EFA
Meat Processing Power
Ein Geschäftsbereich von Schmid & Wezel

MOBILE ANIMAL STUNNING DEVICE

VBE-M

Index number: _____**M0056/M**

Software version: _____**E5.5**

Serial number: _____/____/_____

MAULBRONN, 1ST EDITION, MAY 2021

CAUTION!

This user manual is an integral part of the VBE-M animal stunning device. It is absolutely necessary to read it carefully before installing, commissioning and using the device.

Please contact us in case of any questions or concerns.

The **stunning system** comes equipped with:

1. **VBE-M** animal stunning device (called the ***VBE-M device***)
   - **VBE-M** stunning unit (called the ***VBE-M***)
   - power system
   - trolley with tongs cover (called the ***trolley***)
2. stunning tongs (called the ***tongs***)
3. USB converter with cable (called the ***USB converter***)

This user manual applies to the animal stunning device **VBE-M**.

CAUTION!

The **SD card** contains the **user manual** of the device.

The device meets the requirements of:

- Council Regulation (EC) No 1099/2009 of 24 September 2009 on the protection of animals at the time of killing (***Regulation 1099/2009***);
- FSIS Directive 6900.2 of 15 August 2011 - “Humane Handling and Slaughter of Livestock” (***FSIS Directive***).

TABLE OF CONTENTS

1. WORK SAFETY AND OPERATING RULES

The device operates in two modes:

1. ***battery mode*** - when it is not connected to the mains;
2. ***mains mode*** - when it is connected to the mains.

CAUTION!
Read the entire user manual carefully before using the device.
Failure to comply with the safety rules listed below threatens work safety.

- persons who operate and maintain the device must read this manual or undergo training in operating the device as well as health and safety rules at the given workplace;
- the device cannot be used for purposes other than intended;
- all repairs should be carried out by the authorized service centre. Unauthorized modifications or repairs will void the warranty. The manufacturer is not responsible for damages resulting from malfunction of the device in which unauthorized changes have been made;
- maintenance work should be carried out after disconnecting the device from the power supply;
- it is forbidden to use the device with visible defects;
- in mains mode the device must be connected to the grounded mains;
- it is forbidden for minors or untrained persons to operate the device.

The device is equipped with an electronic protection system against electric shock.
However, it is forbidden to touch the electrodes.

CAUTION!
Wires and sockets of the device must not be exposed to water.
The inspection window of the device should always be tightly closed.
After finishing work, it is absolutely necessary to:

- disconnect the device from the mains (switch off the power system / disconnect from the mains);
- properly secure all elements of the stunning system;
- put all covers on the device sockets to protect against moisture;

Failure to follow the above recommendations may damage the device.

2. OPIS I OCENA RYZYKA RESZTKOWEGO

2.1. Description of residual risk

Although the manufacturer takes responsibility for the construction and proper marking of the device, in order to eliminate hazards during operation and maintenance, certain risk elements cannot be avoided. Residual risk results from incorrect or improper handling of the device by the operator. The greatest danger occurs when performing the following prohibited actions:

- operating the device without reading the user manual or without training in operating the device as well as health and safety rules at the given workplace;
- using the device for purposes other than intended;
- unauthorized modifications or repairs to the device;
- carrying out maintenance work without disconnecting the device from the power supply;
- using the device with visible defects;
- connecting the device to the ungrounded mains while working in mains mode;
- operating the device by minors or untrained persons.

2.2. Assessment of residual risk

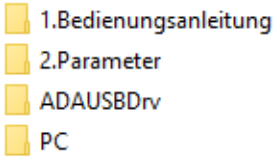
Recommendations to minimize residual risk (for people and the environment) when operating the device:

- carefully reading the user manual and undergoing training in operating the device as well as health and safety rules at the given workplace;
- using the device only for its intended purpose;
- carrying out modifications and repairs only by the authorized service centre;
- carrying out maintenance work only after disconnecting the device from the power supply;
- checking the technical condition of the device always before operation;
- connecting the device to the grounded mains while working in mains mode;
- preventing minors or untrained persons from accessing the device.

CAUTION!
Residual risk occurs in case of failure to comply with recommendations and guidelines listed above.

3. CONTENTS OF THE SDHC CARD

On the SDHC card of the device there are folders **Deutsch**, **English**, **Español** and **Français**, containing materials and information intended for device users:



No.	Subfolder name	Content
1	User manual	User manual, specification, parts list.
2	Parameters	The ***pigpar3.bin*** file with service parameters.
3	ADAUSBDrv	USB converter installation files
4	PC	Software installation files for connecting the **VBE-M** to a PC

Table 1 *Contents of subfolders*

4. INFORMATION AND WARNING SIGNS

4.1 Markings on the housing

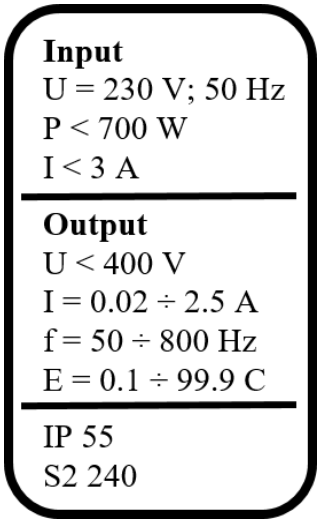


Fig. 1 *Information frame*

Input
U = 230 V (rated voltage)
f = 50 Hz (frequency)
P < 700 W (maximum power)
I < 3 A (maximum current)

Output
U < 400 V (maximum output voltage)
I < 0.02 ÷ 2.5 A (stunning current)
f = 50 ÷ 800 Hz (frequency)
E = 0.1 ÷ 99.9 C (electric charge)

IP55
S2 240 (duty cycle)

4.2 Warning and information pictograms

	Caution		Any repairs, maintenance or technical service must be carried out after disconnecting the device from the mains – pull out the plug from the socket
	Read the user manual		Do not touch! Dangerous voltage
	Must not be used by minors		This device is recyclable. It is subject to the selective collection of electrical and electronic equipment
	Do not connect the device to the mains if the connection or socket is damaged		Do not wash with pressure washers

***Table 2** The meaning of pictograms placed on the device*

4.3 Signal lights

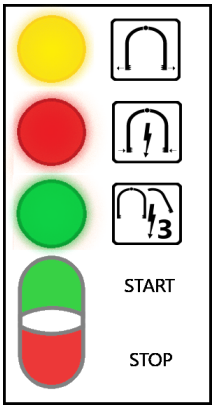


***Fig. 2** Signal lights*

- yellow light - **END OF STUNNING**
- red light - **STUNNING**
- green light - **HEART STUNNING**
- main switch - **START/STOP**

The device housing door is sealed. Breaking the seals will void the warranty

5. DESIGN, TECHNICAL DATA AND PARTS LIST

Equipment of the **VBE-M** device:

1. **VBE-M** stunning unit;
2. power system;
3. trolley with tongs cover.

The **VBE-M** stunning unit (1) and the power system (2) are permanently attached to the trolley (3).
The trolley is equipped with additional wheels for transporting the device up the stairs.
On the side of the **VBE-M** device housing (1) there are:

- oblique socket for connecting the tongs;
- PC connection socket.

On the side of the power system housing (2) there is a mains connection socket.

Detailed technical data and a list of components of the device can be found in:

- **Specification** - see: ***Appendix 2***;
- **Parts list** - see: ***Appendix 3***.

5.1 Types of tongs

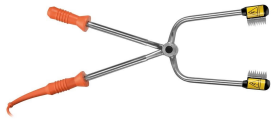
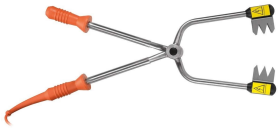
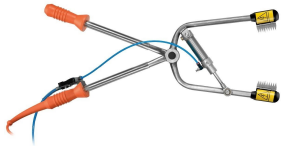
			
X	**XO**	**XP**	**YP**

Table 3 *Types of animal stunning tongs*

CAUTION!
Before inserting, removing and when transporting (in the trolley) tongs connected to the **VBE-M** stunning unit (1), turn off the **VBE-M** unit (1) using the STOP on the START/STOP main switch (see *Fig. 2*).

6. INTENDED USE AND PRINCIPLE OF OPERATION

The device is intended for pre-slaughter stunning animals using electric current with voltage lower than 400 V and frequency in the range of 50-800 Hz.

The device must be used only for its intended purpose

The main controller of the device operates in 4 modes:

- ***boot mode*** - after turning on. The device checks all settings and prepares for operating;
- ***readiness for operation mode*** - the device has been properly turned on and is ready for use;
- ***stunning mode*** - the device measures the animal's resistance, starts the stunning process and maintains the set parameters;
- ***programming mode*** - is used to set parameters (general and for selected programs). The user can change the parameters of the selected program depending on the type, species and size of the animal. Editing parameters - see: section ***9.2***.

The device works according to the selected program with specific stunning parameters.

The display **[Prog]** shows selected program - it can be changed using the P button.
The preset stunning programs can be found on the SDHC card:

- path to file: *SD card/English/Parameters/**pigpar3.bin***

The stunning voltage strictly depends on the animal's resistance. The resistance depends on the type, weight of the animal and method of electrode application. The device measures the resistance and adjusts the voltage to obtain the required stunning current. ***Table 4*** shows the minimum current required (***Regulation 1099/2009***):

Type of animal	Minimum current [A]
sheep, goats, calves	1.0
lambs	0.6
pigs	1.3
cattle <6 months ÷ >6 months	1.25 ÷ 1.28

Table 4 *Minimum current depending on the type of animal*

7. MAIN CONTROLLER

7.1 Control panel - buttons, indicators and displays

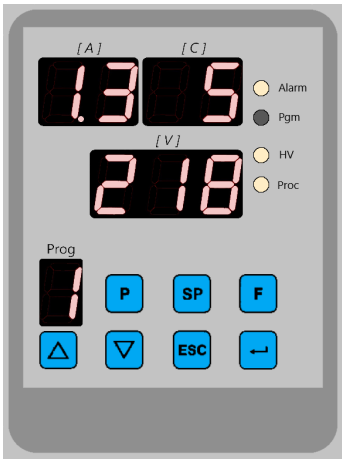


Fig. 4 *Control panel*

Buttons	
△ ▽	selecting between parameters / parameter values
↵	enter (confirm)
ESC	escape (exit)
P	switching the stunning program
SP	changing the value on the display **[V]** from voltage to frequency and back
F	service button

Signaling indicators		Displays in readiness for operation and stunning modes	
[Alarm]	no SDHC card	[Prog]	stunning program number
[Pgm]	programming mode	[A]	current [A]
[HV]	high voltage on the electrodes	[C]	duration [s]
[Proc]	inactive	[V]	voltage [V] / frequency [Hz] - change with SP button

Displays in programming mode	
[A]+[C]	name of the edited parameter
[V]	value of the edited parameter
[Prog]	number of the edited program

Table 5 *Description of the control panel*

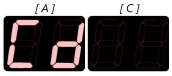
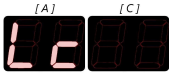
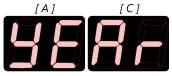
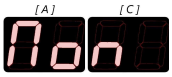
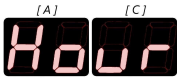
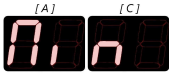
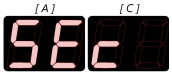
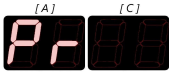
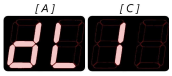
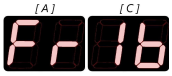
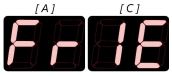
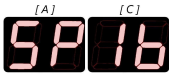
The control panel is used to change the following stunning program values:

- current [A];
- frequency [Hz];
- stunning duration [s].

The control panel also allows to:

- define new stunning programs;
- set current date and time.

7.2 Main controller parameters that can be reprogrammed

Parameter available after entering the programming mode	
	Cd - **access code**, allows access to other parameters
General parameters	
	Lc - allows setting the access code: ● **0** - no access code (all other parameters are visible without entering the access code); ● any value other than **0** activates the **Cd** parameter (entering the other parameters will be possible after entering this value); ● **5** - factory set access code.
	tSG - does not apply to VBE-M
	YEAr - setting the date (year)
	Mon - setting the date (month)
	dAY - setting the date (day)
	Hour - setting the time (hours)
	Min - setting the time (minutes)
	SEc - setting the time (seconds)
	toFH [s] - does not apply to VBE-M
	Pr - allows to select the stunning program
Parameters of the selected stunning program	
	toFF [s] - pause between subsequent stuns (delay time between the stunning current decay and the end of the stunning process
	dL1 [s] - **phase 1** - duration of stunning phase 1 (cannot be shorter than 1.0 s)
	Fr1b [Hz] - initial frequency of stunning phase 1
	Fr1E [Hz] - end frequency of stunning phase 1. The frequency changes from Fr1b to Fr1E over the duration of dL1
	SP1b [A] - initial current of stunning phase 1

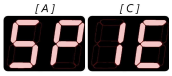
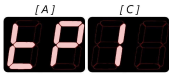
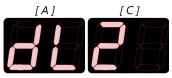
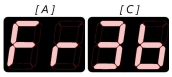
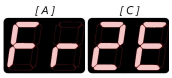
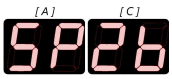
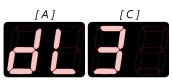
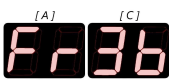
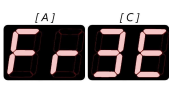
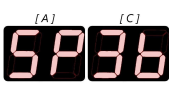
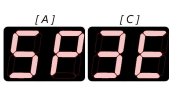
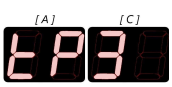
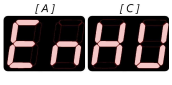
	SP1E [A] - end current of stunning phase 1. The current changes fluently from SP1b to SP1E over the duration of dL1
	tP1 - **stunning mode 1** - determines the stunning mode in phase 1 (dL1) - detailed description: section ***7.3***
	dL2 [s] - **phase 2** - duration of stunning phase 2. Setting dL2 to **0** cancels this phase. The following parameters will then disappear from the menu: Fr2b; Fr2E; SP2b; SP2E; tP2
	Fr2b [Hz] - initial frequency of stunning phase 2. The frequency jumps from Fr1E
	Fr2E [Hz] - end frequency of stunning phase 2. The frequency changes from Fr2b to Fr2E over the duration of dL2
	SP2b [A] - initial current of stunning phase 2. The current jumps from SP1E
	SP2E [A] - end current of stunning phase 2. The current changes fluently from SP2b to SP2E over the duration of dL2
	tP2 - **stunning mode 2** - determines the stunning mode in phase 2 (dL2) - detailed description: section ***7.3***
	dL3 [s] - **phase 3** - duration of stunning phase 3. Setting dL3 to **0** cancels this phase. The following parameters will then disappear from the menu: Fr3b; Fr3E; SP3b; SP3E; tP3
	Fr3b [Hz] - initial frequency of stunning phase 3. The frequency jumps from Fr2E. If dL2=0, the frequency jumps from Fr1E
	Fr3E [Hz] - end frequency of stunning phase 3. The frequency changes from Fr3b to Fr3E over the duration of dL3
	SP3b [A] - initial current of stunning phase 3. The current jumps from SP2E. If dL2=0, the current jumps from SP1E
	SP3E [A] - end current of stunning phase 3. The current changes fluently from SP3b to SP3E over the duration of dL3
	tP3 - **stunning mode 3** - determines the stunning mode in phase 3 (dL3) - detailed description: section ***7.3***
	SPt [s] - duration counted from the beginning of the stunning process. After reaching the set value, the end of the stunning process will be signalled (the yellow light and the sound alarm turn on) - it means that the electrodes should be removed from the animal's body
	EnHV – activation of selected stunning program: ● **0** - inactive; ● **1** - active - measuring voltage on electrodes (stunning process starts automatically after pressing electrodes to the animal's body); ● **2** - does not apply to VBE-M; ● **3** - does not apply to VBE-M.

Table 6 *Description of the controller parameters that can be reprogrammed*

7.3 Description of parameters tP1, tP2 and tP3 - stunning modes

Stunning modes **tP1**, **tP2** and **tP3** define how the stunning process takes place in the individual stunning phases (**dL1**, **dL2**, **dL3**).

Possible variants of setting parameters **tP1**, **tP2** and **tP3**:

- 0 - ***head, sinusoidal*** *waveform*;
- 1 - ***head, rectangular*** *waveform*;
- 4 - ***head-heart***, ***sinusoidal*** *waveform*, continuation of stunning after the ***transition phase***;
- 5 - ***head-heart***, ***rectangular*** *waveform*, continuation of stunning after the ***transition phase***;
- 12 - ***head-heart***, ***sinusoidal*** *waveform*, suspension of stunning after the ***transition phase***;
- 13 - ***head-heart***, ***rectangular*** *waveform*, suspension of stunning after the ***transition phase***.

The other values of the parameters **tP1**, **tP2** and **tP3** (2, 3, 6, 7, 8, 9, 10, 11) are inactive.
The rectangular waveform allows for stunning with higher current but the frequency is limited to 250 Hz.

Stunning modes:

- *continuous mode* - ***head***:

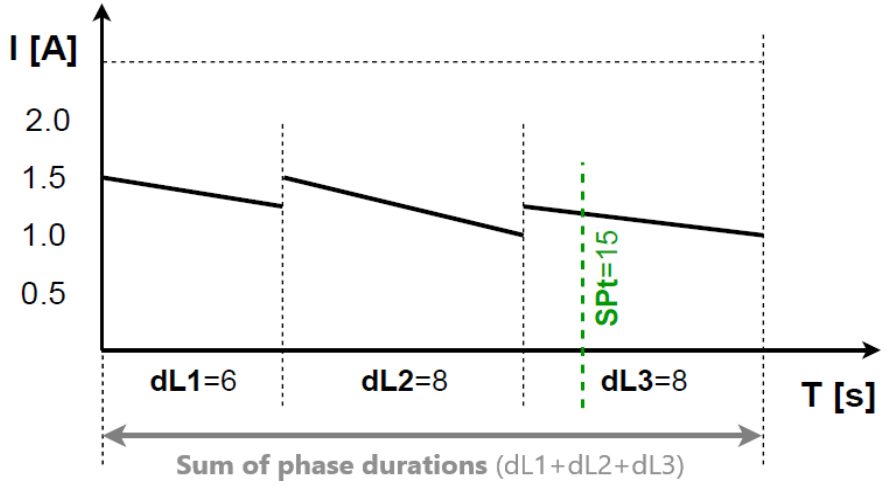


Diagram 1 *Current intensity diagram - continuous stunning*

  - for each phase (**dL1**, **dL2**, **dL3**) parameters **tP1**, **tP2** and **tP3** should be set to **0** or **1**;

- *two-stage mode* - ***head-heart***:

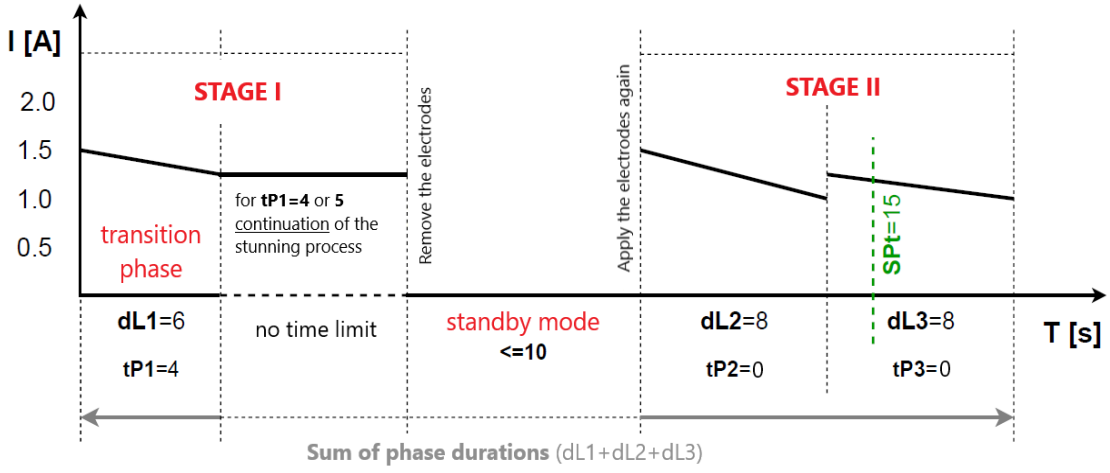


Diagram 2 *Current intensity diagram - stunning with continuation in the transition phase*

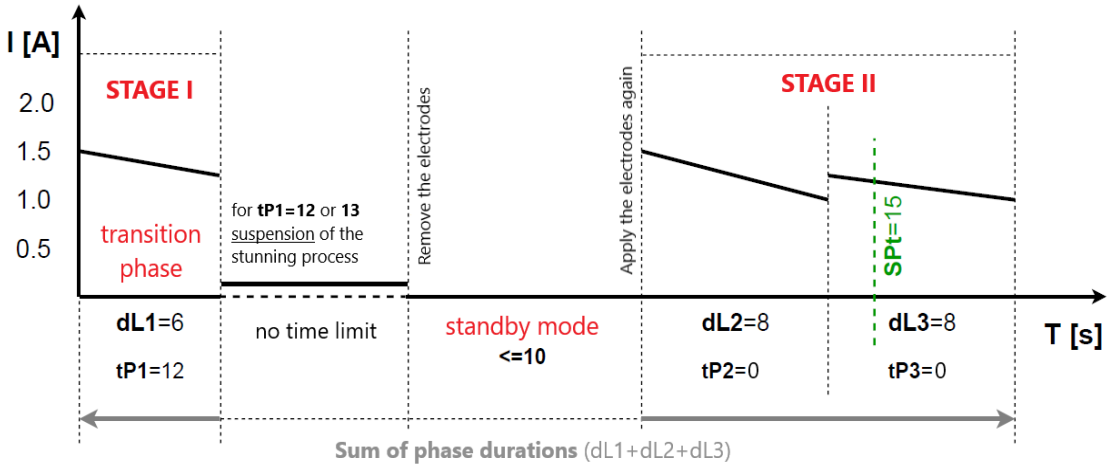


Diagram 3 *Current intensity diagram - stunning with suspension after the transition phase*

- one of phases (**dL1**, **dL2**) should be set as ***transition phase*** - the **tP*** parameter for this phase should be set to **4**, **5**, **12** or **13** (depending on the selected course of the stunning process);
- after applying the electrodes to the animal's head, the device starts **STAGE I** of stunning (***head***)
- after the ***transition phase*** is over, a light signal (yellow lamp) and a sound signal will indicate the moment when the electrodes should be removed from the animal's head (the signal will turn off when the electrodes are removed from the head):
  - for **tP* = 4** or **5** after the ***transition phase*** is over, the device continues the stunning, maintaining the values from the end of the ***transition phase*** - after removing the electrodes from the animal's head, the device goes into the ***standby mode*** (the stunning is stopped);
  - for **tP* = 12** or **13** after the ***transition phase*** is over, the device suspends the stunning, the measuring voltage appears on the electrodes - after removing the electrodes from the animal's head, the device goes into the ***standby mode***;
- when the green light turns on, **STAGE II** of stunning (***head-heart***) can be started.

CAUTION!
After entering the ***standby mode***, the device waits up to **10 seconds** for the re-application of the electrodes to the animal's body and for the start of **STAGE II** of stunning - the application of the electrodes after the specified time will be registered as stunning of the next piece (the stunning process will start from the beginning).

8. INSTALLING AND TURNING THE DEVICE ON

8.1 Turning the device on

CAUTION!
Operation of the device in high air humidity or during rainfall is inadvisable.
The main START / STOP switch of the VBE-M stunning unit and the main switch of the power system should always be visible and accessible to the operator.

The device operates in two modes:

1. ***battery mode*** - when the device is not connected to the mains - **VBE-M** the device uses battery power;
2. ***mains mode*** - when the device is connected to the mains - **VBE-M** the device uses mains power and the battery is charged.

Switching between modes takes place automatically after connecting the power system to the mains or disconnecting it.

Operation in battery mode:

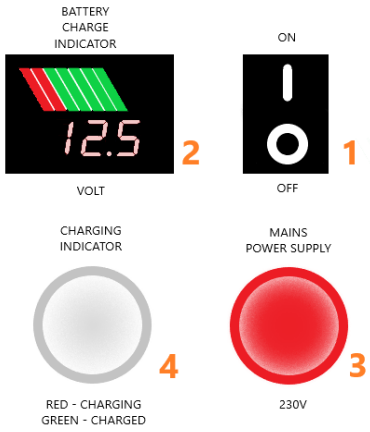


***Fig. 5** Power system - battery mode*

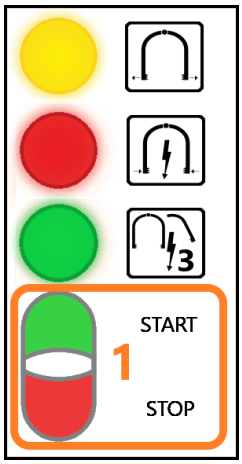


***Fig. 6** VBE-M*

1. Turn on the power system using the ***ON / OFF*** switch located on the housing (***Fig. 5 pos. 1***);
2. After about 10 seconds, turn on the **VBE-M** using the ***START*** button (***Fig. 6 pos. 1***) - the device will automatically enter the *readiness for operation mode*;
3. ***Fig. 5 pos. 3*** - mains supply light is off;
4. ***Fig. 5 pos. 4*** - battery charging light is off;
5. ***Fig. 5 pos. 2*** - voltmeter shows the battery charge level.

CAUTION!
If during stunning in battery mode the battery charge level drops below green (***Fig. 5 pos. 2***), it means that the battery is discharged to more than 50%. Then you should stop stunning and connect the device to the mains in order to charge the battery. During the stunning process, the battery voltage will drop.

Battery charging:

After connecting the device to the mains, the process of charging the power system battery begins. The process takes place in 3 stages:

Stage 1 - battery charging with 10A direct current;

Stage 2 - battery charging with constant voltage of 14.5V (14.3V - 14.7V);

Stage 3 - recharging the battery in the range of 500-900 mA.

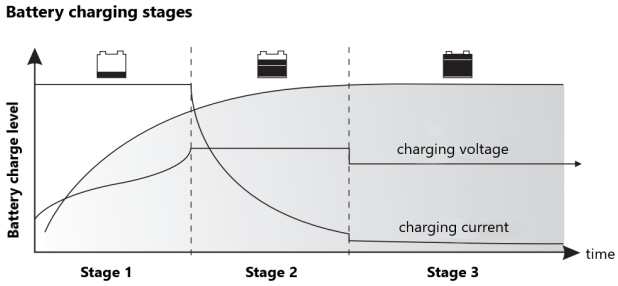


***Diagram 4** Battery charging*

CAUTION!
Do not discharge the battery below 50% as this may damage it.
If the battery is 100% charged, about 100 stunning processes can be carried out (with 2A current for 20s) - the actual number of stunning processes depends on the set stunning parameters and may differ from the estimated one.

The battery charging time from 50 to 100% is approximately 8 hours.

Operation in mains mode:

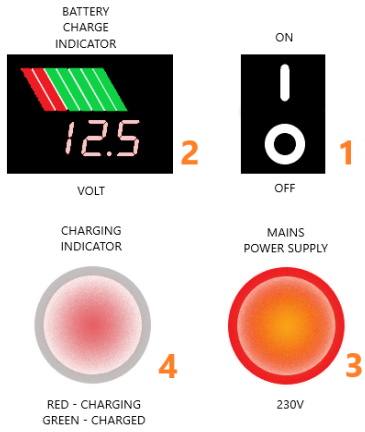


***Fig. 7** Power system - mains mode*

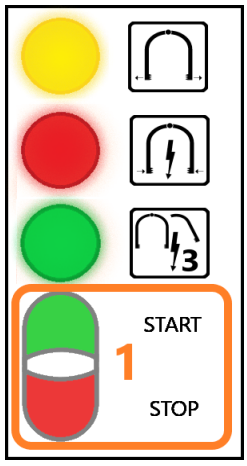


***Fig. 8** VBE-M*

The device is equipped with a detachable power cord with a plug, which must be connected to the power system and to the 230 V mains. The cord must not be within reach of animals or be exposed to damage.

1. Using a detachable power cord, connect the power system to an electrical outlet protected by a 10 A fuse against short circuit and overload;
2. Turn on the power system using the ***ON / OFF*** switch located on the housing (***Fig. 7 pos. 1***);
3. Turn on the **VBE-M** using the ***START*** button (***Fig. 8 pos. 1***) - the device will automatically enter the *readiness for operation mode* (the device uses mains power);
4. ***Fig. 7 pos. 3*** - the light indicating the mains supply is on - it means that the **VBE-M** stunning unit is powered from the mains and not from the power system;
5. ***Fig. 7 pos. 4*** - the light indicating the battery charging is on:
   - steady red light - battery charging;
   - flashing red-green light - battery charged (recharging in the range of 500-900 mA);
   - steady green light - battery charged.
6. ***Fig. 7 pos. 2*** - the voltmeter shows the battery charging voltage.

8.2 Starting the device

The device should be turned on in accordance with section ***8.1***, depending on the selected operating mode. The **VBE-M** stunning unit will automatically enter the *boot mode*:

- displays **[A][C]**, **[V]** and **[Prog]** will start blinking for about 2 s indicating the software version and stunning program number;
- for the next 2 s all displays will show **8**;
- next:
  - displays **[A]** and **[C]** will show **0.0**;
  - display **[V]** will show the measuring voltage.

The device is in *readiness for operation mode*.

8.3 The course of the stunning process

For each of the programs on the device, you can set one of two *stunning modes*:

- *continuous mode* - ***head***
- *two-stage mode* - ***head-heart***

The *stunning mode* is determined by the parameters **tP1**, **tP2** and **tP3** - see: section 7.3.

The *length of the stunning process* is determined by the parameters:

- **SPt** - ***stunning duration*** - the time after which the alarm signaling the end of the stunning process is activated - the electrodes can be removed from the animal's head;
- **dL1+dL2+dL3** - ***sum of phase durations***;

If the ***sum of phase durations*** is greater than the ***stunning duration*** (**SPt**), the stunning process continues until the electrodes are removed from the animal's head or the ***sum of phase durations*** ends - see: ***Diagram 1***.

***CONTINUOUS MODE - head*:**

Before starting the stunning process, only the measuring voltage occurs on the electrodes.

1. After pressing the electrodes to the animal's head the device will enter the *stunning mode*. The stunning process will start automatically:
   The control system will give stunning voltage – the red light (STUNNING) will turn on:
   - display **[A]** will show the stunning current;
   - display **[C]** will show the duration [s] counted from the beginning of the stunning process;
   - display **[V]** will show the stunning voltage.

2. After reaching the ***stunning duration*** (**SPt**) or the ***sum of phase durations*** the yellow light (END OF STUNNING) and the sound alarm will turn on - see: ***Diagram 1***:

   Remove the electrodes from the animal's head

   After reaching the ***stunning duration*** (**SPt**), the stunning process continues until the electrodes are removed from the animal's head or until the ***sum of phase durations*** is complete.
   The end of the process will be signaled by the red light (STUNNING) turning off.

2. After removing the electrodes:
   - the red light (STUNNING) and the yellow light (END OF STUNNING) will turn off;
   - the sound alarm will turn off;
   - display **[A]** will show **0** (no stunning current);
   - display **[C]** will show the duration of last stunning process
   - display **[V]** will show the measuring voltage on the electrodes.

3. After reaching the value set in the **toFF** parameter (pause between stunning) the device is in *readiness for operation mode* again.

TWO-STAGE MODE - head-heart:

In the ***head-heart*** mode, one of the first stunning phases (**dL1** or **dL2**) should be set as the ***transition phase*** - see: ***Diagram 2*** and ***3***.

Before starting the stunning process, only the measuring voltage occurs on the electrodes.

1. After pressing the electrodes to the animal's head the device will enter the *stunning mode*. The stunning **STAGE I** (head) will start automatically:
   The control system will give stunning voltage – the red light (STUNNING) will turn on:
   - display **[A]** will show the stunning current;
   - display **[C]** will show the duration [s] counted from the beginning of the stunning process;
   - display **[V]** will show the stunning voltage.

2. After the end of the ***transition phase*** (**dL1** or **dL2**), the device will signal the end of the stunning **STAGE I** (head) - the yellow light (END OF STUNNING) and the sound alarm will turn on.

Remove the electrodes from the animal's head

- for **tP=4** or **5** - the red light (STUNNING) will remain turned on - stunning will continue until the electrodes are removed;
- for **tP=12** or **13** - the red light (STUNNING) will turn off - the stunning will be suspended (the measuring voltage will appear on the electrodes).

3. After removing the electrodes:
   - the yellow light (END OF STUNNING) and the sound alarm will turn off;
   - for **tP=4** or **5** the red light (STUNNING) will turn off;
   - the device will go into ***standby mode*** (see: ***Diagrams 2*** and ***3***) - the green light (HEART STUNNING) will turn on;
     *The maximum waiting time for reapplying the electrodes to the animal's body is **10 seconds** - after this time, the device will automatically end the stunning process and reapplying the electrodes will start the next process.*

4. To initiate the stunning STAGE II (heart), place one electrode between the animal's eye and ear, and the other one in the heart area - the stunning process will resume automatically:
   The control system will give stunning voltage – the red light (STUNNING) will turn on again:
   - display **[A]** will show the stunning current;
   - display **[C]** will show the duration [s] counted from the beginning of the stunning process;
   - display **[V]** will show the stunning voltage.

5. After reaching the ***stunning duration*** (**SPt**) or the ***sum of phase durations*** the yellow light (END OF STUNNING) and the sound alarm will turn on again - see: ***Diagram 2*** and ***3***.

Remove the electrodes from the animal's body

After reaching the ***stunning duration*** (**SPt**), the stunning process continues until the electrodes are removed from the animal's head or until the ***sum of phase durations*** is complete.
The end of the process will be signaled by the red light (STUNNING) turning off.

6. After removing the electrodes:
   - the red light (STUNNING) and the yellow light (END OF STUNNING) will turn off;
   - the sound alarm will turn off;
   - display **[A]** will show **0** (no stunning current);
   - display **[C]** will show the duration of last stunning process
   - display **[V]** will show the measuring voltage on the electrodes.

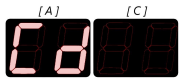
7. After reaching the value set in the **toFF** parameter (pause between stunning) the device is in *readiness for operation mode* again.

Whenever the device is not used, turn off the VBE-M stunning unit using the STOP button on the START / STOP main switch** (see: Fig. 3) **and the power system using the ON / OFF button** (see: Fig. 5, 7 pos. 1)**. If the device is connected to the mains, disconnect it

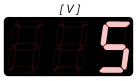
9. MAIN CONTROLLER OPERATION

9.1 Unlocking parameters

1. To enter the menu press ⏎: the device will enter the *programming mode*
   - the **[Pgm]** (*program*) indicator starts blinking;
   - the display **[A][C]** shows blinking **Cd** letters;
   - the display **[V]** shows **0** value.



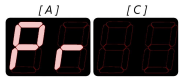
2. Confirm by pressing ⏎:
   - the display **[V]** shows blinking **0** value;
3. Using the △ ▽ buttons select **5** (factory code to unlock other parameters – it can be changed by changing the value of **Lc** parameter).



4. Confirm by pressing ⏎:
   - the **Cd** letters will start blinking again on the display **[A][C]** - it means that the parameters have been unlocked and can be accessed by pressing the △ ▽ buttons.

9.2 Editing parameters

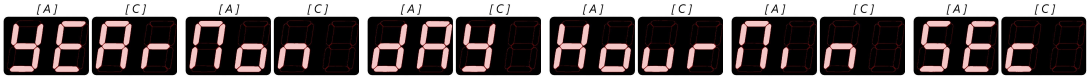
1. Unlock parameters: follow steps listed in subsection ***9.1***.



2. Using the △ ▽ buttons select the general parameter **Pr** (*Program*):
   - the **Pr** parameter allows you to select the program to be modified.
3. Confirm by pressing ⏎:
   - the value on display **[V]** starts blinking;
4. Using the △ ▽ buttons select the program to be modified.
5. Confirm by pressing ⏎:
   - the letters on display **[A][C]** start blinking
6. Using the △ ▽ buttons select the parameter to be modified (list of parameters: ***Table 5*** subsection ***7.2***).
7. Confirm by pressing ⏎:
   - the value on display **[V]** starts blinking;
8. Using the △ ▽ buttons select the needed parameter value.
9. Confirm changes by pressing ⏎:
   - the letters on display **[A][C]** start blinking;
   - you can similarly change other parameters starting from step 6.
10. Press ESC to exit the *programming mode*.

9.3 Setting the date and time

1. Unlock parameters: follow steps listed in subsection ***9.1***.
2. Using the △ ▽ buttons select the date/time parameter to be modified:



   - the display **[V]** shows the current value of the selected parameter.
3. Confirm by pressing ⏎:
   - the value on display **[V]** starts blinking;
4. Using the △ ▽ buttons select the needed parameter value.
5. Confirm changes by pressing ⏎:
   - the letters on display **[A][C]** start blinking;

- you can similarly change other parameters starting from step 2.

6. Press ESC to exit the *programming mode*.

10. STUNNING PARAMETER RECORDER

The device is factory-equipped with a recorder which measures electrical parameters and stores the measured values on an SDHC memory card located in the recorder slot.
*The recorder meets the requirements of the **Regulation 1099/2009** (Appendix II point 4.1).*

10.1 Parameter recording

Parameter recording begins when the stunning process is started - when the red light (STUNNING) turns on. The stunning parameters are saved as text on the SDHC card, in a ***piglog.csv*** file.

Each line in the register refers to one stunning process. The values in the row are written in the following order:

- subsequent number of the stunning process (it resets after turning the device off);
- stunning date in *day-month-year* format;
- the end time of the stunning process in *hour-minutes-seconds* format;
- average voltage [V] measured during the stunning process;
- maximum current [A] measured during the stunning process;
- electric charge [C] measured during the stunning process;
- duration of the stunning process [s];
- initial current frequency [Hz];
- program number;
- status:
  M - too low stunning current (below the minimum value of 1.3A);
  T - too short stunning time (below the minimum value of 4 s).

Lp.	Date	Time	U[V]	I[A]	q[C]	t[sek]	f[Hz]	NrPgm	Status
1	11.05.2020	12:51:16	162	1.31	6.5	6.8	500	2	----
2	11.05.2020	12:52:11	161	1.32	6.5	6.8	500	2	----
3	11.05.2020	12:53:23	162	0.83	6.5	6.8	500	2	M---
4	11.05.2020	12:54:13	162	1.31	6.5	6.8	500	2	----
5	11.05.2020	12:54:52	162	1.31	6.5	1.2	500	2	--T-
6	11.05.2020	12:55:59	161	1.12	6.5	3.8	500	2	M-T-
7	11.05.2020	12:57:19	162	1.31	6.5	6.8	500	2	----

***Table 7** Sample readings of stunning parameters*

CAUTION!
The recorder battery can be replaced only by an authorized service center.

10.2 Parameter reading

To read the recorded data you must:

- remove the SDHC card from the slot on the device;
- insert the SDHC card into the SD card reader on your computer;
- open the ***piglog.csv*** file in any text file reader (e.g. Notepad) or spreadsheet (e.g. Excel).

It is good to copy the ***piglog.csv*** file from time to time on your computer with a different name (e.g. ***May2021.csv***) and then delete it from the SDHC card. The recorder will create a new ***piglog.csv*** file during the next stunning process.

Do not edit the ***piglog.csv*** file on the SDHC card - it may lead to registration errors

11. DOWNLOADING AND UPLOADING STUNNING PARAMETERS

The device comes equipped with the following functions:
- uploading parameters to the device from the SDHC card;
- downloading parameters from the device to the SDHC card.

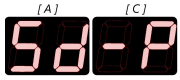
To upload service parameters (factory settings) on the device:
- find the ***pigpar3.bin*** file with service parameters on SDHC card (path to file: *SD card/English/Parameters/**pigpar3.bin***);
- copy the ***pigpar3.bin*** file to main directory of the SDHC card (path to copied file: *SD card/**pigpar3.bin***);
- follow steps listed in subsection ***11.1***.

To download your own parameter settings from the device to SDHC card (e.g. to transfer them to another device) follow steps listed in subsection ***11.2***.

11.1 Uploading parameters to the device from the SDHC card

*In order for the upload process to be successful, the **pigpar3.bin** file must be located in the main directory of the SDHC card*

- insert the SDHC card with ***pigpar3.bin*** file in the SD card slot (in the inspection window);
- press simultaneously △ P buttons and without releasing them press and hold ↵ until display **[A][C]** shows **Sd-P**:
  - the parameters are correctly uploaded to the device from the SDHC card.



- release all buttons.

11.2 Downloading parameters from the device to the SDHC card

- insert the SDHC card in the SD card slot (in the inspection window);
- press simultaneously ▽ P buttons and without releasing them press and hold ↵ until display **[A][C]** shows **P-Sd**:
  - the parameters are correctly downloaded from the device to the SDHC card
- release all buttons.

*If the file named **pigpar3.bin** already exists in the main directory of the SDHC card, it will be replaced by a new file*

12. CONNECTING THE VBE-M DEVICE TO A PC

To enable communication of the VBE-M with the PC, install:

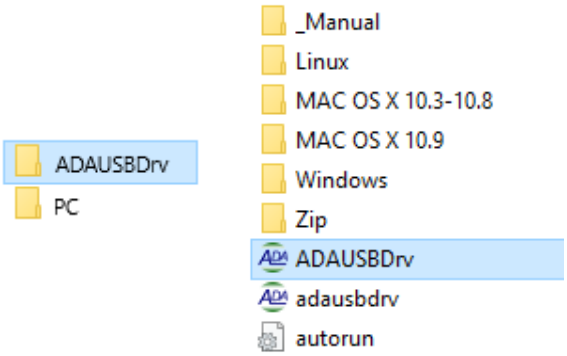
- USB converter drivers - ADAUSBDrv directory;
- EFA software for VBE-M - PC communication - PC directory.

Directories with installation files are in the main directory of the SDHC card - see: section ***3***.

12.1 Installation of the USB converter drivers

STEP 1

Open the ***ADAUSBDrv*** folder and run ***ADAUSBDrv.exe***



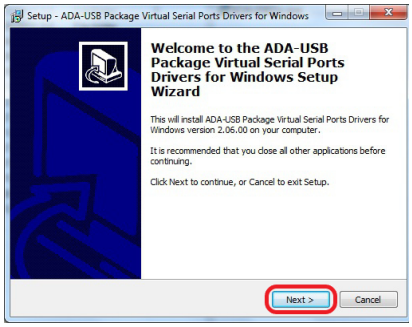
STEP 2

Select the installation language and press ***OK***

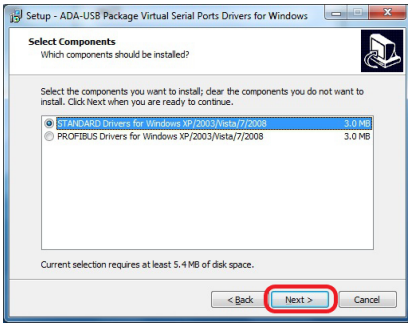
STEP 3

Follow the on-screen instructions

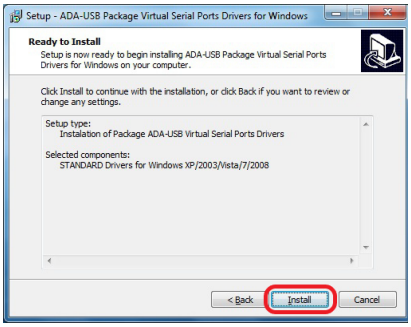
1



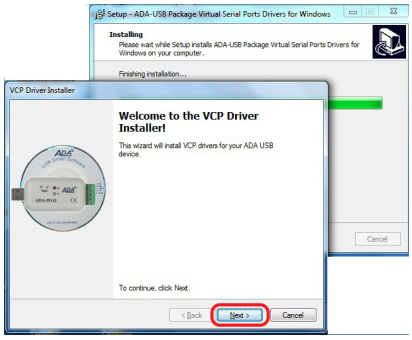
2



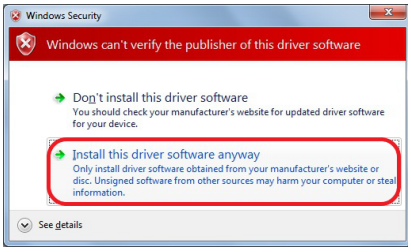
3



4

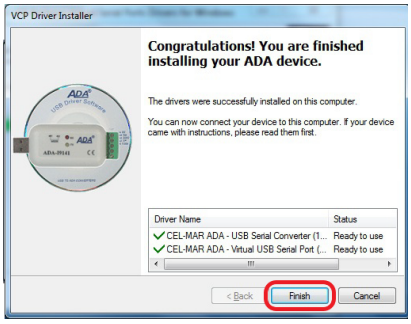


5

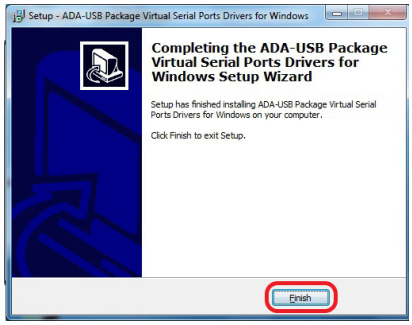


If the following message appears on the screen: "***Windows can't verify the publisher of this driver software***", ignore it and proceed to the next installation steps

6

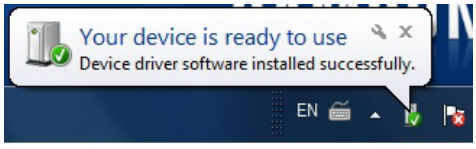


7

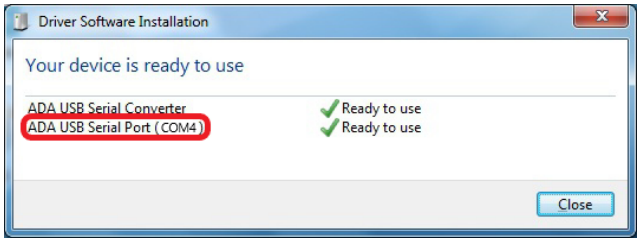


STEP 4

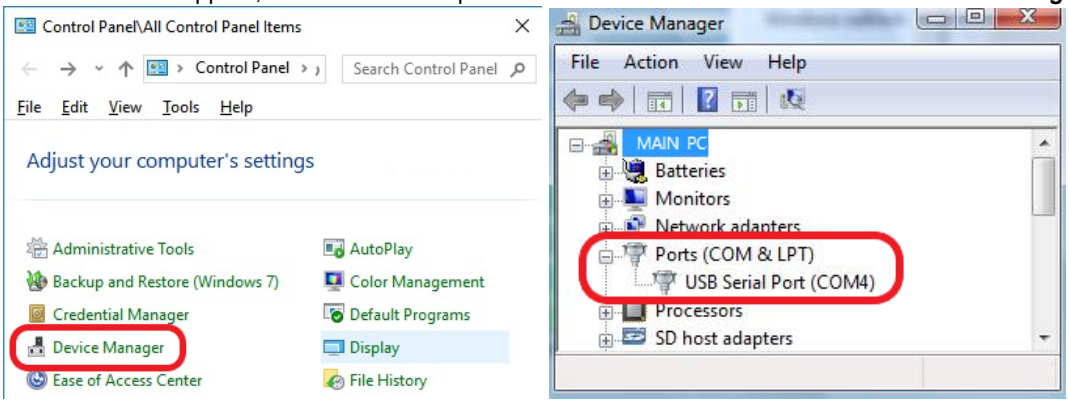
Connect the USB converter to the USB port - you will see a notification that the device is ready for use



Clicking on the notification will open a window with information on which ***COM*** port has been assigned to the converter



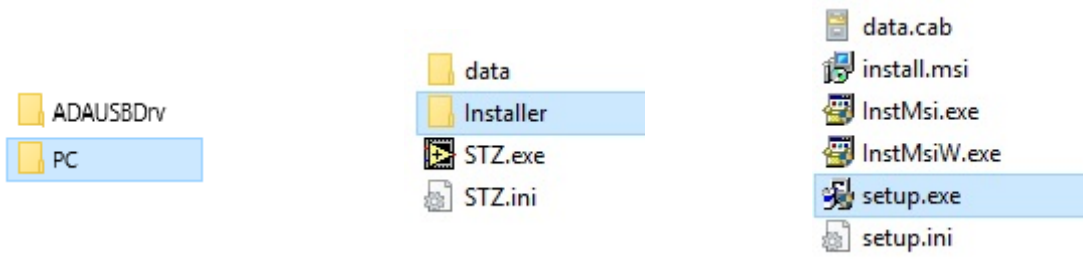
If the notification does not appear, the created ***COM*** port can be found in the ***Control Panel*** in ***Device Manager***.



After installation, the USB converter is visible in the system as a normal ***COM*** port.

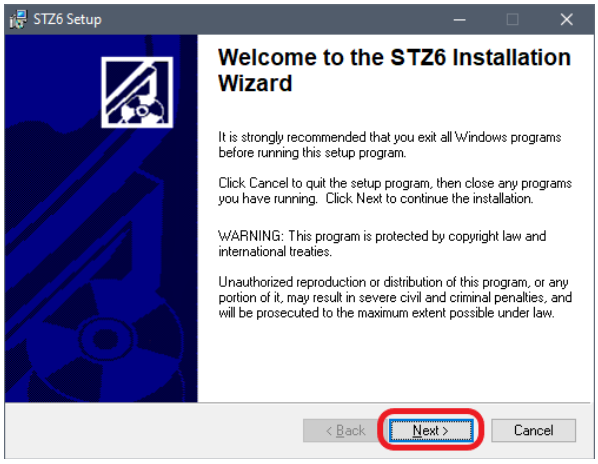
12.2 Installation of the EFA software for VBE-M - PC communication

STEP 1
Open the ***PC*** → ***Installer*** folder and run ***setup.exe***

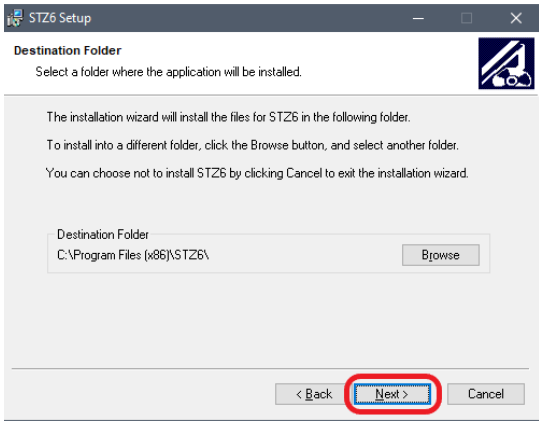


STEP 2
Follow the on-screen instructions

1

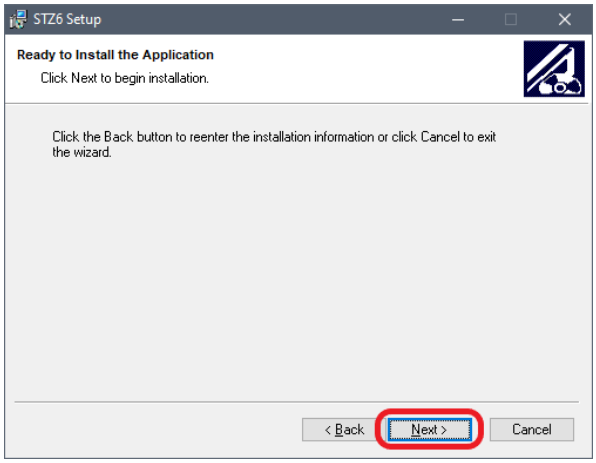


2

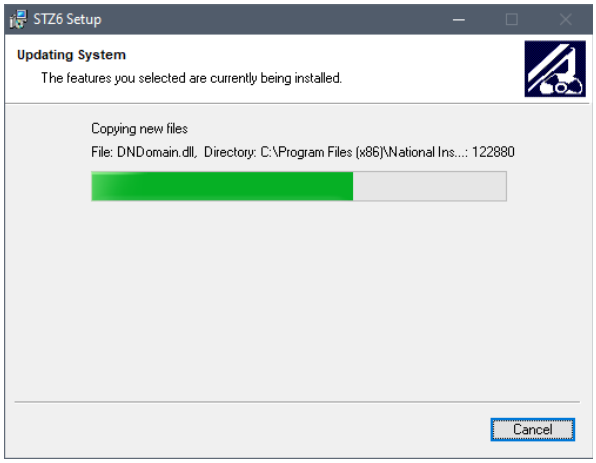


Do not change the default installation folder!

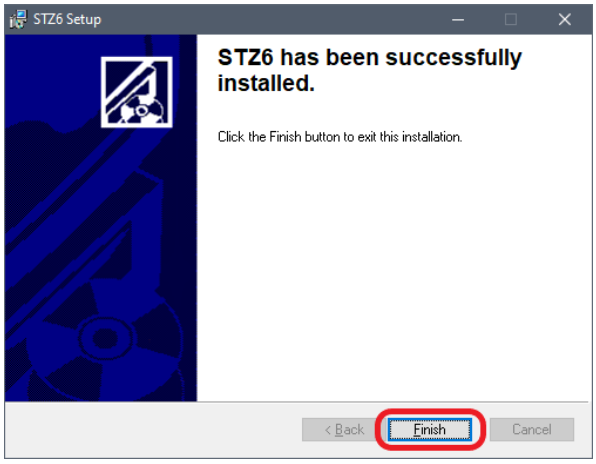
3



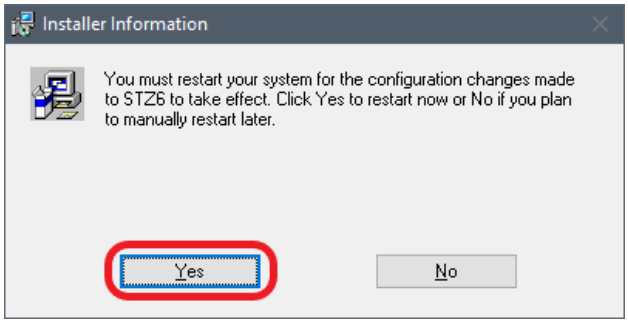
4



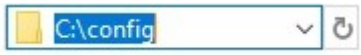
5



STEP 3
Restart the computer



STEP 4
Create a ***config*** folder directly on drive ***C***



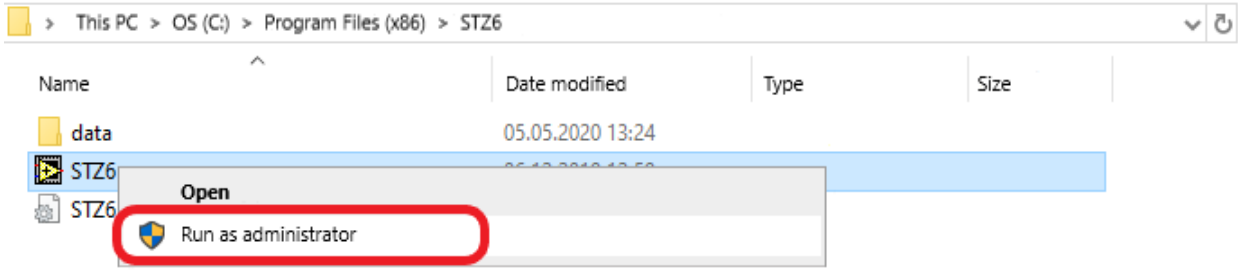
The program for communication with **VBE-M** has been correctly installed and can be started.

12.3 Launching the program for VBE-M - PC communication

STEP 1
Before turning on the **VBE-M** connect the USB converter to the USB port of the computer.

STEP 2
Run ***STZ.exe*** from the *C:\Program Files (x86)\STZ* folder

CAUTION!
The program should always be run as an administrator.



12.4 Program configuration for VBE-M - PC communication

STEP 1

Go to the ***CONFIGURATION*** tab → enter ***129*** in the ***CODE*** field and confirm by pressing ***Enter***

- code 129 unlocks all parameters available for editing

STEP 2

Set the ***READING STZ DATA*** and ***RECORD OF STUNNING PROCESS*** switches to the upper position

STEP 3

In the ***COMMUNICATION*** field, select from the drop-down list the number of the virtual ***COM*** port installed during the installation of the USB converter [*ASRL+PORT NO*]

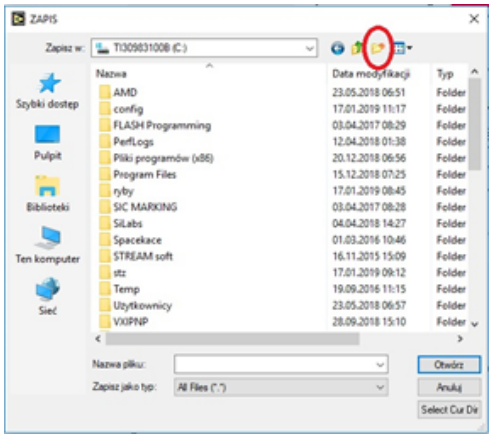
CAUTION!
If the USB converter is connected to a different USB socket on the PC, the COM port number will change.

STEP 4

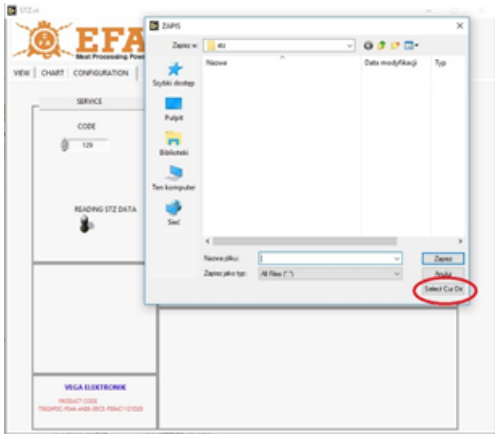
Create a folder for saving logs from stunning

1 Press the directory button in the **RECORD PATH**

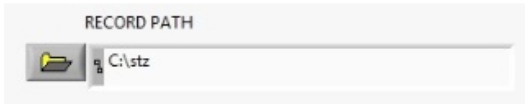
2 Press the button shown



3 Enter the name of the folder to be saved (e.g. stz) and confirm with ***Select Cur Dir***



4 The ***RECORD PATH*** field will show the created data saving path [*C:\stz*]

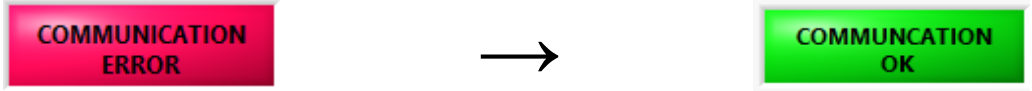


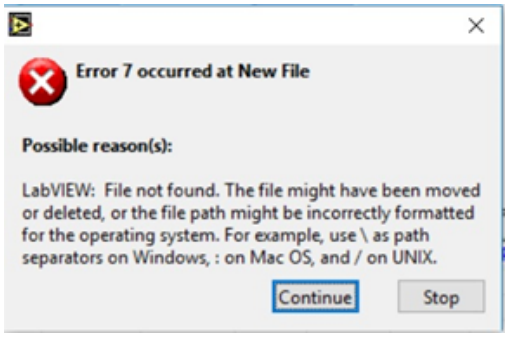
STEP 5
Save the configuration by pressing the ***SAVE CONFIG*** button

CAUTION!
If an error message appears, it means that the config folder has not been properly created - see: section ***12.2 STEP 4***. The *config* file should be directly on drive *C*.

STEP 6
Complete the configuration by pressing the ***EXIT*** button

STEP 7
Restart the ***STZ.exe*** program as administrator - see: section ***12.3 STEP 2***.
If the configuration was successful, ***COMMUNICATION ERROR*** has changed to ***COMMUNICATION OK***.
This means that the device and program have been set up correctly and the stunning process can begin.





CAUTION!
If an error message appears, it means that the *stz* folder has not been properly created and needs to be re-created - see: section ***12.4 STEP 4***

12.5 Working with the VBE-M - PC communication program

VIEW tab

After each stunning process, another entry is added to the stunning register.

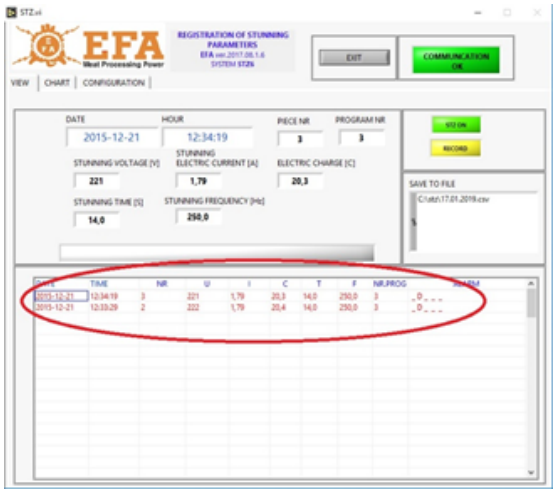
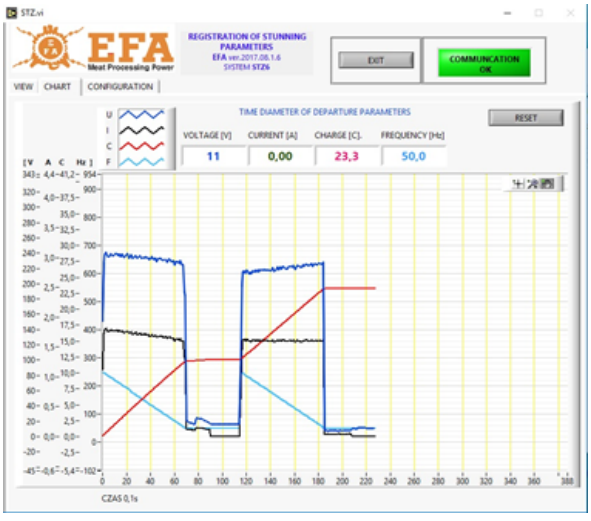


CHART tab

During the stunning process, a graph of stunning parameters is created in real time.



Registration of stunning parameters on the VBE-M device

If there is an SDHC card in the device, the stunning parameters will be saved:

- in the registry on the PC
- in the ***piglog.csv*** file on the SDHC card

13. CLEANING, MAINTENANCE, REPAIRS AND DISPOSAL

13.1 Cleaning

The device does not require any special maintenance, however, it is necessary to maintain it in proper technical condition and cleanliness (***Regulation 1099/2009***):

- clean it manually taking into account the safety rules of using electrical devices;
- clean the housing after each use by wiping with a cloth;
- do not use any detergents.

CAUTION!
Do not wash the device with pressure washers.
The device should be protected against moisture and excessive dust.

13.2 Maintenance

The purpose of the maintenance is to keep the device in a state of full technical efficiency. The scope of maintenance activities should comply with guidelines stated below:

- ***Daily maintenance*** – before and after operation:
  - consists in constant monitoring of the technical condition of individual assemblies and parts that impact work safety.
- ***Periodic maintenance***:
  - determining the technical condition of the device;
  - determining the degree of wear of individual assemblies and parts of the device;
  - removal of possible faults and damages.

CAUTION!
It is necessary to calibrate the device at an authorized service center once a year (***Regulation 1099/2009***). The service center issues a document confirming that the device has been calibrated and works properly.

CAUTION!
Stunning devices and tools should be checked before each stunning cycle.
Proper operation of the device can be checked with the **EFA** Tester:

- connect the Tester to the oblique board socket and turn the device on using the START button;
- press and hold the button on the Tester to start the simulated stunning process;
- hold the button until the yellow light (END OF STUNNING) and the sound alarm will turn on;
- after releasing the button, the simulated stunning process will end: the red light (STUNNING), the yellow light (END OF STUNNING) and the sound alarm will turn off;
- the measuring voltage will be displayed on the display **[V]**.

If the simulated stunning process was successful, the device is working properly.

13.3 Repairs

- If the device malfunctions, report the defect to the authorized service centre;
- In case of repairs and inspections in unauthorized service centres, the manufacturer is not responsible for the technical condition of the device and its proper functioning;
- In case of any maintenance or repairs of the device, it must be disconnected from the power source.

13.4 Disposal

CAUTION!
If the device is completely worn out, it must be disposed of in an appropriate electrical and electronic device recycling plant.

Disposal of the device:

- the crossed-out wheeled bin symbol (placed on the device) indicates that it is strictly forbidden to place the device in a mixed waste container;
- the device was made of materials suitable for secondary raw materials;
- the device is marked as compliant with Directive 2012/19 / EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE);
- correct disposal of the device may contribute to reducing the negative impact on the natural environment and human health;
- the device must be disposed of in accordance with local regulations regarding the disposal of electrical and electronic waste, at an appropriate collection point;
- it is forbidden to leave the device unattended, because it can be a threat to the natural environment and human health.

Disposal of the packaging:
The device packaging was made of recyclable materials. Individual packaging elements must be disposed of responsibly and in accordance with waste management regulations.

Packaging marked with this symbol should be placed in the blue container (PAPER)

Packaging marked with this symbol should be placed in the yellow container (METAL, PLASTIC MATERIALS)

14. TROUBLESHOOTING

CAUTION!
- If the red light (STUNNING) on the device turns on when there is no stunning process, it means that there may be a stunning voltage on the electrodes. It is absolutely necessary to stop work, turn off the device and notify the authorized service centre.
- If the red light (STUNNING) does not turn on during the stunning process, have the device serviced immediately by the authorized service centre.

Examples of troubleshooting procedure:

Problem	Cause	Recommendations
Bursting of blood vessels and bone displacement; animal not properly stunned.	Incorrect stunning parameters. Incorrect stunning method. Restless animal.	Select correct stunning parameters: frequency, time, voltage. Analyze the stunning process.
Device not working.	Blown fuse (3.15 A).	Replace the fuse (3.15 A).

	The device is turned off.	Turn the device on with the START button on the main switch START/STOP (*Fig. 2*).
No stunning process.	The electronics do not work. The displays do not work.	Check the fuse or report the fault to the authorized service centre.
	No measuring voltage on the electrodes, even though the display **[V]** indicates otherwise.	Clean the electrodes. Check the tongs cable. Contact authorized service centre.
The red light (STUNNING) is off.	Red lamp burned out (*Fig. 2*).	Contact authorized service centre.
The yellow light (END OF STUNNING) is off.	Yellow lamp burned out (*Fig. 2*).	Contact authorized service centre.
The green light (HEART STUNNING) is off.	Green lamp burned out (*Fig. 2*).	Contact authorized service centre.

Table 7 *Potential faults and how to remove them*

FOR THE USER

Please read carefully the content of the warranty card and strictly adhere to the terms contained in it, and follow the general rules given in the user manual of the device.

The manufacturer is not responsible for the technical condition of the device and tongs, as well as for their safe functioning when carrying out unauthorized repairs, technical inspections or calibrations.

This device is recyclable. It is subject to the selective collection of electrical and electronic equipment.

EFA Schmid & Wezel GmbH

Maybachstraße 2
75433 Maulbronn
www.efa-germany.com

Phone +49(0)7043-102-0
Fax +49(0)7043-102-78
efa-verkauf@efa-germany.de