

DATA EXCHANGE PROTOCOL

For weighing indicators

**COMPANY RESERVES THE RIGHT TO MODIFY THE DESCRIPTION CONTAINED
HEREIN.**

1. Data exchange rate – 2400...57600 baud.
2. 8 data bits.
3. 1 stop bit.
4. No parity bit.

The structure of the frame for communication between PC and indicator.

FF	Adr	COP	Data	CRC	FF	FF
-----------	------------	------------	-------------	------------	-----------	-----------

Where: FF – delimiter (FFh code in hexadecimal format).

Adr – network address of your device; (The device network address consists of one byte if the first byte of the address takes the value of 01...9Fh. If the first byte of the address equals to zero the address field is extended and the following three bytes contain the device serial number.)

COP – code of operation (1 byte);

Data – content of the data frame (1...N bytes);

CRC – Cyclic Redundancy Code (1 byte) if this code is enabled in settings.

The start frame delimiter is a byte different from the delimiter (FFh), but not equal to FEh. However, it is understood that the first byte of the address field cannot take the delimiter (FFh) and FEh values, and there can be several start frame delimiters. The end frame delimiter is two bytes of the delimiter (FFh) received one after another. If the field of the extended address, code of operation, data or CRC contains FFh the transmitting end is completed with FEh code inserted after FFh, while on the receiving end FEh is discarded. CRC cannot be calculated on the basis of inserted and discarded FEh.

The structure of the frame for extended address field.

FF	0	SN2	SN1	SN0	COP	Data	CRC	FF	FF
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Where: SN2 – most significant byte of the device serial number.

SN1 – trail byte of the device serial number.

SN0 – least significant byte of the device serial number.

The serial number is transmitted in binary form.

The receiving end shall monitor the frame length which shall be not more than 255 bytes (except delimiters and inserted FEs), since it may lead to distortion of delimiters at the end of the frame.

The structure of the command transmitted by PC to your device.

FF	Adr	COP	CRC	FF	FF
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Where: FF – delimiter (FFh code in hexadecimal format).

Adr – network address of your device; (The device network address consists of one byte if the first byte of the address takes the value of 01...9Fh. If the first byte of the address equals to zero the address field is extended and the following three bytes contain the device serial number.)

COP – code of operation (1 byte);

CRC – Cyclic Redundancy Code (1 byte) if this code is enabled in settings.

Below you will find an example of CRC generation in the form of assembler insert for C++
 BYTE CDeviceTestDlg::CRCMaker(BYTE b_input, BYTE b_CRC)

```

{
  __asm
  {
      mov     al,b_input
      mov     ah,b_CRC
      mov     cx,8
mod1:      rol     al,1
            rcl     ah,1
            jnc     mod2
            xor     ah,69h
mod2:      dec     cx
            jnz     mod1
            mov     b_CRC,ah
  }
  return b_CRC;

```

CRC is generated using the primitive irreducible code seed to the 8-th power: P(X)-101101001b (least significant part of 69h). There is zero byte (00h) used on the transmitting end at the close of the array. CRC code can be calculated with CRCMaker routine by substituting array bytes, including zero byte, to b_input variable. During array transmission zero byte is replaced by the calculated byte of CRC. On the receiving end CRC can be calculated by substituting bytes of the received array, including received CRC code, to b_input. If calculated CRC equals to zero the array is received correctly. In the beginning of transmission/reception zero is recorded to b_CRC variable before starting CRC calculation. CRC cannot be calculated on the basis of inserted and discarded FEh.

Commands and Requests

“Assign a network address to the device”:

Request: Adr, COP, NAdr, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Cod of operation COP: **A0h**

NAdr: **01h...9Fh**

“Get the serial number from the device”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, SN2, SN1, SN0, CRC (if enabled in settings);

Code of operation COP: **A1h**

Where: SN2 – most significant byte of the device serial number.

SN1 – trail byte of the device serial number.

SN0 – least significant byte of the device serial number.

The serial number is transmitted in binary form.

“Run the procedure”:

Request: Adr, COP, PAR CRC (if enabled in settings);

Response: Adr, COP, PAR, CRC (if enabled in settings);

Code of operation COP: **A2h**

Where: PAR – requested procedure code 20h – internal zero calibration

21h – internal scale calibration

22h – internal zero and scale calibration

If you try to rerun a procedure that is already running and is not completed or you try to rerun a procedure that cannot be run the following is transmitted:

Response: Adr, COP, NER, CRC (if enabled in settings)

Code of operation COP: **EEh**

NER byte format: PAR – running procedure code

(see “**Response to request in case of device error**”)

“Transmit weighing point levels”:

Request: Adr, COP, Nout, CRC (if enabled in settings);

Response: Adr, COP, Nout, L0, L1, L2, H0, H1, H2, CRC (if enabled in settings);

Code of operation COP: **B1h**

The purpose may vary depending on the device version. To be stated specifically.

Nout – weighing point (discrete output) number 1 to 8.

L0-L2 – lower level of the weighing point. Binary-to-decimal format.

H0-H2 – upper level of the weighing point. Binary-to-decimal format.

Least significant bytes are transmitted first.

“Send custom parameters”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, D0, D1, D2, Tw0, Tw1, To0, T01, P0, P1, P2, R0, R1, R2, CRC (if enabled in settings);

Code of operation COP: **B3h**

The purpose may vary depending on the device version. To be stated specifically.

Binary-to-decimal format. Least significant bytes are transmitted first.

For “FLOWS” (Pt-003)

D0, D1, D2 – dose.

Tw0, Tw1, – stabilization time.

To0, To1, – operating load on-time.

P0, P1, P2 – bucket discharge threshold.

R0, R1, R2 – specified capacity (t/h).

E0, E1, E2 – restrictive AMOUNT.

For “ARRAYS” (GG-002)

Response: Adr, COP, D0, D1, D2, P0, P1, P2, L0, L1, L2, H0, H1, H2, M0, M1, CRC

D0, D1, D2 – DOSE (several batches).

P0, P1, P2 – BATCH (can=DOSE).

L0, L1, L2 – ROUGH weight of falling pillar.

H0, H1, H2 – PRECISE weight of falling pillar.

M0, M1 – TOLERANCE for a set dose.

“Set custom parameters”:

Request: Adr, COP, D0, D1, D2, Tw0, Tw1, To0, To1, P0, P1, P2, R0, R1, R2, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **B4h**

The purpose may vary depending on the device version. To be stated specifically.

Binary-to-decimal format. Least significant bytes are transmitted first.

For “FLOWS”

D0, D1, D2 – dose.

Tw0, Tw1, – stabilization time.

To0, To1, – operating load on-time.

P0, P1, P2 – bucket discharge threshold.

R0, R1, R2 – specified capacity (t/h).

E0, E1, E2 – restrictive AMOUNT.

For “ARRAYS” (GG-002)

Request: Adr, COP, D0, D1, D2, P0, P1, P2, L0, L1, L2, H0, H1, H2, M0, M1, CRC

Response: Adr, COP, CRC (if enabled in settings);

If parameter change is forbidden **Response:** “Response to request in case of device error”

D0, D1, D2 – DOSE (several batches).

P0, P1, P2 – BATCH (can=DOSE).

L0, L1, L2 – ROUGH weight of falling pillar.

H0, H1, H2 – PRECISE weight of falling pillar.

M0, M1 – TOLERANCE for a set dose.

“Set T factors– ICR (Initial Conversion Ratio) correction factors – for the device”:

Request: Adr, COP, A0, A1, A2, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **B5h**

Where: A0 – 4 bytes of the first factor

A1 – 4 bytes of the second factor

A2 – 4 bytes of the third factor.

Least significant bytes are transmitted first.

“Set T factors– OCR (Operational Conversion Ratio) correction factors – for the device”:

Request: Adr, COP, A0, A1, A2, A3, A4, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **B6h**

Where: A0 – 4 bytes of the first factor

A1 – 4 bytes of the second factor

A2 – 4 bytes of the third factor

A3 – 4 bytes of the fourth factor

A4 – 4 bytes of the fifth factor

Least significant bytes are transmitted first.

“Set linearization factors for the device”:

Request: Adr, COP, A0, A1, A2, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **B7h**

Where: A0 – 4 bytes of the first factor

A1 – 4 bytes of the second factor

A2 – 4 bytes of the third factor

Least significant bytes are transmitted first.

“Send fixed GROSS WEIGHT”:

Request: Adr, COP, NW, CRC (if enabled in settings);

Response: Adr, COP, W0, W1, W2, CON, CRC (if enabled in settings);

Code of operation COP: **B8h**

NW – number of stored GROSS weight

W0, W1, W2, (3 bytes) – weight, packed BCD – format

Least significant bytes are transmitted first.

CON byte contains a code.

D7 -= 1 minus sign

D6 -= 0 backup

D5 -= 0 backup

D4 -= 1 stabilization

D3 -= 1 overload

D2 -\

D1 --- comma position

D0 -/

Example: 05, 00, 00, 91,

i.e. weight minus 0.5 kg, weight is stabilized.

“Send current state of the weighing system”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, STATUS, CRC (if enabled in settings);

Code of operation COP: **BFh**

STATUS – system status byte.

The purpose may vary depending on the device version. To be stated specifically.
For batchers.

D7 -= 1 device restart, device is reset upon the request of restart counter.

D6 -= 1 error state (error type upon relevant command).

D5 -= 1 NET mode, = 0- GROSS mode.

D4 -= 1 key is pressed, but not read.

D3 -= 1 STOP batching.

D2 - = 1 weight recording based on the input signal.

D1 -= 1 current ADC calibration.

D0 -= 1 batching (weight gain).

“Zero weight readings”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **C0h**

“Send device settings”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, L0, L1, L2, N, Dis0, Dis1, Freq, VSEN, Filtr, CRC (if enabled in settings);

Code of operation COP: **C1h**

L0, L1, L2 (3 bytes) – upper weighing limit, packed BCD-format.

Least significant bytes are first.

N – (1 byte), number of decimal places (bits 0-2), current mode (bit 5) 1=gross, 0=net.

Dis0, Dis1 – resolution (2 bytes), least significant bytes are first, packed BCD-format.

Freq – ADC reading update rate (see below).

VSEN – supply type and supply voltage of loadcells.

VSEN byte format:

D7 - 0 – DC power supply, 1 – AC power supply.

D6 -- 0 backup.

D5 -- 0 backup.

D4 -\

D3 -\

D2 --- supply voltage (BCD format).

D1 -/

D0 -/

Filtr-**01h...10h** (see “Set the required filter bandwidth”)

“Send NET weight”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, W0, W1, W2, CON, CRC (if enabled in settings);

Code of operation COP: **C2h**

W0, W1, W2 (3 bytes) – weight, packed BCD-format

Least significant bytes are first.

CON byte contains a code.

D7 -- 1 minus sign

D6 -- 0 backup

D5 -- 0 backup

D4 -- 1 stabilization

D3 -- 1 overload

D2 -\

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D1 --- comma position

D0 -/

Example: 05, 00, 00, 91,

i.e. weight minus 0.5 kg, weight is stabilized.

“Send GROSS weight”:

Request: Adr, COP, CLC (if enabled in settings);

Response: Adr, COP, W0, W1, W2, CON, CRC (if enabled in settings);

Code of operation COP: **C3h**

W0, W1, W2 (3 bytes) – weight, packed BCD-format

Least significant bytes are first.

CON byte contains a code.

D7 -- 1 minus sign

D6 -- 0 backup

D5 -- 0 backup

D4 -- 1 stabilization

D3 -- 1 overload

D2 -\

D1 --- comma position

D0 -/

Example: 05, 00, 00, 91,

i.e. weight minus 0.5 kg, weight is stabilized.

“Current status of discrete inputs”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, INP0, (INP1,) CRC (if enabled in settings);

Code of operation COP: **C4h**

INP byte format:

D7	D6	D5	D4	D3	D2	D1	D0
X	X	X	X	X	X	X	X

If there are more than 8 lines, additional data bytes are transmitted. However, least significant bytes are transmitted first.

“Current status of discrete outputs”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, OUT0, (OUT1,) CRC (if enabled in settings);

Code of operation COP: **C5h**

OUT byte format: binary.

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If there are more than 8 lines, additional data bytes are transmitted. However, least significant bytes are transmitted first.

“Send display readings”

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, S1...Sn, L, CRC (if enabled in settings);

Code of operation COP: **C6h**

Where: S1 – the first (most significant) bit/line symbol, Sn – the last (least significant) bit/display symbol in ASCII format, i.e. most significant bits are transmitted first. The number of transmitted bits/symbols may vary depending on the device version.

L byte format:

D7	D6	D5	D4	D3	D2	D1	D0
0	0	1	0	Zero	Gross	Net	Fixed

Example: Adr, COP, 31h, 32h, 33h, 34h, 35h, 36h, 2Eh, 30h, 24h, CRC

Which corresponds to display reading: “123456,0” and “Gross” LED goes on.

“Sequence of input codes – product code”:

Request for the sequence of input codes (keys pressed on the terminal in the mode of input of product codes, password etc.)

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, K0, K1, ...Kn, CRC (if enabled in settings);

Code of operation COP: **C7h**

The response sequence of input codes is transmitted in ASCII format.

K0 – first input code, Kn – last input code.

“Send counter readings”

Request: Adr, COP, NW, CRC (if enabled in settings);

Response: Adr, COP, NW, W0, W1...Wn, CRC (if enabled in settings);

Code of operation COP: **C8h**

NW byte contains the totalizer reading – 0 to 9.

If NW byte contains “1” logic in the most significant bit, counter readings 0 to the set number of the least significant nibble (not more than 9) are sent in the response.

Counter reading 0 is predefined for restart counter.

W0, ...W4 (of N byte) – weight, packed BCD-format.

Least significant bytes are first.

For “FLOWS”:

1 – total weight.

2 – number of weighments.

3 – last weighment reading.

4 – current capacity (t/h).

5 – cycle time of the last weighment.

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Example: 01, C8, 01, 00, 00, 05, CRC (if enabled in settings);

“Send the hotkey code”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, KK, KCON, CRC (if enabled in settings);

Code of operation COP: **C9h**

KK byte contains ASCII code of the hotkey character.

KCON bits mean the following:

D7

D6

D5

D4

D3

D2

D1 – a new product code is entered, to be reset upon response (to C7).

D0 – keystroke, to be reset upon response (to C9).

“Request for multiple sending”

Request: Adr, COP, OPT, CRC (if enabled in settings);

Response: Adr, COP, DD0,...DDn, CRC (if enabled in settings);

Code of operation COP: **CAh**

The response is generated when relevant bits of OPT byte contain logic 1. The sending format corresponds to specific commands, except the operation code.

D7 – device restart counter.

D6 – status of the weighing system.

D5 –

D4 –

D3 – status of discrete outputs,

D2 – status of discrete inputs,

D1 – hotkey code, =0 – no,

D0 – GROSS weight, =1 – NET weight.

“Request for calibration parameters”

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, WO0, WO1, WO2, WZ0, WZ1, WZ2, D0, D1, D2, CRC (if enabled in settings);

Code of operation COP: **CBh**

Binary data

WO0-WO2 – reference weight in weight units.

WZ0-WZ2 – zero calibration weight in weight units.

D0-D2 – ADC code change corresponding to the calibration weight.

“Request for the ADC code”

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, A0, A1,...An, CRC (if enabled in settings);

Code of operation COP: **CCh**

A0, A1,...An – ADC code (integer), least significant bytes are first, the number and purpose of bytes may vary depending on the device version.

“Switch the device to the weight display mode”

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **CDh**

Readings are reset on the master display and the device is switched to the weight display mode.

“Start unsolicited data transmission”:

Start command for transmission of the data requested from the device. The data type is specified in the second command byte.

Request: Adr, COP, COM, CRC (if enabled in settings);

Response: Adr, COP, According to the request code, CRC (if enabled in settings).

Code of operation COP: **CEh**

(COM – code of request for particular sending (see above, e.g. CCh).

“Stop unsolicited data transmission”:

Stop command for transmission of the data requested from the device.

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings).

Code of operation COP: **CFh**

“Set control signals for discrete outputs”:

Request: Adr, COP, OUT0, (OUT1) CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **D0h**

Data-OUT byte format:

Bits correspond to relevant port outputs.

D7	D6	D5	D4	D3	D2	D1	D0
X	X	X	X	X	X	X	X

If there are more than 8 discrete outputs, additional data bytes are transmitted. However, least significant bytes are transmitted first.

“Set the weighing point level”:

Request: Adr, COP, Nout, L0, L1, L2, H0, H1, H2, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **D1h**

The purpose may vary depending on the device version. To be stated specifically.

Nout – weighing point (discrete output) number 1 to 8.

L0-L2 – lower level of the weighing point. Binary-to-decimal format.

H0-H2 – upper level of the weighing point. Binary-to-decimal format.

Least significant bytes are transmitted first.

“Display or output the character message”:

Request: Adr, COP, NUM, CH0, CH1...CHn, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **D2h**

NUM (in binary form) – device number (specified separately for each device, e.g.: 01h – master display TB-003, 02h – auxiliary display TB-003, 03h – matrix printer, 0Fh – display TB-015 etc.).

CH0, CHn – ASCII character codes displayed on the device.

The number of transmitted characters may vary depending on the device type.

“Memorize the character message in the terminal”:

Request: Adr, COP, POZ, CH0, CH1...CHn, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **D3h**

POZ (in binary form) – the number of terminal memory location corresponds to the product code (the number and size of locations are specified separately for each terminal).

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CH0, CHn – ASCII character codes memorized in the terminal.

The number of transmitted characters may vary depending on the terminal type.

“Set the input range for the device”

Request: Adr, COP, LEV, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **D8h**

LEV byte format:

Unipolar

01h – range 0 to 10 mV

02h – range 0 to 20 mV

03h – range 0 to 40 mV

04h – range 0 to 80 mV

Bipolar

11h - range -10 to +10 mV amplification 128

12h - range -20 to +20 mV amplification 64

13h - range -40 to +40 mV

14h - range -80 to +80 mV

“Set the ADC data update rate”

Request: Adr, COP, FREQ, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **D9h**

FREQ byte value:

01h – update rate of 10 Hz;

02h – update rate of 25 Hz;

03h – update rate of 37.5 Hz;

04h – update rate of 50 Hz;

05h – update rate of 75 Hz;

06h – update rate of 100 Hz;

07h – update rate of 150 Hz;

08h – update rate of 200 Hz;

09h – update rate of 225 Hz;

0Ah – update rate of 300 Hz;

0Bh – update rate of 350 Hz;

0Ch – update rate of 400 Hz;

0Dh – update rate of 450 Hz;

0Eh – update rate of 500 Hz;

0Fh – update rate of 750 Hz;

10h – update rate of 1000 Hz.

If the device does not support the specified frequency, the closest frequency is set from the frequency range.

“Set the required filter bandwidth”

Request: Adr, COP, FILTR, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **DAh**

FILTR byte format: **00h...10h**

00h – corresponds to the upper filter bandwidth.

10h – corresponds to the lower filter bandwidth.

The filter bandwidth is set in relative units. FILTR byte value depends on a filter bandwidth specific for the device (see Specifications).

“Set the required data exchange rate for the communication channel”

Request: Adr, COP, RATE, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **DBh**

RATE byte format: **01h...08h**

01h – 2400 baud

02h – 4800 baud

03h – 9600 baud

04h – 14400 baud

05h – 19200 baud

06h – 28800 baud

07h – 57600 baud

08h – 115200 baud

“Set the ADC input channel number”

Request: Adr, COP, CHAN, CRC (if enabled in settings);

Response: Adr, COP, CRC (if enabled in settings);

Code of operation COP: **DCh**

CHAN byte format:

00h - first ADC channel;

01h – second ADC channel;

02h – third ADC channel etc.

“BATCHING Control”:

Request: Adr, COP, CMD, CRC (if enabled in settings);

Response: Adr, COP, CMD, CRC (if enabled in settings);

Code of operation COP: **DFh**

The purpose may vary depending on the device version. To be stated specifically.

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CMD – control command (byte).

For BATCHERS (DD-001):

CMD=00h – STOP batching.

CMD=01h – START batching.

CMD=02h – PAUSE batching.

CMD=01h – CONTINUE batching.

Least significant bytes are transmitted first.

Upon STOP command the process is fully stopped and all outputs are disabled. The device can only be started upon reset.

Upon START command the batching cycle is started.

Upon PAUSE command all outputs are disabled; the device is in standby mode; upon reset the device switches to the initial state; the outputs are set according to the operation algorithms.

Upon CONTINUE command outputs are recovered and the device switches to batching mode.

“Get T factors– ICR (Initial Conversion Ratio) correction factors – from the device”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, A0, A1, A2, CRC (if enabled in settings);

Code of operation COP: **E5h**

Where: A0 – 4 bytes of the first factor.

A1 – 4 bytes of the second factor.

A2 – 4 bytes of the third factor.

Least significant bytes are transmitted first.

“Get T factors– OCR (Operational Conversion Ratio) correction factors – from the device”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, A0, A1, A2, A3, A4, CRC (if enabled in settings);

Code of operation COP: **E6h**

Where: A0 – 4 bytes of the first factor

A1 – 4 bytes of the second factor

A2 – 4 bytes of the third factor

A3 – 4 bytes of the fourth factor

A4 – 4 bytes of the fifth factor

Least significant bytes are transmitted first.

“Get linearization factors from the device”:

Request: Adr, COP, CRC (if enabled in settings);

Response: Adr, COP, A0, A1, A2, CRC (if enabled in settings);

Code of operation COP: **E7h**

Where: A0 – 4 bytes of the first factor

A1 – 4 bytes of the second factor

A2 – 4 bytes of the third factor

Least significant bytes are transmitted first.

“Response to request in case of device error”

Response: Adr, COP, NER, CRC (if enabled in settings);

Code of operation COP: **EEh**

NER byte format:

01h – error No. 1;

02h – error No. 2 etc.;

03h – zeroing range error;

04h – parameter change is forbidden;

05h – error of excessive sending length (input buffer);

06h – CRC-error code

20h – internal ADC zero calibration is not completed;

21h – internal ADC scale calibration is not completed.

“Request for the running procedure status”:

Request: Adr, COP, PAR CRC (if enabled in settings);

Response: Adr, COP, PAA, CRC (if enabled in settings);

Code of operation COP: **EFh**

PAR byte format:

D7	D6	D5	D4	D3	D2	D1	D0
0	X	X	X	X	X	X	X

Where: D6...D0 – requested procedure code

20h – internal zero calibration

21h – internal scale calibration

22h - internal zero and scale calibration

PAA byte format:

D7	D6	D5	D4	D3	D2	D1	D0
0/1	X	X	X	X	X	X	X

Where: D6...D0 – requested procedure code

20h – internal zero calibration

21h – internal scale calibration

22h - internal zero and scale calibration

D7 : 1 – procedure is currently running.

“Response to COP not compatible with this device”

Response: Adr, COP, NAME, Vers, CRC (if enabled in settings);

Code of operation COP: **FDh**

NAME – device name (character string)

Vers – software version number (character string).

The first string character is transmitted first.

Example: Adr, COP, TB102 V1.05, CRC.

Summary table of request codes and responses:

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B1h – Transmit weighing point levels	3
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