

## Heat meter SONOMETER 30 wired M-bus communication protocol description



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## 1. General structure of protocol

### 1.1. General features of protocol

Meter uses a M-bus protocol.

Default baud rate: 2400 bps, Even, 1 Stop.

Baud rate can be changed (see paragraph 4.6), but at the end of communication – after 2 minutes it automatically returns to the original 2400 bps.

Protocol is the same for Mbus interface and for optical interface.

Primary address of Mbus is individual for Mbus interface and for optical interface.

### 1.2. Data strings

Data string to meter SND\_NKE:

|     |     |   |    |     |
|-----|-----|---|----|-----|
| 1   | 2   | 3 | 4  | 5   |
| 10h | 40h | A | CS | 16h |

A - M-bus primary address of meter

CS – control sum (the youngest byte of amount of 2-nd and 3-rd bytes)

Data string to meter SND\_UD2:

|     |   |   |     |            |   |     |                   |     |     |
|-----|---|---|-----|------------|---|-----|-------------------|-----|-----|
| 1   | 2 | 3 | 4   | 5          | 6 | 7   | 8...n-2           | n-1 | n   |
| 68h | L | L | 68h | 53h<br>73h | A | 51h | Duomenų<br>baitai | CS  | 16h |

L - length of string (the number of bytes from 5-th to n-2 byte)

A - M-bus primary address of meter

CS – control sum (the youngest byte of amount of 5-th to n-2 bytes)

Data string to meter REQ\_UD2:

|     |            |   |    |     |
|-----|------------|---|----|-----|
| 1   | 2          | 3 | 4  | 5   |
| 10h | 5Bh<br>7Bh | A | CS | 16h |

A - M-bus primary address of meter

CS – control sum (the youngest byte of amount of 2-nd and 3-rd bytes)

Answer of the meter CON:

|     |
|-----|
| E5h |
|-----|

Answer of the meter RSP\_UD2:

|     |   |   |     |   |   |    |        |        |     |    |    |    |       |
|-----|---|---|-----|---|---|----|--------|--------|-----|----|----|----|-------|
| 1   | 2 | 3 | 4   | 5 | 6 | 7  | 8...11 | 12, 13 | 14  | 15 | 16 | 17 | 18,19 |
| 68h | L | L | 68h | C | A | CI | ID     | Man    | Vrs | Md | TC | St | Sign  |
|     |   |   |     |   |   |    |        |        |     |    |    |    |       |

|     |     |      |     |     |     |         |     |     |
|-----|-----|------|-----|-----|-----|---------|-----|-----|
| 20  | ... | ...  | ... | ... | ... | ... n-2 | n-1 | n   |
| DIF | VIF | Data |     | DIF | VIF | Data    | CS  | 16h |

L - length of string (the number of bytes from 5-th to n-2 byte)

C – „C field“ (08)

A - M-bus primary address of meter

CI - „CI field“

ID – identification number of meter (BSD8, used for secondary addressing, can be changed - see paragraph 4.1),

Man – Manufacturer code (AB AxisIndustries manufacturer code „AXI“: 09h 07h)

Vrs – number of protocol version (07h)

Md – code of medium (for „heat / cold energy“: 0Dh)

TC – counter of telegrams

St - meter status code

Sign - 00 00

The bytes 20...n-2 is data from meter:

DIF – code of data format

VIF – code of data units

Data – values of data

CS – control sum (the youngest byte of amount of 5-th to n-2 bytes).

## 2. Selection of the data type

### 2.1. Selection of the data type “All data”

Master sends to the meter telegram SND\_UD2:

|     |     |     |     |            |   |     |    |     |
|-----|-----|-----|-----|------------|---|-----|----|-----|
| 68h | 03h | 03h | 68h | 53h<br>73h | A | 50h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|----|-----|

or

|     |     |     |     |            |   |     |     |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|
| 68h | 04h | 04h | 68h | 53h<br>73h | A | 50h | 00h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

### 2.2. Selection of the data type “User data”

Master sends to the meter telegram SND\_UD2:

|     |     |     |     |            |   |     |     |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|
| 68h | 04h | 04h | 68h | 53h<br>73h | A | 50h | 10h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

### 2.3. Selection of the data type “Simple billing” (Years logger)

Master sends to the meter telegram SND\_UD2:

|     |     |     |     |            |   |     |     |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|
| 68h | 04h | 04h | 68h | 53h<br>73h | A | 50h | 20h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

### 2.4. Selection of the data type “Enhanced billing” (Days logger)

Master sends to the meter telegram SND\_UD2:

|     |     |     |     |            |   |     |     |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|
| 68h | 04h | 04h | 68h | 53h<br>73h | A | 50h | 30h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

### 2.5. Selection of the data type “Multi tariff billing” (Months logger)

Master sends to the meter telegram SND\_UD2:

|     |     |     |     |            |   |     |     |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|
| 68h | 04h | 04h | 68h | 53h<br>73h | A | 50h | 40h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

### 2.6. Selection of the data type “Instantaneous values”

Master sends to the meter telegram SND\_UD2:

|     |     |     |     |            |   |     |     |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|
| 68h | 04h | 04h | 68h | 53h<br>73h | A | 50h | 50h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

### 2.7. Selection of the data type “Load management values for management” (Hours logger)

Master sends to the meter telegram SND\_UD2:

|     |     |     |     |            |   |     |     |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|
| 68h | 04h | 04h | 68h | 53h<br>73h | A | 50h | 60h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

## 2.8. Selection of the data type “Installation and startup”

Master sends to the meter telegram SND\_UD2:

|     |     |     |     |            |   |     |     |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|
| 68h | 04h | 04h | 68h | 53h<br>73h | A | 50h | 80h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|

Answer of the meter CON (if A not equal FFh):

|     |
|-----|
| E5h |
|-----|

## 2.9. Selection of the data type “Testing”

Master sends to the meter telegram SND\_UD2:

|     |     |     |     |            |   |     |     |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|
| 68h | 04h | 04h | 68h | 53h<br>73h | A | 50h | 90h | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|----|-----|

Answer of the meter CON (if A not equal FFh):

|     |
|-----|
| E5h |
|-----|

## 2.10. Parameter list for preselecting

If not satisfied with Default parameter lists (presented in the tables 1 ... 9). Obtain a desired parameter list presented in Table 11th.

(Paragraph 2.1 ... 2.9) Additionally it is need to send parameter selecting telegram SND\_UD2:

|     |   |   |     |            |   |     |                  |                  |     |                  |    |     |
|-----|---|---|-----|------------|---|-----|------------------|------------------|-----|------------------|----|-----|
| 68h | L | L | 68h | 53h<br>73h | A | 51h | SEL <sub>1</sub> | SEL <sub>2</sub> | ... | SEL <sub>N</sub> | CS | 16h |
|-----|---|---|-----|------------|---|-----|------------------|------------------|-----|------------------|----|-----|

SEL selecting parameter code from the table of 11 (made out of sequence as many codes as you want to select of the parameters).

Note . It may be selectes as many parameters but Response telegram length can not exceed 250 bytes.

Answer of the meter CON (if A not equal FFh):

|     |
|-----|
| E5h |
|-----|

## 3. Data request

### 3.1. Data request

Master sends to the meter telegram SND\_UD2:

|     |            |   |    |     |
|-----|------------|---|----|-----|
| 10h | 5Bh<br>7Bh | A | CS | 16h |
|-----|------------|---|----|-----|

In all cases, except A = FFh, meter response RSP\_UD2 telegrame with selected data (tables 1 ...9)

If no data record, answer of meter is CON:

### 3.2. Meter data coding

**Table 1** Application reset sub-codes and storages: All data (CI = 50 or CI = 50 00)  
Default list

| #  | Parameter                       | DIF VIF     | Type           | Units          |
|----|---------------------------------|-------------|----------------|----------------|
| 1  | Date and time                   | 04 6D       | 32 bit integer | Type F         |
| 2  | Date and time of error starting | 34 6D       | 32 bit integer | Type F         |
| 3  | Error code                      | 34 FD 17    | 32 bit integer |                |
| 4  | Battery operation time          | 04 20       | 32 bit integer | sec            |
| 5  | Working time without error      | 04 24       | 32 bit integer | sec            |
| 6  | Energy for heating              | 04 86 3B    | 32 bit integer | kWh, MWh       |
| 7  | Energy for cooling *            | 04 86 3C    | 32 bit integer | kWh, MWh       |
| 8  | Energy of tariff 1 *            | 84 10 86 3x | 32 bit integer | kWh, MWh       |
| 9  | Energy of tariff 2 *            | 84 20 86 3x | 32 bit integer | kWh, MWh       |
| 10 | Volume                          | 04 13       | 32 bit integer | m <sup>3</sup> |
| 11 | Pulse input 1 *                 | 84 40 13    | 32 bit integer | m <sup>3</sup> |
| 12 | Pulse input 2 *                 | 84 80 40 13 | 32 bit integer | m <sup>3</sup> |
| 13 | Power                           | 04 2B       | 32 bit integer | W              |
| 14 | Flow rate                       | 04 3B       | 32 bit integer | l/h            |
| 15 | Temperature 1                   | 02 59       | 16 bit integer | 0,01°C         |
| 16 | Temperature 2                   | 02 5D       | 16 bit integer | 0,01°C         |
| 17 | Temperature difference          | 02 61       | 16 bit integer | 0,01K          |
| 18 | Serial number                   | 0C 78       | 32bit BCD8     |                |
| 19 | CRC                             | 02 7F       | 16 bit integer | CRC16          |

x = B – for energy for heating, x = C – for energy for cooling

**Table 2** Application reset sub-codes and storages: User data (CI = 50 10)  
Default list

| #  | Parameter                       | DIF VIF     | Type           | Units                     |
|----|---------------------------------|-------------|----------------|---------------------------|
| 1  | Date and time                   | 04 6D       | 32 bit integer | Type F                    |
| 2  | Date and time of error starting | 34 6D       | 32 bit integer | Type F                    |
| 3  | Error code                      | 34 FD 17    | 32 bit integer |                           |
| 4  | Battery operation time          | 04 20       | 32 bit integer | sec                       |
| 5  | Pulse input 1 *                 | 84 40 13    | 32 bit integer | m <sup>3</sup>            |
| 6  | Pulse input 2 *                 | 84 80 40 13 | 32 bit integer | m <sup>3</sup>            |
| 7  | Pulse value of input 1 *        | 02 93 28    | 16 bit integer | m <sup>3</sup>            |
| 8  | Pulse value of input 2 *        | 02 93 29    | 16 bit integer | m <sup>3</sup>            |
| 9  | Pulse value of output 1 *       | 02 93 2A    | 16 bit integer | m <sup>3</sup> , kWh, MWh |
| 10 | Pulse value of output 2 *       | 02 93 2B    | 16 bit integer | m <sup>3</sup>            |
| 11 | Duration when q < qmin          | 04 BE 50    | 32 bit integer | sec                       |
| 12 | Flow min level qmin             | 05 BE 40    | 32 bit float   | m <sup>3</sup> /h         |
| 13 | Duration when q > qmax          | 04 BE 58    | 32 bit integer | sec                       |
| 14 | Flow max level qmax             | 05 BE 48    | 32 bit float   | m <sup>3</sup> /h         |
| 15 | Software version                | 01 FD 0E    | 8 bit integer  |                           |
| 16 | Yearly set day                  | 42 EC 7E    | Type G         |                           |
| 17 | Monthly set day                 | 42 EC 7E    | Type G         |                           |
| 18 | Meter type                      | 0D FD 0B    | 88 bit string  |                           |
| 19 | Serial number                   | 0C 78       | 32bit BCD8     |                           |
| 20 | CRC                             | 02 7F       | 16 bit integer | CRC16                     |

**Table 3** Application reset sub-codes and storages: Simple billing (Years logger) (CI = 50 20)  
Default list

| #  | Parameter                         | DIF VIF     | Type           | Units          |
|----|-----------------------------------|-------------|----------------|----------------|
| 1  | Logger date and time              | 44 6D       | 32 bit integer | Type F         |
| 2  | Logger working time without error | 44 24       | 32 bit integer | sec            |
| 3  | Logger energy for heating         | 44 85 3B    | 32 bit integer | kWh, MWh       |
| 4  | Logger energy for cooling *       | 44 85 3C    | 32 bit integer | kWh, MWh       |
| 5  | Logger energy of tariff 1 *       | C4 10 85 3x | 32 bit integer | kWh, MWh       |
| 6  | Logger energy of tariff 2 *       | C4 20 85 3x | 32 bit integer | kWh, MWh       |
| 7  | Logger volume                     | 44 13       | 32 bit integer | m <sup>3</sup> |
| 8  | Logger pulse input 1 *            | C4 40 13    | 32 bit integer | m <sup>3</sup> |
| 9  | Logger pulse input 2 *            | C4 80 40 13 | 32 bit integer | m <sup>3</sup> |
| 10 | CRC                               | 02 7F       | 16 bit integer | CRC16          |

x = B – for energy for heating, x = C – for energy for cooling

**Table 4** Application reset sub-codes and storages: Enhanced billing (CI = 50 30)

| #  | Parameter                         | DIF VIF     | Type           | Units          |
|----|-----------------------------------|-------------|----------------|----------------|
| 1  | Energy for heating                | 04 86 3B    | 32 bit integer | kWh, MWh       |
| 2  | Energy of tariff 1                | 84 10 86 3x | 32 bit integer | kWh, MWh       |
| 3  | Energy of tariff 2                | 84 20 86 3x | 32 bit integer | kWh, MWh       |
| 4  | Volume                            | 04 13       | 32 bit integer | m <sup>3</sup> |
| 5  | Power                             | 04 2B       | 32 bit integer | W              |
| 6  | Flow rate                         | 04 3B       | 32 bit integer | l/h            |
| 7  | Temperature 1                     | 02 59       | 16 bit integer | 0,01°C         |
| 8  | Temperature 2                     | 02 5D       | 16 bit integer | 0,01°C         |
| 9  | Temperature difference            | 02 61       | 16 bit integer | 0,01K          |
| 10 | Working time without error        | 04 24       | 32 bit integer | sec            |
| 11 | Date and time                     | 04 6D       | 32 bit integer | Type F         |
| 12 | Month logger energy for heating   | 84 08 85 3B | 32 bit integer | kWh, MWh       |
| 13 | Month logger volume               | 84 08 13    | 32 bit integer | m <sup>3</sup> |
| 14 | Month logger energy of tariff 1 * | 84 18 85 3x | 32 bit integer | kWh, MWh       |
| 15 | Month logger energy of tariff 2 * | 84 28 85 3x | 32 bit integer | kWh, MWh       |
| 16 | Month logger date and time        | 84 08 6D    | 32 bit integer | Type F         |

x = B – for energy for heating, x = C – for energy for cooling



**Table 5** Application reset sub-codes and storages: Multi tariff billing (Months logger) (CI = 50 40)

Default list

| #  | Parameter                                 | DIF VIF     | Type           | Units             |
|----|-------------------------------------------|-------------|----------------|-------------------|
| 1  | Logger date and time                      | 84 08 6D    | 32 bit integer | Type F            |
| 2  | Average temperature 1                     | 85 08 5B    | 32 bit float   | °C                |
| 3  | Average temperature 2                     | 85 08 5F    | 32 bit float   | °C                |
| 4  | Logger working time without error         | 84 08 24    | 32 bit integer | sec               |
| 5  | Logger energy for heating                 | 84 08 85 3B | 32 bit integer | kWh, MWh          |
| 6  | Logger energy for cooling *               | 84 08 85 3C | 32 bit integer | kWh, MWh          |
| 7  | Logger energy of tariff 1 *               | 84 18 85 3x | 32 bit integer | kWh, MWh          |
| 8  | Logger energy of tariff 2 *               | 84 28 85 3x | 32 bit integer | kWh, MWh          |
| 9  | Logger volume                             | 84 08 13    | 32 bit integer | m <sup>3</sup>    |
| 10 | Logger pulse input 1 *                    | 84 48 13    | 32 bit integer | m <sup>3</sup>    |
| 11 | Logger pulse input 2 *                    | 84 88 40 13 | 32 bit integer | m <sup>3</sup>    |
| 12 | Logger duration when q > q <sub>max</sub> | 84 08 BE 58 | 32 bit integer | m <sup>3</sup> /h |
| 13 | CRC                                       | 02 7F       | 16 bit integer | CRC16             |

x = B – for energy for heating, x = C – for energy for cooling

Remark.

If meter is specially configured, in table 5 listed monthly parameters data is transmitted and in accordance after inquiry (“All data” table 1) data transmission.

**Table 6** Application reset sub-codes and storages: Instantaneous values (CI = 50 50)

Default list

| #  | Parameter                       | DIF VIF     | Type           | Units          |
|----|---------------------------------|-------------|----------------|----------------|
| 1  | Date and time                   | 04 6D       | 32 bit integer | Type F         |
| 2  | Date and time of error starting | 34 6D       | 32 bit integer | Type F         |
| 3  | Error code                      | 34 FD 17    | 32 bit integer |                |
| 4  | Battery operation time          | 04 20       | 32 bit integer | sec            |
| 5  | Working time without error      | 04 24       | 32 bit integer | sec            |
| 6  | Energy for heating              | 04 86 3B    | 32 bit integer | kWh, MWh       |
| 7  | Energy for cooling *            | 04 86 3C    | 32 bit integer | kWh, MWh       |
| 8  | Energy of tariff 1 *            | 84 10 86 3x | 32 bit integer | kWh, MWh       |
| 9  | Energy of tariff 2 *            | 84 20 86 3x | 32 bit integer | kWh, MWh       |
| 10 | Volume                          | 04 13       | 32 bit integer | m <sup>3</sup> |
| 11 | Pulse input 1 *                 | 84 40 13    | 32 bit integer | m <sup>3</sup> |
| 12 | Pulse input 2 *                 | 84 80 40 13 | 32 bit integer | m <sup>3</sup> |
| 13 | Power                           | 04 2B       | 32 bit integer | W              |
| 14 | Flow rate                       | 04 3B       | 32 bit integer | l/h            |
| 15 | Temperature 1                   | 02 59       | 16 bit integer | 0,01°C         |
| 16 | Temperature 2                   | 02 5D       | 16 bit integer | 0,01°C         |
| 17 | Temperature difference          | 02 61       | 16 bit integer | 0,01K          |
| 18 | Meter type                      | 04 BE 50    | 88 bit string  |                |
| 19 | Serial number                   | 0C 78       | 32bit BCD8     |                |
| 20 | CRC                             | 02 7F       | 16 bit integer | CRC16          |

x = B – for energy for heating, x = C – for energy for cooling

**Table 7** Application reset sub-codes and storages: Load management values for management (Hours logger) (CI = 50 60) Default list

| #  | Parameter                         | DIF VIF        | Type           | Units    |
|----|-----------------------------------|----------------|----------------|----------|
| 1  | Logger date and time              | C4 86 03 6D    | 32 bit integer | Type F   |
| 2  | Average power                     | C5 86 03 2E    | 32 bit float   | kW       |
| 3  | Average flow                      | C5 86 03 3E    | 32 bit float   | m3/h     |
| 4  | Average temperature 1             | C5 86 03 5B    | 32 bit float   | °C       |
| 5  | Average temperature 2             | C5 86 03 5F    | 32 bit float   | °C       |
| 6  | Logger min flow                   | E5 86 03 3E    | 32 bit float   | m3/h     |
| 7  | Logger max flow                   | D5 86 03 3E    | 32 bit float   | m3/h     |
| 8  | Logger min temperature difference | E5 86 03 63    | 32 bit float   | K        |
| 9  | Logger max temperature difference | D5 86 03 63    | 32 bit float   | K        |
| 10 | Logger error code                 | F4 86 03 FD 17 | 32 bit integer |          |
| 11 | Logger working time without error | C4 86 03 24    | 32 bit integer | sec      |
| 12 | Logger energy for heating         | C4 86 03 86 3B | 32 bit integer | kWh, MWh |
| 13 | Logger energy for cooling *       | C4 86 03 86 3C | 32 bit integer | kWh, MWh |
| 14 | Logger energy of tariff 1 *       | C4 96 03 86 3x | 32 bit integer | kWh, MWh |
| 15 | Logger energy of tariff 2 *       | C4 A6 03 86 3x | 32 bit integer | kWh, MWh |
| 16 | Logger volume                     | C4 86 03 13    | 32 bit integer | m3       |
| 17 | Logger pulse input 1 *            | C4 C6 03 13    | 32 bit integer | m3       |
| 18 | Logger pulse input 2 *            | C4 86 43 13    | 32 bit integer | m3       |
| 19 | Logger duration when q > qmax     | C4 86 03 BE 58 | 32 bit integer | m3/h     |
| 20 | CRC                               | 02 7F          | 16 bit integer | CRC16    |

x = B – for energy for heating, x = C – for energy for cooling

**Table 8** Application reset sub-codes and storages: Installation and startup (CI = 50 80) Default list

| #  | Parameter                       | DIF VIF  | Type           | Units  |
|----|---------------------------------|----------|----------------|--------|
| 1  | Date and time                   | 04 6D    | 32 bit integer | Type F |
| 2  | Date and time of error starting | 34 6D    | 32 bit integer | Type F |
| 3  | Error code                      | 34 FD 17 | 32 bit integer |        |
| 4  | Battery operation time          | 04 20    | 32 bit integer | sec    |
| 5  | Working time without error      | 04 24    | 32 bit integer | sec    |
| 6  | Flow min level qmin             | 05 BE 40 | 32 bit float   | m3/h   |
| 7  | Flow max level qmax             | 05 BE 48 | 32 bit float   | m3/h   |
| 8  | Test mode status                | 01 FF 03 | 8 bit integer  |        |
| 9  | Device mode status              | 01 FF 04 | 8 bit integer  |        |
| 10 | Software version                | 01 FD 0E | 8 bit integer  |        |
| 11 | Yearly set day                  | 42 EC 7E | Type G         |        |
| 12 | Monthly set day                 | 42 EC 7E | Type G         |        |
| 13 | Meter type                      | 0D FD 0B | 88 bit string  |        |
| 14 | Serial number                   | 0C 78    | 32bit BCD8     |        |
| 15 | CRC                             | 02 7F    | 16 bit integer | CRC16  |

**Table 9** Application reset sub-codes and storages: Testing (CI = 50 90)

Default list

| #  | Parameter                         | DIF VIF  | Type           | Units  |
|----|-----------------------------------|----------|----------------|--------|
| 1  | Date and time                     | 04 6D    | 32 bit integer | Type F |
| 2  | Date and time of error starting   | 34 6D    | 32 bit integer | Type F |
| 3  | Error code                        | 34 FD 17 | 32 bit integer |        |
| 4  | Battery operation time            | 04 20    | 32 bit integer | sec    |
| 5  | Flow rate                         | 04 3B    | 32 bit integer | l/h    |
| 6  | Temperature 1                     | 02 59    | 16 bit integer | 0,01°C |
| 7  | Temperature 2                     | 02 5D    | 16 bit integer | 0,01°C |
| 8  | Temperature difference            | 02 61    | 16 bit integer | 0,01K  |
| 9  | Pulse value of energy test output | 02 FF 01 | 16 bit integer |        |
| 10 | Pulse value of volume test output | 02 FF 02 | 16 bit integer |        |
| 11 | Test mode status                  | 01 FF 03 | 8 bit integer  |        |
| 12 | Device mode status                | 01 FF 04 | 8 bit integer  |        |
| 13 | Volume high resolution            | 04 01    | 32 bit integer | mWh    |
| 14 | Energy high resolution            | 04 10    | 32 bit integer | ml     |
| 15 | Device configuration              | 01 FF 09 | 8 bit integer  |        |
| 16 | Software version                  | 01 FD 0E | 8 bit integer  |        |
| 17 | Device type                       | 0D FD 0B | 88 bit string  |        |
| 18 | Seial number                      | 0C 78    | 32bit BCD8     |        |
| 19 | CRC                               | 02 7F    | 16 bit integer | CRC16  |

**Table 10** Error code encryption

| Byte N | Bite N | if bite = 1                                | LCD indication code "ERROR xxxx" |
|--------|--------|--------------------------------------------|----------------------------------|
| 0      | 0      | -                                          |                                  |
|        | 1      | -                                          |                                  |
|        | 2      | Hardware status flag Er02                  | 8000                             |
|        | 3      | Hardware status flag Er03                  | 8000                             |
|        | 4      | End of battery live time                   | 1000                             |
|        | 5      | Hardware status flag Er05                  | 0008                             |
|        | 6      | -                                          |                                  |
|        | 7      | -                                          |                                  |
| 1      | 0      | -                                          |                                  |
|        | 1      | -                                          |                                  |
|        | 2      | Flow sensor is empty                       | 0001                             |
|        | 3      | Flow flows in a reverse direction          | 0002                             |
|        | 4      | Flow rate less qi                          |                                  |
|        | 5      | -                                          |                                  |
|        | 6      | -                                          |                                  |
|        | 7      | -                                          |                                  |
| 2      | 0      | Temperture sensor 1 error or short circuit | 0080                             |
|        | 1      | Temperture sensor 1 disconnected           | 0080                             |
|        | 2      | Temperture 1 < 0°C                         | 00C0                             |
|        | 3      | Temperture 1 > 180°C                       | 0080                             |
|        | 4      | Temperture sensor2 error or short circuit  | 0800                             |
|        | 5      | Temperture sensor 2 disconnected           | 0800                             |
|        | 6      | Temperture 2 < 0°C                         | 0C00                             |
|        | 7      | Temperture 2 > 180°C                       | 0800                             |
| 3      | 0      | Hardware status flag Er30                  | 0880                             |
|        | 1      | -                                          |                                  |
|        | 2      | Temperature difference < 3°C               | 4000                             |
|        | 3      | Temperature difference > 150°C             | 2000                             |
|        | 4      | Flow rate greater 1,2qs                    | 0004                             |
|        | 5      | Hardware status flag Er35                  | 8000                             |
|        | 6      | -                                          |                                  |
|        | 7      | Hardware status flag Er37                  | 8000                             |



**Table 11** Parameters list for preselecting

| #  | Parameter                       | SEL            | DIF VIF                  |                            |                           |                             |                               | Type           | Units  |
|----|---------------------------------|----------------|--------------------------|----------------------------|---------------------------|-----------------------------|-------------------------------|----------------|--------|
|    |                                 |                | CI = 50<br>Instantaneous | CI = 50 60<br>Hours logger | CI = 50 30 Days<br>logger | CI = 50 40 Months<br>logger | CI = 50 20<br>Years<br>logger |                |        |
| 1  | Date and time stamp             | C8 FF 7F 6D    | 04 6D                    | C4 86 03 6D                | 84 08 6D                  | 84 08 6D                    | 44 6D                         | 32 bit integer | Type F |
| 2  | Working time without error      | C8 FF 7F 24    | 04 24                    | C4 86 03 24                | 84 08 24                  | 84 08 24                    | 44 24                         | 32 bit integer | sec    |
| 3  | Error code                      | F8 FF 7F FD 17 | 34 FD 17                 | F4 86 03 FD 17             | B4 08 FD 17               | B4 08 FD 17                 | 74 FD 17                      | 32 bit integer |        |
| 4  | Date and time of error starting | F8 FF 7F 6D    | 34 6D                    | -                          | -                         | -                           | -                             | 32 bit integer | Type F |
| 5  | Energy for heating              | C8 0F FE 3B    | 04 86 3B                 | C4 86 03 86 3B             | 84 08 86 3B               | 84 08 86 3B                 | 44 86 3B                      | 32 bit integer | MWh    |
| 6  | Energy for cooling *            | C8 0F FE 3C    | 04 86 3C                 | C4 86 03 86 3c             | 84 08 86 3C               | 84 08 86 3C                 | 44 86 3C                      | 32 bit integer | MWh    |
| 7  | Volume                          | C8 FF 7F 13    | 04 13                    | C4 86 03 13                | 84 08 13                  | 84 08 13                    | 44 13                         | 32 bit integer | m3     |
| 8  | Energy of tariff 1 *            | C8 1F 7E       | 84 10 86 3x              | C4 96 03 86 3x             | 84 18 86 3x               | 84 18 86 3x                 | C4 10 86 3x                   | 32 bit integer | MWh    |
| 9  | Energy of tariff 2 *            | C8 BF 7F 7E    | 84 20 86 3x              | C4 A6 03 86 3x             | 84 28 86 3x               | 84 28 86 3x                 | C4 20 86 3x                   | 32 bit integer | MWh    |
| 10 | Pulse input 1 *                 | C8 FF 3F 7E    | 84 40 13                 | C4 C6 03 13                | 84 48 13                  | 84 48 13                    | C4 40 13                      | 32 bit integer | m3     |
| 11 | Pulse input 2 *                 | C8 BF 7F 7E    | 84 80 40 13              | C4 86 43 13                | 84 88 40 13               | 84 88 40 13                 | C4 80 40 13                   | 32 bit integer | m3     |
| 12 | Average power                   | C8 FF 7F 2E    | 05 2E                    | C5 86 03 2E                | 85 08 2E                  | 85 08 2E                    | 45 2E                         | 32 bit float   | kW     |
| 13 | Average Flow rate               | C8 FF 7F 3E    | 05 3E                    | C5 86 03 3E                | 85 08 3E                  | 85 08 3E                    | 45 3E                         | 32 bit float   | m3/h   |
| 14 | Average Temperature 1           | C8 FF 7F 5B    | 05 5B                    | C5 86 03 5B                | 85 08 5B                  | 85 08 5B                    | 45 5B                         | 32 bit float   | °C     |
| 15 | Average Temperature 2           | C8 FF 7F 5F    | 05 5F                    | C5 86 03 5F                | 85 08 5F                  | 85 08 5F                    | 45 5F                         | 32 bit float   | °C     |
| 16 | Average Temperature difference  | C8 FF 7F 63    | 05 63                    | C5 86 03 63                | 85 08 63                  | 85 08 63                    | 45 63                         | 32 bit float   | °C     |



|    |                        |                |   |                |             |             |          |                |        |
|----|------------------------|----------------|---|----------------|-------------|-------------|----------|----------------|--------|
| 17 | Min Power              | E8 FF 7F 2E    | - | E5 86 03 2E    | A5 08 2E    | A5 08 2E    | 65 2E    | 32 bit float   | kW     |
| 18 | Min Power date         | E8 FF 7F AE 6D | - | E4 86 03 AE 6D | A4 08 AE 6D | A4 08 AE 6D | 64 AE 6D | 32 bit integer | Type F |
| 19 | Max Power              | D8 FF 7F 2E    | - | D5 86 03 2E    | 95 08 2E    | 95 08 2E    | 55 2E    | 32 bit float   | kW     |
| 20 | Max Power date         | D8 FF 7F AE 6D | - | D4 86 03 AE 6D | 94 08 AE 6D | 94 08 AE 6D | 54 AE 6D | 32 bit integer | Type F |
| 21 | Min Flow rate          | E8 FF 7F 3E    | - | E5 86 03 3E    | A5 08 3E    | A5 08 3E    | 65 3E    | 32 bit float   | m3/h   |
| 22 | Min Flow rate Date     | E8 FF 7F BE 6D | - | E4 86 03 BE 6D | A4 08 BE 6D | A4 08 BE 6D | 64 BE 6D | 32 bit integer | Type F |
| 23 | Max Flow rate          | D8 FF 7F 3E    | - | D5 86 03 3E    | 95 08 3E    | 95 08 3E    | 55 3E    | 32 bit float   | m3/h   |
| 24 | Max Flow rate Date     | D8 FF 7F BE 6D | - | D4 86 03 BE 6D | 94 08 BE 6D | 94 08 BE 6D | 54 BE 6D | 32 bit integer | Type F |
| 25 | Min Temperature 1      | E8 FF 7F DB 6D |   | E5 86 03 5B    | A5 08 5B    | A5 08 5B    | 65 5B    | 32 bit float   | °C     |
| 26 | Min Temperature 1 Date | E8 FF 7F DB 6D | - | E4 86 03 DB 6D | A4 08 DB 6D | A4 08 DB 6D | 64 DB 6D | 32 bit integer | Type F |
| 27 | Max Temperature 1      | D8 FF 7F 5B    | - | D5 86 03 5B    | 95 08 5B    | 95 08 5B    | 55 5B    | 32 bit float   | °C     |
| 28 | Max Temperature 1 Date | D8 FF 7F DB 6D | - | D4 86 03 DB 6D | 94 08 DB 6D | 94 08 DB 6D | 54 DB 6D | 32 bit integer | Type F |
| 29 | Min temperature 2      | E8 FF 7F 5F    | - | E5 86 03 5F    | A5 08 5F    | A5 08 5F    | 65 5F    | 32 bit float   | °C     |

DIF VIF

| #  | Parameter                       | SEL            | CI = 50 Instantaneous | CI = 50 60 Hours logger | CI = 50 30 Days logger | CI = 50 40 Months logger | CI = 50 20 Years logger | Type           | Units  |
|----|---------------------------------|----------------|-----------------------|-------------------------|------------------------|--------------------------|-------------------------|----------------|--------|
| 30 | Min Temperature 2 Date          | E8 FF 7F DF 6D | -                     | E4 86 03 DF 6D          | A4 08 DF 6D            | A4 08 DF 6D              | 64 DF 6D                | 32 bit integer | Type F |
| 31 | Max Temperature 2               | D8 FF 7F 5F    | -                     | D5 86 03 5F             | 95 08 5F               | 95 08 5F                 | 55 5F                   | 32 bit float   | °C     |
| 32 | Max Temperature 2 Date          | D8 FF 7F DF 6D | -                     | D4 86 03 DF 6D          | 94 08 DF 6D            | 94 08 DF 6D              | 54 DF 6D                | 32 bit integer | Type F |
| 33 | Min Temperature difference      | E8 FF 7F 63    | -                     | E5 86 03 63             | A5 08 63               | A5 08 63                 | 65 63                   | 32 bit float   | °C     |
| 34 | Min Temperature difference Date | E8 FF 7F E3 6D | -                     | E4 86 03 E3 6D          | A4 08 E3 6D            | A4 08 E3 6D              | 64 E3 6D                | 32 bit integer | Type F |
| 35 | Max Temperature difference      | D8 FF 7F 63    | -                     | D5 86 03 63             | 95 08 63               | 95 08 63                 | 55 63                   | 32 bit float   | °C     |
| 36 | Max Temperature difference Date | D8 FF 7F E3 6D | -                     | D4 86 03 E3 6D          | 94 08 E3 6D            | 94 08 E3 6D              | 54 E3 6D                | 32 bit integer | Type F |
| 37 | Duration when q < qmin          | C8 FF 7F BE    | 04 BE 50              | C4 86 03 BE             | 84 08 BE 50            | 84 08 BE 50              | 44 BE 50                | 32 bit         | sec    |



|    |                        |                   |          |                   |             |             |          |                   |                                           |
|----|------------------------|-------------------|----------|-------------------|-------------|-------------|----------|-------------------|-------------------------------------------|
|    |                        | 50                |          | 50                |             |             |          | integer           |                                           |
| 38 | Flow min level qmin    | C8 FF 7F BE<br>40 | 05 BE 40 | -                 | -           | -           | -        | 32 bit float      | m3/h                                      |
| 39 | Duration when q > qmax | C8 FF 7F BE<br>58 | 04 BE 58 | C4 86 03 BE<br>58 | 84 08 BE 58 | 84 08 BE 58 | 44 BE 58 | 32 bit<br>integer | sec                                       |
| 40 | Flow max level qmax    | C8 FF 7F BE<br>48 | 05 BE 48 | -                 | -           | -           | -        | 32 bit float      | m3/h                                      |
| 41 | Energy Unit Index      | C8 FF 7F FF<br>0C | 01 FF    | -                 | -           | -           | -        | 8 bit             | 0:Gcal<br>1:MWh<br>2: GJ<br>3: 0,1<br>MWh |
| 42 | Battery operation time | C8 FF 7F 20       | 04 20    | -                 | -           | -           | -        | 32 bit<br>integer | sec                                       |
| 43 | Volume high resolution | C8 FF 7F 01       | 04 01    | -                 | -           | -           | -        | 32 bit<br>integer |                                           |
| 44 | Energy high resolution | C8 FF 7F 10       | 04 10    | -                 | -           | -           | -        | 32 bit<br>integer |                                           |

x = B – for energy for heating, x = C – for energy for cooling

**Remark.**

Table 1...11 parameters marked “\*”, will be transmitted only if the conditions are kept:

**Table 12**

| Parameter                                      | Condition                                                                                |
|------------------------------------------------|------------------------------------------------------------------------------------------|
| Energy for cooling . Logger energy for cooling | Heat meter application type – for measurement of energy consumed for heating and cooling |
| Energy of tariff 1. Logger energy of tariff 1  | Tariff 1 function is On                                                                  |
| Energy of tariff 2, Logger energy of tariff 2  | Tariff 2 function is On                                                                  |
| Pulse input 1, Logger pulse input 1            | Pulse input 1 is active                                                                  |
| Pulse input 2, Logger pulse input 2            | Pulse input 2 is active                                                                  |
| Pulse value of output 1                        | Pulse output 1 is active                                                                 |
| Pulse value of output 2                        | Pulse output 2 is active                                                                 |

### 3.3. CRC16 checksum calculation algorithm

```
/*
 * The polynomial  $x^0 + x^5 + x^{12}$ .
 */
const __u16 crc_ccitt_table[256] = {
    0x0000, 0x1189, 0x2312, 0x329b, 0x4624, 0x57ad, 0x6536, 0x74bf,
    0x8c48, 0x9dc1, 0xaf5a, 0xbed3, 0xca6c, 0xdbe5, 0xe97e, 0xf8f7,
    0x1081, 0x0108, 0x3393, 0x221a, 0x56a5, 0x472c, 0x75b7, 0x643e,
    0x9cc9, 0x8d40, 0xbfdb, 0xae52, 0xdaed, 0xcb64, 0xf9ff, 0xe876,
    0x2102, 0x308b, 0x0210, 0x1399, 0x6726, 0x76af, 0x4434, 0x55bd,
    0xad4a, 0xbcc3, 0x8e58, 0x9fd1, 0xeb6e, 0xfae7, 0xc87c, 0xd9f5,
    0x3183, 0x200a, 0x1291, 0x0318, 0x77a7, 0x662e, 0x54b5, 0x453c,
    0xbdcb, 0xac42, 0x9ed9, 0x8f50, 0xfbef, 0xea66, 0xd8fd, 0xc974,
    0x4204, 0x538d, 0x6116, 0x709f, 0x0420, 0x15a9, 0x2732, 0x36bb,
    0xce4c, 0xdfc5, 0xed5e, 0xfcd7, 0x8868, 0x99e1, 0xab7a, 0xbaf3,
    0x5285, 0x430c, 0x7197, 0x601e, 0x14a1, 0x0528, 0x37b3, 0x263a,
    0xdecd, 0xcf44, 0xfddf, 0xec56, 0x98e9, 0x8960, 0xbbfb, 0xaa72,
    0x6306, 0x728f, 0x4014, 0x519d, 0x2522, 0x34ab, 0x0630, 0x17b9,
    0xef4e, 0xfec7, 0xcc5c, 0xdd5, 0xa96a, 0xb8e3, 0x8a78, 0x9bf1,
    0x7387, 0x620e, 0x5095, 0x411c, 0x35a3, 0x242a, 0x16b1, 0x0738,
    0xffcf, 0xee46, 0xdcdd, 0xcd54, 0xb9eb, 0xa862, 0x9af9, 0x8b70,
    0x8408, 0x9581, 0xa71a, 0xb693, 0xc22c, 0xd3a5, 0xe13e, 0xf0b7,
    0x0840, 0x19c9, 0x2b52, 0x3adb, 0x4e64, 0x5fed, 0x6d76, 0x7cff,
    0x9489, 0x8500, 0xb79b, 0xa612, 0xd2ad, 0xc324, 0xf1bf, 0xe036,
    0x18c1, 0x0948, 0x3bd3, 0x2a5a, 0x5ee5, 0x4f6c, 0x7df7, 0x6c7e,
    0xa50a, 0xb483, 0x8618, 0x9791, 0xe32e, 0xf2a7, 0xc03c, 0xd1b5,
    0x2942, 0x38cb, 0x0a50, 0x1bd9, 0x6f66, 0x7eef, 0x4c74, 0x5dfd,
    0xb58b, 0xa402, 0x9699, 0x8710, 0xf3af, 0xe226, 0xd0bd, 0xc134,
    0x39c3, 0x284a, 0x1ad1, 0x0b58, 0x7fe7, 0x6e6e, 0x5cf5, 0x4d7c,
    0xc60c, 0xd785, 0xe51e, 0xf497, 0x8028, 0x91a1, 0xa33a, 0xb2b3,
    0x4a44, 0x5bcd, 0x6956, 0x78df, 0x0c60, 0x1de9, 0x2f72, 0x3efb,
    0xd68d, 0xc704, 0xf59f, 0xe416, 0x90a9, 0x8120, 0xb3bb, 0xa232,
    0x5ac5, 0x4b4c, 0x79d7, 0x685e, 0x1ce1, 0x0d68, 0x3ff3, 0x2e7a,
    0xe70e, 0xf687, 0xc41c, 0xd595, 0xa12a, 0xb0a3, 0x8238, 0x93b1,
    0x6b46, 0x7acf, 0x4854, 0x59dd, 0x2d62, 0x3ceb, 0x0e70, 0x1ff9,
    0xf78f, 0xe606, 0xd49d, 0xc514, 0xb1ab, 0xa022, 0x92b9, 0x8330,
    0x7bc7, 0x6a4e, 0x58d5, 0x495c, 0x3de3, 0x2c6a, 0x1ef1, 0x0f78
};

/*
 * crc_ccitt - recompute the CRC for the data buffer
 * @crc - previous CRC value
 * @buffer - data pointer
 * @len - number of bytes in the buffer
 */
__u16 crc_ccitt(__u16 crc, __u8 const *buffer, size_t len)
{
    while (len--)
        crc = (crc >> 8) ^ crc_ccitt_table[(crc ^ (*buffer++)) & 0xff];
    return crc;
}
```



## 4. Settings the parameters of meter

### 4.1. Changing the identification number

Master sends to the meter string SND\_UD2 with new identification number „ID“ (BCD8 format):

|     |     |     |     |            |   |     |     |     |    |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|-----|----|----|-----|
| 68h | 09h | 09h | 68h | 53h<br>73h | A | 51h | 0Ch | 79h | ID | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|-----|----|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

### 4.2. Changing the identification number, Manufacturer ID and Medium

Master sends to the meter string SND\_UD2 with new Complete ID (64 bit integer):

|     |     |     |     |            |   |     |     |     |                      |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|-----|----------------------|----|-----|
| 68h | 09h | 09h | 68h | 53h<br>73h | A | 51h | 07h | 79h | Complete ID (64 bit) | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|-----|----------------------|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

Structure of “Complete ID” (64 bit integer):

| Identification number „ID“ | Manufacturer ID | Generation | Medium |
|----------------------------|-----------------|------------|--------|
| 4 byte (BCD8 format)       | 2 byte          | 1 byte     | 1 byte |

Remark: Generation code is ignored (In meter Generation code is fixed 07h)

### 4.3. Changing the primary address

Master sends to the meter string SND\_UD2 with new primary address „aa“:

|     |     |     |     |            |   |     |     |     |    |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|-----|----|----|-----|
| 68h | 06h | 06h | 68h | 53h<br>73h | A | 51h | 01h | 7Ah | aa | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|-----|----|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

### 4.4. Changing the data and time of the meter

Master sends to the meter string SND\_UD2 with new data and time:

|     |     |     |     |            |   |     |     |     |                       |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|-----|-----------------------|----|-----|
| 68h | 09h | 09h | 68h | 53h<br>73h | A | 51h | 04h | 6Dh | Dat and time (Type F) | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|-----|-----------------------|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

#### 4.5. Changing the yearly set day

Master sends to the meter string SND\_UD2 with new set data :

|     |     |     |     |            |   |     |     |     |     |                              |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|-----|-----|------------------------------|----|-----|
| 68h | 08h | 08h | 68h | 53h<br>73h | A | 51h | 42h | ECh | 7Eh | Month<br>and day<br>(Type G) | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|-----|-----|------------------------------|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

#### 4.6. Changing the monthly set day

Master sends to the meter string SND\_UD2 with new set data :

|     |     |     |     |            |   |     |     |     |     |     |                 |    |     |
|-----|-----|-----|-----|------------|---|-----|-----|-----|-----|-----|-----------------|----|-----|
| 68h | 09h | 09h | 68h | 53h<br>73h | A | 51h | 82h | 08h | ECh | 7Eh | Day<br>(Type G) | CS | 16h |
|-----|-----|-----|-----|------------|---|-----|-----|-----|-----|-----|-----------------|----|-----|

Answer of the meter CON (if A not equal FFh):

E5h

*Remark. Changig the identification number and the set date is possible only when meter is set to TEST mode.*

#### 4.7. Changing the baud rate

Master sends to the meter string SND\_UD2 with new baud rate code „BR“:

|     |     |     |     |            |   |    |    |     |
|-----|-----|-----|-----|------------|---|----|----|-----|
| 68h | 03h | 03h | 68h | 53h<br>73h | A | BR | CS | 16h |
|-----|-----|-----|-----|------------|---|----|----|-----|

Answer of the meter CON (if A not equal FFh) with old baud rate:

E5h

Values of BR code:

- BR=B8h – for changing boud rate to 300 bps
- BR=B9h – for changing boud rate to 600 bps
- BR=BAh – for changing boud rate to 1200 bps
- BR=BBh – for changing boud rate to 2400 bps
- BR=BCh – for changing boud rate to 4800 bps
- BR=BDh – for changing boud rate to 9600 bps
- BR=BFh – for changing boud rate to 19200 bps

## 5. Secondary addressing

### 5.1. Selecting of the meter

Master sends to the meter string SND\_UD2 :

|     |     |     |     |            |    |    |    |    |    |    |    |    |    |    |    |     |
|-----|-----|-----|-----|------------|----|----|----|----|----|----|----|----|----|----|----|-----|
| 68h | 0Bh | 0Bh | 68h | 53h<br>73h | FD | 52 | NN | NN | NN | NN | HH | HH | ID | MM | CS | 16h |
|-----|-----|-----|-----|------------|----|----|----|----|----|----|----|----|----|----|----|-----|

NN – Identification number (secondary adress) BCD8 format (if „F“- this number ignored)

HH – Manufacturer code, HST format (if „FF“- this byte ignored)

ID – Identification code, HST format (if „FF“- ignored)

MM – Medium code, SMED format (if „FF“- ignored)

The meter, whose identification number is the same, is selected for further communication and send answer CON:

|     |
|-----|
| E5h |
|-----|

### 5.2. Communication with selected meter

Communication with selected meter carried out as usual:

- data type for reading is selected by sending to meter string SND\_UD2 (see paragraph 2), only in this case, M-bus adress must be FDh,

- answer of the selected meter CON :

|     |
|-----|
| E5h |
|-----|

- for data request master sends to the meter string (M-bus adress must be FDh):

|     |            |     |    |     |
|-----|------------|-----|----|-----|
| 10h | 5Bh<br>7Bh | FDh | CS | 16h |
|-----|------------|-----|----|-----|

- meter response RSP\_UD2 telegram with selected data (tables 1 ...9)

### 5.3. Deselection of secondary addressing mode

Master sends to the meter telegram SND\_NKE with adress FDh :

|     |     |     |    |     |
|-----|-----|-----|----|-----|
| 10h | 40h | FDh | CS | 16h |
|-----|-----|-----|----|-----|

