

MF4

Calculator

Manual addition

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Manual addition

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

1.2.2.3 Medium

The MF4 is for water mixtures. There are several different MF4's with different calculator algorithms for different water mixtures. The display label on your MF4 will show which mixture applies for your MF4. See also the appendix for the conversion table.

3.3.4 Testmode

Only service program version 2.20 (02-10-15) or later versions may be used to program the MF4.

3.3.51 Display seq. Normal Mode

Seq	Description
10	Accumulated energy. Heating (Default position)
11	Accumulated volume according to flow sensor
12	Display test, see fig 3.2
13	Accumulated volume for pulse input 1, [m ³]
14	Accumulated volume for pulse input 2, [m ³]
15	Error Code
16	Error time [Minutes]
20	Momentary Power
21	Momentary Flow
22	Temperature, High
23	Temperature, Low
24	Temperature Difference
30	Account days ¹ , [YYMMDD]
31	Account days, Accumulated energy
32	Account days, Accumulated volume
33	Account days, Accumulated volume according to energy calculation
34	Account days, Accumulated volume pulse input 1, [m ³]
35	Account days, Accumulated volume pulse input 2, [m ³]
36	Possible error code, at time of storage.
37	Possible accumulated error time, at the time of storage [Minutes]
3x	(loop back, next account day)
40	Monthly value ¹ , [YYMMDD]
41	Monthly value, Accumulated energy
42	Monthly value, Accumulated volume
43	Monthly value, Accumulated volume according to energy calculation
44	Monthly value, Accumulated volume pulse input 1, [m ³]
45	Monthly value, Accumulated volume pulse input 2, [m ³]
46	Possible error code, at time of storage.
47	Possible accumulated error time, at the time of storage [Minutes]
4x	(loop back, next monthly value)
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, [H/L], H = high, L = low
70	Accumulated volume corresponding to accumulated energy
71	Last remote read accumulated energy
72	Accumulated Error time, [Minutes]
74	Previous Error Code
75	Time for previous Error code, [Minutes]
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 connections of temperature sensors are shown in figure 5.2 and table 5.1, numbering in accordance to EN1434.

Warning; Do not connect the M-Bus to the wrong terminal or the calculator can be seriously damaged when the power from the M-Bus loop enters through the wrong terminals.

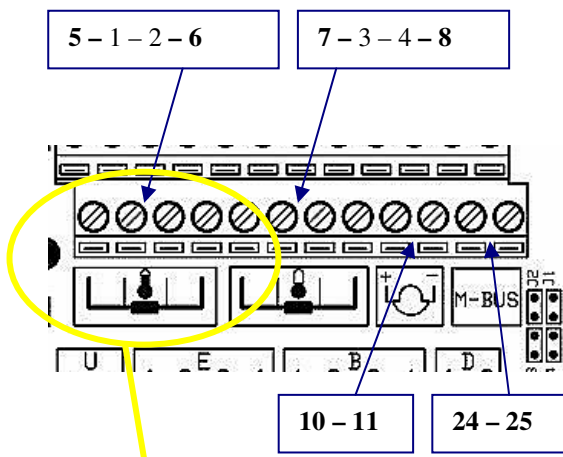


Fig 5.2, Numbering of terminal according to EN1434, (numbering from left to right).

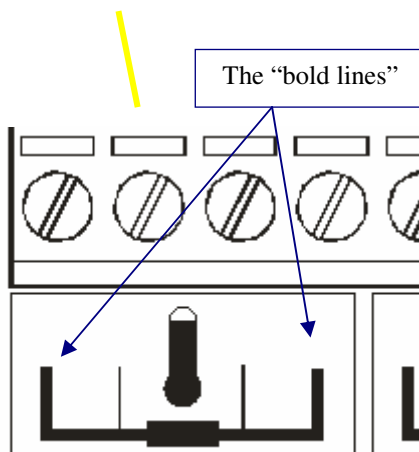


Fig 5.2c, when using the 2-wire method, the wires are to be connected to terminals marked with the "bold lines".

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 (-)
16	Pulse 1 output (+)
17	Pulse 1 output (-)
18	Pulse 2 output (+)
19	Pulse 2 output (-)
24	M-Bus interface**
25	M-Bus interface**
26	Earth symbol
27	N (neutral)
28	L (line)

Table 5.1, terminal connection according to EN1434

* Connected only when 4-Wire method

** Not sensitive to polarity

*** High = Supply, Low = Return

When using the 2-Wire method connected the terminals 5,6,7 and 8.

5.6 Option board handling

Warning: Only option boards especially designed for MF4 can be put in to MF4, no other option board may be installed. See option board documentation for further information.

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

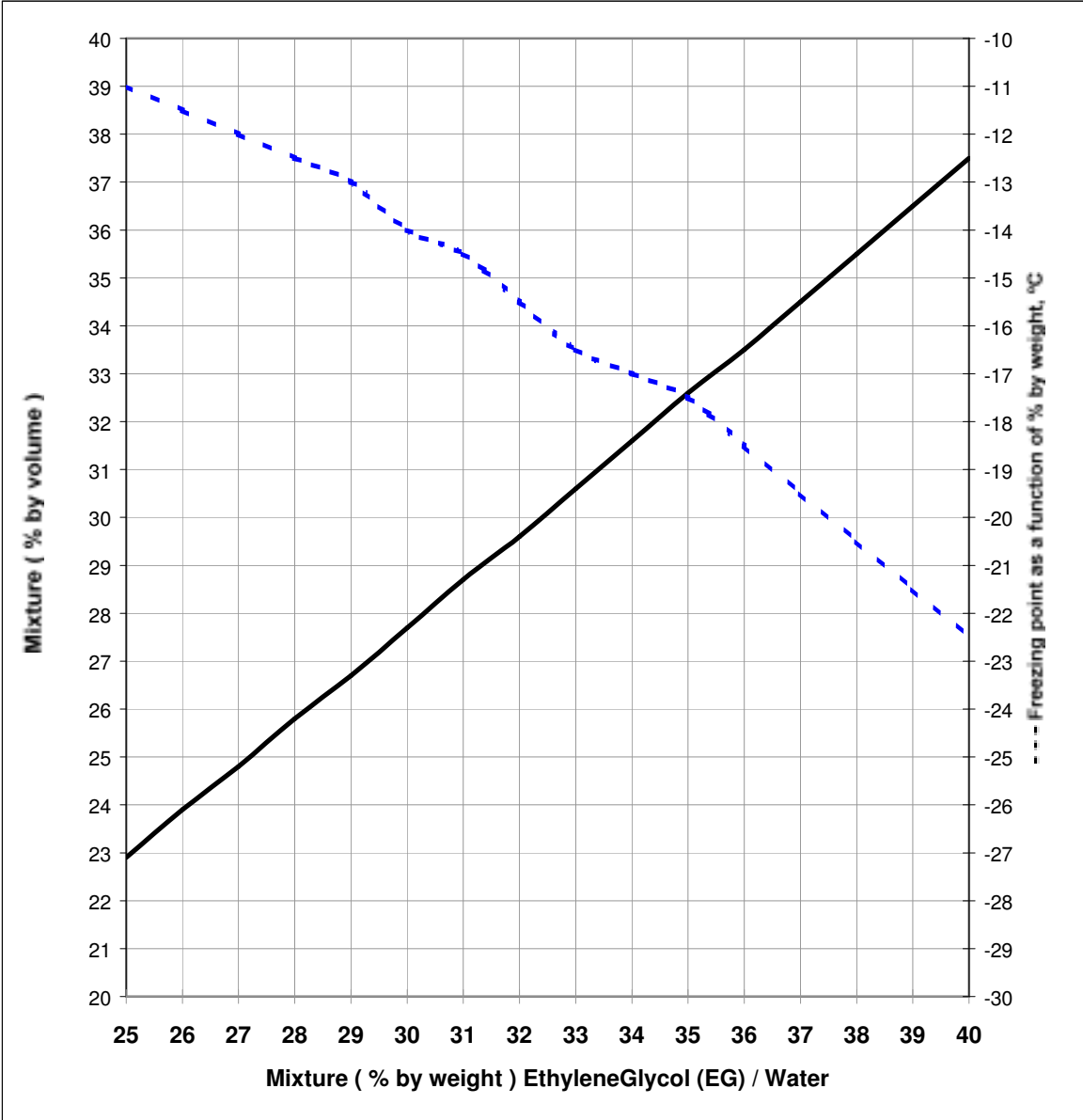
Service sequence, value number : “09” displays recommended date for battery replacement. The format is “YYMMDD”. Where “YY” = Years, “MM”=Months, “DD”= Days.

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.

Appendix 2

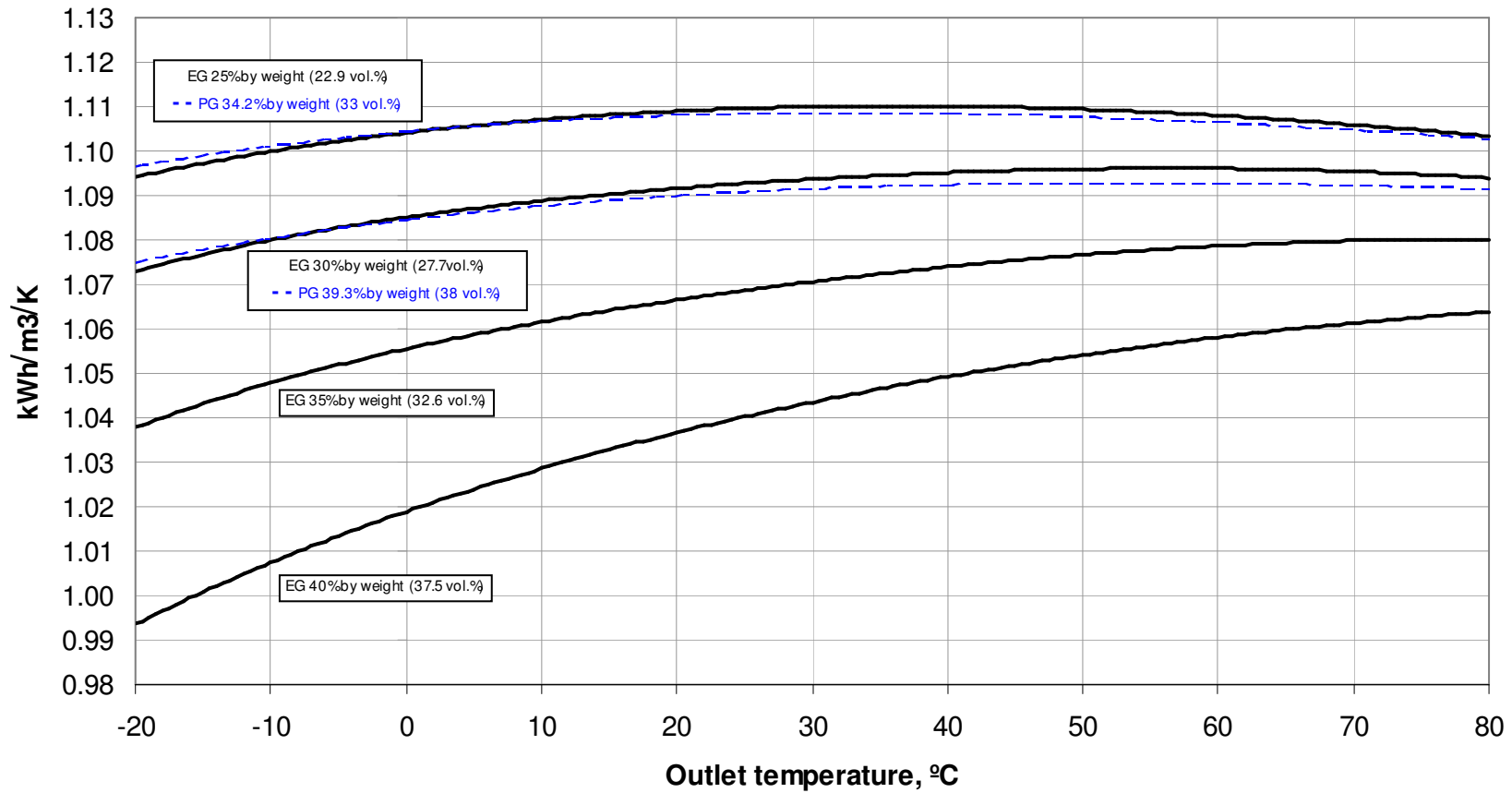
Conversion tables, MF4 energy calculator for mixed fluids (-20°C to +150°C)



Heat coefficient, K, at $\Delta T = 20^\circ\text{C}$ for various Glycol mixtures

EG = Ethylene Glycol, e.g Antifrogen N

PG = 1.2 Propylene Glycol, e.g Antifrogen L



Systematical error (%) to add for various mixtures. (Relative EG 30% by weight)

Temperature Inlet / Outlet (°C)	3 / 0	23 / 20	43 / 40	10 / 0	20 / 10	60 / 40	90 / 40
Temperature difference (K)	3	3	3	10	10	20	50
EG 20% by weight (18.1 vol%)	-3	-2.5	-2	-2.5	-2.5	-2	-2
EG 25% by weight (22.9 vol%)	-1.5	-1.5	-1	-1	-1	-1	-1
EG 40% by weight (37.5 vol%)	+1.5	+5.5	+4.5	+6	+6	+4	+4.5
Antifrogen N, 30% by volume (32.4 weight%)	+3	+2	+2	+2	+3	+3	+4
Antifrogen N, 40% by volume (42.6 weight%)	+5	+5	+5	+5	+5	+5	+4
Antifrogen L, 40% by volume (41.3 weight%)	+1	+1	+1	+0.5	0	+0.5	0
1.2 PropyleneGlycol 50% by weight (48.7 vol%)	+4	+4.5	+4.5	+7	+6	+4	+3.5
PKL 30	-2	-5	-6	-3	-3	-6	-7
PKL 40	+2.5	+2	+1	+1.5	+2	+1	0
Ethyl alcohol 15% by weight	-10	-14			-10		
Ethyl alcohol 25% by weight (≈ 30 vol%)	-2.5	-5.5			-4		
CalciumChloride 15% by weight	+3			+3	+3		
CalciumChloride 25% by weight	+8			+8	+8		
Water 100%	-7	-6	-5.5	-7	-7	-5	-4.5

Elster Messtechnik GmbH
 Otto-Hahn-Str 25
 68623 Lampertheim

www.elstermesstechnik.com

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