Sontex ■ Thermal Energy ■ Flow Metering ■

Manual

Radio Modem

Supercom 636

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Revision

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211010	21.10.10	SV	Add 656 & 541. Adapted writing factor KC for 556
200411	20.04.11	SV	Add information for 449
010312	01.03.12	SV	Add entry for 539 (write) + change finalize parametrize 556

Table of Contents

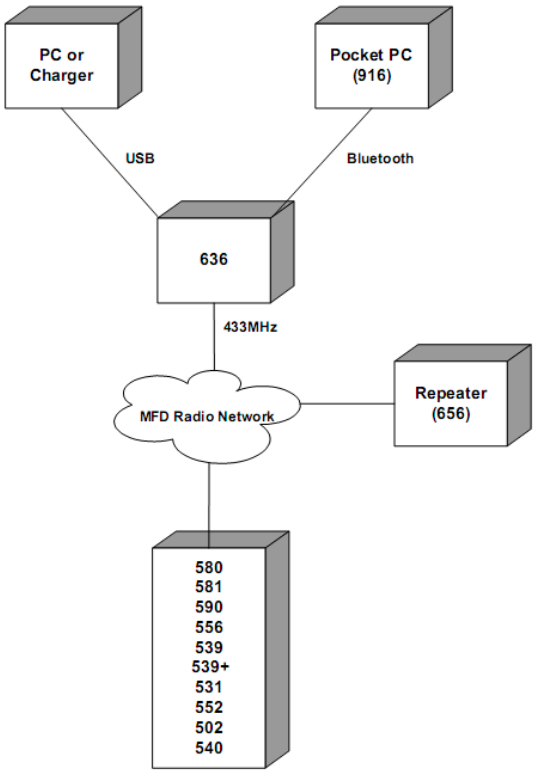
1. General

1.1 Introduction

This user guide describes the operation and the use of the radio modem 636. It is addressed to all users as well as to application engineers.

1.2 Field of application of modem

The external peripheral radio modem Supercom 636 is suitable for a connection to PC or Pocket PC with USB or Bluetooth. It allows the read out of meters per radio. The modem works at a frequency of 433.82 MHz and supports the protocols MFD and Radian 0.



1.3 Necessary configuration

The radio modem Supercom 636 can be connected to any system (PC, Laptop or Pocket PC) which has the following characteristics:

- USB port
  or
- Bluetooth

2. Scope of delivery

Content set radio modem Supercom 636:

- Radio modem Supercom 636 with belt clip
- 3 accumulators 1.2V type AAA (1000mAh)
- Radio antenna
- User manual
- CD with
  User manual (pdf)
  USB driver
  PDA SW Sontex916
  Firmware update PC SW Tools636
  Road Creator PC SW Tools916
- USB cable (mini USB - USB A male)
- USB charger (230VAC and 12VDC)

! Accumulators are not charged !
! Initial charge necessary !
! 8 h minimum !

3. How to use

3.1 Introduction

There're two possibilities to communicate with the modem Supercom 636: USB or Bluetooth. Both are using M-Bus protocol.

3.1.1 USB

- Speed: 38'400 bauds
- Bits: 8 bits
- Parity: even
- Stop bit: 1

The USB driver (virtual com port) you find on the CD delivered with the set radio modem Supercom 636 or on the internet at the following address: ://www.ftdichip.com/FTDrivers.htm

This driver is requested only at the first connection of the radio modem to the PC. Thereafter the communication will then be available from a com port (COMx).

3.1.2 Switch ON/OFF the modem

With the orange button the radio modem Supercom 636 can be switched ON and OFF.
After 10 minutes of inactivity the radio modem Supercom 636 shuts down by itself.

3.1.3 Bluetooth

For the start up the modem must first connect with the remote system.
To establish connection the following steps must be followed and completed:

- Switch ON the radio modem Supercom 636 over the orange button.
  The blue LED indicates that the modem Supercom 636 is visible to other Bluetooth devices.
- On the remote device (PDA) search for Bluetooth devices in your area.
  Check the manual of your remote device for instructions.
- Once the remote device found the modem radio Supercom 636 the remote device will display its name and serial number (e.g. Supercom 636 S/N: 08094002).
- Select it and enter the following password if necessary: 0000
- Depending on the remote device you have to indicate a COM port number for the outgoing communication. Please check the manual of your remote device for instructions. This task must only be performed once.
- Once the remote device opens a communication port to the radio modem Supercom 636 the blue LED is blinking as long the port is open. When the port is closed the blue LED is on but not blinking.

3.1.4 LED display

There're four LEDs on the front of the device.

- Link : (Blue)

Conditions	LED state
The modem is ON	ON
A Bluetooth communication port is opened.	Blinking 0.25s every 2s
The modem is OFF	OFF

- Charge: (Red)

Conditions	LED state
Accumulators charged	OFF
Low power	Blinking 0.25s every 3s
** Near empty	1 blink
Charging	ON

** If the accumulators are near empty the device shuts down by itself.

- Tx : (yellow)

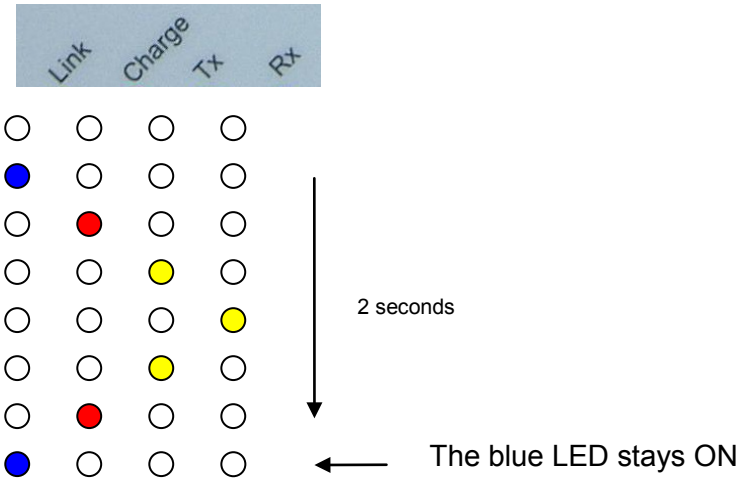
Conditions	LED state
A byte is transmitted via radio	0.25s per byte

- Rx : (yellow)

Conditions	LED state
A byte is received via radio	0.25s per byte

3.1.4.1 Switch ON sequence

By turning ON the Supercom 636, the following LEDs sequence is running:



If another sequence is running contact your local Sontex agent or the Sontex technical support. (See last page of this document for contacts).

3.1.5 Charging accumulators

The radio modem Supercom 636 needs 3 accumulators 1.2V type AAA Ni-Mh (1000mAh). In case of replacing the accumulators we recommend to always use products of the same supplier of accumulators.

Only use Ni-Mh accumulators.

Disposal of battery and device

It is mandatory to dispose of used accumulators and the radio modem Supercom 636 environmental friendly or to return it after use to the manufacturer for appropriate disposal to ensure that the components are recycled in accordance with the battery and electronic scrap regulations. If you decide to dispose of the battery or the device yourself get proper information about recycling possibilities locally.

The radio modem Supercom 636 can be charged by USB on a host PC hub (500mA) or with the charger (recommended) delivered with the set. The red LED indicates the charging mode (see 3.1.4.)

The device must be charged first before a first use (Minimum 8 hours).

Once the device is fully charged it will switch OFF automatically.

3.1.6 Using the accumulators

Accumulators are self discharging over time, accumulators not used must be charged at least every 6 months.

4. Communication

4.1 Introduction

The radio modem Supercom 636 uses the M-Bus protocol according to EN1434 to communicate. It supports primary and secondary addressing. For more detailed information, please refer to the M-Bus documentation available on the internet: ://www.m-bus.com/

4.1.1 Reading concept

The radio modem is like 2 separate devices:
1. The modem itself
2. The device to be read

Each device can be accessed with its secondary address (serial number) or primary address:
- Primary address for modem 636: **251**
- Primary address for device to be read: **254**

The 636 has a local memory which can contain the information (address and readout method) of the radio device to be read (maximum one).

The 636 contains two frames.
1. Modem information
2. Device to read information (address and readout method) if present

To read a radio device (e.g Radio module Supercom 580) the necessary information (radio address and readout method) must be introduced into the local memory with the

command “SND_UD”

containing the field “Add entry to device list”.

The radio communication is started with the

command “SND_UD”

containing the field “Start read radio process”.

Sending a request to the radio modem Supercom 636 during the radio process will return a “busy” frame. (3. / page 12).

To read the result send a request “REQ_UD2” to the device address “254”.

4.1.2 Detailed reading steps

See Annex A, page 14, for the detailed reading process schematic.

1. Request the frame “Rsp1” with a “REQ_UD2” (Addr.251).

Frame “Rsp1” (Contains modem information)

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, **L**ength	68,Le Le,68		
	Control	08		Respond with user data, RSP_UD
	Address	FD or FB		
User data	Control **I**nformation	72		Variable structure respond
	Identification number	xx xx xx xx	A, 32 bits	
	Manufacturer ID	EE 4D	C, 16 bits	"SON"
	Version of meter	14	C, 8 bits	
	Device type	0E	D, 8 bits	Bus / System component
	Access number	xx	C, 8 bits	
	Status	st	Ds, 8 bits	
	Signature (not used)	00 00	C, 16 bits	
	Detailed errors	02,FD 17,er er	D, 16 bits	
	Current date & time	04,6D,xx xx xx xx	F, 32 bits	
	Parameters flags	01,FD 66,pp	D, 8 bits	
	Internal version	0C,FD 0F,xx xx xx xx	A, 32 bits	
	Hardware version	02,FD 0D,xx xx	C, 16 bits	
	Fabrication Number	0C,78,xx xx xx xx	A, 32 bits	
	More records in next telegram	mo		Start of manufacturer specific data
End	**C**heck **S**um	cs		
	Stop	16		

Keys

[ ] Optional record

`xx` Value LSByte first
`yy` Value MSByte first

`ch` ASCII character

`cs` The value of Check Sum is calculated from arithmetical sum modulo 256 of each byte of the frame except the fields: Start, Length (if any), Check Sum and Stop.

`er er` Detailed errors

	636	***M-Bus standard***
`bit0`	†	*Tamper*
`bit1`	Accumulators low	*Battery low*
`bit2`	†	*External alarm*
`bit3`	†	*Battery cut*
`bit7..4`	†	*RSSI*
`bit8`	SND_UD frame: unknown CI.	
`bit9`	SND_UD frame, structured write: unknown field.	
`bit10`	†	
`bit11`	SND_UD frame, structured write: bad field size.	
`bit12`	SND_UD frame, structured write: memory overflow.	
`bit13`	†	
`bit14`	Invalid time clock	
`bit15`	Last radio process error	

`Le` Length of the M-Bus frame. The fields Start, Length, Check Sum and Stop (6 bytes) are not included in the calculation of the Length field. The Length field is repeated twice preceded and followed by the Start field 68h.

`Ls` Length of ASCII character string
Warning: according to the M-Bus standard, the first byte following the length byte is the rightmost character of the string, and the last byte is the leftmost character.

`mo` More records in next telegram :

`0Fh`	no
`1Fh`	yes

`pp` Parameter flags

`bit0`	When the selected device is in the device list, but not yet read : 0: send an ""empty"" RSP_UD (with just the 12 bytes header) 1: do not send anything

`st` Status

	636	***M-Bus standard***
`bit1..0`	Application	*Application*
`00b`	No error	*No error*
`01b`	†	*Application busy*
`10b`	Any application error	*Any application error*
`11b`	†	*Reserved*
`bit2`	Accumulators low	*Power low*
`bit3`	†	*Permanent error*
`bit4`	†	*Temporary error*
`bit5`	†	*Manufacturer specific*
`bit6`	Invalid time clock	*Manufacturer specific*
`bit7`	Last radio process error	*Manufacturer specific*

† Not used.

2. To read a device send the command “SND_UD" (Addr.251):

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, Length	68,Le Le,68		
	Control	73|53		Send user data to slave, SND_UD
	Address	FD or FB		
User data	Control Information	51		Stuctured write telegram
	Current date & time	04,6D,xx xx xx xx	F, 32 bits	
	Add entry to device list	0D,FF 16,Ls xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx	LVAR	§
	Parameters flags	01,FD 66,pp	D, 8 bits	
	Start read radio process	01,FF,24,00		§
	Start write radio process	01,FF,24,01		§
End	Check Sum	cs		
	Stop	16		
	Symbols			
	‡ Function: 0=instantaneous, 1=maximum, 2=minimum, 3=during error state			
	§ manufacturer specific VIFE			
	Notes			
	1. For non hexadecimal or lower case digits see the detailled description in the Keys sheet.			

Read process:
The field “Current date & time” must be added in the “Add entry to device list” if bit7”Adjust device clock” = 1 of Options byte.
The field “Add entry to device list” is detailed in Annex B.
The field “Start read radio process” starts the read radio communication.

Write process:
The field “Add entry to device list” is detailed in Annex E.
The field “Start write radio process” starts the write radio communication.

3. Sending the command “REQ_UD2” if the radio process is in progress, the radio modem Supercom 636 is communicating by radio with the device, will return a “busy” frame:

	Field	Frame bytes in hex	
Header	Start, Length	68,04 04,68	See Note 1
	Control	08	Respond with user data, RSP_UD
	Address	FD or FB	
	Control Information	70	Repport of application errors
		08	Application to busy for handling readout request
End	Check Sum	xx	
	Stop	16	

4. If the modem is no longer busy send the command “REQ_UD2” (Addr.254) to readout the device frame.
5. If a radio problem occurs (e.g. no answer of the device), the frame RSP_UD of the device contains only the header without data or doesn’t send anything at all.
   See parameter flags “pp” in the frame Rsp1 of the modem.
   Also check bit7 of status byte “st” in the frame Rsp1 of the modem.

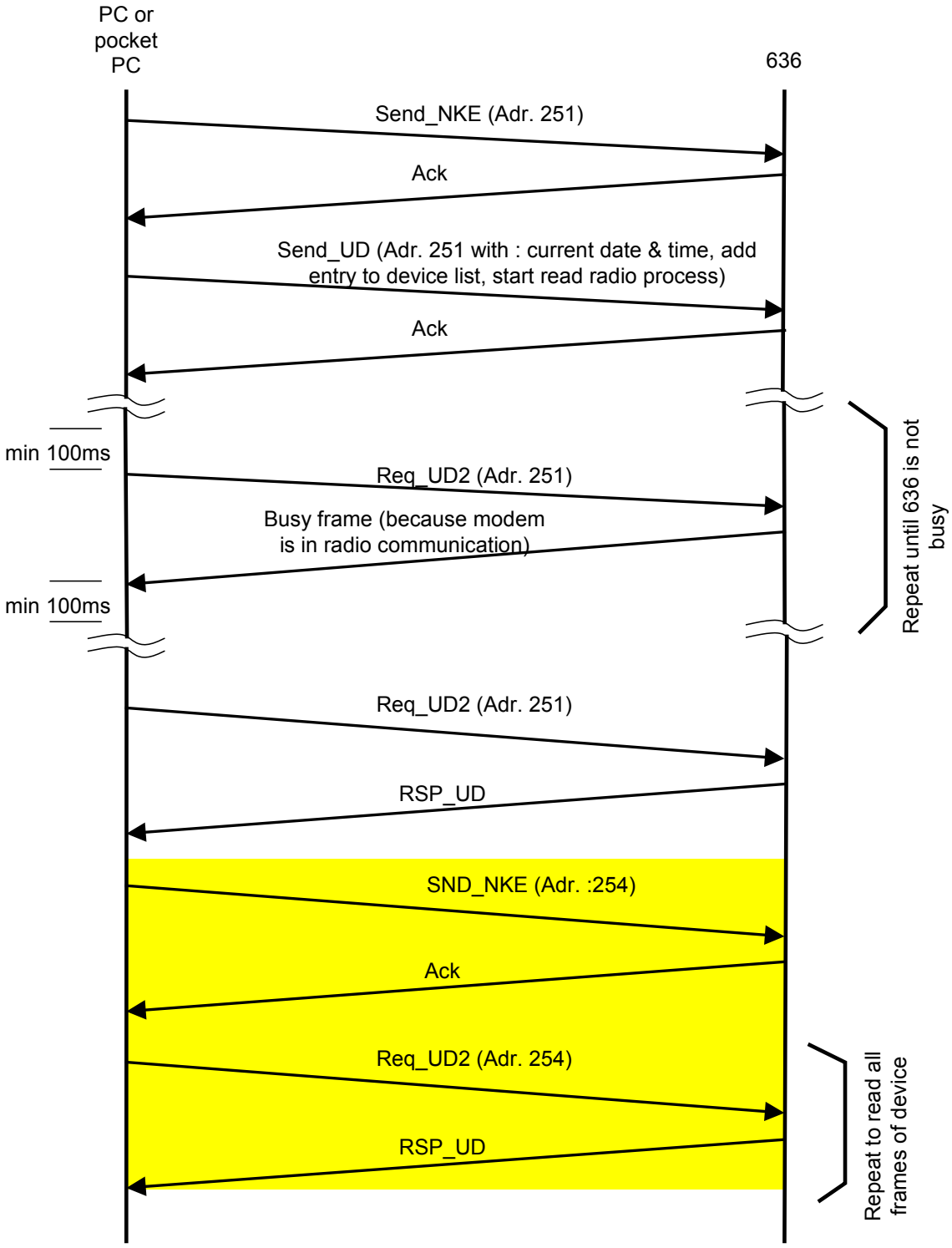
5. Utilities

5.1 Firmware Update

The firmware of the modem Supercom 636 can be updated by the USB interface from a computer with the software Tools636.

6. Annex A

6.1 Detailed reading process schematics



7. Annex B

7.1 Add entry to device list to read a device

		Identification Number	Manufacturer ID	Generation of Meter	Measured Media	Radio Address	Radio Device Type	Options	Maximal Frame Number	Application Reset Subcode	Date of Last Successful Reading
	Type	A	C	C	D	A	C	D	C	D	G
	Bytes	4	2	1	1	4	1	1	1	1	2
	Notes	a, e	a, e	a	a	b, e	b	b	b	b	c, e
Device type	Values to read										
HCA 502, 502S, 552	All values	xxxxxxxxh	4DEEh	4	08h	xxxxxxxxh	0	80h	01h	00h	0101h
HCA 502S, 552	All values (compact reading)	xxxxxxxxh	4DEEh	4	08h	xxxxxxxxh	0	80h	01h	01h	0101h
Supercal 539 or 539+	Current values	xxxxxxxxh	4DEEh	4	04h	xxxxxxxxh	1	80h	01h	00h	0101h
Supercal 539+	+ monthly energy	xxxxxxxxh	4DEEh	4	04h	xxxxxxxxh	1	80h	02h	00h	0101h
Supercal 539+	+ monthly volume	xxxxxxxxh	4DEEh	4	04h	xxxxxxxxh	1	80h	03h	00h	0101h
Supercal 539+	All values	xxxxxxxxh	4DEEh	4	04h	xxxxxxxxh	1	80h	05h	00h	0101h
540 pulses	All values	xxxxxxxxh	4DEEh	1	00h	xxxxxxxxh	2	80h	04h	00h	0101h
531 / 449	frames 1, 2, 3, 4	xxxxxxxxh	4DEEh	12	04h	xxxxxxxxh	3	80h	04h	00h	0101h
531 / 449	frames 1, 2, 3, 4, 5, 10	xxxxxxxxh	4DEEh	12	04h	xxxxxxxxh	3	80h	06h	01h	0101h
531 / 449	frames 106, 107	xxxxxxxxh	4DEEh	12	04h	xxxxxxxxh	3	80h	04h	02h	0101h
531 / 449	frames 56, 57, 58, 59	xxxxxxxxh	4DEEh	12	04h	xxxxxxxxh	3	80h	04h	03h	0101h
590 WCA	All values	xxxxxxxxh	38AFh	4	07h	xxxxxxxxh	4	81h	01h	00h	0101h
580 Water counter	All values	xxxxxxxxh	4DEEh	10	07h	xxxxxxxxh	4	80h	01h	00h	0101h
581 Water counter	All values	xxxxxxxxh	4DEEh	20	07h	xxxxxxxxh	4	80h	01h	00h	0101h
556 HCA	All values	xxxxxxxxh	4DEEh	16	08h	xxxxxxxxh	5	B1h	02h	00h	0101h
541 pulses	All values	xxxxxxxxh	4DEEh	10	00h	xxxxxxxxh	6	90h	03h	00h	0101h
656 repeater	All values	xxxxxxxxh	4DEEh	30	0Eh	xxxxxxxxh	6	00h	01h	00h	0101h

Notes

a	This value is part of the M-Bus secondary address used to access the data of a device stored in 636. It is updated by 636 according to the value really read from the device by radio.
b	This value is used to access the device by radio. It is never modified by the 636 itself.
c	The date 1.1.2000 means ""not yet successful read"", coded in M-Bus G type: 0101h
e	Multibytes values are transmitted with LSB first.

Options

bit7 Adjust device clock: 0=no, 1=yes

8. Annex C

8.1 Encoded frames Radio Pulse Adapter 540

Rsp_1

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, Length	68,Le Le,68		
	Control	08		Respond with user data, RSP_UD
	Address	xx		
User data	Control Information	72		Variable structure respond
	Identification number	xx xx xx xx	A, 32 bits	
	Manufacturer ID	EE 4D	C, 16 bits	"SON"
	Version of meter	01	C, 8 bits	
	Device type	00	D, 8 bits	
	Access number	xx	C, 8 bits	
	Status	st	Ds, 8 bits	
	Signature (not used)	00 00	C, 16 bits	
	Current date & time	04,6D,xx xx xx xx	F, 32 bits	
	Identification number	0C,79, xx xx xx xx	A, 32 bits	
	Medium string	0D,FD 09,03, me me me	LVAR	3 char
	Units string	0D,FD 67,05, un un un un un	LVAR	5 char
	Units factor	05,EE 76,xx xx xx xx	H, 32 bits	dimensionless
	Totalizer initial value	44,6E,xx xx xx xx	B, 32 bits	dimensionless
	Info string	0D,FD 0C,18,ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch	LVAR	24 char
	Totalizer current value	04,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 1	84 01,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 2	C4 01,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 3	84 02,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 4	C4 02,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 5	84 03,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 6	C4 03,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 7	84 04,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 8	C4 04,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 9	84 05,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 10	C4 05,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 11	84 06,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 12	C4 06,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 13	84 07,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 14	C4 07,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 15	84 08,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 16	C4 08,6E,xx xx xx xx	B, 32 bits	dimensionless
	More records in next telegram	mo		Start of manufacturer specific data
End	Check Sum	cs		
	Stop	16		

Rsp_2

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, Length	68,Le Le,68		
	Control	08		Respond with user data, RSP_UD
	Address	xx		
User data	Control Information	72		Variable structure respond
	Identification number	xx xx xx xx	A, 32 bits	
	Manufacturer ID	EE 4D	C, 16 bits	"SON"
	Version of meter	01	C, 8 bits	
	Device type	00	D, 8 bits	
	Access number	xx	C, 8 bits	
	Status	st	Ds, 8 bits	
	Signature (not used)	00 00	C, 16 bits	
	Identification number	8C 40,79, xx xx xx xx	A, 32 bits	
	Medium string	8D 40,FD 09,03,me me me	LVAR	
	Units string	8D 40,FD 67,05,un un un un un	LVAR	3 char
	Units factor	85 40,EE 76,xx xx xx xx	H, 32 bits	5 char
	Totalizer initial value	C4 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Info string	8D 40,FD 0C,18,ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch	LVAR	dimensionless
	Totalizer current value	84 40,6E,xx xx xx xx	B, 32 bits	24 char
	Units stored at month - 1	84 41,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 2	C4 41,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 3	84 42,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 4	C4 42,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 5	84 43,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 6	C4 43,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 7	84 44,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 8	C4 44,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 9	84 45,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 10	C4 45,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 11	84 46,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 12	C4 46,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 13	84 47,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 14	C4 47,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 15	84 48,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 16	C4 48,6E,xx xx xx xx	B, 32 bits	
	More records in next telegram	mo		Start of manufacturer specific data
End	Check Sum	cs		
	Stop	16		

Rsp_3

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, **L**ength	68,Le Le,68		
	Control	08		Respond with user data, RSP_UD
	Address	xx		
User data	Control **I**nformation	72		Variable structure respond
	Identification number	xx xx xx xx	A, 32 bits	
	Manufacturer ID	EE 4D	C, 16 bits	"SON"
	Version of meter	01	C, 8 bits	
	Device type	00	D, 8 bits	
	Access number	xx	C, 8 bits	
	Status	st	Ds, 8 bits	
	Signature (not used)	00 00	C, 16 bits	
	Identification number	8C 80 40,79, xx xx xx xx	A, 32 bits	
	Medium string	8D 80 40,FD 09,03,me me me	LVAR	
	Units string	8D 80 40,FD 67,05,un un un un un	LVAR	3 char
	Units factor	85 80 40,EE 76,xx xx xx xx	H, 32 bits	5 char
	Totalizer initial value	C4 80 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Info string	8D 80 40,FD 0C,18,ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch	LVAR	dimensionless
	Totalizer current value	84 80 40,6E,xx xx xx xx	B, 32 bits	24 char
	Units stored at month - 1	84 81 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 2	C4 81 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 3	84 82 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 4	C4 82 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 5	84 83 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 6	C4 83 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 7	84 84 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 8	C4 84 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 9	84 85 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 10	C4 85 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 11	84 86 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 12	C4 86 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 13	84 87 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 14	C4 87 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 15	84 88 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 16	C4 88 40,6E,xx xx xx xx	B, 32 bits	
	More records in next telegram	mo		Start of manufacturer specific data
End	**C**heck **S**um	cs		
	Stop	16		

Rsp_4

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, **L**ength	68,Le Le,68		
	Control	08		Respond with user data, RSP_UD
	Address	xx		
User data	Control **I**nformation	72		Variable structure respond
	Identification number	xx xx xx xx	A, 32 bits	
	Manufacturer ID	EE 4D	C, 16 bits	"SON"
	Version of meter	01	C, 8 bits	
	Device type	00	D, 8 bits	
	Access number	xx	C, 8 bits	
	Status	st	Ds, 8 bits	
	Signature (not used)	00 00	C, 16 bits	
	Identification number	8C C0 40,79, xx xx xx xx	A, 32 bits	
	Medium string	8D C0 40,FD 09,03,me me me	LVAR	
	Units string	8D C0 40,FD 67,05,un un un un un	LVAR	3 char
	Units factor	85 C0 40,EE 76,xx xx xx xx	H, 32 bits	5 char
	Totalizer initial value	C4 C0 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Info string	8D C0 40,FD 0C,18,ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch ch	LVAR	dimensionless
	Totalizer current value	84 C0 40,6E,xx xx xx xx	B, 32 bits	24 char
	Units stored at month - 1	84 C1 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 2	C4 C1 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 3	84 C2 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 4	C4 C2 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 5	84 C3 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 6	C4 C3 40,6E,xx xx xx xx	B, 32 bits	dimensionless
	Units stored at month - 7	84 C4 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 8	C4 C4 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 9	84 C5 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 10	C4 C5 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 11	84 C6 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 12	C4 C6 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 13	84 C7 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 14	C4 C7 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 15	84 C8 40,6E,xx xx xx xx	B, 32 bits	
	Units stored at month - 16	C4 C8 40,6E,xx xx xx xx	B, 32 bits	
	More records in next telegram	mo		Start of manufacturer specific data
End	**C**heck **S**um	cs		
	Stop	16		

Notes

Medium

me		ASCII characters (3x)
	«ELE»	electricity
	«GAS»	gas
	«HCA»	heat cost allocator
	«HEA»	heat
	«HWA»	hot water
	«OIL»	oil
	«STE »	steam
	«WAT»	water
	«OTH»	other
	« »	unknown medium

Units

un		ASCII characters (5x)
	«Imp»	impuls
	«J»	Joules
	«kJ»	kilo Joules
	«MJ»	Mega Joules
	«l»	liter
	«m3»	cubic meter
	«Wh»	Watt hour
	«kWh»	kilo Watt hour
	«MWh»	Mega Watt hour
	« »	unknown unit

Information

ch		ASCII characters (24x)
	« »	all what you like
mo		More records in next telegram :
	0F	no
	1F	yes

8.2 Encoded frames calculator Supercal 531/449 (rsp106 and rsp107)

Rsp_1

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, Length	68,Le Le,68		
	Control	08		Respond with user data, RSP_UD
	Address	xx		
User data	Control Information	72		Variable structure respond
	Identification number	xx xx xx xx	A, 32 bits	
	Manufacturer ID	EE 4D	C, 16 bits	"SON"
	Version of meter	00	C, 8 bits	
	Device type	dt	D, 8 bits	
	Access number	xx	C, 8 bits	
	Status	st	Ds, 8 bits	
	Signature (not used)	00 00	C, 16 bits	
	Detailed errors	02,FD 17,er er	D, 16 bits	
	Energy totalizer heating	04,en en,xx xx xx xx	B, 32 bits	
	Volume totalizer	04,vo vo,xx xx xx xx	B, 32 bits	
	Energy totalizer tarif 1	84 10,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer tarif 2	84 20,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer stored at ST 1	C4 84 01,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 1	44,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 2	84 01,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 3	C4 01,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 4	84 02,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 5	C4 02,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 6	84 03,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 7	C4 03,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 8	84 04,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 9	C4 04,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 10	84 05,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 11	C4 05,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 12	84 06,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 13	C4 06,en en,xx xx xx xx	B, 32 bits	
	Energy stored at month - 14	84 07,en en,xx xx xx xx	B, 32 bits	
	More records in next telegram	mo		Start of manufacturer specific data
End	Check Sum	cs		
	Stop	16		

Rsp_2

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, **L**ength	68,Le Le,68		
	Control	08		Respond with user data, RSP_UD
	Address	xx		
User data	Control **I**nformation	72		Variable structure respond
	Identification number	xx xx xx xx	A, 32 bits	
	Manufacturer ID	EE 4D	C, 16 bits	"SON"
	Version of meter	00	C, 8 bits	
	Device type	dt	D, 8 bits	
	Access number	xx	C, 8 bits	
	Status	st	Ds, 8 bits	
	Signature (not used)	00 00	C, 16 bits	
	Energy totalizer 1 stored at month - 1	C4 10,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 2	84 11,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 3	C4 11,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 4	84 12,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 5	C4 12,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 6	84 13,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 7	C4 13,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 8	84 14,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 9	C4 14,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 10	84 15,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 11	C4 15,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 12	84 16,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 13	C4 16,en en,xx xx xx xx	B, 32 bits	
	Energy totalizer 1 stored at month - 14	84 17,en en,xx xx xx xx	B, 32 bits	
	Power maximum stored at - 1	D5 82 03,2B,xx xx xx xx	H, 32 bits	
	Power maximum stored at - 2	95 83 03,2B,xx xx xx xx	H, 32 bits	
	Power maximum stored at - 3	D5 83 03,2B,xx xx xx xx	H, 32 bits	
	Power maximum stored at - 4	95 84 03,2B,xx xx xx xx	H, 32 bits	
	Power maximum stored at - 5	D5 84 03,2B,xx xx xx xx	H, 32 bits	
	Power maximum stored at - 6	95 85 03,2B,xx xx xx xx	H, 32 bits	
	Power maximum stored at - 7	D5 85 03,2B,xx xx xx xx	H, 32 bits	
	Power maximum date/time stored at - 1	C4 82 03,6D,xx xx xx xx	F, 32 bits	
	Power maximum date/time stored at - 2	84 83 03,6D,xx xx xx xx	F, 32 bits	
	Power maximum date/time stored at - 3	C4 83 03,6D,xx xx xx xx	F, 32 bits	
	Power maximum date/time stored at - 4	84 84 03,6D,xx xx xx xx	F, 32 bits	
	Power maximum date/time stored at - 5	C4 84 03,6D,xx xx xx xx	F, 32 bits	
	Power maximum date/time stored at - 6	84 85 03,6D,xx xx xx xx	F, 32 bits	
	Power maximum date/time stored at - 7	C4 85 03,6D,xx xx xx xx	F, 32 bits	
	More records in next telegram	mo		Start of manufacturer specific data
End	**C**heck **S**um	cs		
	Stop	16		

Rsp_3

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, **L**ength	68,Le Le,68		
	Control	08		Respond with user data, RSP_UD
	Address	xx		
User data	Control **I**nformation	72		Variable structure respond
	Identification number	xx xx xx xx	A, 32 bits	
	Manufacturer ID	EE 4D	C, 16 bits	"SON"
	Version of meter	00	C, 8 bits	
	Device type	dt	D, 8 bits	
	Access number	xx	C, 8 bits	
	Status	st	Ds, 8 bits	
	Signature (not used)	00 00	C, 16 bits	
	Fabrication Number MET	0C,78,xx xx xx xx	A, 32 bits	
	Fabrication Number MIO	8C C0 C0 40,78,xx xx xx xx	A, 32 bits	
	Current date & time	04,6D,xx xx xx xx	F, 32 bits	
	Power	05,2B,xx xx xx xx	H, 32 bits	[W]
	Flow	05,3E,xx xx xx xx	H, 32 bits	[m3/h]
	Days without energy	02,FF 05,xx xx	C, 16 bits	[days]
	Days without flow	02,FF 06,xx xx	C, 16 bits	[days]
	High temperature	05,5B,xx xx xx xx	H, 32 bits	[°C]
	Low temperature	05,5F,xx xx xx xx	H, 32 bits	[°C]
	Identification number 1	8C 40,79,xx xx xx xx	A, 32 bits	
	Complementary counter 1 totalizer	84 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 1	C4 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 2	84 41,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 3	C4 41,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 4	84 42,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 5	C4 42,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 6	84 43,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 7	C4 43,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 8	84 44,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 9	C4 44,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 10	84 45,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 11	C4 45,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 12	84 46,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 13	C4 46,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 1 totalizer stored at month - 14	84 47,co co,xx xx xx xx	B, 32 bits	
	More records in next telegram	mo		Start of manufacturer specific data
End	**C**heck **S**um	cs		
	Stop	16		

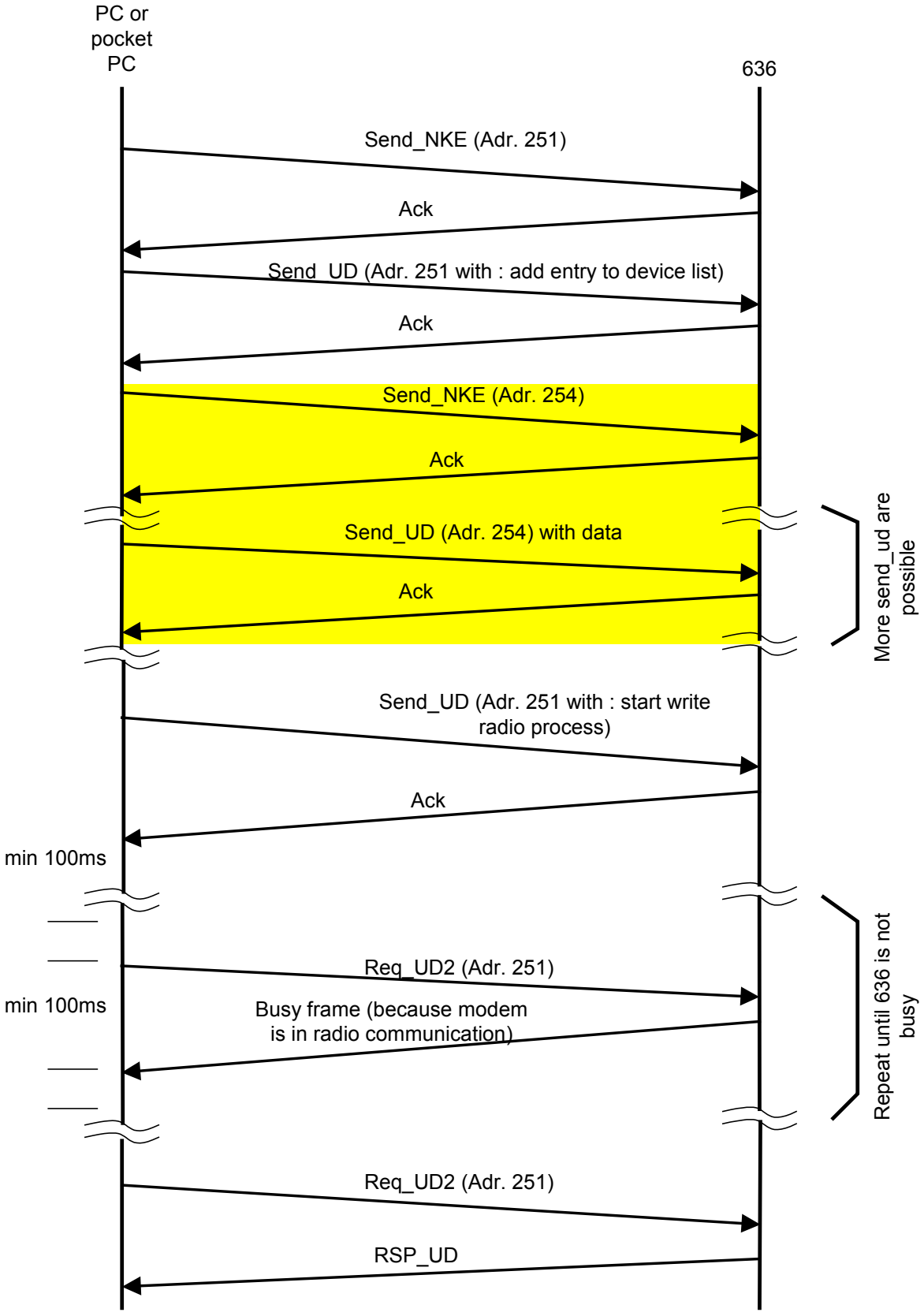
Rsp_4

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, Length	68,Le Le,68		
	Control	08		Respond with user data, RSP_UD
	Address	xx		
User data	Control Information	72		Variable structure respond
	Identification number	xx xx xx xx	A, 32 bits	
	Manufacturer ID	EE 4D	C, 16 bits	"SON"
	Version of meter	00	C, 8 bits	
	Device type	dt	D, 8 bits	
	Access number	xx	C, 8 bits	
	Status	st	Ds, 8 bits	
	Signature (not used)	00 00	C, 16 bits	
	Identification number 2	8C 80 40,79,xx xx xx xx	A, 32 bits	
	Complementary counter 2 totalizer	84 80 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 1	C4 80 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 2	84 81 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 3	C4 81 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 4	84 82 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 5	C4 82 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 6	84 83 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 7	C4 83 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 8	84 84 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 9	C4 84 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 10	84 85 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 11	C4 85 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 12	84 86 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 13	C4 86 40,co co,xx xx xx xx	B, 32 bits	
	Complementary counter 2 totalizer stored at month - 14	84 87 40,co co,xx xx xx xx	B, 32 bits	
	More records in next telegram	mo		Start of manufacturer specific data
End	Check Sum	cs		
	Stop	16		

Note : See Supercal 531/449 M-Bus frames documentation for details

9. Annex D

9.1 Detailed writing process schematics



10. Annex E

10.1 Add entry to device list to write a device

		Identification Number	Manufacturer ID	Generation of Meter	Measured Media	Radio Address	Radio Device Type	Options	Maximal Frame Number	Application Reset Subcode	Date of Last Successful Reading
	Type	A	C	C	D	A	C	D	C	D	G
	Bytes	4	2	1	1	4	1	1	1	1	2
	Notes	a, e	a, e	a	a	b, e	b	b	b	b	c, e
Device type	Values to write										
HCA 502, 502S, 552	Set of values	xxxxxxxxh	4DEEh	4	08h	xxxxxxxxh	0	00h	00h	00h	0101h
540 pulses	Set of values	xxxxxxxxh	4DEEh	1	00h	xxxxxxxxh	2	00h	00h	00h	0101h
531 / 449	Set of values	xxxxxxxxh	4DEEh	12	04h	xxxxxxxxh	3	00h	00h	00h	0101h
539	Set of values	xxxxxxxxh	4DEEh	4	04h	xxxxxxxxh	1	00h	00h	00h	0101h
590 WCA	Set of values	xxxxxxxxh	38AFh	4	07h	xxxxxxxxh	4	01h	00h	00h	0101h
580 Water counter	Set of values	xxxxxxxxh	4DEEh	10	07h	xxxxxxxxh	4	00h	00h	00h	0101h
581 Water counter	Set of values	xxxxxxxxh	4DEEh	20	07h	xxxxxxxxh	4	00h	00h	00h	0101h
556 HCA	Set of values	xxxxxxxxh	4DEEh	16	08h	xxxxxxxxh	5	31h	00h	00h	0101h
541 pulses	Set of values	xxxxxxxxh	4DEEh	10	00h	xxxxxxxxh	6	10h	00h	00h	0101h

Notes

a	This value is part of the M-Bus secondary address used to access the data of a device stored in 636. It is updated by 636 according to the value really read from the device by radio.
b	This value is used to access the device by radio. It is never modified by the 636 itself.
c	The date 1.1.2000 means ""not yet successful read"", coded in M-Bus G type: 0101h
e	Multibytes values are transmitted with LSB first.

Options

bit7..0 Internal use

10.2 Writing standard products

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, **L**ength	68,Le Le,68		
	Control	73|53		Send user data to slave, SND_UD
	Address	FE		
User da	Control **I**nformation	51		Stuctured write telegram
		See product documentation		
End	**C**heck **S**um	cs		
	Stop	16		

To write a standard product (e.g.580, 581, 590, 541, 539) send a standard command “SND_UD” as described in the respective M-Bus frames documentation.

10.3 Writing the heat cost allocator 502 / 552

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, **L**ength	68,Le Le,68		
	Control	73|53		Send user data to slave
	Address	FE		
User data	Control **I**nformation	51		Stuctured write telegram
	Select week in period A in 502/552	0F,00,57,30,x1 x2 x3 x4 x5 x6	LVAR	§
End	**C**heck **S**um	cs		
	Stop	16		

You can select maximum 4 weeks in the year in period A.
Week N°1 : days 1..7; Week N°2 : days 8..15; Week N°3 : days 16..23; Week N°4 : days 24..31

	Week N°4	Week N°3	Week N°2	Week N°1	Week N°4	Week N°3	Week N°2	Week N°1
bit	7	6	5	4	3	2	1	0
Byte x1	**february**				**january**			
	x	x	x	x	x	x	x	x
Byte x2	**april**				**march**			
	x	x	x	x	x	x	x	x
Byte x3	**june**				**may**			
	x	x	x	x	x	x	x	x
Byte x4	**august**				**july**			
	x	x	x	x	x	x	x	x
Byte x5	**october**				**september**			
	x	x	x	x	x	x	x	x
Byte x6	**december**				**november**			
	x	x	x	x	x	x	x	x

Example : to select period A from 16 may to 15 june =>
x1..x6 = 00, 00, 3C, 00, 00, 00

	Week N°4	Week N°3	Week N°2	Week N°1	Week N°4	Week N°3	Week N°2	Week N°1	
bit	7	6	5	4	3	2	1	0	
Byte x1	**february**				**january**				
	0	0	0	0	0	0	0	0	=00h
Byte x2	**april**				**march**				
	0	0	0	0	0	0	0	0	=00h
Byte x3	**june**				**may**				
	0	0	1	1	1	1	0	0	=3Ch
Byte x4	**august**				**july**				
	0	0	0	0	0	0	0	0	=00h
Byte x5	**october**				**september**				
	0	0	0	0	0	0	0	0	=00h
Byte x6	**december**				**november**				
	0	0	0	0	0	0	0	0	=00h

10.4 Writing the heat cost allocator Sontex 556

FRAME PARAMETRIZE

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, Length	68,Le Le,68		
	Control	73|53		Send user data to slave
	Address	FE		
User data	Control Information	51		Stuctured write telegram
	Change param in 556	0F,02, Param556	LVAR	§
End	Check Sum	cs		
	Stop	16		

FRAME FINALIZE PARAMETRIZE (always necessary)

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, Length	68,Le Le,68		
	Control	73|53		Send user data to slave
	Address	FE		
User data	Control Information	51		Stuctured write telegram
	Finalize param in 556	0F,02, finalizeParam556	LVAR	§ (Always necessary)
End	Check Sum	cs		
	Stop	16		

Symbols

‡ Function: 0=instantaneous, 1=maximum, 2=minimum, 3=during error state

§ manufacturer specific VIFE

Notes

1. For non hexadecimal or lower case digits see the detailled description in the Keys sheet.

Param556 in FRAME PARAMETRIZE

Param556 is a frame wrapped in SND_UD frame, it has also a similar header and footer. The "L" (lenght) and "CS"(checksum) bytes must be calculated.

Param556 / L (length) and CS (checksum)

	68	L	L	68												
	4B	FE	B0													
	02	2C	00	26	5A	6F	12	00	02	5D	20	44	02	54	70	79
	05	00	5C	09	35	6C	58	47	3E	18	66	6C	5E	09	16	69
	66	6C	54	18	BB	63	B8	47	1E	73	74	46	0E	6F	12	00
	06	FC	01	6D	F0	5D	20	6D	70	40	14	6C	52	6C	5A	68
	63	14	23	16	A3	68	E3	0C	4A	EA	7F	18	22	09	26	0A
	0B	AB	08	45	D0	40	BE	7F	77	72	30	FA	04	54	70	5A
	FB															
	PARAM															
	00															
	CS	16														

PARAM: (one or more, order insignificant)

ID number

			lsb	⋮	⋮	msb	
01	12	04	xx	xx	xx	xx	BCD M-Bus format A

KC and KQ factor[3]

float M-Bus format H

02	0E	81	20	FF	03	14	04	xx	xx	xx	xx	xx	xx	xx	xx
								KC				KQ			

Date and time

01	0C	04	xx	xx	xx	xx	M-Bus format F

Set day

								lsb	msb	
02	0E	81	02	FF	02	16	02	xx	xx	M-Bus format G (year will be '00)

Two different periods

			Summer date		Winter date		
			lsb	msb	lsb	msb	
0C	16	02	xx	xx	xx	xx	M-Bus format G (year will be '00)

Summer period start date, Winter period start date

To disable this function, put the date 2000-01-01 into the 2 dates.

Reset max. heatsink temp.

0C	20	02	00	00	00	00	

[3] *If KC or KQ = 0 then the device will count in "unit scale" mode.*
Otherwise will count in "product scale" mode.

					OR	AND	OR	AND	OR	AND	OR	AND	
	Set of parameters	4E	0E	81	xx	xx	xx	xx	xx	xx	xx	xx	MASK
	Reset fraud duration and date of the last case opening				BIT7								1 = reset
	Zeroing mode												Only one to "1" or all to "0" if never
	At the end of the year						BIT2						
	At set day						BIT3						
	At the sum. period start day						BIT4						
	At the win. period start day						BIT5						
	Storage period of units						BIT7						0= 1 Month 1=
	Measurement principle						BIT6						0= 2 sensor 1=
	Device counting cold						BIT1						1= enabled
	LCD schedule						BIT0						0= ON from
	Suppress counting during summer period								BIT0				1= suppress
	Automatic rolling LCD								BIT7				1= enabled
	Items displayed in short time 1s [5]										BIT7..0		bit7 (POS8) ...

Example *If we want only set zeroing mode at set day*

Set of parameters	4E	0E	81	00	FF	08	CB	00	FF	00	FF	

				lsb	msb	
Device in sleep mode until date [4]	01	16	02	xx	xx	M-Bus format G

[4] *If date = 01h 01h --> never wakeup (only with button)*

[5] *If automatic rolling LCD is enabled, the 8 positions of menu can be displayed a short time 1s or a long time (2s to 7s).*

Display time for an item set as "long time" *2..7s*

Time					
2s	20	0E	81	40	5F
3s	20	0E	81	60	7F
4s	20	0E	81	80	9F
5s	20	0E	81	A0	BF
6s	20	0E	81	C0	DF
7s	20	0E	81	E0	FF

				POS2	POS3	POS4	POS5	POS6	POS7	POS8
LCD Position_2,3,4,5,6,7,8	FE	1C	01	xx	xx	xx	xx	xx	xx	xx

00h = disable position (not allowed in POS2)
01h = errors position
02h = current date position
03h = set day position
04h = set day value position
05h = checkcode position
06h = ambient temperature position
07h = value at the end of the last period position
0Ah = temperatures menu
14h = values menu
1Eh = times and dates menu
22h = max. heatsink temperatures menu
2Bh = service menu
3Bh = metrological menu
92h = monthly menu
D2h = half monthly menu

We can not change the POS1 of LCD (Errors menu) and we must not disable POS2.

finalizeParam556 in FRAME FINALIZE PARAMETRIZE (always necessary)

finalizeParam556 is a frame wrapped in SND_UD frame, it has also a similar header and footer. The "L" (lenght) and "CS"(checksum) bytes must be calculated.

finalizeParam556 — L (length) and CS (checksum)

68	L	L	68												
4B	FE	B0													
02	2B	00	32	AE	6F	10	00	0E	0B	00	68	04	F5	00	68
85	79	02	00	B0	09	32	68	2C	AC	01	46	02	70	34	69
12	FD	3C	1D	52	47	38	45	12	70	44	68	84	6F	12	00
08	5D	20	40	72	09	62	69	A5	54	70	79	05	31	9C	0D
32	79	06	00	7E	55	EE	79	05	21	8A	FE	0A	55	E6	79
05	21	A2	FE	14	55	DE	79	05	0F	8A	FE	04	55	D6	73
74	47	24	6F	12	00	16	6F	23	FF	F8	6F	A3	00	0A	79
05	01	01	6F	A5	00	08	1B	02	1B	82	6D	F2	19	55	19
66	5E	00	31	DA	0B	87	73	14	47	04	5E	00	21	9C	73
34	47	0C	7F	76	70	20	7F	7B	70	10	7F	7B	72	20	5E
00	21	B4	5E	00	0F	58	FA	02	3A	C1	7F	FB	72	00	FA
04	54	70	8B	99											
WS															
CS	16														

WS (byte)

= 1	Finalize write in 556 and put device in sleep mode
= 0	Finalize write in 556

10.5 Writing the radio pulse adapter 540

Stuctured write SND_UD (master to slave)

	Field	Frame bytes in hex (Note 1)	Coding	Comment
Start	Start, Length	68,Le Le,68		
	Control	73|53		Send user data to slave
	Address	FE		
User data	Control Information	51		Stuctured write telegram
	Write param in 540	0F,01, BLOCK	LVAR	§
End	Check Sum	cs		
	Stop	16		

Symbols
‡ Function: 0=instantaneous, 1=maximum, 2=minimum, 3=during error state
§ manufacturer specific VIFE

You must send a SND_UD separately for each BLOCK (A, B or C) and for each counter.

If you change the factor and initial value in "BLOCK A", you must send "BLOCK B" and "BLOCK C".

For example if you need to change everthing in the 4 counters, you must send 12 SND_UD.

In "BLOCK A", you can change one or more parameters (ex. only unit), but the group of parameters must be preceded with "F0 01" and ended with "FF".

For counter 1

BLOCK A

	F0	01																				
ID number	05	04	D0	40	lsb	sb1	sb2	msb														unsigned integer (0..99999999)
Medium	05	03	D4	40	ch0	ch1	ch2															ascii char (always 3 chr complete with space ='20h')
Unit	05	05	D7	40	ch0	ch1	ch2	ch3	ch4													ascii char (always 5 chr complete with space ='20h')
Factor and initial value	05	0C	DC	40	lsb	sb1	sb2	sb3	sb4	sb5	sb6	msb	lsb	sb1	sb2	msb						
					factor is a float (double IEEE754)								init. value (unsigned int)									
info string	05	18	E8	40	ch0	ch1	ch2	ch3	ch4	ch5	ch6	ch7	ch8	ch9	ch10	ch11	ch12	ch13	ch14	ch15	ch16	
					ch17	ch18	ch19	ch20	ch21	ch22	ch23											ascii char (always 24 chr complete with space ='20h')
	FF																					

BLOCK B

F0	01							
05	04	04	02	00	00	00	00	
05	04	18	40	00	00	00	00	
05	04	00	41	00	00	00	00	
05	04	10	41	00	00	00	00	
05	04	20	41	00	00	00	00	
05	04	30	41	00	00	00	00	
05	04	40	41	00	00	00	00	
05	04	50	41	00	00	00	00	
05	04	60	41	00	00	00	00	
FF								

BLOCK C

F0	01							
05	04	70	41	00	00	00	00	
05	04	80	41	00	00	00	00	
05	04	90	41	00	00	00	00	
05	04	A0	41	00	00	00	00	
05	04	B0	41	00	00	00	00	
05	04	C0	41	00	00	00	00	
05	04	D0	41	00	00	00	00	
05	04	E0	41	00	00	00	00	
05	04	F0	41	00	00	00	00	
FF								

For counter 2

BLOCK A

ID number	05	04	9E	40	lsb	sb1	sb2	msb															unsigned integer (0..99999999)
Medium	05	03	A2	40	ch0	ch1	ch2																ascii char (always 3 chr complete with space ='20h')
Unit	05	05	A5	40	ch0	ch1	ch2	ch3	ch4														ascii char (always 5 chr complete with space ='20h')
Factor and initial value	05	0C	AA	40	lsb	sb1	sb2	sb3	sb4	sb5	sb6	msb	lsb	sb1	sb2	msb							
					factor is a float (double IEEE754)								init. value (unsigned int)										
info string	05	18	B6	40	ch0	ch1	ch2	ch3	ch4	ch5	ch6	ch7	ch8	ch9	ch10	ch11	ch12	ch13	ch14	ch15	ch16		
					ch17	ch18	ch19	ch20	ch21	ch22	ch23												ascii char (always 24 chr complete with space ='20h')
	FF																						

BLOCK B

F0	01						
05	04	08	02	00	00	00	00
05	04	1C	40	00	00	00	00
05	04	04	41	00	00	00	00
05	04	14	41	00	00	00	00
05	04	24	41	00	00	00	00
05	04	34	41	00	00	00	00
05	04	44	41	00	00	00	00
05	04	54	41	00	00	00	00
05	04	64	41	00	00	00	00
FF							

BLOCK C

F0	01						
05	04	74	41	00	00	00	00
05	04	84	41	00	00	00	00
05	04	94	41	00	00	00	00
05	04	A4	41	00	00	00	00
05	04	B4	41	00	00	00	00
05	04	C4	41	00	00	00	00
05	04	D4	41	00	00	00	00
05	04	E4	41	00	00	00	00
05	04	F4	41	00	00	00	00
FF							

For counter 3

BLOCK A

ID number	05	04	6C	40	lsb	sb1	sb2	msb															unsigned integer (0..99999999)
Medium	05	03	70	40	ch0	ch1	ch2																ascii char (always 3 chr complete with space ='20h')
Unit	05	05	73	40	ch0	ch1	ch2	ch3	ch4														ascii char (always 5 chr complete with space ='20h')
Factor and initial value	05	0C	78	40	lsb	sb1	sb2	sb3	sb4	sb5	sb6	msb	lsb	sb1	sb2	msb							
					factor is a float (double IEEE754)								init. value (unsigned int)										
info string	05	18	84	40	ch0	ch1	ch2	ch3	ch4	ch5	ch6	ch7	ch8	ch9	ch10	ch11	ch12	ch13	ch14	ch15	ch16		
					ch17	ch18	ch19	ch20	ch21	ch22	ch23												ascii char (always 24 chr complete with space ='20h')
	FF																						

BLOCK B

F0	01						
05	04	0C	02	00	00	00	00
05	04	20	40	00	00	00	00
05	04	08	41	00	00	00	00
05	04	18	41	00	00	00	00
05	04	28	41	00	00	00	00
05	04	38	41	00	00	00	00
05	04	48	41	00	00	00	00
05	04	58	41	00	00	00	00
05	04	68	41	00	00	00	00
FF							

BLOCK C

F0	01						
05	04	78	41	00	00	00	00
05	04	88	41	00	00	00	00
05	04	98	41	00	00	00	00
05	04	A8	41	00	00	00	00
05	04	B8	41	00	00	00	00
05	04	C8	41	00	00	00	00
05	04	D8	41	00	00	00	00
05	04	E8	41	00	00	00	00
05	04	F8	41	00	00	00	00
FF							

For counter 4

BLOCK A

	F0	01																			
ID number	05	04	3A	40	lsb	sb1	sb2	msb													unsigned integer (0..99999999)
Medium	05	03	3E	40	ch0	ch1	ch2														ascii char (always 3 chr complete with space ='20h')
Unit	05	05	41	40	ch0	ch1	ch2	ch3	ch4												ascii char (always 5 chr complete with space ='20h')
Factor and initial value	05	0C	46	40	lsb	sb1	sb2	sb3	sb4	sb5	sb6	msb	lsb	sb1	sb2	msb					
					factor is a float (double IEEE754)								init. value (unsigned int)								
info string	05	18	52	40	ch0	ch1	ch2	ch3	ch4	ch5	ch6	ch7	ch8	ch9	ch10	ch11	ch12	ch13	ch14	ch15	ch16
					ch17	ch18	ch19	ch20	ch21	ch22	ch23										ascii char (always 24 chr complete with space ='20h')
	FF																				

BLOCK B

F0	01							
05	04	10	02	00	00	00	00	
05	04	24	40	00	00	00	00	
05	04	0C	41	00	00	00	00	
05	04	1C	41	00	00	00	00	
05	04	2C	41	00	00	00	00	
05	04	3C	41	00	00	00	00	
05	04	4C	41	00	00	00	00	
05	04	5C	41	00	00	00	00	
05	04	6C	41	00	00	00	00	
FF								

BLOCK C

F0	01							
05	04	7C	41	00	00	00	00	
05	04	8C	41	00	00	00	00	
05	04	9C	41	00	00	00	00	
05	04	AC	41	00	00	00	00	
05	04	BC	41	00	00	00	00	
05	04	CC	41	00	00	00	00	
05	04	DC	41	00	00	00	00	
05	04	EC	41	00	00	00	00	
05	04	FC	41	00	00	00	00	
FF								

CD

CE Conformity according to R&TTE 1999/5/CE
The detailed certificate of conformity you can find on our internet homepage:
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