

IEC 62056-21 规约通讯协议

(仅供内部使用)

拟制	Reallin	日期	2016-04-11
审核		日期	
审核		日期	
批准		日期	

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Modification History

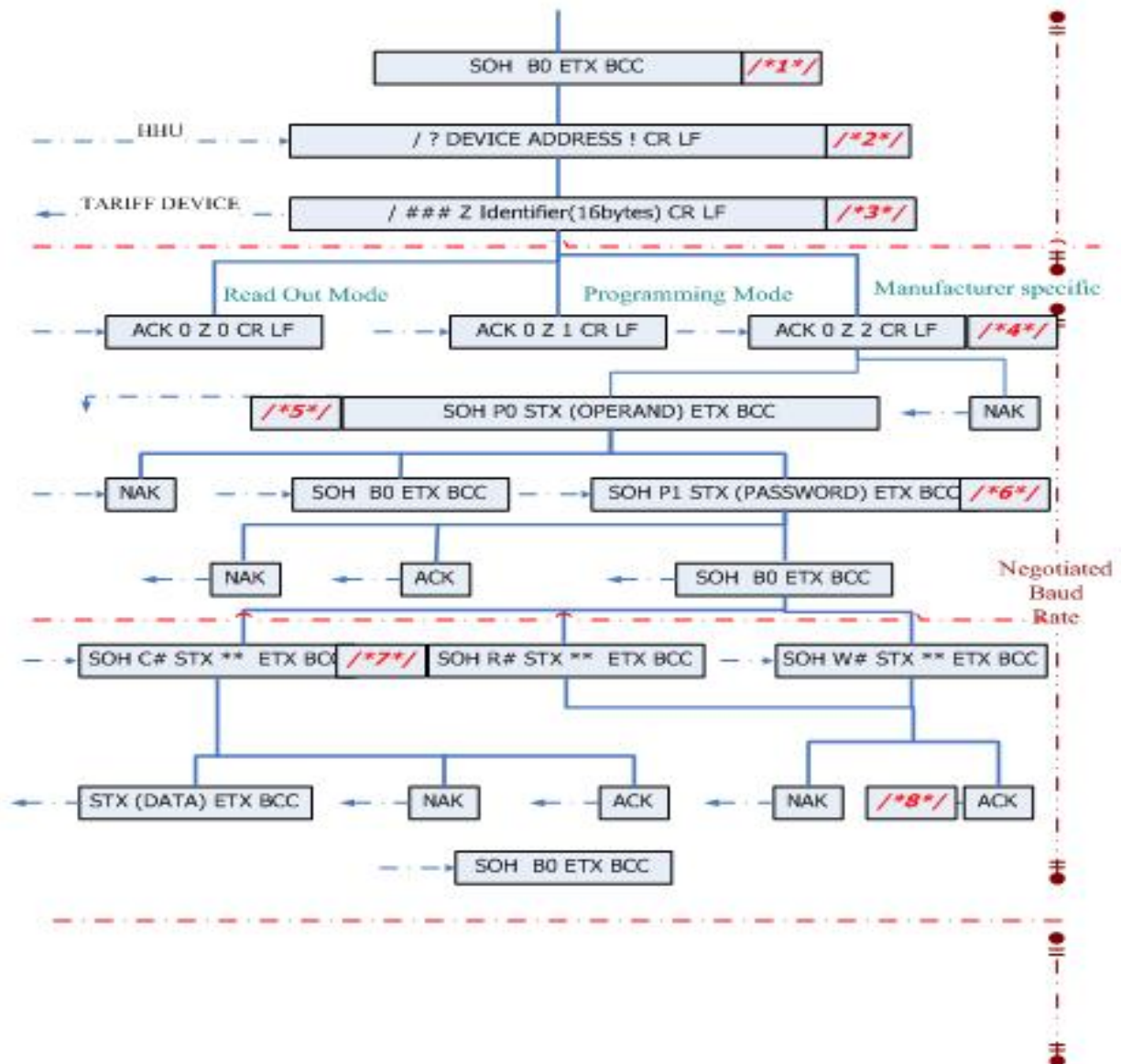
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1 Data transmission protocol

1.1 Overview of Manufacturer specific



1.1.1 Transmission Speed of IR-Interface

Initial Baud Rate: 300bps

Support Baud Rates: 300,600,1200,2400,4800,9600,19200.

1.1.2 Transmission Speed of RS485/RS232

Initial Baud Rate: Initial Baud Rate will be changed according to actual setting.

Support Baud Rates: 300,600,1200,2400,4800,9600,19200.

1.1.3 Character format

Data bits	Parity bit	Stop bits
7	Even	1

1.1.4 Baud rate identification

Z is baud rate identification (for baud rate changeover), the definition of baud rate is determined by the protocol. In protocol Mode C, the message of baud rate is defined as the following:

- 0 — 300bps
- 1 — 600bps
- 2 — 1200bps
- 3 — 2400bps
- 4 — 4800bps
- 5 — 9600bps
- 6 — 19200bps

1.1.5 Reaction and monitoring times

The time between the reception of a message and the transmission of an answer is:

$$(20 \text{ ms}) \quad 200 \text{ ms} < t_r < 1 \text{ 500 ms (see item 12) of 6.3.14).}$$

If a response has not been received, the waiting time of the transmitting equipment after transmission of the identification message, before it continues with the transmission, is:

$$1\ 500\ \text{ms} < t_t < 2\ 200\ \text{ms}$$

The time between two characters in a character sequence is:

$$t_a < 1\ 500\ \text{ms}$$

2 Message definitions

2.1 Request message

Opening message from the HHU to the tariff device. The device address is optional.

/	?	Device Address	!	CR	LF
---	---	----------------	---	----	----

2.1.1 Device address field

The Device Address is optional.

2.2 Identification message

Reply of *Request message*,

/	×	×	×	Z	\	W	Identification	CR	LF
Manufacturer's identification									

Identification format:

表型号(6 字符)	硬件版本(4 字符)		固件版本(4 字符)	
6 个字符(不足后而补空格)	H	100	F	200
举例: A30VA H100F200				

HEX: 41 33 30 56 41 20 48 31 30 30 46 32 30 30
--

2.2.1 Identification field

Manufacture-specific, 16 printable characters.

For this device, this field is filled with ‘\WA30VAH100F200 ‘

2.3 Negotiation baud rate

Negotiation of advanced features:

ACK	0	Z	2	CR	LF
-----	---	---	---	----	----

Acknowledgement:

SOH	P	0	STX	(Random operand)	ETX	BCC
-----	---	---	-----	------------------	-----	-----

OPERAND: The random operand is 8 characters

2.4 Password command

SOH	P	D	STX	(OPERAND)	ETX	BCC
-----	---	---	-----	-------------	-----	-----

D is the command type identifier.

0 — data is operand for secure algorithm

1 — data is operand for comparison with internally held password.

The procedure for verification of password:

Process1: Meter send the random serial number to the MMS using P0 command.

The random operand is 8 characters

Process2: MMS compute the cipher code using the negotiated encrypt algorithm.

*void Algorithm_Encrypt(unsigned char *plainIn, unsigned char *secretKey, unsigned char *cipherOut)*

the plainIn[] is the password

the secretKey is the random serial number received from the meter in the P0 command

Process3: MMS send the cipher code to the meter, 12 characters

Process4: Meter decrypt the cipher code using the negotiated decrypt algorithm

```
void Algorithm_Decrypt(unsigned char *cipherIn, unsigned char *secretKey, unsigned char *plainOut)
```

Process5: compare the plainOut with the passWord

the plain code is the password to be checked.

Acknowledgement of the meter: if accepted, acknowledge ACK, otherwise reply NAK.

2.5 Programming command message

Used for programming and block oriented data transfer.

SOH	C	D	STX	OBIS CODE	Data Set	ETX	BCC
-----	---	---	-----	-----------	----------	-----	-----

2.5.1 Command messages identifier

W — write command

R — read command

E — execute command

2.6 Exit command

SOH	B	D	ETX	BCC
-----	---	---	-----	-----

D is the command type identifier.

0 — complete sign off

1 — complete sign off for battery operated device using the fast wake-up method

2~9 — reserved for future use

For this design, only complete sign off type is support.

No reply.

3 Read command

3.1 Read type 2

SOH	R	2	STX	OBIS CODE	()	ETX	BCC
-----	---	---	-----	-----------	----	-----	-----



Examples:

Length: 0025, Data: 0R2001-00:00.00.00.FF0X

3.2 Acknowledgement

If the corresponding data is found, construct the data as the following frame; otherwise reply NAK.

STX	OBIS CODE	(DATA)	ETX	BCC
-----	-----------	--------	-----	-----

Examples:

Length: 0028, Data: 001-00:00.00.00.FF(373737373
 Length: 0012, Data: 737373737)0>

4 Write command

4.1 Write type2

SOH	W	2	STX	OBIS CODE	(DATA)	ETX	BCC

Examples:

0W2001-00:00.00.01.FF(0000000000000000)0...

4.2 Acknowledgement

If accepted, acknowledge ACK; otherwise reply NAK.

5 Execute command

5.1 Execute command type

SOH	E	2	STX	OBIS CODE	(DATA)	ETX	BCC
-----	---	---	-----	-----------	--------	-----	-----



Examples:

```
Length: 0039, Data: 0E2001-80:80.80.81.01(09361205110113)0F
```

5.2 Acknowledgement

If accepted, acknowledge ACK; otherwise reply NAK