T4 (months 2 to 11)	0x2220 ~ 0x2228 ... 0x22B0 ~ 0x22B8	XXXXXXXX	1 Wh	R				*	*	*	*
Active Energy Export (12 months ago)	0x22C0	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T1 (12 months ago)	0x22C2	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T2 (12 months ago)	0x22C4	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T3 (12 months ago)	0x22C6	XXXXXXXX	1 Wh	R	2			*	*	*	*
Active Energy Export T4 (12 months ago)	0x22C8	XXXXXXXX	1 Wh	R	2			*	*	*	*

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643 ¹
Reactive Energy Import (Actual)	0x2400	XXXXXXXX	1 VArh	R	2	0x00000000 - 0x3B9AC9FF (0Wh to 999.999.999Wh)	000000kWh a 999.999kWh	*	*	*	*
Reactive Energy Import T1 (Actual)	0x2402	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T2 (Actual)	0x2404	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T3 (Actual)	0x2406	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T4 (Actual)	0x2408	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import (Last month)	0x2410	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T1 (Last month)	0x2412	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T2 (Last month)	0x2414	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T3 (Last month)	0x2416	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T4 (Last month)	0x2418	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T1,T2,T3,T4 (months 2 to 11)	0x2420 ~ 0x2428 ... 0x24B0 ~ 0x24B8	XXXXXXXX	1 VArh	R				*	*	*	*
Reactive Energy Import (12 months ago)	0x24C0	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T1 (12 months ago)	0x24C2	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T2 (12 months ago)	0x24C4	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T3 (12 months ago)	0x24C6	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Import T4 (12 months ago)	0x24C8	XXXXXXXX	1 VArh	R	2			*	*	*	*

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643 ¹
Reactive Energy Export (Actual)	0x2500	XXXXXXXX	1 VArh	R	2	0x00000000 - 0x3B9AC9FF (0Wh to 999.999.999Wh)	000000kWh to 999.999kWh	*	*	*	*
Reactive Energy Export T1 (Actual)	0x2502	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T2 (Actual)	0x2504	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T3 (Actual)	0x2506	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T4 (Actual)	0x2508	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export (Last month)	0x2510	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T1 (Last month)	0x2512	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T2 (Last month)	0x2514	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T3 (Last month)	0x2516	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T4 (Last month)	0x2518	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T1,T2,T3,T4 (months 2 to 11)	0x2520 ~ 0x2528 ... 0x25B0 ~ 0x25B8	XXXXXXXX	1 VArh	R				*	*	*	*
Reactive Energy Export (12 months ago)	0x25C0	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T1 (12 months ago)	0x25C2	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T2 (12 months ago)	0x25C4	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T3 (12 months ago)	0x25C6	XXXXXXXX	1 VArh	R	2			*	*	*	*
Reactive Energy Export T4 (12 months ago)	0x25C8	XXXXXXXX	1 VArh	R	2			*	*	*	*

1. The values shown in display are Register Value * Transformation ratio in MWh

[illegible]

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643
Active Energy Export (sample 1)	0x632E	XXXX	0.01 kWh	R	1	0x0000 - 0xFFFF (0.0 kWh to 655.35 kWh)	/	*	*	*	
Active Energy Export (sample 2)	0x632F	XXXX	0.01 kWh	R	1			*	*	*	
Active Energy Export (sample 3)	0x6330	XXXX	0.01 kWh	R	1			*	*	*	
Active Energy Export (sample 4)	0x6331	XXXX	0.01 kWh	R	1			*	*	*	
.....		XXXX	0.01 kWh	R	1			*	*	*	
Active Energy Export (sample 9000)	0x8655	XXXX	0.01 kWh	R	1			*	*	*	
Active Energy Export (sample 1)	0x632E	XXXX	1 Wh	R	1	0x0000 - 0xFFFF (0 Wh to 65535 Wh)	/				*
Active Energy Export (sample 2)	0x632F	XXXX	1 Wh	R	1						*
Active Energy Export (sample 3)	0x6330	XXXX	1 Wh	R	1						*
Active Energy Export (sample 4)	0x6331	XXXX	1 Wh	R	1						*
.....		XXXX	1 Wh	R	1						*
Active Energy Export (sample 9000)	0x8655	XXXX	1 Wh	R	1						*
Reactive Energy Import (m 1)	0x8656	XXXX	0.01 kvarh	R	1	0x0000 - 0xFFFF (0.00kvarh to 655.35kvarh)	/	*	*	*	
Reactive Energy Import (m 2)	0x8657	XXXX	0.01 kvarh	R	1			*	*	*	
Reactive Energy Import (m 3)	0x8658	XXXX	0.01 kvarh	R	1			*	*	*	
Reactive Energy Import (m 4)	0x8659	XXXX	0.01 kvarh	R	1			*	*	*	
.....		XXXX	0.01 kvarh	R	1			*	*	*	
Reactive Energy Import (m 9000)	0xA97D	XXXX	0.01 kvarh	R	1			*	*	*	

Reactive Energy Import (m 1)	0x8656	XXXX	1 varh	R	1	0x0000 - 0xFFFF (0 varh to 65535 varh)	/				*
Reactive Energy Import (m 2)	0x8657	XXXX	1 varh	R	1						*
Reactive Energy Import (m 3)	0x8658	XXXX	1 varh	R	1						*
Reactive Energy Import (m 4)	0x8659	XXXX	1 varh	R	1						*
.....		XXXX	1 varh	R	1						*
Reactive Energy Import (m 9000)	0xA97D	XXXX	1 varh	R	1						*
Reactive Energy Export (m 1)	0xA97E	XXXX	0.01 kvarh	R	1	0x0000 - 0xFFFF (0.00kvarh to 655.35kvarh)	/	*	*	*	
Reactive Energy Export (m 2)	0xA97F	XXXX	0.01 kvarh	R	1			*	*	*	
Reactive Energy Export (m 3)	0xA980	XXXX	0.01 kvarh	R	1			*	*	*	
Reactive Energy Export (m 4)	0xA981	XXXX	0.01 kvarh	R	1			*	*	*	
.....		XXXX	0.01 kvarh	R	1			*	*	*	
Reactive Energy Export (m 9000)	0xCCA5	XXXX	0.01 kvarh	R	1			*	*	*	
Reactive Energy Export (m 1)	0xA97E	XXXX	1 varh	R	1	0x0000 - 0xFFFF (0 varh to 65535 varh)	/				*
Reactive Energy Export (m 2)	0xA97F	XXXX	1 varh	R	1						*
Reactive Energy Export (m 3)	0xA980	XXXX	1 varh	R	1						*
Reactive Energy Export (m 4)	0xA981	XXXX	1 varh	R	1						*
.....		XXXX	1 varh	R	1						*
Reactive Energy Export (m 9000)	0xCCA5	XXXX	1 varh	R	1						*

The curve is deleted when this register is written

In three-phase systems, the voltage data is the measurement of the three phases, $V_{avg} = (V_a + V_b + V_c) / 3$

In three-phase systems, the current data is the measurement of the three phases, $I_{avg} = (I_a + I_b + I_c) / 3$

In order to read the load curve

- Read the number of samples for the curve (0x4002) and the date-time stamp for the last sample (0x4003). It is necessary to calculate the date-time stamps for the rest of the samples in the PC
- The meter only allows a maximum of 25 registers to be read at a time..

METER CONFIGURATION

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643
Password	0x0200	XXXX		W	1	0x0000 - 0xFFFF (1 to 9999)	/	*	*	*	* (0000)
Exit configuration mode				R	1		/	*	*	*	*
Communications (Address)	0x0210	XXXX		R/W	1	0x0000 - 0x00F7 (1 to 247)	001	*	*	*	*
Communications (speed)	0x0211	XXXX		R/W	1	0: 1200 1: 2400 2: 4800 3: 9600	9600	*	*	*	*
Communications (parity)	0x0212	XXXX		R/W	1	0: 8N1 1: 8O1 2: 8E1	n.8.1	*	*	*	*
Internal configuration (meter constant)	0x0216	XXXX		R	1	0x0000 - 0xFFFF	800	*	*	*	*
Internal configuration (Status Word)*	0x0217	XXXX		R	1	0x0000 - 0xFFFF	/	*	*	*	*
Internal configuration (Firmware version)	0x0218	XXXX		R	1	0x0000 - 0xFFFF	V2.470	*	*	*	*
Internal configuration (meter model)	0x0219	XXXX		R	1	6041 10093 6593 0643	/	*	*	*	*
Transformation Ratio	0x021C	XXXX		R/W	1	0x0000 – 0x03E8	20				*
Calendar (date and time)	0x0220	AA.MM. DD.hh. mm.ss		R/W	3	YYMMDDhhmmss (BCD)	12.08.13 11:59:30	*	*	*	*
Calendar (day of the week)	0x0223	XXXX		R	1	00: Domingo ... 06: Sábado	/	*	*	*	*
Start summer time	0x0230	DD.MM.hh.mm		R	2	DDMMhhmm	/	*	*	*	*
Start winter time	0x0240	DD.MM.hh.mm		R	2	DDMMhhmm	/	*	*	*	*
Tariff periods Summer time	0x0250	hh.mm.NN		R/W	12	hhmmNN***hhmmNN	/	*	*	*	*

Parameter	Address	Format	Units	R/W	Register size	Permitted values	Display	6041	10093	6593	0643
Tariff periods Winter time	0x0260	hh.mm.NN		R/W	12	hhmmNN***hhmmNN	/	*	*	*	*
Relay (status)	0x0271	XXXX		R/W	1	ON: 0xFF00 OFF: 0x0000	/			*	
Relay (reset)	0x0272	XXXX		R/W	1	1: Timer and Modbus 2: Sel. Button (5 s.) and Modbus 3: Modbus(by default)	/			*	
Relay (reset time after over-current)	0x0273	XXXX	seconds	R/W	1	0x0000 - 0xFFFF	/			*	
Relay (over-current value)	0x0274	XXXX	A	R/W	1	0x0000 - 0x005A (0 to 90 A) (70 A by default)	/			*	

*Status word

CONTAX D-6041-BUS		CONTAX D-10093-BUS CONTAX D-0643-BUS	CONTAX D-6593-BUS-R
bit15	Reserved	Inverted phase sequence	Inverted phase sequence
bit14	Reserved	Phase L3 voltage drop	Phase L3 voltage drop
bit13	Reserved	Phase L2 voltage drop	Phase L2 voltage drop
bit12	Phase voltage drop	Phase L1 voltage drop	Phase L1 voltage drop
bit11	Reserved	Phase L3 in Active Export	Phase L3 in Active Export
bit10	Reserved	Phase L2 in Active Export	Phase L2 in Active Export
bit9	Reserved	Phase L1 in Active Export	Phase L1 in Active Export
bit8	Meter in Active Export	Meter in Active Export	Meter in Active Export
bit7	Reserved	EEPROM error	EEPROM error
bit6	Reserved	Phase sequence error	Phase sequence error
bit5	Reserved	Calibration error	Calibration error
bit4	Reserved	Reserved	Relay status
bit3	Reserved	Phase L3 in Reactive Export	Phase L3 in Reactive Export
bit2	Reserved	Phase L2 in Reactive Export	Phase L2 in Reactive Export
bit1	Reserved	Phase L1 in Reactive Export	Phase L1 in Reactive Export
bit0	Meter in Reactive Export	Meter in Reactive Export	Meter in Reactive Export

CONFIGURATION EXAMPLES

In order to write to any register meter write register (W or C in the table), it is first necessary to send a frame with the equipment password (by default: 9999)

Example:

Password = 9999 (0x270F), Meter address = 1.

Frame: 01,10,02,00,00,01,02,27,0F,DE,64

Meter response: 01,10,02,00,00,01,F0,C1

When the password has been sent, any write register can be written during twenty minutes.

Meter address

The new address is '02':

Tx: 01,10,02,10,00,01,02,00,02,06,C1

Rx: 01,10,02,10,00,01,F4,01

Date and time

The meter date and time are in three consecutive registers:

- ```

1 YYYY are in register 0x0220
2 DDhh are in register 0x0221(the one following 0x0220)
3 mmss are in register 0x0222

```

### Reading date and time

Tx: 01,03,02,20,00,03,05,B9

Rx: 01,03,06,0D,04,0D,03,03,25,E2,2F

13/04/13 03:03:25

### Writing date and time

22/04/13 09:30:00

Tx: 01,10,02,20,00,03,06,0D,04,16,09,1E,00,C1,65

Rx: 01,10,02,20,00,03,81,FE

## Tariff period programming

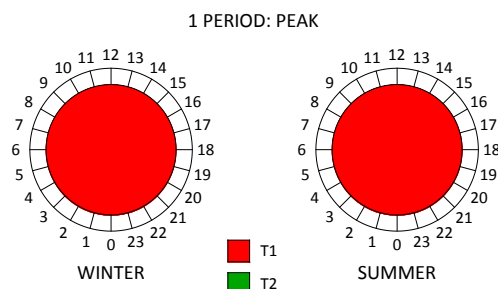
The meter is factory configured with a single tariff period (T1 for 24hours throughout the year)

The meter can distinguish between four tariff periods (T1, T2, T3 and T4), together with two annual periods of winter and summer.

The meter incorporates a series of registers (0x0250, 0x0260) for configuring time discrimination and allowing the selection of up to six daily period changes.

Some typical configurations are:

ST: Single Tariff

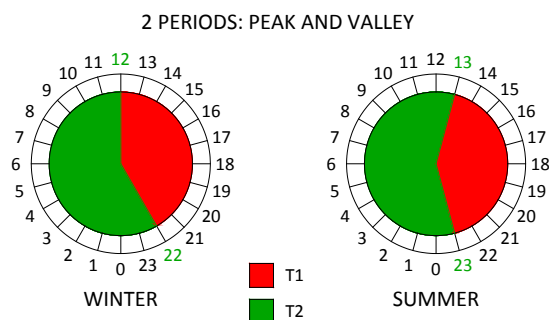
[illegible]

Rx 08,10,02,60,00,0C,C1,33,

Tx 08,10,02,50,00,0C,18,00,00,01,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,42,14,

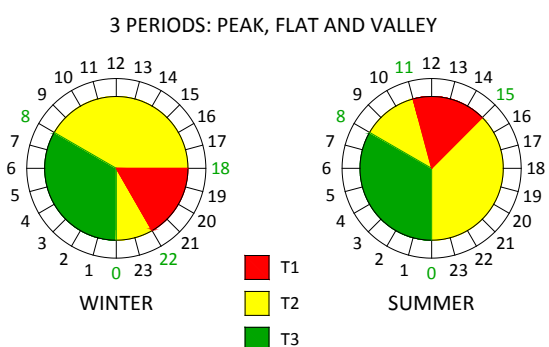
Rx 08,10,02,50,00,0C,C1,3C,

## dh: hourly discrimination



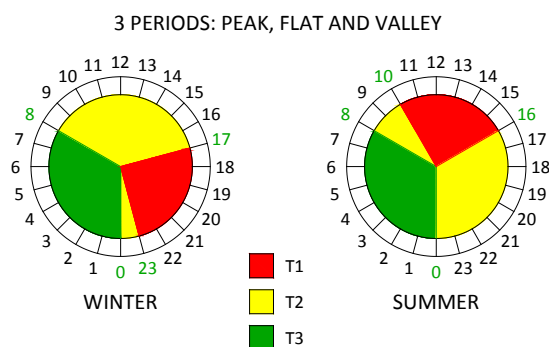
Tx 08,10,02,60,00,0C,18,00,00,02,0C,00,01,16,00,02,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,D4,DC,  
Rx 08,10,02,60,00,0C,C1,33,  
Tx 08,10,02,50,00,0C,18,00,00,02,0D,00,01,17,00,02,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,E4,31,  
Rx 08,10,02,50,00,0C,C1,3C,

## 3.0A



Tx 08,10,02,60,00,0C,18,00,00,03,08,00,02,12,00,01,16,00,02,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,95,5C,  
Rx 08,10,02,60,00,0C,C1,33,  
Tx 08,10,02,50,00,0C,18,00,00,03,08,00,02,0B,00,01,0F,00,02,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,EA,CD,  
Rx 08,10,02,50,00,0C,C1,3C,

## 3.1A



Tx 08,10,02,60,00,0C,18,00,00,03,08,00,02,11,00,01,17,00,02,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,A4,18,  
Rx 08,10,02,60,00,0C,C1,33,  
Tx 08,10,02,50,00,0C,18,00,00,03,08,00,02,0A,00,01,10,00,02,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,E4,39,  
Rx 08,10,02,50,00,0C,C1,3C,

The winter and summer time and vice versa changes coincide with the official time change dates.

## Relay (model CONTAX D-6593-BUS-R)

The relay in the equipment opens:

- If the current circulating in any of the phases exceeds the over-current value in register 0x0274 during time  $t$  seconds =  $270-3 \cdot I$ , where  $I$  is the circulating current per phase.
- If the current circulating in any of the phases exceeds 85 A during more than five seconds

Examples:

The over-current register value is 70 A (0x0046). 72 A circulates through phase L1, 68 A through L2 and 67 A through L3. Because the equipment detects an over-current in L1, after 54 seconds, the relay opens the three phases ( $t = 270-3 \cdot 72 = 54$  s).

88 A circulates through L1, 78 A through L2 and 79 A through L3. Since the current through L1 exceeds 85 A, after five seconds, the relay opens the three phases.

The relay reset in case of over-current is configurable via register 0x272, where it is configured by time by writing the time in register 0x0273), by pushbutton by pressing **Sel** for five seconds or by Modbus command.

