



**COMAC CAL**

**CZECH PRODUCER  
AND DEVELOPER**  
OF MEASUREMENT  
AND SENSOR TECHNOLOGY

# **FLOW 38**

## **v8.x**

# **M-Bus communication protocol specification**

**d.v. 21/6/2013**

[WWW.COMACCAL.COM](http://WWW.COMACCAL.COM)

### ***Transmission service used***

The master is the primary station which initiates all the messages transfers, the satellites stations are secondary stations which only transmit when they are asked for.

### ***Transmission SPEED***

The transmission speed can be 1200, 2400, 4800, 9600 baud.  
The transmission is asynchronous RS485 with a start bit, 8 data bits, an even parity and a stop bit. Default transmission speed is 2400Bd.

### ***Addresses***

The addresses 1 to 250 are reserved for 250 secondary stations.  
The address 254 (FEh) is used for point to point links with only one secondary station.

### ***Initialization of Slave (SND\_NKE)***

EN 1434-3 compatibility (redundant) command. The secondary station answers ACK (E5h) if the reception is correct.

Request:	<b>10h</b>	
	<b>40h</b>	Initialization of slave
	<b>A</b>	Address
	<b>CS</b>	Checksum
	<b>16h</b>	Stop
Response:	<b>E5h</b>	

### ***Request / Response (REQ\_UD2)***

The master sends a short frame with the data request code 5Bh or 7Bh and the address of secondary station.

<b>Request:</b>	<b>10h</b>	
	<b>5Bh/7Bh</b>	Data request instruction code
	<b>A</b>	Address
	<b>CS</b>	Checksum
	<b>16h</b>	Stop

## Response:

The meter answers a frame composed with the following parameters:

Identification numer

Volume  $\Sigma$

Volume user

Volume +

Volume -

Flow

Software version

Error code

**Volume  $\Sigma$ , user, +, -**

The volume is transmitted (coded on 32 Bit Integer) with the unit of the significant digit on the display.

The following table gives the possibly VIF value:

<b>transmitted unit</b>	<b>VIF</b>
1 m3	16h
100 litre	15h
10 litre	14h
1 litre	13h
0,1 litre	12h
0,01 litre	11h
0,001 litre	10h

## Flow

The flow is transmitted on 4 binary bytes (coded on 32 Bit Integer).

The following table gives the possibly VIF value:

<b>transmitted unit</b>	<b>VIF</b>
1 m3/hour	3Eh
100 litre/hour	3Dh
10 litre/hour	3Ch
1 litre/hour	3Bh
0,1 litre/hour	3Ah
0,01 litre/hour	39h
0,001 litre/hour	38h
1 litre/min	44h
0,1 litre/min	43h
0,01 litre/min	42h
0,001 litre/min	41h
1 litre/sec	4Eh
0,1 litre/sec	4Dh
0,01 litre/sec	4Ch
0,001 litre/sec	4Bh

## Software version

8 bit integer format

## Alarms

8 bit integer

bit 0	Add volume overflow(unreasonable increment)
bit 1	FRAM error
bit 2	Empty tube
bit 3	Imp out overflow
bit 4	reserved
bit 5	reserved
bit 6	reserved
bit 7	reserved

total length of the frame : 70 bytes

### *Meter response frame:*

0	68h	start
	40h	(total length of the frame) - 6
	40h	(total length of the frame) - 6
	68h	start
	08h	
5	xxh	address
	72h	CI (mode 1)
	xxh	identification numer (LSB)
	xxh	„
	xxh	„
10	xxh	„ (MSB)
	43h	manufacturer identification
	4Dh	„
	xxh	Dimension code
	07h	water meter
15	xxh	numer of access
	xxh	error code
	00h	signature
	00h	„
	0Ch	DIF : 8digit BCD
20	78h	VIF : Fabrication No.
	xxh	SN (LSB)
	xxh	„
	xxh	„
	xxh	„ (MSB)

25	04h	DIF : 4 bytes binary coded / UNIT1
	10h -16h	VIF : volume $\Sigma$ , depending on comma position
	xxh	volume $\Sigma$ (LSB)
	xxh	„
	xxh	„
30	xxh	„ (MSB)
	84h	DIF : 4 bytes binary coded / UNIT2
	40h	DIFE
	10h -16h	VIF : volume user, depending on comma position
	xxh	volume user (LSB)
35	xxh	„
	xxh	„
	xxh	„ (MSB)
	84h	DIF : 4 bytes binary coded / UNIT3
	80h	DIFE
40	40h	DIFE
	10h - 16h	VIF : volume +, depending on comma position
	xxh	volume + (LSB)
	xxh	„
	xxh	„
45	xxh	„ (MSB)
	84h	DIF : 4 bytes binary coded / UNIT3
	C0h	DIFE
	40h	DIFE
	10h - 16h	VIF : volume -, depending on comma position
50	xxh	volume - (LSB)
	xxh	„
	xxh	„
	xxh	„ (MSB)
	04h	DIF : 4 bytes binary coded
55	38h – 4Eh	VIF : flow, depending on comma position
	xxh	flow – (LSB)
	xxh	„
	xxh	„
	xxh	„ (MSB)
60	01h	DIF : 1 bytes binary coded
	FDh	VIF : extension of VIF code
	0Fh	VIFE : software version
	xxh	software version value
	01h	DIF : 1 bytes binary coded
65	FDh	VIF : extension of VIF code
	17h	VIFE : alarm
	xxh	error code
	CS	checksum
	16h	stop

Communication timing:

