

The use of VIF Extensions in M-Bus for MULTICAL® 403, 603, and 803

From a certain meter size, it is no longer possible to use a standard VIF for M-Bus encoding of the energy register. To code the energy register correctly, a VIF Extension is added.

For all meters configured to show energy in MWh and GJ, the VIF Extension is used when the display has 0 or 1 decimal. The VIF extension is shown in the M-Bus datagram as follows:

MWh

FB 00 for 1 decimal (from qp 40 with CCC 458)

FB 01 for 0 decimal (not currently used)

GJ

FB 08 for 1 decimal (from qp 3.5 with CCC 451)

FB 09 for 0 decimal (from qp 40 with CCC 458)

In reading equipment that does not support VIF Extensions it will not be possible to decode the energy register.

In some cases, the problem can be solved by using an alternative CCC code with 2 decimals.

An additional option is to use a CCC code with 8 digits in the display instead of 7 digits.

For MWh meters, all 8 digits configurations have a minimum of 2 decimals.

For GJ meters, all 8 digits configurations up to qp 150 have minimum 2 decimals.

A list of CCC codes can be found in the technical descriptions for each MULTICAL® meter type.

Examples with MC 603

The energy register in the following M-Bus data examples is indicated in **yellow**.

CCC 458 (qp40, 7 digits, 1 dec) med VIF Extension FB 00

68 C9 C9 68 08 E8 72 32 62 00 80 2D 2C 35 0C 01 10 00 00 **04 FB 00 3F 00 00 00** 04 FF 07 3B 00 00 00 04 FF 08 03 00 00 00 04 16 42 00 00 00 84 40 14 00 00 00 00 84 80 40 14 00 00 00 00 04 22 C0 33 00 00 34 22 14 00 00 00 02 59 72 23 02 5D BC 01 02 61 B6 21 04 2E 00 00 00 00 14 2E F3 09 00 00 04 3C 00 00 00 00 14 3C 63 0A 00 00 04 FF 22 00 00 01 00 04 6D 05 29 6C 23 44 FB 00 00 00 00 80 44 FF 07 00 00 00 00 44 FF 08 00 00 00 00 44 16 00 00 00 80 C4 40 14 00 00 00 00 C4 80 40 14 00 00 00 00 54 2E 00 00 00 80 54 3C 00 00 00 80 42 6C 61 21 02 FF 1A 01 1B 0C 78 32 62 00 80 04 FF 16 85 0B 20 00 04 FF 17 5D D5 B4 00 80 16

Location	Date	Time	Addr.	ID-no.	Man.	No.	Value	Unit	Description	Type	Module	St.-No.	Tariff
	12.03.19	09:06:41	232	80006232	KAM	1	6.3	MWh	energy	instant.	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	2	59		man. specific \$07	instant.	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	3	3		man. specific \$08	instant.	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	4	66	m ³	volume	instant.	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	5	0.00	m ³	volume	instant.	1	0	0
	12.03.19	09:06:41	232	80006232	KAM	6	0.00	m ³	volume	instant.	2	0	0
	12.03.19	09:06:41	232	80006232	KAM	7	13248	hours	on time	instant.	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	8	20	hours	on time	error	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	9	90.74	°C	flow temperature	instant.	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	10	4.44	°C	return temperature	instant.	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	11	86.30	K	temperature difference	instant.	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	12	0	kW	power	instant.	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	13	2547	kW	power	maximum	0	0	0
	12.03.19	09:06:41	232	80006232	KAM	14	0.00	m ³ /h	volume flow	instant.	0	0	0

CCC 486 (qp40, 7 digits, 2 dec) without VIF Extension

68 C7 C7 68 08 E8 72 32 62 00 80 2D 2C 35 0C 01 10 00 00 04 07 78 02 00 00 04 FF 07 57 02 00 00 04 FF 08 22 00 00 00 04 15 94 02 00 00 84 40 14 00 00 00 00 84 80 40 14 00 00 00 00 04 22 C0 33 00 00 34 22 14 00 00 00 02 59 65 23 02 5D B9 01 02 61 AC 21 04 2E 00 00 00 00 14 2E F3 09 00 00 04 3C 00 00 00 00 14 3C 63 0A 00 00 04 FF 22 00 00 01 00 04 6D 18 29 6C 23 44 07 00 00 00 80 44 FF 07 00 00 00 00 44 FF 08 00 00 00 00 44 15 00 00 00 80 C4 40 14 00 00 00 00 C4 80 40 14 00 00 00 00 54 2E 00 00 00 80 54 3C 00 00 00 80 42 6C 61 21 02 FF 1A 01 1B 0C 78 32 62 00 80 04 FF 16 85 0B 20 00 04 FF 17 5D D5 B4 00 5B 16

Location	Date	Time	Addr.	ID-no.	Man	No.	Value	Unit	Description	Type	Module	St.-No.	Tariff
	12.03.19	09:25:42	232	80006232	KAM	1	6.32	MWh	energy	instant.	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	2	599		man. specific \$07	instant.	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	3	34		man. specific \$08	instant.	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	4	66.0	m ³	volume	instant.	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	5	0.00	m ³	volume	instant.	1	0	0
	12.03.19	09:25:42	232	80006232	KAM	6	0.00	m ³	volume	instant.	2	0	0
	12.03.19	09:25:42	232	80006232	KAM	7	13248	hours	on time	instant.	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	8	20	hours	on time	error	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	9	90.61	°C	flow temperature	instant.	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	10	4.41	°C	return temperature	instant.	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	11	86.20	K	temperature difference	instant.	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	12	0	kW	power	instant.	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	13	2547	kW	power	maximum	0	0	0
	12.03.19	09:25:42	232	80006232	KAM	14	0.00	m ³ /h	volume flow	instant.	0	0	0

CCC 586 (qp40, 8 digits, 3 dec) without VIF Extension

68 C7 C7 68 08 E8 72 32 62 00 80 2D 2C 35 0C 01 10 00 00 04 06 B5 18 00 00 04 FF 07 6B 17 00 00 04 FF 08 5A 01 00 00 04 14 C9 19 00 00 84 40 14 00 00 00 00 84 80 40 14 00 00 00 00 04 22 C0 33 00 00 34 22 14 00 00 00 02 59 5F 23 02 5D B8 01 02 61 A7 21 04 2E 00 00 00 00 14 2E F3 09 00 00 04 3C 00 00 00 00 14 3C 63 0A 00 00 04 FF 22 00 00 01 00 04 6D 2E 2A 6C 23 44 06 00 00 00 00 44 FF 07 00 00 00 00 44 FF 08 00 00 00 00 44 14 00 00 00 00 C4 40 14 00 00 00 00 C4 80 40 14 00 00 00 00 54 2E 00 00 00 80 54 3C 00 00 00 80 42 6C 61 21 02 FF 1A 01 1B 0C 78 32 62 00 80 04 FF 16 85 0B 20 00 04 FF 17 5D D5 B4 00 63 16

Location	Date	Time	Addr.	ID-no.	Man	No.	Value	Unit	Description	Type	Module	St.-No.	Tariff
	12.03.19	10:47:31	232	80006232	KAM	1	6325	kWh	energy	instant.	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	2	5995		man. specific \$07	instant.	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	3	346		man. specific \$08	instant.	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	4	66.01	m ³	volume	instant.	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	5	0.00	m ³	volume	instant.	1	0	0
	12.03.19	10:47:31	232	80006232	KAM	6	0.00	m ³	volume	instant.	2	0	0
	12.03.19	10:47:31	232	80006232	KAM	7	13248	hours	on time	instant.	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	8	20	hours	on time	error	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	9	90.55	°C	flow temperature	instant.	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	10	4.40	°C	return temperature	instant.	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	11	86.15	K	temperature difference	instant.	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	12	0	kW	power	instant.	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	13	2547	kW	power	maximum	0	0	0
	12.03.19	10:47:31	232	80006232	KAM	14	0.00	m ³ /h	volume flow	instant.	0	0	0