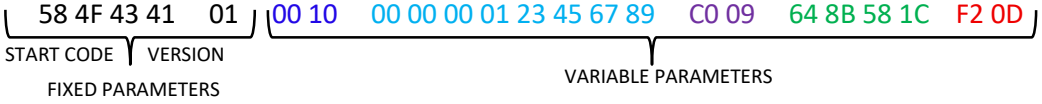
REV. 0.1 _ 18/06/2026

PECTECH SRL

Via Ca' Rasi 9/P -35142 Padova (PD) – Italy
Tel. +39 049 4906494
P.I. / C.F. 05183250280

The informations reported in this document are related to LoRaWAN section of PEC-EM3-5A-LW-MID type, complete informations are available on user manual read it before (jointly) with these suggestions.

Complete frame is something like the one below:



00 10 = LENGTH FRAME METER ID + CONTROL CODE + DATA + CRC

00 00 00 01 23 45 67 89 = METER ID (SHOWED ON DEVICE'S SILKPRINT)

C0 09 = CONTROL CODE

64 8B 58 1C = DATA

F2 0D = CRC16 _ CALCULATED OVER: VERSION + LENGTH + METER ID + CONTROL CODE + DATA

Note: Byte format informations, see par. 1.1.2 user manual, appendix D

CONTROL CODE is command parameter to send instructions to device (downlink) to set up parameters or read measurements, and it's status feedback from device (uplink); it's two byte format as follow:

bit [0 ÷ 7] → CTRLCODE L = instruction code

bit [8 ÷ 11] → CTRLCODE H = instruction class

bit [12] → 1 reply at reading request

bit [13] → 1 reply at set-up/writing request

bit [14] → its status change related to uplink/downlink phase and bit[15] status

bit [15] → 0 = reading instruction / 1 = writing instruction

bit [14]

SERVER send to device (Downlink)

Case A: Writing command (Bit 15 = 1)

Bit 14 define acknowledge request to server after sending command:

- **Bit 14 = 0**: **no feedback request**
- **Bit 14 = 1**: **feedback request**→ Bit [13] raised to 1

Case B: Reading command (Bit 15 = 0)

Bit 14 define the type of request:

- **Bit 14 = 0**: Standard reading. Meter send datas and raised Bit [12] to 1
- **Bit 14 = 1**: Server is sending acknowledge after automatic report , meter doesn't need process anything.

METER send to server (Uplink)

Bit 14 used to request acknowledge from server:

- **Bit 14 = 0**: ACK no request.
- **Bit 14 = 1**: ACK request, server send reply with Bit [14] → 1

  NOTE: server have to reply in 10 seconds (user manual_appendix D_par 1.1.3) or meter'll rise error flag (user manual_appendix D _par 2.1.2)

CTRLCODE H = 0x00 requests as meter informations, status or set-up (serial number, CT, VT etc.)

CTRLCODE L = set as par. 2 of usr manual

0x01 measurements reading request (voltage, current, power etc.)

CTRLCODE L = number of parameters (user manual_par 3)

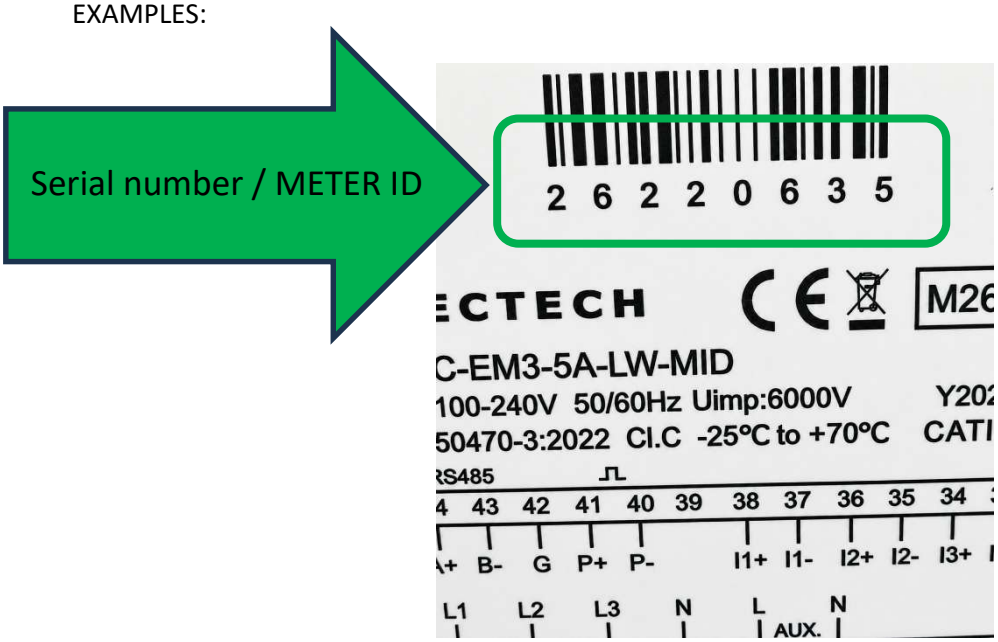
0x02 automatic reports

CTRLCODE L = channel number (user manual_par 4)

Before send a command intended to change set-up parameters (CONTROL CODE H = 0X00) need in the early get permission, sending firs PASSWORD command.

Whenever error occur meter send fail message where control code is set to 0x0E22, follow byte is error type explained into appendix D par 1.1.3 of user manual

EXAMPLES:



1) **READ SERIAL NUMBER**

Request (downlink) fport1

584F4341 01 000C 0000000026220635 0003 BC91

Given that it's info request there isn't payload data but only control code

CTRL_H = 0X00 (info/set-up command)

CTRL_L= 0X03 _ serial number

Bit[15] = 0 _ reading command

Answer (uplink)

584f4341 01 0010 0000000026220635 1003 26220635 749b

Note serial number is as METER ID , control code is changes as:

CTRL_H = 0X00
CTRL_L= 0X03 = serial number
Bit[12] = 1 _ reply to reading command
Bit[15] = 0 _ reading command

2) READING BAUD RATE (MODBUS)

Request (downlink)
584F4341 01 000C 0000000026220635 001E B551
CTRL_H = 0X00
CTRL_L= 0X1E = Baud rate
Bit[15] = 0 _ reading command

Answer (uplink)

584f4341 01 000d 0000000026220635 101e 03 fbc8
CTRL_H = 0X00
CTRL_L= 0X1E
Bit[12] = 1 _ reply to reading command
Bit[15] = 0 _ reading command
Data = 03 _ baud 9600 (appendix D_par 2.1.10)

3) GET PERMISSION (password 0000)

Request (downlink)
584F4341 01 000E 0000000026220635 C000 0000 63A7
CTRL_H = 0X00
CTRL_L= 0X00
Bit[14] = 1 _ request acknowledge
Bit[15] = 1 _ writing request
Data = 0000 (password HEX format*)
*If password showed at screen would be 7766, byte send should be 1E56

Answer (uplink)

584f4341 01 000d 0000000026220635 2000 00 5581
CTRL_H = 0X00
CTRL_L= 0X00
Bit[13] = 1 _ confirmation (set modification enabled)

4) SET BAUD RATE (MODBUS)

Request (downlink)
584F4341 01 000D 0000000026220635 C01E 04 C088
CTRL_H = 0X00
CTRL_L= 0X1E = Baud rate
Bit[14] = 1 _ acknowledge request
Bit[15] = 1 _writing command
Dati = 04 (19200 baud)

Answer (uplink)

584f4341 01 000d 0000000026220635 201e 00 f588
CTRL_H = 0X00
CTRL_L= 0X1E
Bit[13] = 1 _ set confirmed

Now if I request a new BAUD RATE status I'd get back new situation as:

584f4341 01 000d 0000000026220635 101e 04 3989

04 baud rate set to 19200

5) REDING VOLTAGE VALUE _ L1-N

Request (downlink)
584F4341 01 000E 0000000026220635 0101 0000 5FCB
CTRL_H = 0X01 (reading command)
CTRL_L= 0X01 (1 parameter)
Dati = 0000 register address V1-N (see register list)

Answer (uplink)

584f4341 01 0012 0000000026220635 1101 0000436dc6a8 bb11

CTRL_ CTRL_H = 0X01 (reading command)
CTRL_L= 0X01 (1 parameter)
Bit[12] = 1 _ answer at reading command
Data = 0000436dc6a8 _ converted as FLOAT IEEE754 = 237,776Vac

6) REDING VOLTAGE VALUE L1-N + I1 CURRENT VALUE

Request (downlink)
584F4341 01 0010 0000000026220635 0102 0000 0003 018D
CTRL_H = 0X01 (reading command)
CTRL_L= 0X02 (2 parameters)
Dati = 0000 address V1-N _ 0003 address I1

Answer (uplink)

584f4341 01 0018 0000000026220635 1102 0000436d57f8 000000000000 e3c0

CTRL_ CTRL_H = 0X01 (reading command)
CTRL_L= 0X02 (2 parameters)
Bit[12] = 1 _ answer at reading command
Data = 0000436d57f8 _ converted as FLOAT IEEE754 = 237,343Vac (current = 0)

7) AUTOMATIC REPORT _ ENABLING CANALE 3

Refer to par 4 appendix D of user manual

Request (downlink)

584F4341 01 0026 0000000026220635 C203 F101 F30001 F4 0000 FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FB89

CTRL_H = 0X02 _ automatic report
CTRL_L= 0X03 _ Channel 3
Bit[14] = 1 _ acknowledge request
Bit[15] = 1 _ writing command
Data = F1 _ 01 (channel enabled)
F3 _ 0001 time between airing (minutes)
F4 _ registers address

NOTA: registers available for single channel are 10 maximum, if registers request are less than 10, need fill up with 0xFFFF all residual BYTE

Answer (uplink) a command

584f4341 01 000d 0000000026220635 2203 00 6520
CTRL_H = 0X02 _ automatic report
CTRL_L= 0X03 _ Channel 3
Bit[13] = 1 confirmed

Automatic Uplink

584f4341 01 0013 0000000026220635 0203 01 0000436d9748 184e
CTRL_H = 0X02 _ automatic report
CTRL_L= 0X03 _ Channel 3
Dati = 01 _ single register
0000436d9748 _ (237,59Vac)

8) DISABLE AUTOMATIC REPORT _ CANALE 3

Request (downlink)

584F4341 01 0026 0000000026220635 C203 F100 F30001 F4 0000 FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF 02DD

CTRL_H = 0X02 _ Automatic report
CTRL_L= 0X03 _ Channel 3
Bit[14] = 1 _ acknowledge request
Bit[15] = 1 _ writing command
Dati = F1 _ 00 report OFF
F3 _ 0001 time between airing
F4 _ registers address

NOTA: If flag F1 = 0x00 all following parameters are ignored