

DRT-205C M-Bus Protocol V1.1

Initialization slave

Format:

Start	C Field	A Field	Check Sum	Stop
10	40	XX	CS	16

XX=1 to FF

Parse of the primary address:

The address field serves to address the recipient in the calling direction, and to identify the sender of information in the receiving direction. The size of this field is one Byte, and can therefore take values from 0 to 255. The addresses 1 to 250 can be allocated to the individual slaves, up to a maximum of 250. Un-configured slaves are given the address 0 at manufacture, and as a rule are allocated one of these addresses when connected to the M-Bus. The addresses 254 (FE) and 255 (FF) are used to transmit information to all participants (Broadcast). With address 255 none of the slaves reply, and with address 254 all slaves reply with their own addresses. The latter case naturally results in collisions when two or more slaves are connected, and should only be used for test purposes. The address 253 (FD) indicates that the addressing has been performed in the Network Layer instead of Data Link Layer, The FD used when using The second level address. The remaining addresses 251 and 252 have been kept for future applications.

1.1 how to initialize a meter which you don't know the address ?

Master to slave : 10 40 fe 3e 16

Slave to master: e5 (success)

1.2 Remove the secondary address matching flag of all the power meters on the bus

Master to slave : 10 40 fd 3d 16

Slave : **No answer**

1.3 How to initialize all meters on the bus line by using FF as broadcast address?

Master to slave : 10 40 ff 3f 16

Slave : **No answer**

1.4 How to Initialize a Slave with specific address?

Ex: address 01

Master to slave : 10 40 01 41 16

Slave to master: e5

2、 How to Set Bard rate ?

2.1 Point to point baud-rate setting command format: (Control Frame)

Start	L Field	L Field	Start	C Field	A Field	CI Field	Data	Check Sum	Stop
68H	04	04	68H	53/73	fe	b8	xx	CS	16

(Control Frame)

L Field-----Byte length

C Field-----Control Field, Function Field

A Field -----Address Field

CI Field -----control information field

Check Sum-----The Check Sum is calculated from the arithmetical sum of the data mentioned above, without taking carry digits into account.

Data-xx:

02-----600

04-----1200

08-----2400

10-----4800

20-----9600

Example:

(1) How to change Baud rate to 2400bps?

Master to slave: 68 04 04 68 53 fe b8 08 cs 16

Slave to master: e5

(2) How to change Baud rate to 9600?

Master to slave: 68 04 04 68 53 fe b8 20 cs 16

Slave to master: e5

2.2 how to use Broadcast command to set baud rate?

Format:

Start	L Field	L Field	Start	C Field	A Field	CI Field	Data	Check Sum	Stop
68H	04	04	68H	53/73	ff	B8	xx	CS	16

Slave to master: **no answer**

Data-xx:

02-----600

04-----1200

08-----2400

10-----4800

20-----9600

Example:

Change all the meters' baud rate to 2400bps?

Master to slave:: 68 03 03 68 53 **ff** b8 08 cs 16

Slave to Master: No answer

3、 How to Set primary address

3.1 How to set the address of a Slave to 01?

Format:

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Addr Data	Check Sum	Stop
68H	06	06	68H	53/73	fe	51	01	7A	XX	CS	16

Example:

Master to slave : 68 06 06 68 53 fe 51 01 7a **01** 1e 16

Slave to master : e5

3.2 How to use Broadcast Command to set primary address to 01?

Master to slave: 68 06 06 68 53 **ff** 51 01 7a **01** 1f 16

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Addr Data	Check Sum	Stop
68H	06	06	68H	53/73	ff	51	01	7A	XX	CS	16

Slave : **no answer**

3.3 How to change Address from 01 to 02?

Format:

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Address Data	Checksum	Stop
68H	06	06	68H	53/73	XX	51	01	7A	YY	CS	16

XX-- current primary Address

YY-- new primary address

Master to slave: 68 06 06 68 73 01 51 01 7A 02 42 16

Slave to master : e5

3.4 How to Set primary address to 01 by using secondary address (for example: secondary address:12345678)

Step1 Initialize the slave

Master to slave : 10 40 fe 3e 16

Slave to master: e5

Step2 Check the secondary address. After receiving the command, the Slave will check if the secondary address in the command is same with its secondary address or not.

Maseter to slave: 68 0B 0B 68 73 FD 52 78 56 34 12 FF FF FF FF D2 16

FD--- the primary Address used when you use secondary address to read data.

78 56 34 12 --- the meter's secondary address is 12 34 56 78

Master to slave : e5 (success)

Step3 Change the primary address to 01

Master to slave :68 06 06 68 73 FD 51 01 7A 01 3D 16

01---- new primary address

Slave to master: e5

- 4、 Set the complete identification of the slave (ID=12345678, Man=4024h (PAD), Gen=1, Med=02 (energy))

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Identification No	Manufacturer ID	Generation	Medium	Checksum	Stop
68H	0D	0D	68H	53/73	FE	51	07	79	4 个 byte	2 个 byte	1 个 byte	1 个 byte	CS	16

Master to slave: 68 0D 0D 68 53 FE 51 07 79 78 56 34 12 24 40 01 02 9D 16

Slave to master:e5

- 5、 How to read out of Energy information

5.1 Use primary address 01 to read Energy information

Format:

Master to slave: 10 7B/5B adr cs 16

Slave to master: Variable data structure

Example: 10 7B 01 7C 16

- 5.2 How to read out a meter's Energy information by using broadcast address 254 (FE)?

Master to slave: 10 7b/5b fe cs 16

Slave to master: Variable data structure

Example: 10 5B FE 59 16

- 5.3 How to read out the meter's Energy information by using secondary Address? For example: Secondary address:12 34 56 78

Step1 initialize the slave

Master to slave:10 40 ff 3f 16

Slave to master: No answer

Step2 Check the secondary address. After receiving the command, the Slave will check if the secondary address in the command is same with its secondary address or not.

Master to slave:68 0b 0b 68 73 fd 52 78 56 34 12 FF FF FF FF d2 16

Slave to master:E5

Step3 read the Energy information

Master to slave :10 7b fd 78 16

Slave to master:

DIF=====Coding of the Data Information Field

VIF=====Codes for Value Information Field

bytes		data structure	Notice
4	header telegram	68 5d 5d 68	header of RSP_UD telegram
3		08 A 72	C field =08 address A CI field 72
4		78 65 34 21	Identification number =12345678
2		24 40	Manufacturer ID 4024
1		01	Generation 1
1		02	Energy Meter
1		55	ACCESS NO
1		00	STATUS
2		00 00	Signature
6		Current total active energy	0C
	04		VIF: 10w (0.01Kw)
	78 56 34 12		123456.78kwh
7	Current total reactive energy	0C	DIF: 8digit BCD , Current Value
		FD	VIF:fd
		3A	VIFE: dimensionless / no VIF
		78 56 34 12	123456.78kVarh
1	CHECK SUM	CS	
1	End	16	

6、Read out of instantaneous electrical information

The instantaneous electrical information includes:

V, I, P, Q, S, PF, Hz ect. MD

6.1 how to read instantaneous electrical information by using primary address:

Start	L Field	L Field	Start	C Field	A Field	CI Field	Check Sum	Stop
68	3	3	68	53/73	XX	B1	CS	16

Master to slave : 68 03 03 68 53 XX b1 05 16

Slave to master: Variable data structure (instantaneous electrical information)

If the primary address is 01 then XX=01

6.2 how to use Secondary Address to read out the instantaneous electrical information?

Step1 Initialization slave

Master to slave: 10 40 ff 3f 16

Slave to master: No answer

Step2 Check the secondary address. After receiving the command, the Slave will check if the secondary address in the command is same with its secondary address or not.

Master to slave: 68 0b 0b 68 73 fd 52 78 56 34 12 ff ff ff d2 16

Slave to master: E5

Step3 use Secondary Address to read out the instantaneous electrical information

Master to slave : 68 03 03 68 53 fd b1 01 16

Slave to master: Variable data structure

bytes		data structure	Notice
4	header telegram	68 90 90 68	header of RSP_UD telegram
3		08 A 72	C field =08 address A CI field 72
4		78 65 34 21	Identification number =12345678
2		24 40	Manufacturer ID 4024
1		01	Generation 1
1		02	Energy Meter
1		55	ACCESS NO
1		00	STATUS
2		00 00	Signature
6	L1 Voltage	0b	DIF: 6digit BCD
		Fd	VIF:fd
		47	VIFE: 0.01V
		56 34 12	1234.56V
6	L2 Voltage	0b	DIF: 6digit BCD
		Fd	VIF:fd
		47	VIFE: 0.01V
		56 34 12	1234.56V
6	L3 Voltage	0b	DIF: 6digit BCD
		Fd	VIF:fd
		47	VIFE: 0.01V
		56 34 12	1234.56V
6	L1 current	0b	DIF: 6digit BCD
		Fd	VIF:fd
		59	VIFE: 1mA(xxx.xxxA)
		56 34 12	123456mA(123.456A)
6	L2 current	0b	DIF: 6digit BCD
		Fd	VIF:fd
		59	VIFE: 1mA(xxx.xxxA)
		56 34 12	123456mA(123.456A)
6	L3 current	0b	DIF: 6digit BCD
		Fd	VIF:fd
		59	VIFE: 1mA(xxx.xxxA)
		56 34 12	123456mA(123.456A)
		56 34 12	123456mA(123.456A)
5	total active power	0b	DIF: 6digit BCD
		2a	VIF:0.1W(xx.xxxxkw)
		56 34 12	12345.6w(12.3456kw)
5	L1 active power	0b	DIF: 6digit BCD
		2a	VIF:0.1W(xx.xxxxkw)
		56 34 12	12345.6w(12.3456kw)
5	L2 active power	0b	DIF: 6digit BCD
		2a	VIF:0.1W(xx.xxxxkw)
		56 34 12	12345.6w(12.3456kw)
5	L3 active power	0b	DIF: 6digit BCD
		2a	VIF:0.1W(xx.xxxxkw)

		56 34 12	12345.6w(12.3456kw)
6	total reactive power	0b	DIF: 6digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		56 34 12	12345.6w(12.3456kw)
6	L1 reactive power	0b	DIF: 6digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		56 34 12	12345.6w(12.3456kw)
6	L2 reactive power	0b	DIF: 6digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		56 34 12	12345.6w(12.3456kw)
6	L3 reactive power	0b	DIF: 6digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		56 34 12	12345.6w(12.3456kw)
5	Total power factor	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 05	0.500
5	A power factor	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 05	0.500
5	B power factor	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 05	0.500
5	C power factor	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 05	0.500
5	Frequency	0a	DIF: 4digit BCD
		Fd	VIF:fd
		3a	VIFE: dimensionless / no VIF
		00 50	50.00 z
1	End	CS	
1		16	

7、How to read password?

Start	L Field	L Field	Start	C Field	A Field	CI Field	C eck Sum	Stop
68	3	3	68	11	addr	03	CS	16

Master to Slave: 68 03 03 68 11 addr 03 cs 16

Slave to Master: 68 05 05 68 11 addr 03 passwordH passwordL cs 16

8、Change to a new Password:

Start	L Field	L Field	Start	C Field	A Field	CI Field	数据		C eck Sum	Stop
68	5	5	68	11	addr	04	Password	Password L	CS	16

Master to Slave: 68 05 05 68 11 addr 04 passwordH passwordL cs 16

Slave to Master: E5

9、How to reset all resettable energy data?

Start	L Field	L Field	Start	C Field	A Field	CI Field	C eck Sum	Stop
68	3	3	68	11	addr	0d	CS	16

Master to Slave: 68 03 03 68 11 01 0d 1f 16

Slave to Master: e5

10、Set Demand interval、slide time、Display time、LED time

Send: 68 09 09 68 53 FE 51 30 01 60 01 05 06 3F 16

Start	L Field	L Field	Star t	C Field	A Field	CI Field	DI F	VI F	data	Check Sum	Sto p
68H	09	09	68H	53/73	FE	51	30	01	Demand interval、slide time、 Display time、LED time Display time=0 : the display does not scroll automatically. LED time=0 : Backlight always on min-min-s-min 4 bytes	cs	16

Master to Slave: 68 09 09 68 53 FE 51 30 01 60 01 05 06 3F 16

Slave to Master: E5

11、 Read Demand interval、 slide time、 Display time、 LED time

Start	L Field	L Field	Start	C Field	A Field	CI Field	DIF	VIF	Check Sum	Stop
68H	05	05	68H	53/73	FE	51	30	81	cs	16

Master to Slave: 68 05 05 68 53 FE 51 30 81 53 16

Slave to Master: E5

bytes		data structure	Notice
4	eader telegram	68 16 16 68	eader of RSP_UD telegram
3		08 A 72	C field =08 address A CI field 72
4		78 65 34 21	Identification number =12345678
2		24 40	Manufacturer ID 4024
1		01	Generation 1
1		02	Energy Meter
1		55	ACCESS NO
1		00	STATUS
2		00 00	Signature
7		Demand interval、 slide time、 Display time、 LED time	0a
	Fd		VIF:fd
	3a		VIFE: dimensionless / no VIF
	15010610		Demand interval: 15 min slide time: 01min Display time: 06s LED time: 10s
1	CHECK SUM	CS	
1	End	16	

Accessory (Protocol of FYL)

Write ID

68 06 06 68 53 (FE/FF/ADDR) 51 01 7A DATA CS 16

Meter reply: E5

Write Baud Rate

68 04 04 68 53 (FE/FF/ADDR) b8 DATA cs 16

02-----600

04-----1200

08-----2400

10-----4800

20-----9600

Meter reply: E5

Write main display round display screen number

68 04 04 68 53 (FE/FF/ADDR) 30 DATA cs 16

Meter reply: E5

Write round display screen time

68 04 04 68 53 (FE/FF/ADDR) 31 DATA cs 16

Meter reply: E5

Write energy decimal digits

68 04 04 68 53 (FE/FF/ADDR) 32 DATA cs 16

Meter reply: E5

Write sub display round display screen number

68 04 04 68 53 (FE/FF/ADDR) 33 DATA cs 16

Meter reply: E5

Set CT ratio

68 04 04 68 53 (FE/FF/ADDR) 34 DATA cs 16

Meter reply: E5

Set display screen number

68 1F 1F 68 53 (FE/FF/ADDR) 35 DATA. DATA cs 16

Meter reply: E5

Read kWh

10 7B/5B adr cs 16

Read voltage and current parameters

68 03 03 68 53 (FE/FF/ADDR) b1 CS 16

Read ID

68 05 05 68 11 (FE/FF/ADDR) 51 01 7A CS 16

Meter reply:

68 06 06 68 11 (FE/FF/ADDR) 51 01 7A DATA CS 16

Read Baud Rate

68 03 03 68 11 (FE/FF/ADDR) b8 cs 16

Meter reply:

68 04 04 68 11 (FE/FF/ADDR) b8 DATA cs 16

Read main display round display screen number

68 03 03 68 11 (FE/FF/ADDR) 30 cs 16

Meter reply: 68 04 04 68 53 (FE/FF/ADDR) 30 DATA cs 16

Read round display screen time

68 03 03 68 11 (FE/FF/ADDR) 31 cs 16
Meter reply: 68 04 04 68 53 (FE/FF/ADDR) 31 DATA cs 16

Read energy decimal digits

68 03 03 68 11 (FE/FF/ADDR) 32 DATA cs 16
Meter reply: 68 04 04 68 11 (FE/FF/ADDR) 32 DATA cs 16

Read sub display round display screen number

68 03 03 68 11 (FE/FF/ADDR) 33 DATA cs 16
Meter reply: 68 04 04 68 11 (FE/FF/ADDR) 33 DATA cs 16

Read CT ratio

68 03 03 68 11 (FE/FF/ADDR) 34 DATA cs 16
Meter reply: 68 04 04 68 11 (FE/FF/ADDR) 34 DATA cs 16

Read display screen number

68 03 03 68 11 (FE/FF/ADDR) 35 DATA cs 16
Meter reply: 68 1F 1F 68 11 (FE/FF/ADDR) 35 DATA DATA cs 16