

# PolluCom E, PolluTherm, PolluStat E

## Description of the data record

### General

Both heat meters meet all standard requirements for normal heat meters including all requirements of EN1434. This is especially true for the requirements of M-Bus communication according to part 3 of this standard. All valid SND\_UD telegrams will be acknowledged even if they are functionally not supported. SND\_NKE telegrams will be acknowledged. The answer delay of 11 bit times will be met. The maximum mark state current from the M-Bus is below 1.5mA (1 unit load).

Find more information about the M-Bus at [www.m-bus.com](http://www.m-bus.com).

### Link layer

The meters (in addition to the default baudrate of 300 Baud) support also the baudrate of 2400 Baud. For switching from 300 Baud to 2400 Baud and back either the baudrate switch command (CI=\$BB, \$B8) and an autospeed-detect technique is supported. Primary and secondary addressing is supported.

The link layer is described in prEN 13757-2, "remote reading of meters".

### Application layer

All telegrams from the master to the meter are described in table 1.

The six different telegrams (RSP\_UD) after a REQ\_UD2 are described in table 2.

The FCB (Frame Count-Bit) in the REQ\_UD2 can be considered as the LSB of a telegram counter for the transmitted telegrams in the master to slave direction. The master signals by a toggled FCB-Bit in the next REQ\_UD2 (Request user data) telegram that its link layer has properly received the last RSP\_UD-telegram from the meter. The meter answers to a REQ\_UD-request with toggled FCB-Bit with a RSP\_UD containing the next link layer telegram section of a multi-telegram answer, otherwise it will repeat the last telegram.

After a valid reception of a SND\_NKE or a RES\_APP to the primary address of the device or to the test address 254 (\$FE) or the broadcast address 255 (\$FF) the meter will answer with the first RSP\_UD-telegram.

The actuality of the instantaneous data is:

- 1.) Temperature and power information:  
30sec. for battery supply  
10sec. for main power supply
- 2.) Flow information:  
4sec. for flow values between  $Q_{Min}$  and  $Q_{Max}$
- 3.) Status informationen:  $\leq 30$ sec.

Table 1

telegram from the master																	meter answer		
SND_NKE	10h	40h	A	CS	16h												E5h		
REQ_UD2	10h	5B/7Bh	A	CS	16h												next ch.		
APP_RES	68h	03h	03h	68h	53/73h	A	50h	CS	16h								E5h		
REQ_UD1	10h	7Ah	A	CS	16h												E5h		
300 to 2400 Baud	68h	03h	03h	68h	53/73h	A	B8h	CS	16h								E5h		
2400 to 300 Baud	68h	03h	03h	68h	53/73h	A	BBh	CS	16h								E5h		
secondary selection	68h	0Bh	0Bh	68h	53/73h	A	52h	ID1-4	man	gen	med	CS	16h				E5h		
deselection	10h	40h	FDh	3Dh	16h		or select another meter												
set prim. adress	68h	06h	06h	68h	53/73h	A	51h	01h	7Ah	adress	CS	16h					E5h		
set sec. adress	68h	0Dh	0Dh	68h	53/73h	A	51h	07h	79h	Sc1-4	man	gen	med	CS	16h		E5h *1		
set sec. adress	68h	09h	09h	68h	53/73h	A	51h	0Ch	79h	Sc1-4	CS	16h					E5h		
set date and time	68h	09h	09h	68h	53/73h	A	51h	04h	6Dh	date/time ( typ F)			CS	16h				E5h	
set ID-number	The identification number is the secondary adress !																		
set customer loc.	68h	0Ah	0Ah	68h	53/73h	A	51h	0Ch	FDh	10h	number	CS	16h				E5h		
set averaging time	68h	0Bh	0Bh	68h	53/73h	A	51h	0F	1F	00h	65h	09h	02h	81h	minutes	CS	16h	E5h	
set tarif	68h	0Fh	0Fh	68h	53/73h	A	51h	0Fh	1Fh	65h	09h	06h	45h	5 Byte	CS	16h	E5h		
reset maximum	68h	0Ah	0Ah	68h	53/73h	A	51h	0Fh	1Fh	00	65	09	01	B2	CS	16h	E5h		
maximize display	68h	0Bh	0Bh	68h	53/73h	A	51h	0F	1F	00h	65h	09h	02h	27h	00h	CS	16h	E5h	
minimize display	68h	0Bh	0Bh	68h	53/73h	A	51h	0F	1F	00h	65h	09h	02h	36h	FFh	CS	16h	E5h	
Comm. Credit on	68h	0Bh	0Bh	68	53/73h	A	51h	0F	1F	00h	65h	09h	02h	9A	00h	CS	16h	E5h	
Comm. credit off	68h	0Bh	0Bh	68	53/73h	A	51h	0F	1F	00h	65h	09h	02h	95h	FFh	CS	16h	E5h	

\*1: only secondary adress will change !

## The six different RSP\_UD - telegrams

With the frame RSP\_UD, after the start character 68h, the length field (L field) is first transmitted twice, followed by the start character once again. After this, there follow the function field (C field), the address field (A field) and the control information field (CI field). The L field gives the quantity of the user data inputs plus 3 (for C,A,CI). After the user data inputs, the check sum is transmitted, which is built up over the same area as the length field, and in conclusion the stop character 16h is transmitted.

The structure of the user data is:

Fixed Data Header	Variable Data Blocks (Records)	MDH	Mfg.specific data
12 Byte	variable number	1 Byte	variable number

The structure of the fixed data header is:

Ident. Nr.	Manufr.	Version	Medium	Access No.	Status	Signature
4 Byte	2 Byte	1 Byte	1 Byte	1 Byte	1 Byte	2 Byte

The structure of the variable data blocks is:

DIF	DIFE	VIF	VIFE	Data
1 Byte	0-10 (1 Byte each)	1 Byte	0-10 (1 Byte each)	N Bytes
Data Information Block DIB		Value Information Block VIB		
Data Record Header DRH				

**First user data:**

integral values and instantaneous values

length: 42h or 43h

( example in MWh and GJ ), *different DIF/DIFE/VIF/VIFE are possible !*

DIF	VIF	VIFE			
0C	06			00000662	Energy in MWh
<i>or 0C</i>	<i>07</i>				
<i>0C</i>	<i>85</i>	<i>7D</i>			
<i>0C</i>	<i>86</i>	<i>7D</i>			
<i>0C</i>	<i>0E</i>				Energy in GJ
<i>0C</i>	<i>0F</i>				
<i>0C</i>	<i>8D</i>	<i>7D</i>			
<i>0C</i>	<i>8E</i>	<i>7D</i>			
0C	13			00011852	Volume
	<i>or 14 or 15 or 16</i>				
0C	3B			00000401	Flow
	<i>or 3C or 3D or 3E</i>				
0C	2B			00016572	Power
	<i>or 2C or 2D or 2E</i>				
0A	5A			0781	Inlet temperature
0A	5E			0580	Outlet temperature
0B	60			020138	Temperature difference
0C	78			18534492	Fabrication number
0C	FD	10		48056318	Customer Location
1F					more records follow in next telegram

**Second user data:**

minimum/maximum and tariff values

length: 60h or 61h

DIF	VIF	VIFE			
02	71			3C00	Averaging duration
04	6D			E4010A00	TimeDate Typ F
9C	0F	2B		00000000	Max Val. Power
		<i>or 2C or 2D or 2E</i>			
82	0F	6C		1F01	Time point
DC	0E	3B		00000000	Max. Val flow
		<i>or 3C or 3D or 3E</i>			
C2	0E	6C		0000	Time point
9A	0E	5A		2801	Max. Val. Inlet temperature
82	0E	6C		1F01	Time point
DA	0D	5E		2701	Max. Val. Outlet temperature

C2	0D	6C		1F01	Time point
DIF	DIFE	VIF	VIFE	4 byte	Tariff: compare if greater /else if lower; compare with average power compare with flow compare with inlet temperature compare with outlet temperature compare with temperature difference
8C	10	06		00000000	Tariff energy
		<i>or 07</i>			
		85	7D		
		86	7D		
		0E			
		0F			
		8D	7D		
		8E	7D		
8C	10	13		00000000	Tariff volume
		<i>Or 14 or 15 or 16</i>			
1F					more records follow in next telegram Manufacturer specific data

**Third user data:**

historic data

length: 8Ch or 9Ch

DIF	VIF	VIFE			
01	FD	22		10	number of storages
82	08	6C		21 08	Date of last storaging
01	FD	28		01	month between storaging
8C	08	06		00 00 00 00	energy
		<i>or 07</i>		00 00 00 00	
		85	7D	00 00 00 00	
		86	7D	00 00 00 00	
		0E		00 00 00 00	
		0F		00 00 00 00	
		8D	7D	00 00 00 00	
		8E	7D	00 00 00 00	
CC	07	06		00 00 00 00	
8C	07	06		00 00 00 00	
CC	06	06		00 00 00 00	
8C	06	06		00 00 00 00	
CC	05	06		00 00 00 00	
8C	05	06		00 00 00 00	
CC	04	06		00 00 00 00	
8C	04	06		00 00 00 00	
CC	03	06		00 00 00 00	
8C	03	06		00 00 00 00	
CC	02	06		00 00 00 00	

8C	02	06		00 00 00 00	
CC	01	06		00 00 00 00	
8C	01	06		00 00 00 00	
4C	07			00 00 00 00	energy
1F					more records follow in next telegram

**Fourth user data:**

length: 8Ch or 9Ch

same like the third telegram, but volume:

DIF	VIF	VIFE			
01	FD	22		10	number of storages
82	08	6C		21 08	Date of last storaging
01	FD	28		01	month between storaging
8C	08	13		00 00 00 00	volume
	<i>or</i>	14		00 00 00 00	
		15		00 00 00 00	
		16		00 00 00 00	
CC	07	13		00 00 00 00	
...					...
1F					more records follow in next telegram

**Fifth user data:**

length: 8Ch

same like the third telegram, but maximum flow:

DIF	VIF	VIFE			
01	FD	22		10	number of storages
82	08	6C		21 08	Date of last storaging
01	FD	28		01	month between storaging
9C	08	3B		00 00 00 00	maximum flow
	<i>or</i>	3C		00 00 00 00	
		3D		00 00 00 00	
		3E		00 00 00 00	
DC	07	3B		00 00 00 00	
...					...
1F					more records follow in next telegram

**Sixth user data:**

length: 8Bh

same like the third telegram, but maximum average power:

DIF	VIF	VIFE			
01	FD	22		10	number of storages
82	08	6C		21 08	Date of last storaging
01	FD	28		01	month between storaging
9C	08	2B		00 00 00 00	maximum average power
	<i>or</i>	2C		00 00 00 00	
		2D		00 00 00 00	
		2E		00 00 00 00	
DC	07	2B		00 00 00 00	
...					...