



**COMAC CAL**

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## **FLOW 45**

# **M-Bus communication protocol specification**

**d.v. 21/6/2018**

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### ***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 is 2400 baud.

The transmission is asynchronous RS485 with a start bit, 8 data bits, an even parity and a stop bit.

### ***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  
Date and time  
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

#### ***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

### ***Date and time***

The date and time is transmitted on 4 binary bytes (Date and time type F).

### ***Software version***

8 bit integer format

### ***Alarms***

8 bit integer

bit 0	empty tube
bit 1	reserved
bit 2	reserved
bit 4	reserved
bit 5	reserved
bit 6	reserved
bit 7	reserved

total length of the frame : 76 bytes

### ***Meter response frame:***

0	68h	start
	46h	(total length of the frame) - 6
	46h	(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
	10h -16h	VIF : volume $\Sigma$ , depending on comma position
	xxh	volume $\Sigma$ (LSB)
	xxh	”
	xxh	”
30	xxh	” (MSB)
	84h	DIF : 4 bytes binary coded / UNIT1
	40h	DIFE
	13h -16h	VIF : volume user, depending on comma position
	xxh	volume user (LSB)
35	xxh	”
	xxh	”
	xxh	” (MSB)
	84h	DIF : 4 bytes binary coded / UNIT2
	80h	DIFE
40	40h	DIFE
	13h - 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
	13h - 16h	VIF : volume -, depending on comma position
50	xxh	volume - (LSB)
	xxh	”
	xxh	”
	xxh	” (MSB)
	04h	DIF : 4 bytes binary coded
55	3Bh – 3Eh	VIF : flow, depending on comma position
	xxh	flow (LSB)
	xxh	”
	xxh	”
	xxh	” (MSB)
60	04h	DIF : 4 bytes binary coded
	6Dh	VIF : Time point type F
	xxh	” Date and time (LSB)
	xxh	”
	xxh	”
65	xxh	” (MSB)

	01h	DIF : 1 bytes binary coded
	FDh	VIF : extension of VIF code
	0Fh	VIFE : software version
	xxh	software version value
70	01h	DIF : 1 bytes binary coded
	FDh	VIF : extension of VIF code
	17h	VIFE : alarm
	xxh	error code
	CS	checksum
	16h	stop