OCTOGON

MANUAL

EILD

BATCHING UNIT WITH A SELECTOR SWITCH

Installation and user manual – Program Unloading (S)



Document	Version	Date	Applies to
Installation and user manual	V00x	10/2026	EILD, Program Unloading (S)

This manual describes installation, connection and operation of the EILD with the Unloading program (S): a product is extracted from the weighed structure under control – with up to 99 formulas, automatic fall calculation, tolerance control, automatic loading and batching resume after a power cut. The other programs of the instrument have program manuals of their own.

octogon GmbH · Roseggerstrasse 16 · 8700 Leoben · Austria · office@octogon.org

www.octogon.org

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1 About this manual

Display texts are set in a fixed-width typeface, as they appear on the display, for example **CALIb**. Keys are written in square brackets (section 9.2). A menu path is a sequence of keys and display texts, for example:

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[ENTER]** › **FS-tEO** › **[TARE] [PRINT]** › **UEIGHt**

000000 stands for the weight display. "[ENTER]+[ESC]" means: press [ENTER] immediately followed by [ESC]. "[TARE] [PRINT]" means: scroll to the next menu item with the arrow keys. In the menus changes are applied right after pressing [ENTER]; no further confirmation is required.

1.1 Symbols

Notice	Meaning
Caution	Risk of electric shock, or: this operation must be performed by skilled personnel.
Important	Pay particular attention to the following instructions.
Note	Further information.

1.2 Scope

The EILD is supplied with one of several programs; the instrument shows the program at switch-on (chapter 10). This manual applies to the Unloading program (S, display **UNLOAD**). The other programs and the approved (legal for trade) version have manuals of their own; they are available from octogon.

Of the options, this manual describes the analog output (chapter 15), the E/EC option (formula selection, section 7.6) and the label printer (chapter 24). Connection and setup of the other options of the data sheet – fieldbuses, additional RS485, USB, external relay modules, weight input – are provided by octogon on request.

2 Safety, warranty and disposal

2.1 Recommendations for proper use

- Keep away from heat sources and direct sunlight.
- Protect the instrument from rain (except special IP versions).
- Do not wash with water jets (except special IP versions).
- Do not dip in water.
- Do not spill liquid on the instrument.
- Do not use solvents to clean the instrument.
- Do not install in areas subject to explosion hazard (except special Atex versions).

2.2 Recommendations for correct installation of the instrument

- The terminals indicated on the instrument's wiring diagram to be connected to earth must have the same potential as the weighed structure (same earthing pit or earthing system). If this cannot be ensured, connect the terminals of the instrument (including the terminal –SUPPLY) to the weighed structure with an earthing wire.
- Lead the cell cable individually to its panel input, do not share a conduit with other cables, and connect it directly to the instrument terminal strip without breaking its route with support terminal strips.
- Use "RC" filters on the instrument-driven solenoid valve and remote control switch coils.
- Avoid inverters in the instrument panel; if inevitable, use special filters for the inverters and separate them with sheet metal partitions.
- The panel installer must provide electric protections for the instruments (fuses, door lock switch etc.).
- It is advisable to leave the equipment always switched on to prevent the formation of condensation.

2.3 Maximum cable lengths

Connection	Length
RS485	1000 m with AWG24, shielded and twisted cables
RS232	15 m for baud rates up to 19200
Analog current output	up to 500 m with 0.5 mm^2 cable
Analog voltage output	up to 300 m with 0.5 mm^2 cable

2.4 Warranty

24 months from the date of the delivery note. The warranty covers only failures of defective components (due to construction defects or defects in materials) and includes replacement or repair of the components and related labour costs.

The warranty is automatically forfeited in the event of:

- tampering, deletion, removal of the identification label and/or serial number of the product;
- misuse, transformation, alteration, repair of products not carried out by the manufacturer.

A 1-year warranty from the date of the delivery note applies to defects in material or manufacture of the battery.

2.5 Guidelines for proper disposal

- This is electrical/electronic equipment and cannot be disposed of as municipal solid waste, but must be delivered to a recycling centre.
- Improper use or disposal can pollute the environment or damage human health.
- Non-compliance with these guidelines will be penalised in accordance with the regulations in force in the country of destination.
- Dispose of the packing and packaging as required by local regulations.

3 Installation of the load cells

3.1 Sizing of load cell capacity

For safety reasons, in case of static weighing, it is advisable to use the load cells at a maximum of 70–80 % of their nominal capacity (assuming that the load is uniformly distributed over the entire weighed structure); depending on the handling mode of the load (e.g. forklifts, bridge cranes), consider reducing the share of the nominal capacity further. With dynamic loads the installer has to estimate thrust speed, acceleration, frequency, etc.

3.2 Installing load cells

The load cells must be placed on rigid, stable in-line structures; use the mounting modules for load cells to compensate for misalignment of the support surfaces.

3.3 Connecting several cells in parallel

Connect several cells in parallel by using – if necessary – a watertight junction box with terminal box. The cell extension cables must be shielded, led individually into their piping or conduit and laid as far as possible from the power cables (with 4-wire connections use cables of at least 4 × 1 mm^2).

3.4 Protection of the cell cable

Use water-proof sheaths and joints in order to protect the cell cables.

3.5 Mechanical restraints (pipes, etc.)

When pipes are present, use hoses and flexible couplings with open mouthpieces with rubber protection; with hard pipes, place the pipe support or anchor bracket as far as possible from the weighed structure (at a distance of at least 40 times the pipe diameter).

3.6 Welding

Avoid welding with the load cells already installed. If this cannot be avoided, place the welder ground clamp close to the welding point to prevent sending current through the load cell body.

3.7 Windy conditions, knocks, vibrations

The use of weigh modules is strongly recommended for all load cells to compensate for misalignment of the support surfaces. The system designer must ensure that the plant is protected against lateral shifting and tipping relating to: shocks and vibration; windy conditions; seismic conditions in the installation setting; stability of the support structure.

3.8 Earthing the weighed structure

By means of a copper wire with suitable cross-section, connect the upper support plate of each cell with its lower support plate, then connect all the lower plates to a single earthing system. Electrostatic charges accumulated by the product rubbing against the pipes and the container walls are discharged to the ground without going through or damaging the load cells. Without a proper earthing system the weighing system may still work, but future damage to the cells and the connected instrument cannot be ruled out. Earthing continuity must not be ensured by using metal parts of the weighed structure.

Important Failure to follow the installation recommendations will be considered a misuse of the equipment.

4 Load cell testing

4.1 Load cell input test (quick access)

Menu **000000** › **[PRINT] 3 s** › **MU-CEL**

From the weight display, press [PRINT] for 3 seconds: the response signal of the load cells is displayed, expressed in mV with four decimals.

4.2 Load cell resistance measurement (digital multimeter)

– Disconnect the load cells from the instrument and check that there is no moisture in the cell junction box caused by condensation or water infiltration. If so, drain the system or replace it if necessary.
– The value between the positive and the negative signal wire must be equal or similar to the output resistance indicated in the load cell data sheet.
– The value between the positive and the negative excitation wire must be equal or similar to the input resistance indicated in the load cell data sheet.
– The insulation value between the shield and any other cell wire and between any other cell wire and the body of the load cell must be higher than 20 MΩ.

4.3 Load cell voltage measurement (digital multimeter)

– Take out the load cell to be tested from underneath the container, or alternatively lift the container support.
– Make sure that the excitation of the two wires of the load cell connected to the instrument is 5 VDC ± 3 %.
– Measure the response signal between the positive and the negative signal wire by directly connecting them to the tester, and make sure that it is between 0 and ± 0.5 mV.
– Apply load to the cell and make sure that there is a signal increment.

Note If one of the above conditions is not met, please contact octogon.

5 Product description

5.1 Main specifications

Manufacturer type: W200BOXEC

– Weight indicator with 6-wire load cell input
– 6-digit semi-alphanumeric red LED display (14 mm height)
– 8 signalling LEDs
– 5-key keyboard
– Real-time clock/calendar with buffer battery
– Two serial ports (RS485 and RS232) for connection to: PC/PLC up to 32 instruments (max. 99 with line repeaters) by ASCII or Modbus RTU protocol, remote display, printer
– Optional: integrated Profibus DP, DeviceNet, CANopen, Profinet IO, Ethernet/IP, Ethernet TCP/IP, Modbus TCP output

The instrument can be connected to an intelligent junction box (e.g. octogon ETLB) or to a weight transmitter. In the Unloading program, connection and setup of the ASCII protocol and of the fieldbuses are provided by octogon on request.

5.2 Version and dimensions

Item	Value
Housing	polycarbonate box, protection rating IP64, wall mounting
Dimensions	170 × 140 × 95 mm
Fixing	4 holes Ø 4 mm, centre distance 152 × 122 mm
Cable entries	4 + 2 caps for M16 × 1.5 cable glands
Terminals	removable screw terminal strips, 24 poles
Controls on the front	selector switch for the formula (EC option), START and STOP buttons

Caution The EILD is not compatible with the optional 115/230 VAC power supply; it is powered with 12/24 VDC.

5.3 Buffer battery

The instrument is equipped with an internal battery that keeps the internal clock running even in the event of power failure.

Important At the first start and after long periods of inactivity, leave the instrument on for at least 12 hours to fully charge the battery.

6 Technical specifications

Item	Value
Power supply and consumption (VDC)	12/24 VDC ± 10 %; 5 W (standard)
No. of load cells in parallel and supply	max. 8 (350 Ω); 5 VDC / 120 mA
Linearity / analog output linearity	< 0.01 % F.S.; < 0.01 % F.S.
Thermal drift / analog output thermal drift	< 0.0005 % F.S./°C; < 0.003 % F.S./°C
A/D converter	24 bit (16000000 points)
Max. divisions (measurement range ± 10 mV = sens. 2 mV/V)	± 999999
Measurement range	± 39 mV
Max. sensitivity of usable load cells	± 7 mV/V
Max. conversions per second	300
Display range	± 999999
No. of decimals / display increments	0 ... 4 / x1 x2 x5 x10 x20 x50 x100
Digital filter / readings per second	10 levels / 5 ... 300 Hz
Relay outputs	5 – max. 115 VAC; 150 mA (4 with analog output)
Digital inputs	3 – optoisolated 5 ... 24 VDC PNP (2 with analog output)
Serial ports	RS485, RS232
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 115200
Humidity (non condensing)	85 %
Storage temperature	–30 ... +80 °C
Working temperature	–20 ... +60 °C
Optoisolated analog output (optional), 16 bit – 65535 divisions	0 ... 20 mA; 4 ... 20 mA (max. 300 Ω); 0 ... 10 V; 0 ... 5 V; ± 10 V; ± 5 V (min. 10 kΩ)

6.1 UL version

For the UL version the source states instead: relay outputs 5 – max. 30 VAC, 60 VDC; 150 mA (4 with analog output); working temperature –20 ... +50 °C. Equipment to be powered by 12–24 VDC LPS or Class 2 power source.

7 Electrical connections

7.1 Basic information

- It is recommended that the power supply negative pole be grounded.
- It is possible to supply up to eight 350 Ω load cells or sixteen 700 Ω load cells.
- For 4-wire load cells, make a jumper between EX– and REF– and between EX+ and REF+ (section 7.4).
- Connect terminal –SUPPLY to the RS485 common of the connected instruments in the event that these receive alternating current input or that they have an optically isolated RS485.
- In an RS485 network with several devices, provide a 120 Ω termination resistance on the two devices located at the ends of the network (section 16.3).
- Option E/EC: selects the first 12 formulas (section 7.6).

Caution Connect the power supply specified on the plate found on the back of the instrument.

7.2 Terminals

Terminal	Signal
1	+SUPPLY (12/24 VDC)
2	–SUPPLY (12/24 VDC) · RS232, RS485: SHIELD, GND · E/EC OPTION: GND
3	RS232: TXD
4	RS232: RXD
5	OUTPUT No. 1: PRESET
6	OUTPUT No. 2: SET
7	OUTPUT No. 3: CYCLE END
8	OUTPUT No. 4: LOAD
9	OUTPUT COMMON
10	INPUT No. 1: START (+VDC min. 5 V, max. 24 V)
11	INPUT No. 2: STOP (+VDC min. 5 V, max. 24 V)
12	INPUT COMMON (–VDC 0 V)
13	–
14	INPUT No. 3: selectable (+VDC min. 5 V, max. 24 V) · otherwise: +ANALOG OUTPUT (0 ... 20 or 4 ... 20 mA)
15	OUTPUT No. 5: TOLERANCE/ALARM · otherwise: +ANALOG OUTPUT (0 ... 10 V)
16	E/EC OPTION · otherwise: –ANALOG OUTPUT COMMON
17	RS485: –
18	RS485: +
19	–LOAD CELL EXCITATION (–Exc) · LOAD CELL SHIELD
20	+LOAD CELL EXCITATION (+Exc)
21	+LOAD CELL REF/SENSE
22	–LOAD CELL REF/SENSE
23	–LOAD CELL SIGNAL (–Sig)
24	+LOAD CELL SIGNAL (+Sig)

Terminal 13 has no signal in the source.

7.3 Outputs and inputs in the Unloading program

Terminal	Function	Meaning
5	Output 1: PRESET	batching organ contact; switching sequence by **PSS** (section 17.1)
6	Output 2: SET	batching organ contact; switching sequence by **PSS**; single-speed batching uses this contact only
7	Output 3: CYCLE END	closes when the cycle end is reached
8	Output 4: LOAD	closes for the automatic loading of the scale
15	Output 5: ALARM/TOLERANCE	closes with an alarm or a weight out of tolerance
10	Input 1: START	batching start (chapter 20)
11	Input 2: STOP	batching stop
14	Input 3: selectable	approval, semi-automatic zero (default), net/gross weight or automatic load (section 13.2)

7.4 4-wire or 6-wire load cell

6-wire load cell: terminals 19 ... 24 as in section 7.2. With a 4-wire load cell, jumper EX– with REF– (terminals 19 and 22) and EX+ with REF+ (terminals 20 and 21); without these jumpers the instrument reports **ERCEL** (chapter 22).

7.5 Analog output (option)

With the analog output, terminals 14 (+ 0 ... 20 / 4 ... 20 mA), 15 (+ 0 ... 10 V) and 16 (– common) carry the output. Input 3, output 5 (ALARM/TOLERANCE) and the E/EC options are then no longer available. Current output: max. load 300 Ω; voltage output: min. load 10 kΩ.

7.6 E/EC option

On the EILD the selector switch for the formula (EC option) and the START and STOP buttons are built into the front. The selector switch selects one of the first 12 formulas; START starts the batching of the selected formula (section 20.3).

7.7 Power supply 115/230 VAC

The 115/230 VAC power supply is not available for the EILD (section 5.2).

8 Functions of the Unloading program

The instrument is able to extract automatically a settable amount of product from the weighing structure, driving the batching organ (including two-speed) through the PRESET and SET contacts. It offers:

- up to 99 settable formulas (chapter 19);
- batching resume after a blackout (section 20.6);
- automatic fall calculation (section 18.4);
- tolerance error control (section 18.5);
- precision batching through slow or tapping function (section 18.6);
- consumption storage and print of batching data (section 18.7, chapter 21);
- management of batching with big bags (section 18.9);
- alarm contact (section 13.3);
- automatic loading of the weighed structure (section 20.2).
- Batching start via keypad (set formula and number of cycles) or via external contact (section 20.3); batching sequence: section 20.1.
- Consumption storage: at the end of every batching the instrument stores the amount consumed for each formula; it can be viewed on the display in standby.
- Automatic loading: if minimum and maximum weight are set, the LOAD contact closes when the weight reaches the minimum and remains closed until the weight reaches the maximum.
- Calibration theoretical (full scale and load cell sensitivity) or real with sample weights (chapter 11).
- Alarm management: if an alarm occurs during batching, the instrument shows it, closes the related contact (if enabled) and waits for the operator to abort or continue the batching.

9 Display, keys and menu map

9.1 Signalling LEDs

LED	Function
NET	net weight (semi-automatic tare)
>0<	zero (deviation from zero not more than ± 0.25 divisions)
stability symbol	stability
kg	unit of measure: kg
g	unit of measure: g
W1 · W2 · W3	no function (no entry in the source)

Into menus the LEDs light up in sequence to indicate that no weight is displayed.

9.2 Keys

Key	Short press	Long press (3 s)	Into menus
[ESC] (>0<)	semi-automatic zero	tare resetting	cancel or return to previous menu
[TARE] (left arrow)	gross › net	net › gross	select figure to be modified or go to previous menu item
[START/STOP]	batching start / stop	–	–
[PRINT] (up arrow)	print menu	mV load cell test	modify selected figure or go to next menu item
[ENTER] (MENU/ENTER)	setting formulas and batching constants	formula selection for START input (EC not present)	confirm or enter in submenu
[ENTER]+[ESC]	setting general parameters (press [ENTER] immediately followed by [ESC])	–	–

9.3 System parameters menu

[ENTER]+[ESC] opens **CALIb**; [TARE] [PRINT] scroll to the other main items, [ENTER] opens the submenu.

Main item	Sub-items	Section
CALIb	**FS-tEO SEnSIb dIUIS ZErO IMP 0 UEIGHt unIt**	11
FILtEr	value 0 … 9, then **ANTpOn** / **AntPOF**	12.1
PArA 0	**0 SEt AUtO 0 trAC 0**	12.2
AnALOG (option)	**tYPE MOdE AnA 0 AnA FS COr 0 COr FS**	15
SErIAL	**rS485** / **rS232** › **nOnE ModbUS rIP HdrIP HdrIPn YHL PrIntr UEIMOd UEIrIP** › **bAUd Addr dELAY PArItY StOP**	16
ALArM	**COnS EMPtY UnLOAd PrOd?? tOL FALL SLAuE**	13.3
Out-In	**In 3**	13.2
tESt	**In Out AnALOG** (option) **EC** (option) **MU-CEL**	13.4
dAtE	date and time	17.2
PSUbLC	unlock password	25.4
SEttIn	**nEHt P PSS EndnEt bLACH**	17.1
InFO	**GEnrIC OP2**	17.3

Direct access from the weight display: [ESC] 3 s › **ZErO** (tare weight zero setting); [PRINT] 3 s › **MU-CEL** (mV test).

9.4 Formulas and batching constants menu

[ENTER] from the weight display opens **FOrP**; [TARE] [PRINT] scroll to the other main items.

Main item	Sub-items	Chapter
FOrP	**FOrP01** … **FOrP99** › **PrESEt SEt**	19
CAnCFO	**FOrP00** › **SUrE**	19
tOtAL*	total consumption › deletion date › **COn 1 COn 2** …	21
CAnCtO*	**SUrE**	21
COnSt	**MIn MASS tSIC tIMEAt tnUnLO MOdFAL FALDIv FALL tOL SLOU SLOUOn SLOUOF tOtAL PrInt nCOPY PC SLAuE rALArM bIGbAG**	18

*) Appears only if **tOtAL** = **YES** is set in the constants.

10 Instrument commissioning

Upon switch-on, the display shows in sequence:

- **111111** › **999999** (only in case of approved program);
- instrument model (e.g. **U200**);
- **SU** followed by the software code (e.g. **SU 5**);
- program type, in the Unloading program **UNLOAD**;
- **r** followed by the software version (e.g. **r 1.12.00**);

- **HU** followed by the hardware code (e.g. **HU 104**);
- serial number (e.g. **100515**).

Check that the display shows the weight and that the weight increases when the load cells are loaded. If not, check the connections and the correct positioning of the load cells.

- Instrument already theoretically calibrated (plant identification tag on the instrument and on the cover, load cell rated data entered): reset to zero (section 11.3), then check the calibration with sample weights and correct the indicated weight if necessary (section 11.5).
- Instrument not calibrated (no plant identification tag): load cell data unknown – real calibration (section 11.5); known – theoretical calibration (section 11.2); then reset to zero (section 11.3) and check with sample weights (section 11.5).
- Analog output: set type and full scale (chapter 15).
- Serial communication: set the parameters (chapter 16).
- Set the clock to the current date and time (section 17.2).

10.1 Required settings for the first batching

- Access the system parameters menu and set the **PSS** parameter (section 17.1).
- Access the formulas menu and set formula 01 (chapter 19).
- Start the batching by pressing [START/STOP] or by closing the START contact (chapter 20).

11 Calibration

11.1 Programming of system parameters

From the weight display, press [ENTER] immediately followed by [ESC]. [ENTER]: enter a menu or confirm the data entry; [PRINT]: modify the displayed figure or menu item; [TARE]: select a new figure or modify the displayed menu item; [ESC]: cancel and return to the previous menu.

11.2 Theoretical calibration

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[ENTER]** › **FS-tEO** › **[ENTER]** › **SEnSIb** › **[ENTER]** › **dIUIS**

This function allows the load cell rated values to be set, in sequence:

- **FS-tEO** (default **dEMO**): system full scale = capacity of one cell × number of cells. Example: 4 cells of 1000 kg › full scale 1000 × 4 = 4000. The instrument is supplied with a theoretical full scale **dEMO**, corresponding to 10000. To restore factory values, set 0 as full scale.
- **SEnSIb** (default 2.00000 mV/V): load cell rated sensitivity; enter the average value of the cells, settable 0.50000 … 7.00000 mV/V. Example 4 cells with 2.00100, 2.00150, 2.00200, 2.00250 › 2.00175 = (2.00100 + 2.00150 + 2.00200 + 2.00250) / 4.
- **dIUIS**: division (resolution), the minimum weight increment which can be displayed. It is calculated automatically after the calibration to 1/10000 of full scale; it can be changed between 0.0001 and 100 with x1 x2 x5 x10 increments.

Important By modifying full scale or sensitivity, the real calibration is cancelled and only the theoretical calibration is valid. If theoretical full scale and the full scale recalculated in real calibration are equal, the theoretical calibration is in use, otherwise the real one. By modifying the theoretical full scale, the system's parameters containing a weight value are set to default values.

11.3 Tare weight zero setting

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[ENTER]** › **FS-tEO** › **[TARE] [PRINT]** › **ZErO**

This menu may also be accessed directly from the weight display by holding [ESC] for 3 seconds. Perform it after the theoretical calibration. Use it to set to zero the weight of the empty system after commissioning and later to compensate zero variations due to product residues.

- Confirm **ZErO** with [ENTER]; the weight value to be set to zero is displayed, all LEDs are flashing.
- Confirm again: the weight is set to zero and stored to the permanent memory.
- Press [PRINT] to display the total weight reset by the instrument, the sum of all previous zero settings.

11.4 Zero value manual entry

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[ENTER]** › **FS-tEO** › **[TARE] [PRINT]** › **IMP 0**

Caution Perform this procedure only if it is not possible to reset the weighed structure tare, for example because it contains product that cannot be unloaded.

Set the estimated zero value (–999999 ... 999999; default 0).

11.5 Real calibration (with sample weights)

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[ENTER]** › **FS-tEO** › **[TARE] [PRINT]** › **UEIGHt**

After the theoretical calibration and the tare weight zero setting, calibrate with weights of known value and correct the display if necessary. Load a sample weight of at least 50 % of the maximum quantity to be weighed. Confirming **UEIGHt**, the current weight is displayed flashing, all LEDs are off; adjust the value with the arrow keys if necessary and confirm – the new weight appears with all LEDs flashing. After a further confirmation **UEIGHt** is shown again; pressing [ESC] repeatedly returns to the weight display.

Example: system of maximum capacity 1000 kg and 1 kg division, sample weights of 500 kg and 300 kg. Load both and correct the indicated weight to 800. Remove the 300 kg weight – the system must show 500; remove the 500 kg weight too – the system must read zero. If not, a mechanical problem affects the linearity; correct it before repeating the procedure.

Important If the correction changes the previous full scale by more than 20 %, all parameters with settable weight values are reset to default.

Linearisation on max. 8 points: repeat the procedure with up to eight different sample weights. It ends with [ESC] or after the eighth value; then only a new real calibration is possible (return to the weight display and re-enter the calibration menu). [PRINT] after confirming the sample weight shows the full scale recalculated from the maximum sample weight entered and the sensitivity **SEnSIb**.

11.6 Units of measure

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[ENTER]** › **FS-tEO** › **[TARE] [PRINT]** › **unIt**

Display	Unit
kILOG	kilograms
G	grams
t	tons
LB	pounds
Neuton	newtons
LItre	litres
Bar	bars
Atm	atmospheres
PIECe	pieces
NEU-M	newton metres
KILO-m	kilogram metres
OTHER	other unit not included in the list

If the print function is enabled, the symbol of the selected unit is printed after the measured value.

12 Filter on the weight and zero parameters

12.1 Filter on the weight

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **FILtEr**

The filter stabilises the weight display; a higher value increases the effect (0 ... 9, default 4). Confirming **FILtEr** shows the current value; after changing and confirming, the weight is displayed to check its stability. If it is not satisfactory, confirming brings back **FILtEr**. The filter stabilises a weight as long as its variations are shorter than the response time; set it according to the application and the full scale.

Filter value	Response time [ms]	Display and serial port refresh [Hz]
0	12	300
1	150	100
2	260	50
3	425	25
4 (default)	850	12.5
5	1700	12.5
6	2500	12.5
7	4000	10
8	6000	10
9	7000	5

Anti peak

When the weight is stable, the anti peak filter removes sudden disturbances with a maximum duration of 1 second. After the filter value select with [ENTER]: **ANTpOn** enabled (default), **AntPOF** disabled.

12.2 Zero parameters

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **PArA 0**

– **0 SEt** (0 to full scale; default 300; with decimals 300 – 30.0 – 3.00 – 0.300): maximum weight resettable by external contact, keypad or serial protocol.

– **AUtO 0** (0 to 10 % of full scale; default 0): if at switch-on the weight is lower than this value, it is reset; set 0 to disable.

– **trAC 0** (1 ... 5, default **nOnE**): when the weight is stable and after a second deviates from zero by a number of divisions smaller or equal to this value, it is set to zero; **nOnE** disables. Example: **dIUIS** = 5, **trAC 0** = 2 › zero tracking for variations up to 10 (**dIUIS** × **trAC 0**).

13 Outputs, inputs, alarm relay and test

13.1 Outputs

– Output 1: PRESET and output 2: SET – operation according to **PSS** (section 17.1).

– Output 3: CYCLE END – the relay is closed when the cycle end is reached.

– Output 4: LOAD – the relay is closed to perform the automatic loading of the scale.

– Output 5: ALARM/TOLERANCE – the relay is closed when an alarm is present or the weight is out of tolerance.

13.2 Inputs

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **Out-In** › **[ENTER]** › **In 3**

Input 1 is START, input 2 is STOP. For input 3 (default **ZEr0**) one of the following can be selected:

– **ne-LO** (NET/GROSS): closing the input for no more than one second › semi-automatic tare, net display; holding it closed for 3 seconds › back to gross.

– **ZEr0** (SEMI-AUTOMATIC ZERO): closing the input for no more than one second › the weight is set to zero (section 14.2).

– **COnS** (APPROVAL): the instrument starts the batching only after verifying that this input is closed.

– **LOAD** (LOAD): if the minimum (**MIn**) and maximum (**MASS**) weights are set, the automatic loading is performed during the batching (section 20.2).

13.3 Alarm relay closure

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **ALArM**

The ALARM relay closing can be enabled or disabled for each of the following alarms: approval (**COnS**), formula not programmed (**EMPtY**), no decrease in weight (**UnLOAd**), insufficient product (**PrOd??**), tolerance (**tOL**), fall (**FALL**), the PC did not read the batching data (**SLAuE**). **YES**: in presence of the alarm the relay is closed (default); **nO**: the relay is not closed even in the presence of the alarm.

13.4 Test

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **tESt**

Test	Meaning
In	inputs: open input **0**, closed input **1**
Out	outputs: **0** › the output must open; **1** › the output must close
EC	E/EC option: number of the selected formula; without or with inactive option **EC-ER**
AnALOG	analog output option: the signal ranges from minimum to maximum; **MA** current, **VOLT** voltage
MU-CEL	millivolt: load cell response signal in mV with four decimals

14 Semi-automatic tare and zero

14.1 Semi-automatic tare (net/gross)

Close the NET/GROSS input or press [TARE] for less than 3 seconds: the instrument displays the net weight (just set to zero), NET lights up. Unload the desired product – the display shows the weight actually extracted. The operation can be repeated many times. Back to gross: keep the NET/GROSS input closed or press [TARE] for 3 seconds.

– While the net weight is displayed, keep [PRINT] pressed to display the gross weight.
– Not allowed if the gross weight is zero (**InZEr0**).
– The semi-automatic tare is lost upon instrument power-off.

14.2 Semi-automatic zero

Close the SEMI-AUTOMATIC ZERO input: the weight is set to zero. Or press [ESC] for less than 3 seconds: **STORE?** is displayed for 3 seconds, [ENTER] sets the weight to zero. Only allowed if the weight is lower than **0 SEt** (section 12.2); otherwise **t‾‾‾‾** (upper dashes) appears and the weight is not set to zero.

15 Analog output (option)

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **AnALOG**

– **tYPE**: analog output type: 4 ... 20 mA, 0 ... 20 mA, 0 ... 10 V, 0 ... 5 V, ± 10 V, ± 5 V (default 4 ... 20 mA).
– **MOdE**: **GrOSS** follows the gross weight, **nEt** the net weight, **PLC** remote control via protocol (section 27.6).
– **AnA 0**: weight for the minimum analog output value. Only set a value other than zero to limit the range – e.g. full scale 10000 kg, 4 mA at 5000 kg and 20 mA at 10000 kg › 5000.
– **AnA FS**: weight for the maximum value; it must correspond to the value in the PLC program (default: calibration full scale). Example 4 ... 20 mA with 20 mA = 8000 kg › 8000.
– **COr 0**: zero correction so that the PLC indicates 0; "–" can be set on the last digit on the left. Example: with 4 ... 20 mA the PLC reads 4.1 mA at minimum › set 3.9 to obtain 4.0.
– **COr FS**: full scale correction so that the PLC indicates the value of **AnA FS**. Example: at full scale 19.9 mA › set 20.1 to obtain 20.0.

Caution For the ± 10 V and ± 5 V outputs the soldered jumper SW1 on the printed circuit board must be closed (short the pads with a drop of tin). The source describes the opening for the panel housing only; for the box version and the position of SW1 ask octogon.

Analog output type	Minimum	Maximum
0 ... 10 V	–0.150	10.200
0 ... 5 V	–0.150	5.500
± 10 V	–10.300	10.200
± 5 V	–5.500	5.500
0 ... 20 mA	–0.200	22.000
4 ... 20 mA	–0.200	22.000

The output can also be used in the opposite manner: **AnA 0** may be greater than **AnA FS**; the output then increases as the weight decreases. Example 0 ... 10 V with **AnA 0** = 10000 and **AnA FS** = 0: 0 kg › 10 V, 5000 kg › 5 V, 10000 kg › 0 V.

Important All analog outputs are ACTIVE and SINGLE ENDED and can only be connected to PASSIVE receiver devices. Voltage output: minimum load 10 kΩ; current output: maximum load 300 Ω.

16 Serial communication

16.1 Setting

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **SErIAL** › **[ENTER]** › **rS485 / rS232**

First select the port (**rS485** or **rS232**), then the protocol:

Protocol	Meaning
nOnE	no communication (default)
ModbUS	Modbus RTU, addresses 1 ... 99 (chapter 27)
rIP	continuous transmission to remote displays; the remote display shows net or gross weight according to its settings (**bAUd** = **9600**, **PArItY** = **nOnE**, **StOP** = **1**; section 26.1)
HdrIP	as **rIP**, for remote displays with decimal point (section 26.1)
HdrIPn	as **HdrIP**; if the remote display is set to gross and the instrument shows net, the remote display shows net alternated with **nEt**
YHL	continuous weight transmission (section 26.3)
PrIntr	printer (chapters 23 and 24)
UEIMOd / **UEIrIP**	weight reception (section 16.4)

With the optional function "batching data on remote displays" enabled, **rIPLAU** is additionally available on **rS485** (section 26.2).

16.2 Parameters

Parameter	Meaning
bAUd	transmission speed 1200, 2400, 4800, 9600, 19200, 38400, 115200 (default 9600)
Addr	instrument address 1 ... 99 (default 1)
dELAY	delay of the reply 0 ... 200 ms (default 0)
PArItY	**nOnE** no parity (default), **Euen** even, **Odd** odd parity
StOP	stop bits 1 or 2 (default 1)
EMPtY	number of blank lines between one printout and the next (printer)
HEADER	printing of a custom heading from PC: **YES** / **nO** (default **nO**)
LBLPAR	configuration parameters of the **LBLPRT** label printer (chapter 24)
PrtMOd	connected printer type: **P190**, **STAuP**, **STAut**, **TMT203**, **LBLPRT**

16.3 RS232 and RS485

Connection	Instrument	Counterpart
RS232 to PC (DB9 female)	RS232 TXD · RS232 RXD · GND	pin 2 · pin 3 · pin 5
RS485, several instruments	RS485 + · RS485 – · GND	RS485 + · RS485 – · GND of each instrument
RS485 directly to RS232 (no converter)	RS485 – · RS485 +	RXD · GND

– Terminals: RS485 – 17, RS485 + 18, shield/GND 2; RS232 TXD 3, RXD 4, shield/GND 2.

– If the RS485 network exceeds 100 m or baud rates over 9600 are used, connect two 120 Ω terminating resistors between "+" and "–" on the terminal strip of the furthest instruments. With other instruments or converters refer to their manuals.

– A two-wire RS485 output may be used directly on the RS232 input of a PC or remote display; this allows A SINGLE instrument to be used in a ONE WAY mode.

– For an RS485 converter at the PC (line up to 500 m), follow its wiring diagram.

16.4 Weight reading via serial port

The transmitting instrument is the one connected to the load cell, the receiving instrument the one which receives the weight via RS485 or RS232. Outputs, serial ports and analog output of the receiving instrument work as described, using the weight received. For this the weight reading mode must be set as **SErIAL** (section 25.5).

UEIMOd: the instrument works as if it were directly connected to the load cell; calibration and zero setting are possible. Protocol Modbus, the receiving instrument is master, the transmitting one slave. Transmitting instrument: select the port, **ModbUS**, set the communication parameters and the filter value. Receiving instrument: select the port, **UEIMOd**, the same parameters as on the transmitting one: **bAUd**, **SLAuE** (address of the transmitting instrument, 1 … 99, default 1), **dELAY**, **PArItY**, **StOP**. The transmitting instrument display is locked and shows the instrument model; to unlock it, disconnect the receiving instrument and release the keypad/display lock (section 25.7).

UEIrIP: the instrument receives the gross weight; calibration and zero setting on the transmitting instrument. Transmitting instrument: select the port, **rIP**, set the parameters. Receiving instrument: select the port, **UEIrIP**, **bAUd**, **dELAY**, **PArItY**, **StOP** as on the transmitting one, plus unit **unIt** and decimals **DECIM** of the received weight; these two items appear in the main menu after setting **UEIrIP**.

UEIMOd and **UEIrIP** can only be enabled on one port; in case of conflict the port set last remains active. Connection transmitting › receiving instrument: RS485 +, RS485 – and –SUPPLY, or RS232 TX › RX, RX › TX and –SUPPLY (terminals section 16.3).

17 Operation settings, date and info

17.1 Operation settings

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **SEttIn**

Parameter	Meaning
nEHt P	conditions for switching from the SET opening to the CYCLE END closing: **TIME** (default **YES**) – waiting time **tIMEAt** of the constants; **COMAnd** (default **n0**) – START input closure or [ENTER]; **STABLE** (default **n0**) – stable weight
PSS	operating mode of the SET and PRESET contacts (default **2**): **1** – at batching start only PRESET is closed; when the preset value is reached, PRESET opens and SET closes; when the set value is reached, SET opens. **2** – at batching start SET and PRESET close simultaneously; at the preset value PRESET opens (beginning of the slow phase), at the set value SET opens as well; for single-speed batching program **PSS = 2** and use only the SET contact. **3** – at batching start only PRESET is closed; at the preset value SET closes too; at the final set value both reopen
EndnEt	display during CYCLE END (unloading of the scale at the end of batching), default **n0**: **YES** – net, gross after the CYCLE END opening; **n0** – gross
bLACH	batching resume after a power failure, default **MAN**: **AUT** – at power restore **bLACH** appears for 3 seconds, then the batching resumes from the point of interruption; **MAN** – **bLACH** appears, [ENTER] resumes, [ESC] stops

17.2 Date and time setting

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **dAtE**

Pressing [ENTER] several times scrolls through day, month, year, hours, minutes; [TARE] selects the figure to modify, [PRINT] increases it, [ENTER] confirms and goes to the next item.

17.3 Info menu

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **InFO**

GEnrIC: identification data of the instrument — **INSTRM** model, **SU COD** software code, **PROGRM** program type, **Fw wer** software version, **ser nV** serial number. **OP2**: active options.

18 Batching constants

18.1 Programming

Menu **000000** › **[ENTER]** › **FOrP** › **[TARE] [PRINT]** › **COnSt** › **[ENTER]**

From the weight display press [ENTER], then press the arrow key several times until **COnSt** is displayed, and confirm. [ENTER]: enter a menu or confirm the data entry; [PRINT]: modify the displayed figure or menu item; [TARE]: select a new figure or modify the displayed menu item; [ESC]: cancel and return.

18.2 Minimum and maximum weight

- **MIn** (from 0 to full scale; default 10): minimum weight, value at which the scale is considered empty.
- **MASS** (from 0 to full scale; default 0): maximum weight that the scale can load.

If the minimum and maximum weights are set, the AUTOMATIC LOADING function is activated: the LOAD contact closes when the weight is lower than the minimum weight and opens again once the maximum weight is reached (section 20.2).

18.3 Times

- **tSIC** (0.0 ... 999.9 s; default 3.0): safe emptying time — the CYCLE END contact remains closed during this time to indicate that the batching is ended.
- **tIMEAt** (0.0 ... 999.9 s; default 5.0): waiting time between the SET batching end and the CYCLE END closing, to allow the weight to become stable.
- **tnUnLO** (0.0 ... 999.9 s; default 0.0): no product unload time — if there is no product extraction, the instrument waits for this time before activating the **UnLOAd** alarm.

18.4 Fall

Fall is the amount of product still falling after the batching STOP, which causes inaccuracy. The instrument anticipates the STOP to reduce it: AUTOMATIC fall (calculated by the instrument) or MANUAL fall (set by the operator).

Caution Set a waiting time **tIMEAt** such that the weight is stable at the end of the batching, otherwise the update of the automatic fall is not correct.

- **MOdFAL** (0 ... 99; default 0): 0 = MANUAL fall; different from 0 = AUTOMATIC fall, the value shows after how many batchings the fall value is updated (e.g. 3 = every three batching cycles). In cycles without update the waiting time is not applied, unless another function requires it (e.g. prints) — a high value therefore reduces the duration of batchings.
- **FALDIv** (only if **MOdFAL** is different from 0; from 0 to full scale; default 0): limit within which the automatic fall is updated according to **MOdFAL**; outside it is updated every cycle. A low value gives more accuracy, but batchings could take longer; 0 disables. Example **MOdFAL** = 3, **FALDIv** = 5, weight 100: update at every batching until the batched weight falls within 95 ... 105, then again every 3 batchings.
- **FALL** (from 0 to maximum weight; default 0): set the fall value for each formula (only if **MOdFAL** = 0) or display and/or modify the value calculated automatically (if **MOdFAL** is different from 0).

18.5 Tolerance

tOL (from 0 to maximum weight; default 0; for each formula): how much the batched weight may deviate from the value set in the formula. If it deviates by more than the tolerance, the instrument closes the ALARM/TOLERANCE contact; press [ENTER] to continue the batching. Example SET = 1000 and tolerance = 100: the batched weight must not be lower than 900 or higher than 1100 to allow the instrument to continue. Setting 0 disables the function.

18.6 Slow and tapping function

- **SLOU** (from 0 to maximum weight; default 0): single value valid for all formulas in place of the preset value. When the weight has reached the SET value minus this value, the slow phase starts by the PRESET contact. If the value is greater than the weight to batch, the whole batching runs in slow phase. Setting 0 disables. Example SET = 100, slow = 15: the slow phase begins at 85.
- Tapping function: if the batching organ has no slow speed, this function slows down the final phase by opening and closing the SET contact, increasing the accuracy. Set in **SLOU** the amount to be batched with the tapping function.
- **SLOUOn** (0 ... 9.9; default 0): time in which the SET relay remains closed during the slow phase; 0 disables.
- **SLOUOF** (0 ... 9.9; default 0): time in which the SET relay remains open during the slow phase; 0 disables.

18.7 Consumption, printing and PC

- **tOtAL** (default **nO**): consumption memory (total batched quantity) for each formula – **YES** enabled, **nO** disabled.
- **PrInt** (default **nO**): print batching data at cycle end – **YES** enabled, **nO** disabled.
- **nCOPY** (from 1 to 9; default 1): number of copies of the batching printout.
- **PC** (default **nO**): check for a PC connected to the instrument – **YES**: the instrument checks every 10 seconds; if no PC is detected, the alarm **PC** is displayed alternated with the weight. Active only with the Modbus protocol.
- **SLAuE** (default **nO**): waiting for confirmation of the batching data record from the PC – **YES**: the instrument waits for the PC to read the batching data before starting another batching, otherwise alarm **SLAuE**; **nO**: no waiting.

18.8 Switching of the ALARM/TOLERANCE relay on weight

rALArM (from 0 to full scale; default 0): a value different from 0 turns the ALARM/TOLERANCE contact into a setpoint contact – it no longer switches over in case of alarm or tolerance but closes when the weight reaches this value.

18.9 Big bag unloading

bIGbAG: enable when the scale has to be fully unloaded during batching (e.g. big bags or containers already prepared). It only works if minimum and maximum weight are set; batching is allowed even if less product than in the formula is on the scale. Sequence: when the weight has reached the minimum and the safe emptying time **tSIC** has elapsed, the batching is interrupted and AUTOMATIC LOADING is enabled (the operator replaces the container or big bag). Then press [ENTER] or close the START contact to resume from the point of interruption, or press STOP to cancel the batching.

19 Formulas

19.1 Formulas programming

Menu **000000** › **[ENTER]** › **FOrP** › **[ENTER]** › **FOrP01 … FOrP99** › **[ENTER]** › **PrESEt / SEt**

Select the formula and set **PrESEt** and **SEt**; max. 99 formulas can be set. **PrESEt** is NOT displayed if a slow value (**SLOU**) has been set in the constants. If a value for **PrESEt** or **SEt** is higher than the maximum weight **MASS** of the constants, **Error** is displayed.

19.2 Deleting formulas

Menu **000000** › **[ENTER]** › **FOrP** › **[TARE] [PRINT]** › **CAnCFO** › **[ENTER]** › **FOrP00** › **[ENTER]** › **SUrE**

Confirm **CAnCFO** with [ENTER]; to delete one formula enter its number, to delete all formulas enter 00 (**FOrP00**); confirm with [ENTER]. At **SUrE** press [ENTER] again to delete or [ESC] to cancel.

20 Batching

20.1 Sequence

Menu **000000** › **[START/STOP]** › **FOr 01** › **[ENTER]** › **C 0001**

After selecting the formula and setting the number of batching cycles, the first cycle starts as follows (in case of alarm, the batching may be cancelled by pressing [ESC] or closing the STOP input):

– 1. The instrument checks: the formula has been programmed, otherwise alarm **EMPtY**; input 3 (if set as approval) is closed, otherwise **COnS?** – close the input to start; the weight on the scale is enough to perform the batching, otherwise **PrOd??**. Only if **tOtAL** = **YES**: if the consumed amount exceeds 999000, **tOtAL** appears for a second; above 999999 it is set to zero. An AUTOMATIC LOADING in progress is interrupted.

– 2. The batching starts; SET and PRESET switch according to **PSS** (section 17.1). From here on **PSS** = 2 (default) is assumed: SET and PRESET are closed.

– 3. If during the batching the product is not extracted by at least 20 divisions within the time **tnUnLO**, the **UnLOAd** alarm is displayed.

– 4. PRESET opens as soon as – only if **SLOU** is set – the set value minus the slow value is reached, or the preset value of the formula is reached.

– 5. If a tapping value has been set, SET opens and closes according to the **SLOUOn** and **SLOUOF** times.

– 6. When the set value of the formula minus the fall value is reached, SET opens and the product extraction stops.

– 7. The display then shows the weight preceded by **A** and waits – only if **TIME** = **YES**: for the waiting time **tIMEAt**; only if **COMAnd** = **YES**: for START or [ENTER]; only if **STABLE** = **YES**: for a stable weight.

– 8. If **tOL** is set and the batched quantity is lower than the set quantity minus the tolerance, one single finishing re-start is made (SET closes, back to step 6), otherwise alarm **tOL**. If it is greater than the set quantity plus the tolerance, the **tOL** alarm appears. [ENTER] cancels the alarm and continues.

– 9. Cycle end: CYCLE END closes; the display shows the weight preceded by **E**; only if **PrInt** = **YES** the batching data are printed with date and time; only if **tOtAL** = **YES** the consumption is stored.

– 10. The batching ends (CYCLE END opens) only after the safe emptying time **tSIC** has elapsed.

– 11. Only if **SLAuE** = **YES**: the instrument waits for the data recording on the PC before being available for a new batching.

If several cycles have been set, the instrument starts a new cycle. If **bIGbAG** = **YES** and the weight reaches the minimum weight **MIn** during the batching, the instrument pauses and starts the AUTOMATIC LOADING; at the end it is paused again – [ENTER] or START resumes, STOP cancels.

20.2 Automatic loading

The AUTOMATIC LOADING loads product into the weighed structure by closing the LOAD contact; the display shows **LOAd** alternated with the weight. Prerequisite: minimum (**MIn**) and maximum weight (**MASS**) are set.

– Started manually by the operator (closing input 3, if set as **LOAD**) or automatically by the instrument (only if at the end of the batching the weight is lower than the minimum weight).

– Ends when the weight reaches the maximum weight **MASS**, when the operator closes input 3 (set as **LOAD**) again or presses STOP.

– To start it manually during a batching, first pause the batching with STOP (SET and PRESET open); at the end of the loading the instrument is paused – [ENTER] resumes, STOP cancels.

Caution Only with **bIGbAG** = **YES**: if during the batching the weight reaches the minimum weight **MIn**, the instrument waits for the safe emptying time **tSIC**, pauses the batching (SET and PRESET open) and starts the AUTOMATIC LOADING (LOAD closes). The display shows **LOAd** alternated with the weight; the operator replaces the big bag or container. Then the instrument waits paused – [ENTER] resumes, STOP cancels.

20.3 Batching start from external contact

The formula can be selected via an external selector switch (E/EC option, the first 12 formulas). Then close the external START contact for at least 0.5 seconds; if the conditions of section 20.1 are met, the selected formula is batched. Without selector switch the latest formula entered via the keypad is batched, or it is set as follows: press [ENTER] for 3 seconds, **FEST00** is

displayed, set the formula number with the arrow keys and confirm with [ENTER]. 00 recalls the latest formula set via keypad. If START is closed at the end of the batching, the same batching sequence is repeated.

20.4 Displaying during batching

During the batching the display shows the net weight of product preceded by **b**. [PRINT] shows the formula number, pressing it again the number of the running cycle.

20.5 Batching stop

- Open the START contact and close the STOP contact. If START is closed, the **StArt?** alarm is displayed.
- Pause at any time: press STOP, **PAUSE** is displayed. [ENTER] resumes the batching, pressing STOP again cancels it completely.

20.6 Resume batching after a power cut

If a blackout occurs during the batching (unloading phase included), **bLACH** appears when power comes back: [ENTER] resumes from the point of interruption, [ESC] cancels and returns to the weight display. With **bLACH** = **AUT** (section 17.1) the batching resumes automatically after 3 seconds. Cycles still to be performed are not deleted.

21 Consumption

21.1 Display

Menu **000000** › **[ENTER]** › **FOrP** › **[TARE] [PRINT]** › **tOtAL** › **[ENTER]** › **123456** › **[ENTER]** › **01.10.10** › **[ENTER]** › **COn 1** …

With **tOtAL** = **YES** in the constants the quantities batched for each formula are stored. **tOtAL** shows in sequence: the total quantity consumed for all formulas (divided by 100), the deletion date, the quantity consumed for each formula. The quantities are printed out in full.

21.2 Consumption deletion

Menu **000000** › **[ENTER]** › **FOrP** › **[TARE] [PRINT]** › **CAnCtO** › **[ENTER]** › **SUrE**

Confirm **CAnCtO**; at **SUrE** press [ENTER] again to delete or [ESC] to cancel. If the printer is enabled (chapter 16), an operation receipt is printed.

22 Alarms

Display	Meaning
PrOd??	at batching start the weight on the scale is lower than the quantity to be batched; [ESC] returns to the weight display
LOAd	alternated with the weight: automatic load in progress (activated when the weight is lower than the minimum, cleared when it is equal to or higher than the maximum weight)
COnS?	at batching start the APPROVAL input is open (input 3 = **COnS**); close the input or cancel with [ESC]
tOL	at batching end the weight differs from the formula value by more than the tolerance; [ENTER] cancels the alarm and continues
FALL	at batching start the fall value is higher than the product quantity to be batched; [ESC] cancels alarm and batching
EMPtY	at batching start the formula recalled is not programmed; [ESC] quits
PAUSE	STOP was pressed during batching; [ENTER] restarts, STOP terminates completely
bLACH	power failure during batching; [ESC] cancels, [ENTER] resumes from the point of interruption
UnLOAd	during batching the product is not extracted; cancelled automatically if the product decreases; STOP twice cancels the batching
StArt?	3 seconds, if you try to stop the batching (STOP twice or input) while the START input is closed; open the START input
PArSEr	batching cancelled; [ESC] quits; if the alarm persists contact octogon
ErUEIG	weight alarm, the current batching is cancelled; [ESC] back to the weight display, check the alarm
ErCEL	load cell not connected or incorrectly connected; load cell signal exceeds 39 mV; conversion electronics (AD converter) malfunctioning; 4-wire cell without jumpers EX−/REF− and EX+/REF+

Display	Meaning
nO COn	communication problems between transmitter and receiver; check electrical connections and instrument configuration
Er OL	the weight display exceeds 110 % of full scale
EErOL	weight display on the transmitting instrument exceeds 110 % of full scale
Er Ad	internal converter failure; check load cell connections, if necessary contact octogon
‾‾‾‾‾ (upper dashes)	the weight exceeds the maximum weight by 9 divisions
Er OF	maximum displayable value exceeded (higher than 999999 or lower than –999999)
EErOF	maximum displayable value exceeded on the transmitting instrument
t‾‾‾‾ (upper dashes)	weight too high: zero setting not possible
MAH-PU	in real calibration, after the eighth sample weight has been entered
Error	value beyond the permitted values; [ESC] quits the setting leaving the previous value (e.g. too many decimals for the full scale, value above the maximum, sample weight not matching the detected mV increase, analog output correction beyond the limits)
bLOC	lock active on menu item, keypad or display
nOdISP	number greater than 999999 or less than –999999, cannot be displayed
bAtrtC	buffer battery low, date and time lost; confirm with [ENTER], leave the instrument on for at least 12 hours; if the alarm persists contact octogon
dAtE?	incorrect date detected; check and correct it in the **dAtE** menu
COMAnd	waiting for START closure or [ENTER] to continue the batching
PC	PC is not connected
SLAuE	PC has not read the batching data
InZErO	gross weight equal to zero: semi-automatic tare not possible

22.1 Serial protocol alarms

Alarm	Modbus RTU, status register	RIP*	HDRIP-N
ErCEL	bit 0	**__0-F_**	**_ERCEL**
Er OL	bit 3	**__0-L_**	**_ER_OL**
Er Ad	bit 1	**__0-F_**	**_ER_AD**
‾‾‾‾‾ (upper dashes)	bit 2	**__0-L_**	######
Er OF	gross bit 4 · net bit 5	**__0-F_**	**_ER_OF**
t‾‾‾‾ (upper dashes)	response to the zero command: 'value not valid' error (code 3)	**__0-F_**	**0__SET**

"_" stands for a space. *) With remote displays on the **rIP** protocol, the display reads ‾‾‾‾‾ (upper dashes) if the message exceeds 5 digits.

With an alarm the relays open and the analog outputs go to the lowest possible value:

Range	0 ... 20 mA	4 ... 20 mA	0 ... 5 V	0 ... 10 V	± 10 V	± 5 V
Output value	–0.2 mA	3.5 mA	–0.5 V	–0.5 V	0 V	0 V

23 Printing examples

If the printer has been set (chapter 16), [PRINT] from the weight display opens the print menu:

- **UEIGHt**: prints the displayed weight;
- **COnSt**: prints the constants (minimum weight, maximum weight, etc.);
- **FOrP**: prints one or all formulas – press [ENTER] to display **FOrP01**, set the number or 00 for all;
- **tOtAL**: prints the consumption (only if **tOtAL** = **YES**, section 18.7).

"‹Model›" stands for the model identification printed by the instrument.

Batching printout

```
:::::::::::::::::::::::
‹Model›  UNLOAD   Addr:01
FORMULA:             01
CYCLE:       1/       1
DATE: 01/10/11 08:30:01
TARE            5680 kg
NET     1005:   1000 kg
```

Constants printout

```
:::::::::::::::::::::::
‹Model›  UNLOAD   Addr:01
DATE: 01/10/11 08:30:01
      CONSTANTS
MIN                  10
MASS                  0
TIME SIC            3.0
TIME WAIT           5.0
TIME NLOAD          0.0
FALL              MANUAL
SLOW                  0
TIME SLOWON         0.0
TIME SLOWOF         0.0
PSS                   2
TOTAL                NO
PRINT                NO
PC                   NO
SLAVE                NO
BLACKOUT          MANUAL
RELAY ALARM           0
BIGBAG               NO
FOR.      FALL    TOLER
05           0      100
48         178        0
```

Standard formula printout (SLOU = 0)

```
:::::::::::::::::::::::
‹Model› UNLOAD     Addr:01
DATE: 01/10/11 08:30:01
FORMULA:             02
SET             2000 kg
PSET             200 kg
```

Formula printout with slow active (SLOU = 100)

```
:::::::::::::::::::::::
‹Model› UNLOAD     Addr:01
DATE: 01/10/11 08:30:01
FORMULA:             02
SET             2000 kg
SLOW             100 kg
```

Consumption printout

```
:::::::::::::::::::::::
‹Model›  UNLOAD   Addr:01
DATE: 01/10/11 08:30:38
      CONSUMPTION
F01             1148 kg
F03             1456 kg
TOTAL           2604 kg
FROM: 01/09/11 09:11:13
```

Weight printout

```
:::::::::::::::::::::::
‹Model›  UNLOAD   Addr:01
DATE: 12/09/11 14:48:12
GROSS           1204 kg
NET              831 kg
TARE             373 kg
```

If the consumption is set to zero, “CONSUMPTION ERASED” is also printed.

24 Label printer

A label printer with RS232 connection and the ZPL programming language can be used with the instrument. Connection via RS232: TXD, RXD and GND of the instrument to TXD, RXD and GND of the printer (terminals section 16.3). In the serial communication menu select the printer **LbLPrt** under **PrtMOd**; the additional menu items then appear.

Note The compatibility table of the source lists the label printer with the Loading and Unloading programs for the panel and the box instrument, but not for the version with selector switch (EILD). Ask octogon before use.

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **SErIAL** › **[ENTER]** › **rS232** › **[ENTER]** › **PrIntr** › **[ENTER]** › **PrtMOd** › **[ENTER]** › **LbLPrt**

Menu item	Meaning
LbLPAr › **drv**	version of the driver on the PC where the label software is installed: **v8.0** or **V5.0**
LbLPAr › **LbLdOS**	linking of the printing data for the batching label (**DAT 1** ... **DAT 12**)
LbLPAr › **LbLALA**	linking of the printing data for the label with active alarm (**DAT 1** ... **DAT 12**)

With an approved instrument, a qualified access is required for these menu items (manual of the approved version).

24.1 Creating the label

– Create the layout of the label; for this the driver version of the PC must be known.

– Save the label on the printer: BATCHEX.ZPL – batching program (load/unload); BATCHAL.ZPL – batching program, active alarm (load/unload).

– On the instrument, link the parameters to be printed to the variable fields used on the label. All variable fields not present on the label must be set as **NONE**.

Firmware variable	Label field (driver 5.0)	Label field (driver 8.0)
DAT 1	FN1	FN11
DAT 2	FN2	FN12
DAT 3	FN3	FN13
DAT 4	FN4	FN14
DAT 5	FN5	FN15
DAT 6	FN6	FN16
DAT 7	FN7	FN17
DAT 8	FN8	FN18
DAT 9	FN9	FN19
DAT 10	FN10	FN20
DAT 11	FN11	FN21
DAT 12	FN12	FN22

24.2 Linkable parameters

Parameter	Meaning
NONE	the field is not printed (default)
FORP	batching formula number
CYCLE	cycle running
CYCLET	total cycles to run
TARE	tare set to zero
ALIBI	alibi memory
QTA	batched quantity
QTAIMP	quantity set in the formula
TOTIMP	total quantity set in the formula
TOTDOS	batched total quantity
ALARM	alarm during batching (only for **LbLALA**)
DATE	date set on the instrument in DD/MM/YY format
TIME	time set on the instrument in HH:MM:SS format

25 Reserved for the installer

25.1 Menu locking

Any menu can be locked. Select the menu (e.g. **CALIb**) and press [ESC] and [TARE] simultaneously for 3 seconds: the display shows **C.ALIb** (the left point indicates the lock). When the operator tries to enter this menu, **bLOC** is displayed.

25.2 Menu unlocking

With **C.ALIb** displayed press [ENTER] and [PRINT] simultaneously for 3 seconds; the unlock password is requested (if enabled) and the display shows **CALIb** without point.

25.3 Temporary menu unlocking

With **C.ALIb** displayed press [PRINT] and [TARE] simultaneously for 3 seconds; after the password (if enabled) all menus, including the locked ones, can be entered and modified. Returning to the weight display restores the lock.

25.4 Setting unlock password

Menu **000000** › **[ENTER]+[ESC]** › **CALIb** › **[TARE] [PRINT]** › **PSUbLC**

The password must contain 6 characters; to change a customized password the current one is required. **000000** (default) disables the unlock password.

25.5 Data deletion and program selection

Caution Perform these operations only after contacting octogon. After each operation **DONE** is displayed, press [ENTER] to continue; [ESC] cancels without changes.

Upon power-on hold [ESC] until **PROG** is displayed, then:

- Constants restore (the calibration is not erased): confirm **PROG**, select **PASSu** with the arrow keys, set code 6935 and confirm.
- Program selection: confirm **PROG** and select the program with the arrow keys; this manual applies to **UNLOAD** (single product unloading program). Other displays: **base**, **rip**, **LOAD**, **3PROD**, **6PROD**, **14PROD**, **MULTI** (no program).
- Weight reading mode: **CELL** – from load cells, intelligent junction box or weight transmitter connected to the instrument; **SErIAL** – via serial port (WEIMOD or WEIRIP, section 16.4).
- Approval status: **nOtLEG** not approved; **LEGAL** approved, single interval*; **LEGMI** approved, multi-interval*; **LEGMR** approved, multiple range*.
- Active regulation (not with **nOtLEG**): **OIML**, **NTEP**.
- Connection of an intelligent junction box or weight transmitter (not with **SErIAL**): **EStYES** connected, **EStnO** not connected.
- Enable the optional functions (section 25.6).

*) For the approved version request the proper manual and procedure from octogon, stating hardware code and serial number (chapter 10). When the indicator is used with an intelligent junction box or weight transmitter, the approval status set on both devices must be the same. By confirming, the instrument is restored to default and data is erased.

25.6 Optional function: batching data on remote displays

The Unloading program has one optional function: displaying batching data on remote displays (section 26.2). During program selection the display indicates whether it is enabled: **rPL On** enabled, **rPL OF** disabled.

25.7 Keypad or display locking

Press [ESC] immediately followed by [PRINT] and hold them down for about 5 seconds (also possible via the Modbus and ASCII protocols):

- **FrEE**: no lock;
- **HEY**: keypad lock – when a key is pressed **bLOC** is displayed for 3 seconds;

– **dISP**: keypad and display lock – the display shows the instrument model instead of the weight; when a key is pressed **bLOC** is displayed for 3 seconds.

26 Remote displays and continuous transmission

Common to all strings: with negative weight the first character from the left is "–" (ASCII 45); in case of error or alarm the weight is replaced by the messages of section 22.1. The checksum ckck is the XOR of the 8-bit ASCII codes of the characters between "&" and "\" (both excluded), as two hexadecimal digits 0 ... 9, A ... F in ASCII.

26.1 Continuous transmission to remote displays

The string is transmitted 10 times per second; **bAUd** = **9600**, **PArItY** = **nOnE**, **StOP** = **1**. **rIP**: remote displays e.g. octogon EDLD; **HdrIP** and **HdrIPn**: remote displays e.g. octogon EDLF, EDLG.

```
&NxxxxxxLyyyyyy\ckckCR
```

Character	Meaning
&	start (ASCII 38)
N	net weight identification (ASCII 78)
xxxxxx	6 characters of net weight (ASCII 48 ... 57)
L	gross weight identification (ASCII 76)
yyyyyy	6 characters of gross weight (ASCII 48 ... 57)
\	separation (ASCII 92)
ckck	2 checksum characters
CR	end (ASCII 13)

– **HdrIP**: the decimal point at the position shown on the instrument display can also be transmitted; if the value exceeds 5 digits, only the 5 most significant digits are transmitted, if negative no more than the 4 most significant; the decimal point shifts accordingly.

– **HdrIPn**: in addition the instrument transmits **nEt** every 4 seconds in the gross weight field if a net operation has been carried out.

– Below –99999 "–" is sent alternated with the most significant figure.

26.2 Batching data on remote displays

With the optional function (section 25.6) several remote displays, connected in parallel on RS485, show batching data – a maximum of 4 pieces of information, according to their address. Setting: [ENTER]+[ESC] › **CALIb** › **SErIAL** › **rS485** › **rIPLAU**; **bAUd** = **9600**, **PArItY** = **nOnE**, **StOP** = **1**. Check in the remote display manual whether it supports the protocol and whether the address can be changed.

Address	Displayed information
A	state of instrument / formula and product being batched / error code
B	remaining quantity of product to be batched
L	gross weight on the scale
N	net weight on the scale

```
&AsxxxxxBsyyyyy\ckckCR
```

Character	Meaning
&	start (ASCII 38)
A, B	remote display identification character (A, B, L, N)
s	minus sign "–" or other character with a decimal point "."
xxxxx, yyyyy	5 alphanumeric characters each (may include ".")
\	separation (ASCII 92)
ckck	2 checksum characters
CR	end (ASCII 13)

26.3 Continuous transmission YHL

The string is transmitted 5 times per second; after a net operation the net weight, otherwise the gross weight.

```
=xxxxxxxxx
```

Character	Meaning
=	start (ASCII 62)
xxxxxxxxx	9 characters of net or gross weight (ASCII 48 ... 57), LITTLE ENDIAN sorting

With negative weight the first character from the right is "–"; the decimal point is transmitted at the position given by the calibration. Example gross weight –20.7 kg: **`=7.02000-`**. In case of error or alarm "999999999" is sent.

27 Modbus RTU protocol

The Modbus RTU protocol allows the reading and writing of the registers listed below according to the Modicon PI-MBUS-300 specification. Selection: section 16.1. Check whether the Modbus master (or the development tool) numbers the registers from 40001 or from 0; in the second case the register is the table value minus 40001 (e.g. 40028 › 27).

Some data are written directly to the EEPROM, whose writing operations are limited (100000); avoid useless writings. The instrument does not write if the value equals the stored one. Numbers without prefix are decimal, with 0x hexadecimal. This chapter lists the registers and commands that apply in the Unloading program.

27.1 Data format and functions

1 start bit; 8 data bits, least significant bit sent first; settable parity bit and stop bit. Use only the following functions – others could be incorrectly interpreted and generate errors or blocks of the system:

Function	Description
03 (0x03)	READ HOLDING REGISTER (read programmable registers)
16 (0x10)	PRESET MULTIPLE REGISTERS (write multiple registers)

The interrogation frequency depends on the baud rate (the instrument stands by for at least 3 bytes before calculating a response); **dELAY** (section 16.2) adds a further delay.

	Address	Function	Content	CRC	Bytes
Function 3 query	A	0x03	1st register 0x0000 · no. registers 0x0002	2 byte	8
Function 3 response	A	0x03	no. bytes 0x04 · 1st register 0x0064 · 2nd register 0x00C8	2 byte	3 + 2 × no. registers + 2
Function 16 query	A	0x10	1st register 0x0000 · no. registers 0x0002 · no. bytes 0x04 · value 1 0x0000 · value 2 0x0000	2 byte	7 + 2 × no. registers + 2
Function 16 response	A	0x10	1st register 0x0000 · no. registers 0x0002	2 byte	8

27.2 Broadcast requests and communication errors

– Broadcast (address 0): read requests are not executed and not answered; write requests are executed but not answered.

– The strings are checked by CRC. In case of communication error the slave does not respond; the master must consider a time-out.

– If a correctly received string is not executable, the slave responds with an exceptional response: address, function + 0x80, code, CRC – code 1 ILLEGAL FUNCTION (function not valid or not supported), 2 ILLEGAL DATA ADDRESS (data address not available), 3 ILLEGAL DATA VALUE (invalid value).

27.3 List of available registers

A maximum of 32 registers per query or response. R = read only, R/W = read and write; H/L = high/low half of the DOUBLE WORD.

Register	Description	EEPROM	Access
40001	firmware version	–	R
40002	instrument type	–	R
40003	year of manufacture	–	R
40004	serial number	–	R
40005	program type	–	R

Register	Description	EEPROM	Access
40006	command register (section 27.5)	no	R/W
40007	status register (section 27.4)	–	R
40008 / 40009	gross weight H / L	–	R
40010 / 40011	net weight H / L	–	R
40012 / 40013	peak weight H / L	–	R
40014	divisions and units of measure (section 27.4)	–	R
40017	inputs	–	R
40018	outputs (read only in the Unloading program)	no	R
40050	instrument status (section 27.4)	–	R
40051 ... 40060	register 1 ... 10 (exchange registers, section 27.8)	no	R/W
40065 / 40066	sample weight for instrument calibration H / L (with command 101)	–	R/W
40067 / 40068	weight value corresponding to zero of the analog output H / L	yes	R/W
40069 / 40070	weight value corresponding to full scale of the analog output H / L	yes	R/W

27.4 Status, inputs, outputs, divisions

Status register 40007	Meaning
Bit 0	load cell error
Bit 1	AD converter malfunction
Bit 2	maximum weight exceeded by 9 divisions
Bit 3	gross weight higher than 110 % of full scale
Bit 4	gross weight beyond 999999 or less than –999999
Bit 5	net weight beyond 999999 or less than –999999
Bit 7	gross weight negative sign
Bit 8	net weight negative sign
Bit 9	peak weight negative sign
Bit 10	net display mode
Bit 11	weight stability
Bit 12	weight within ± ¼ of a division around zero

Instrument status 40050	Meaning (Unloading program)
0	instrument in idle condition (weight displaying)
1	formulas displaying
2	batching constants displaying
3	consumption displaying
4	system parameters displaying
5	setting of formula number and cycles to batch
6	instrument in batching condition
7	**EMPtY** alarm
9	**COnS?** alarm
10	**tArE?** alarm (per source, for the batching programs)
11	**UnLOAd** alarm
12	phase elapsing between the opening of SET and the closing of CYCLE END
13	batching pause
14	cycle end
16	**bLACH** alarm
18	**FALL** alarm
24	**PrOd??** alarm
25	**tOL** alarm
26	instrument waits for the printing to complete
27	operating menu displaying
29	AUTOMATIC LOADING phase
30	**USb Er** alarm (only with DATAUSB option)
33	**ErUEIG** alarm
34 / 35	**MEMFUL** / **MEMOur** alarm (only with DATAUSB or DATAPC option)
38 / 39	the operator is starting an automatic / manual batching
40	**SLAuE** alarm

Inputs 40017: bit 0 ... 2 = status of input 1 ... 3. Outputs 40018: bit 0 ... 4 = status of output 1 ... 5; read only in the Unloading program. Register 40014: L byte = division (**dIUIS**), H byte = unit of measure (**unIt**):

L byte	Divisor	Decimals	H byte	Unit
0	100	0	0	kilograms
1	50	0	1	grams
2	20	0	2	tons
3	10	0	3	pounds
4	5	0	4	newton
5	2	0	5	litres
6	1	0	6	bar
7	0.5	1	7	atmospheres
8	0.2	1	8	pieces
9	0.1	1	9	newton metres
10	0.05	2	10	kilogram metres
11	0.02	2	11	other
12	0.01	2		
13	0.005	3		
14	0.002	3		
15	0.001	3		
16	0.0005	4		
17	0.0002	4		
18	0.0001	4		

27.5 Commands to the command register 40006

Command	Description
0	no command
7	semi-automatic tare enabling (net weight displaying)
8	semi-automatic zero
9	semi-automatic tare disabling (gross weight displaying)
21	keypad lock
22	keypad and display unlock
23	keypad and display lock
99	save data in EEPROM
100	tare weight zero setting for calibration
101	save first sample weight for calibration
104	real calibration cancellation
106	add sample weight for calibration
201	batching: START
202	batching: PAUSE
203	batching: RESUMES from PAUSE
204	batching: STOP
205*	batching: accepts alarm and stop
207*	batching: ignores the alarm **tOL**
208	interruption of the AUTOMATIC LOADING
209	batching continues when **COMAnd** appears or if INSTRUMENT STATUS = 12 (only if **COMAnd** = **YES**)
250	confirmation of batching data reading
1114	check whether the batching data are ready (section 27.9)
2000 ... 2999	formulas and batching data via the exchange registers (section 27.8)
6811 / 6812	writing / reading the current value requested at the analog output
6813 / 6814	writing / reading the voltage value requested at the analog output

*) In case of alarm during the batching, command 205 accepts the alarm and stops the batching; with the **tOL** alarm, command 207 ignores it and continues the batching. To execute the same command twice consecutively, send command 0 between them.

27.6 Analog output

– **MOdE** = **GrOSS** or **nEt** (chapter 15): write or read the weight for zero and full scale in registers 40067/40068 and 40069/40070.

– **MOdE** = **PLC**: the output is set directly. Multiply the value by 10000, write the H bytes into REGISTER 1 (40051) and the L bytes into REGISTER 2 (40052) and send command 6811 (current, value in mA) or 6813 (voltage, value in V). Reading: send command 6812 or 6814, read 40051/40052 and divide by 10000.

Example	REGISTER 1 (H)	REGISTER 2 (L)	Total
write current 14 mA, hexadecimal	0x0002	0x22E0	0x000222E0
decimal	2	8928	140000
read voltage, hexadecimal	0x0000	0xCF76	0x0000CF76
decimal	0	53110	53110 › 5.3110 V

27.7 Real calibration commands

– Unload the system and reset the displayed weight with command 100 (tare weight zero setting for calibration).

– Load a sample weight and write its value to registers 40065/40066.

– Command 101 saves the first sample weight and removes the previously saved values; command 106 adds a sample weight and keeps the previous ones.

– Up to 8 different sample weights for a linearisation; the same sample weight only once per calibration, no sample weights of value zero. If successful, 40065/40066 are set to zero.

– Command 104 cancels the real calibration and returns to the theoretical one; the tare reset is not cancelled.

Enter the sample weight in divisions (register 40014): 100 kg with division 0.001 › 100000. 40065/40066 are a 32-bit signed number; negative values in two's complement if necessary: –56 kg › 40065 = 0xFFFF (–1), 40066 = 0xFFC8 (–56).

27.8 Formulas and data via the exchange registers

Values are exchanged via the exchange registers 40051 … 40060 together with the command register (CMD R = read command, CMD W = write command). For a read command first set the values marked "›" in the table. Procedure, example 2020: write the formula number to 40053 and the value 1 to 40054; send command 2020 to 40006; read 40060 until it contains the command echo (2020, data ready) or 0xFFFF (error in the command); then read 40051 … 40060 according to the table.

Variable	CMD R	CMD W	Register
Formulas programming	2000	2001	40051/40052 quantity H/L · › 40053 1 = set, 2 = preset · › 40054 1 = set, 2 = preset · › 40055 formula no.
Totals management (consumption per formula)	2020	–	40051/40052 quantity H/L · › 40053 formula no. · › 40054 1 = consumption
Totals deletion date and time	2022	–	40051 day · 40052 month · 40053 year · 40054 hours · 40055 minutes · 40056 seconds · › 40057 1 = consumption
Formula no. and cycles no. to run	2030	2031	40051 formula no. · 40052/40053 cycles H/L
Current cycle	2032	–	40051/40052 cycle H/L · 40053/40054 step H/L · 40055/40056 product H/L · 40057/40058 set H/L
Batching data reading	2100	–	section 27.9

For the Loading and Unloading programs the source gives the same assignment for 40053 and 40054 (1 = set, 2 = preset). Writing a formula: write the quantity to be batched into 40051/40052, 1 for SET or 2 for PRESET into 40053 and 40054, the formula number into 40055, and send command 2001. Reading a formula: set 40053, 40054 and 40055 in the same way, send command 2000 and, after the echo in 40060, read the quantity from 40051/40052.

27.9 Batching start, stop and data reading

– Start: write formula number and number of cycles to 40051 … 40053 and set them with command 2031; then send command 201. Stop: command 204.

– At the end of the batching the instrument makes the data available: send command 1114 and check that 40051 = 1 (data ready). This command gives no echo; instead wait for bit 7 of 40060 to be 1.

– Then send command 2100 with the step number in 40051 (Unloading program: step = 1), or 2100 with 1005 in 40051 for the initial tare, and read the response from 40051 ... 40060.
– After reading, send command 250; the instrument then accepts the **SLAuE** alarm and continues the batching sequence.

Query (40051)	Response 40051 ... 40060
Batching step: 1	40051/40052 real batched H/L · 40053/40054 theoretical batched H/L · 40055/40056 alarm H/L · 40057/40058 alibi ID H/L · 40059 product number · 40060 value detail
Initial tare: 1005	40051/40052 value H/L · 40055/40056 alarm H/L · 40060 value detail

Value detail (40060): bit 0 = negative value (refers only to the double word "real batched"), bit 7 = data ready.

27.10 Batching data alarms (40055/40056)

An alarm takes up one byte; with more than one alarm, up to four bytes (four alarms) are sent in chronological order.

Code	Alarm
0	no alarm
1	general alarm
2	**EMPtY**
3	**MASFOr**
5	**COnS?**
6	**bLACH**
7	**tOL**
8	**UnLOAd**
12	batching STOP
13	**ErUEIG**
14	**FALL**
15	**SLAuE**
22	**PrOd??**
23	**LOAd**: AUTOMATIC LOADING function
27	**USb Er** (only with DATAUSB option)
28 / 29	**MEMFUL** / **MEMOur** (only with DATAUSB or DATAPC option)

27.11 Communication example

Function 3: read gross weight (4000) and net weight (3000) from 40008 ... 40011; values in hexadecimal with prefix h, instrument address h01.

Direction	String
Query	h01 h03 h00 h07 h00 h04 hF5 hC8
Response	h01 h03 h08 h00 h00 h0F hA0 h00 h00 h0B hB8 h12 h73

Query structure: address, function, first register H/L (h0007 = 40008), number of registers H/L, CRC16 L/H. Response: address, function, byte count, data (h00000FA0 = 4000, h00000BB8 = 3000), CRC16 L/H. Further CRC16 examples: Modicon PI-MBUS-300.

28 Directives and standards

According to the manufacturer's declarations of conformity (EU and United Kingdom, 03/12/2024), which apply jointly to EILB, EILC and EILD:

Directive	Standards
2014/35/EU Low Voltage	EN 61010-1:2010+A1:2019 – not applicable for the VDC type (only for 230/115 VAC type)
2014/30/EU EMC	EN 55011:2016+A1+A11:2020 · EN 61000-6-2:2019 · EN 61000-6-4:2019 · EN 61000-4-2:2009 · EN 61000-4-3:2006+A2:2010 · EN 61000-4-4:2012 · EN 61000-4-5:2014+A1:2017 · EN 61000-4-6:2014
2014/31/EU NAWI (only if the M mark is applied)	EN 45501:2015 · OIML R76-1:2006
United Kingdom	Electrical Equipment (Safety) Regulations 2016, Electromagnetic Compatibility Regulations 2016, Non-automatic Weighing Instruments Regulations 2016 (only if the M mark is applied) – with the corresponding BS EN standards

The declarations of conformity are available from octogon on request.