Calculator F4HC
Manual addition

ABB

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This is only a manual addition with the differences
to the standard F4 calculator.

3.3.5.1 Display Sequence Normal mode

Seq	Description
10	Accumulated energy. Heating (Default position)
11	Accumulated volume. Heating
12	Accumulated energy. Cooling
13	Accumulated volume. Cooling
14	Display test, see fig.3.2
15	Error Code, see Error code
16	Accumulated Error Time, [Minutes]
17	Pulse counter 1
20	Momentary Power [H/C]
21	Momentary Flow
22	Supply Temperature (High)
23	Return Temperature (Low)
24	Temperature Difference [+/-]
30	Account days[1], [YYMMDD]
31	Account days, Accumulated energy Heating
32	Account days, Accumulated volume Heating
33	Account days, Accumulated volume Cooling
34	Account days, Accumulated volume pulse input 1, [m^3]
35	Account days, Accumulated energy Cooling
36	Possible error code, at time of storage.
37	Possible accumulated error time , at the time of storage., [Minutes]
40	Monthly registers[2], date when values are stored, [YYMMDD]
41	Monthly registers, Accumulated energy Heating
42	Monthly registers, Accumulated volume Heating
43	Monthly registers, Accumulated volume Cooling
44	Monthly registers, Accumulated volume pulse input 1, [m^3]
45	Monthly registers, Accumulated energy Cooling
46	Possible error code, at time of storage
47	Possible accumulated error time , at the time of storage, [Minutes]
50	Operating time, [Hours]
51	Relevant date, [YYMMDD]
52	Relevant time, [HHMM]
53	Recommended date for battery replacement, [YYMMDD]
60	Communication address, Primary address
A9	Communication address, Secondary address
b0	Meter S/N
63	Pulse value, converted to installed unit
64	Placing of flow sensor, [F/r], F = Supply, r = Return
70	Accumulated Error time, [Minutes]
71	Previous Error Code
72	Time for previous Error code, [Minutes]

Table 3.2, Display sequence 10 – 70, normal mode

Display seq. Normal Mode 2

```
90    ID Option card A
91    Status option card A
92    ID Option card B
93    Status option card B
94    ID Option card C
95    Status option card C
96    ID Option card D
97    Status option card D
98    ID Option card E
99    Status option card E
9A    ID Option card F
9B    Status option card F
```

A0	Sequence option card A
B0	Sequence option card B
C0	Sequence option card C
D0	Sequence option card D
E0	Sequence option card E
F0	Sequence option card F[3]

Table 3.2b, Display sequence normal mode

1   In order to change to the next account day, keep pushing the button until the date starts to increment, then release the button. After the display 37, see table above, the next account day will display. **Note:** If one hold the "Push Button" again the display reverts to default position (seq. 10).

2   To change to another month keep pushing the button until the date starts to increment. Release at the requisite month. After display 47, see above, the next stored date will be displayed. **Note:** If one hold the "Push Button" again the display reverts to default position (seq. 10).

3   This sequence's slot is only available in the F2, but will also be displayed in the F4. The F4 have maximum 5 slots.

5.2.1 Sensors and M-Bus connection

The connection of temperature sensors are shown in figure 5.2 and table 5.1, according to EN1434.

Warning: <u>Do not</u> connect the M-Bus to the wrong terminal or the meter can be seriously damaged when the M-Bus loop is powered.
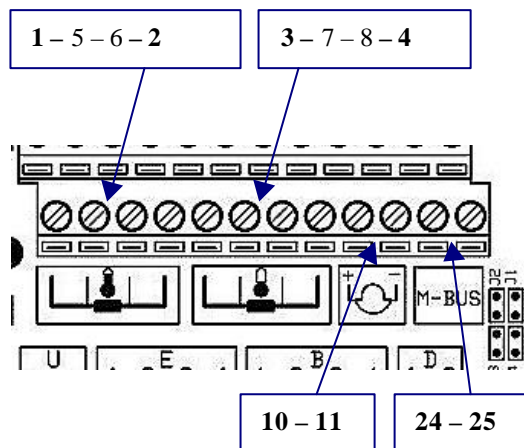

Fig 5.2, Numbering of terminal according to EN1434, (numbering from left to right).

5.2.1.1 EN1434 terminal table

Terminal no.	Signal description
1	High** temp. sensor*
2	High** temp. sensor*
3	Low** temp. sensor*
4	Low** temp. sensor*
5	High** temp. sensor
6	High** temp. sensor
7	Low** temp. sensor
8	Low** temp. sensor
10	Flow sensor signal input (+)
11	Flow sensor signal input (-)
24	M-Bus interface
25	M-Bus interface

Table 5.1, terminal connection according to EN1434

* Only for 4-Wire connection

** High = Supply, Low = Return

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5.2.2 Pulse input connection

The calculator can accumulate pulses from other meters, such as electricity meters, cold and warm water meters and gas meters. Pulse input shall be connected to the terminal marked IN and the outputs from the other device shall be of the type "Open Collector".

Pulse input 1, connect
    "+" to "IN 1" and
    "-" to "IN -"
Pulse input 2, disabled

Specification input :
Min pulse duration 250ms, Voltage: 3V. The pulse registers act as a volume accumulator, see also Pulse counter 1.3.3.

Note: The jumpers on slot C and D must be correctly set according to the marking on circuit board otherwise the output will not work.

7.4 Service

When meter is in for service there can be a necessity to change the parameter setting within the meter. Some parameters can be changed in the F4HC meter without the "Service program" version "FxHC". Following service procedure is recommended:

1. **Brake the seals, set meter into** "Service mode", *see "Service mode" under display and "Seals" for more information.*

2. **Make the changes**, *see below for explanation and see "Display, Service mode" for display sequence.*

3. **Exit** *service* **mode**, see 1,

4. **Replace the broken seals**.

7.4.0 Time

Service sequence, value number : **"00"**

The time is shown in "HHMM" where the two digits "HH" is hour with two digits, and "MM" is minutes with two digits.

7.4.1 Date

Service sequence, value number : **"01"**

The time format is "YYMMDD", where,
"YY"=Yeas, "MM"=Months and "DD"=Days.

7.4.4 Account days

The F4 have to account days at service sequence, value number :
> **"04",** Account day 1
> **"05",** Account day 2.

The format is "MMDD", "MM"= Months, "DD"= Days. If the "MMDD" is set to "0000" the meter will not store account days.

7.4.6 Communication address (primary address)

The primary communication address can be changed in display sequence **"06".** The communication address can be set with three (3) digits, with the value 0-250.

Example, address 5 on display: 0005.

7.4.7 Resetting stored error time

Service sequence, value number : **"07"** will reset the stored error time. By changing the value to "0" will reset the stored error time.

7.4.8 Placement of flow sensor placing

Service sequence, value number : **"08"** is for setting placement of flow sensor. Format 1 or 0. Where:

1. = Flow sensor installed in return (cold) end of pipe
2. = Flow sensor installed in forward (hot) end of pipe.

7.4.9 Recommended date for battery replacement

Service sequence, value number : **"09"** displays recommended date for battery replacement. The format is "YYMMDD". Where "YY" = Years, "MM"=Months, "DD"= Days.

7.3.A Return to normal mode

Service sequence, value number : **"0A"** displays return to normal mode. When value is set to 1 the meter exits the service mode when leaving "0A" sequence.

8. Technical data

Data output table

Following data is accessible via the data output:

Data	EN 60870-5	Manufacture Specific	SIOX (Optional)
Flow sensor placing	X		X
Program version	X		X[5]
Manufacturer	X		
Communication address	X		X
Meter number	X		
Error code (limited)	X		X
Accumulated energy	X		X
Accumulated, volume 1[1]	X		X
~~Accumulated, volume 2[2]~~	~~X~~		
Flow temperature (high)	X		X
Return temperature (low)	X		X
Temperature difference	X		X
"Operation Time" (operation time error time)	X		
Momentary flow	X		X
Momentary power	X		X
Time and date	X		
Pulse register for pulse input 1	X		
~~Pulse register for pulse input 2~~	~~X~~		
Monthly values[3] data storage	X		
Monthly values[3] accumulated energy	X		
Monthly values[3] accumulated volume 1[1]	X		
~~Monthly values[3] accumulated volume 2[2]~~	~~X~~		
Account days same as monthly values, see above	X		
High resolution energy		X	X
High resolution volume 1[1]		X	X
High resolution volume 2[2]		X	
Relevant error code		X	
Accumulated time for relevant error		X	
Previous error code		X	X[6]
Previous accumulated time for relevant error		X	
Manufacturing number		X	
Pulse value		X	
Latest read energy via communication		X	
Time [h] since latest reading		X	
Recommended date for battery replacement			
Error codes and accumulated error times during storage (see monthly registers and account days above)			

Table 8.1, Data output

1. as per flow sensor
2. corresponding to energy registers
3. 37 registers
4. –
5. For being compatible towards existing system, the version number is fictitiously set to four.
6. Total error time

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