

ZWS12, ZWS230 motors user manual

(Draft version for Motor Class C prototype)

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1 Safety rules

Please read carefully the instructions below before proceeding to the device installation so as to prevent electric shock, injury, etc.

When installing the mechanical motor, it is necessary to observe the following recommendations:

- Above all, follow the safety rules. The use of electric motors for roof window operating is connected with a risk of injury. Although, the motor is equipped with an overload switch, the forces which operate here are strong enough to cause injury.
- If the window equipped with an electric motor is easily accessible, e.g. the lower window edge is situated lower than 2.50m above the floor level, then special safety measures should be adopted so as to prevent health hazards.
- After unpacking, check the motor elements for any signs of mechanical damage.
- Installation should be performed by a qualified person in accordance with manufacturer instructions.
- Before connecting the motor, make sure that the power voltage corresponds with motor voltage specified on the data plate.
- Connect the motor and verify its correct functioning by performing one full working cycle without any load (two-core cable – 12V DC motor, three-core cable – 230V AC). Leave the chain protruding by approximately 5cm.
- Plastic containers used for packing should be stored out of children reach as they may be a potential source of danger.
- The motor should be used according to its intended design. The FAKRO Company shall not be responsible for any consequences being the result of improper motor use.
- Any activities relating to cleaning, adjustment or dismantling the motor should be preceded with disconnecting the power supply.
- The motor cannot be washed using solvent-based substances or open stream of water (do not immerse in water).
- Any repairs of the motor should be carried out by service authorised by the manufacturer
- Electric wires supplying electricity to the power source must have suitable area ($2 \times 1 \text{mm}^2$). Permissible cable length for the mentions area is 30mb.
- The motor has been designed for installation inside the room.
- The motor cannot be used as a mechanism for operating the sashes of smoke ventilation windows (FAKRO window).

WARNING!!!

Danger of crashing. While closing, the motor exerts the force of 250N (app. 25kg).

2 Description

The ZWS motors are intended to operate with windows and adapted to cooperate with wireless remote control systems offered by FAKRO and by others manufacturers offering products with logo Z-Wave. The ZWS motors are equipped with a two-way “Z-Wave” communication radio module. For communication, the Z-Wave exploits radio wave frequency of 868MHz. ZWS motors, are Security Enabled products.

Security Enabled Z-Wave Controller must be used in order to fully utilize ZWS.

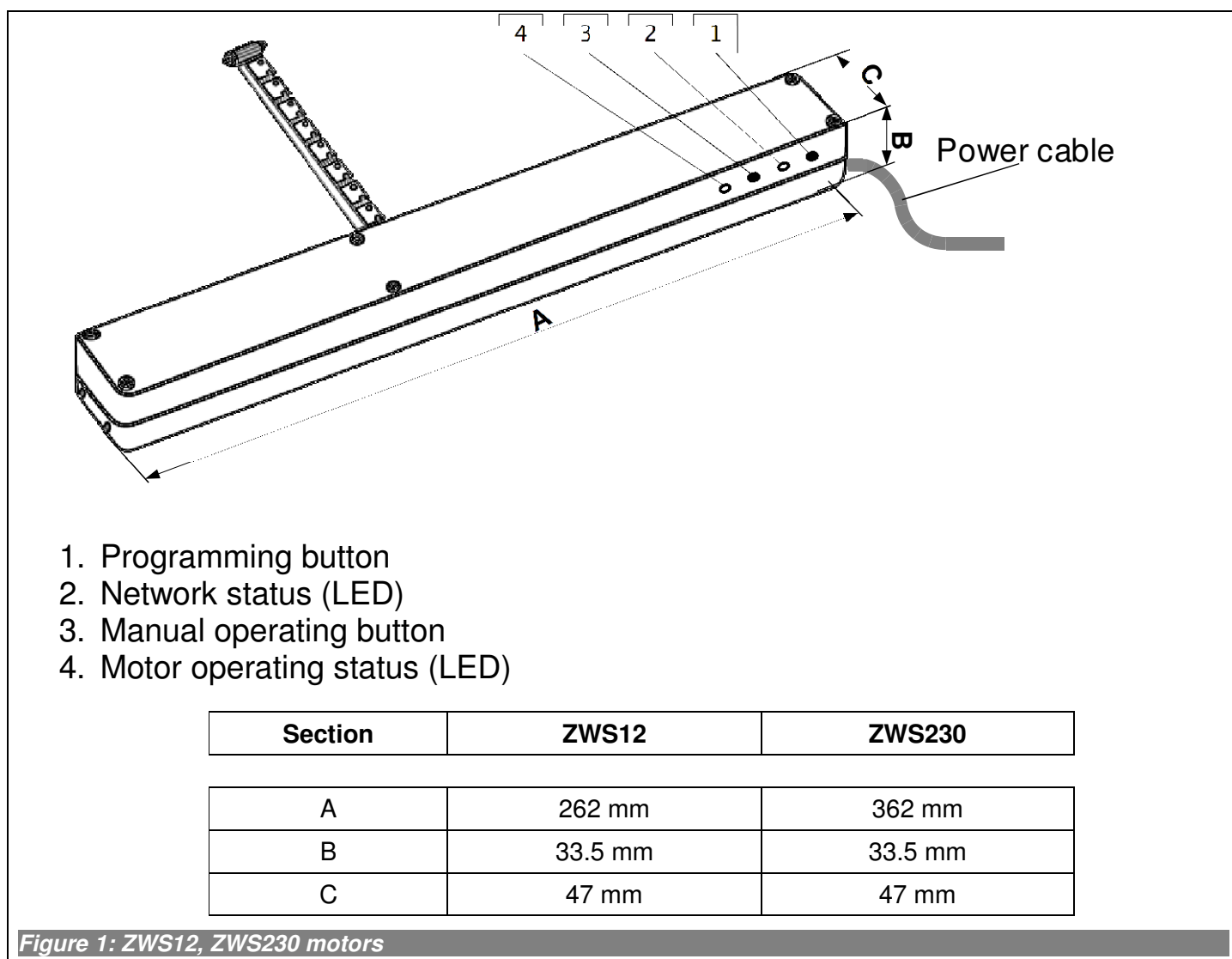
The motor functionality is anyway identical when included as a secure or non-secure device.

The ZWS motors are equipped with two limits:

- limit switch at maximum chain travel position,
- overload limit at folded chain position.

In order to be able to operate ZWS motors, they must be installed according to the picture installation manual included in the product package. Subsequently, the motors should be programmed to work with one of the controllers (e.g. ZWP15 remote control, ZWK15, ZWK1 keyboard) offered by FAKRO – see section 3.

In Figure 1 there is presented a general view of the ZWS motor with description of available buttons and indicators.



3 Actuator calibration

ZWS actuator can determine precisely its position from 0-100%. This makes it possible to open the actuator to any desired position and also check the present position in which it is located with the resolution of 100 steps (step - chain unfolding rate). For the entire working range of chain (250mm), one step amounts 2.5mm (250/100).

Position 100% (completely open) is always clearly determined by the limit switch, while position 0% (completely closed) is variable because there are different ways to install the actuator.

Position is determined by occurrence of excessive current, when the actuator is working into close direction. In order to determine scope of work properly, it is necessary to perform calibration after actuator installation in the window. In order to perform calibration, the following points must be realized:

- Press and hold "Node info" button, then still holding "Node info" button, press button operating the actuator
- The actuator closes automatically and signals beginning of calibration process (singular blink of the diode)
- The actuator signals position completely open (singular blink of the diode)
- Then the actuator closes automatically until an overload which indicates that the completely closed position is reached
- The actuator signals end of calibration process (sevenfold blink of the diode)

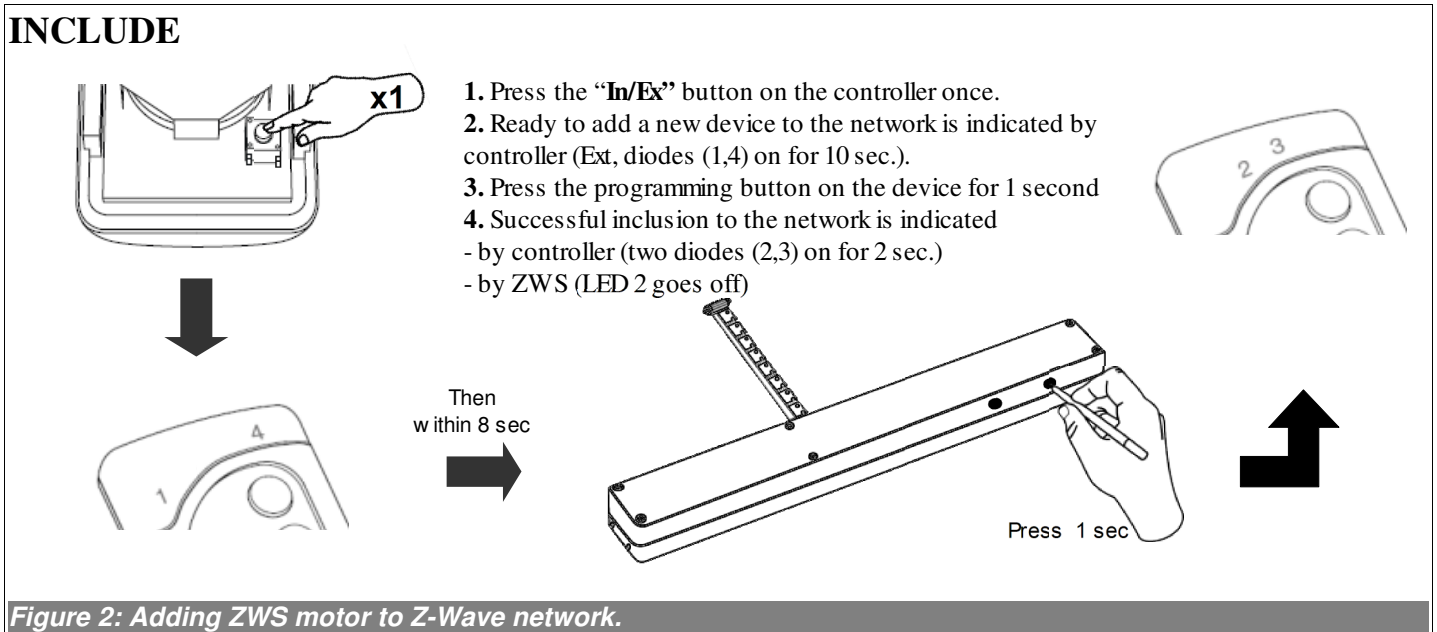
Note!!! In case of break of the power supply during the actuator work, the device will need to verify reference position. It happens automatically after receiving any command. Irrespective of received command, the actuator starts to close and after complete closure it returns to position set by a command.

4 Device programming – INCLUDE & ASSOCIATE.

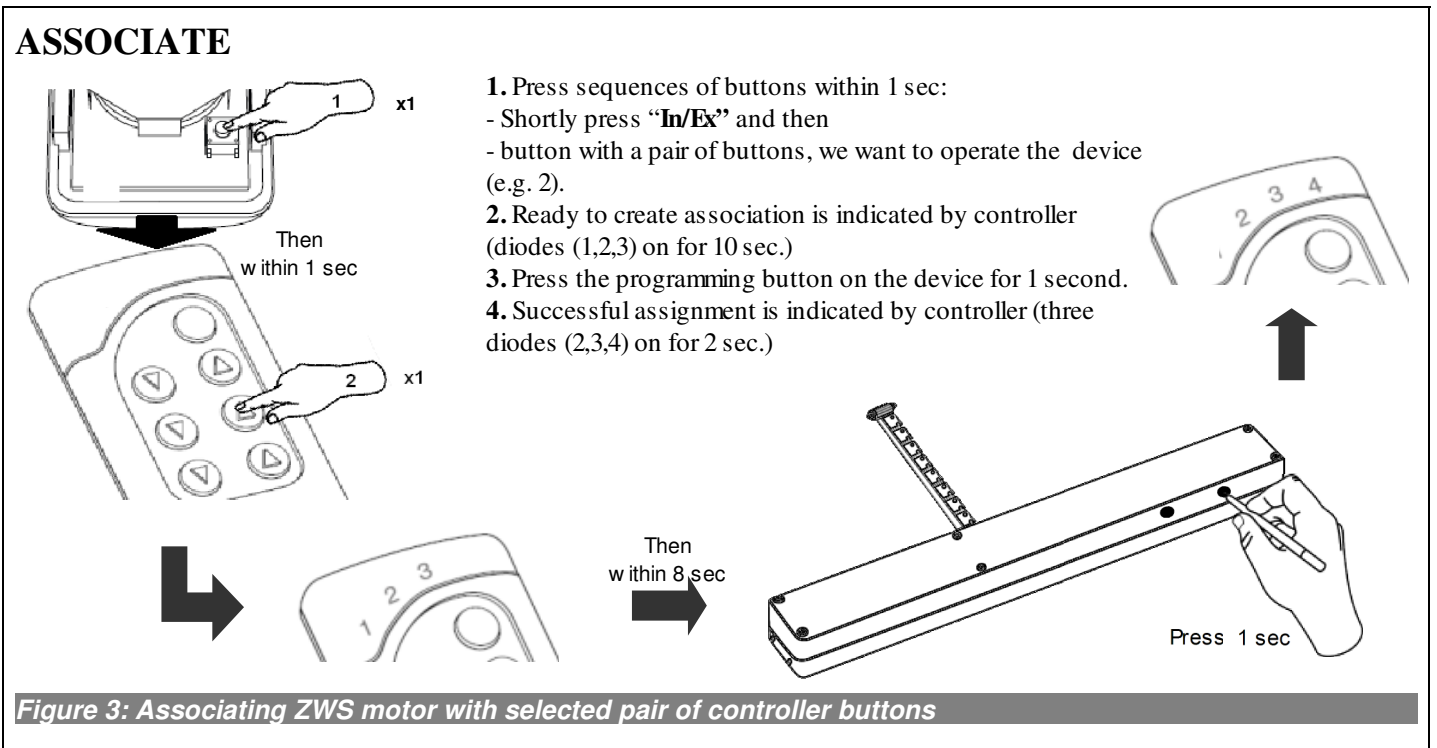
For the device to communicate on the network Z-Wave is necessary to append it to this network and to give a specific node ID number. The device can be added to the network if it is not part of another network. To be able to add the device to another network it is necessary to remove it from the existing network or reset to factory state (read *section 7*, using any Primary controller). Ready to add to the network ZWS, is indicated by the LED2-Network Status

To be able to operate ZWS motors it is necessary to:

1. Add the device (using “**INCLUDE**” function) to selected network. A model procedure is presented in *Figure 2*;



2. Link the device with the selected pair of buttons on the Controller (using “**ASSOCIATE**” function). A model procedure is presented in *Figure 3*. **For some controllers, it is possible to both Include and Associate at one time.**



For information on handling, the Inclusion and Association functions using products of another manufacturers, please read the documents of the respective manufacturer.

5 Device programming – EXCLUDE & DELETE.

In some cases (changing the place of installation, replacement of damaged equipment) is necessary to remove devices with both memory of the controllers (the links with buttons - DELETE) and Z-wave network (EXCLUDE) to prevent erroneous routing of commands.

Do not remove devices from the network without an EXCLUDE function executed, as this may cause a delay in the operation of other devices on the network and reduce the battery life time of remote controllers.

- Device deleting (“DELETE” function) from selected controller *group of buttons*. Device deleted from group of buttons still is a part of Z-wave network until “EXCLUDE” function is executed.

DELETE

1. Press sequences of buttons within 1 sec:
 - Shortly press twice “In/Ex” and then
 - button with a pair of buttons, you want to delete the device (e.g. 2).
2. Ready to delete association is indicated by controller (diodes (2,3,4) on for 10 sec.)
3. Press the programming button on the device for 1 second.
4. Successful association delete is indicated by controller (three diodes (1,2,3) on for 2 sec.)

Then within 1 sec

Then within 8 sec

Press 1 sec

Figure 4: Deleting ZWS motor from selected pair of controller button.

- Device removing (“EXCLUDE” function) from the network Z-Wave. Excluded from the network device does not have Node ID and it can be “INCLUDED” into the new network. At ZWS this stage is indicated by the LED no.2 continuous glow. The device is no longer a part of the network and can not be used as a router in the network anymore.

EXCLUDE

1. Shortly press twice “In/Ex” button on the controller.
2. Ready to remove a device from the network is indicated by controller (diodes (2,3) on for 10 sec.).
3. Press the programming button on the device for 1 second
4. Successful Exclusion from the network is indicated
 - by controller (two diodes (1,4) on for 2 sec.)
 - by ZWS (LED 2 goes ON)

Then within 8 sec

Press 1 sec

Figure 5: Removing ZWS motor from Z-Wave network.

For information on handling, the Exclusion and Delete functions using products of another manufacturers, please read the documents of the respective manufacturer.

6 Interoperability of devices different manufacturers

The Z-Wave allows you to integrate devices from different manufacturers working in different functional groups, such as light, heating, home automation, ect. Z-Wave devices, are acting as repeaters in the network and increases the range of radio communication. The more devices on the networks, the more stable and more resistant to distortion networks are.

7 Including ZWS actuator into a third-party network

Start the **INCLUDE** procedure on the controller which is able to perform inclusion for desired network and press **“Programming”** button on the ZWS which to be included.

Note:

For information about how to activate procedure of Inclusion, using products of another manufacturers, please read the manuals of the respective manufacturer.

8 Reset (factory default)

Sometimes it is necessary to reset ZWS to the factory settings and deleting all network information as well as groups information. For resetting, a Primary controller (able to include/exclude) is needed. For ZWS Reset function is synonymous with **“EXCLUDE”**.

Note:

A successful reset is indicated by the ZWS, continuous light of network status diode (LED 2 see Figure 1)

9 Special functions – *PROTECTION, ASSOCIATION, ALL ON, ALL OFF, SECURITY*

“PROTECTION” - used to protect a device against unintentional operation e.g. by a child. Three levels can be set by any controller which supports this functionality.

Unprotected – motor can be operated manually as well as by remote control.

Protection by sequence – After pressing the programming button, the motor can be controlled manually for 30 seconds by means of buttons (see Figure 1.). Control via Z-Wave is possible.

No operation possible – local control locked. Control via Z-Wave is possible.

Note:

The description for activation and deactivation of the protection function is described in detail in the manual instruction for controllers which are supporting this function.

“ASSOCIATION” - depending on version ZWS can be equipped with rain sensor input. In such case this ZWS, may also resend Close command to the other devices e.g without rain sensor. In this case it is necessary to initiate **“ASSAIN A ROUTE”** function by means of Controller.

Below standard procedure which can vary for different controllers:

Start **“ASSIGN A ROUTE”** function then press for 1 second programming button at destination ZWS (without rain sensor) then press for 1 second programming button at source ZWS (with rain sensor).

Note:

For information on handling the **“ASSAIN A ROUTE” function for products of another manufacturers, please read the instruction manuals of the respective manufacturer. Actuator added to secure network may in case of rain resend Close command to both secure and non-secure devices.**

“All ON or All OFF” - it is possible to define if device should respect **“All close”** (OFF) or **“All Open”** (ON) command.

Note:

The description for activation and deactivation of the **“ALL SWITCH” function is described in the user manual of the controllers supporting this function.**

“SECURITY”

ZWS motors are **Security Enabled** products. The security provides confidential communication between nodes in network.

Note:

Security Enabled Z-Wave Controller must be used in order to fully utilize ZWS. Actuator added to the secure network will not be able to be operated by controllers which do not support Security.

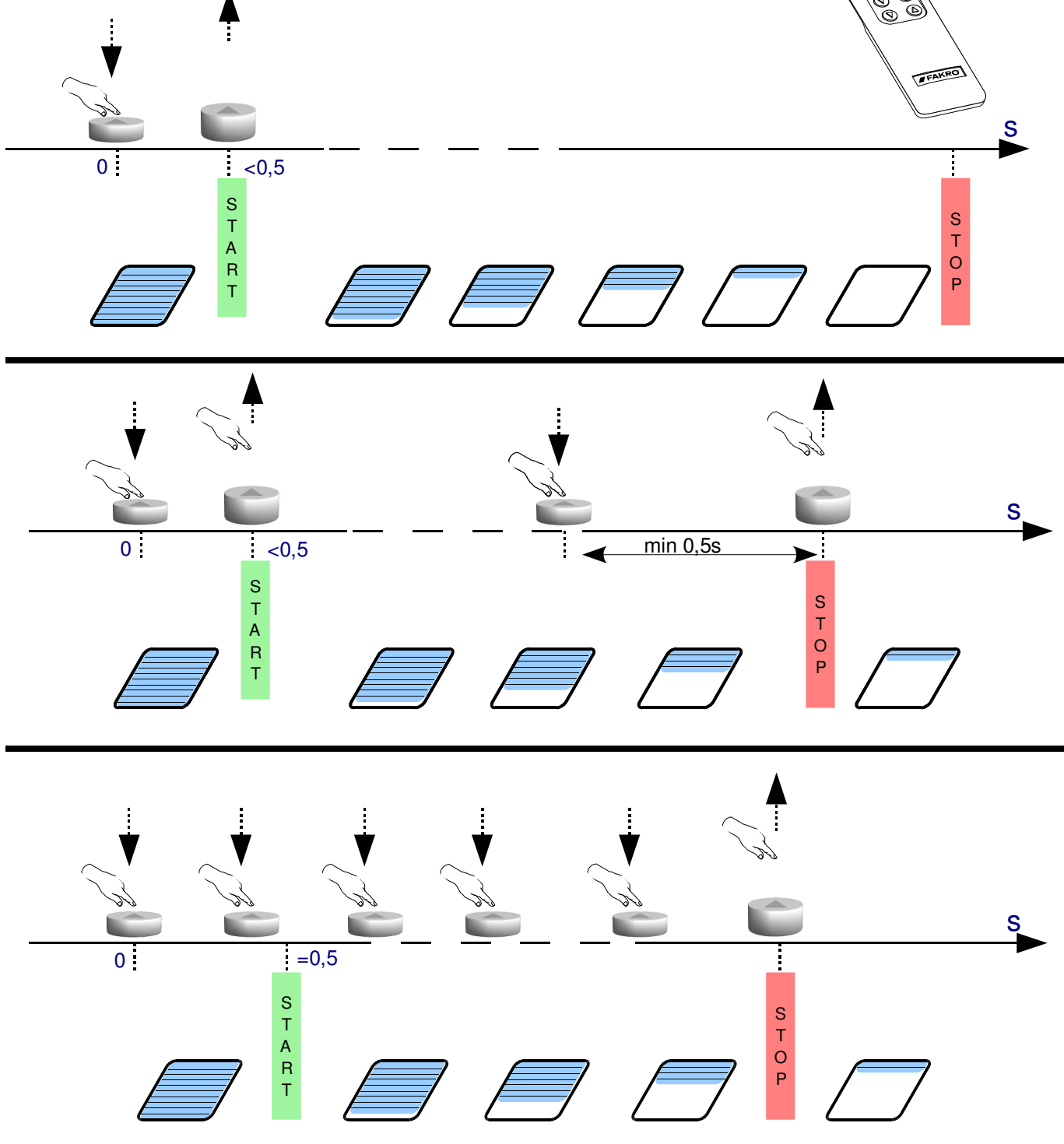
10 Manual operation

The “Manual operation” button makes it possible to operate the motor just after connecting the power supply. Button works in sequential mode, i.e. start, stop, start in opposite direction, stop – etc...

1. First pressing of the button after connecting the power supply will cause that the motor will unfold the chain.
2. 2. Second pressing the button, stops the motor
3. Next pressing the button will start the motor in the opposite direction.

Note:
Watch the LED showing the status of devices on the network. **Blinking LED** indicates the status of protection state (see section 7) and may mean that the control of the device is not possible.

11 Remote operation (use of ZWP15 remote controller)



12 Technical parameters

Technical Parameters		
<i>Parameter</i>	<i>ZWS12</i>	<i>ZWS230</i>
Chain reach	240 mm	360 mm
Output power	9 W	15W
Rated current	0.72 A	0.12 A
Standby current	0.03 A	0.03 A
Current limit	YES	YES
Chain unfolding rate	7.5 mm	9.7 mm
Chain pushing force	200 N	200 N
Closing force	200 N	200 N
Working temperature	(-10°C) do (65°C)	(-10°C) do (65°C)
Power cable	2 x 0.75 mm ² (0,4 m)	3 x 0.75 mm ² (1,5 m)
Power voltage	12V DC	90 - 230V AC
Weight	0.850 kg	0.940 kg

13 Indicators description – LEDs

<i>Light indication (LED)</i>	<i>ZWS12, ZWS230</i>	
	<i>No. 3 – Motor operating status</i>	<i>No. 4 – Network status</i>
Diode is on for 2-3 sec.	Overload limit has been activated while pulling the chain - the window is closed	-
Diode is on continuously	-	The device has not been associated with any network. This LED always comes on after connecting power supply to a brand new motor. It is switched off after associating the device with network.
Diode is blinking	-	The device is in protected mode. Both (Protected by sequence and no operation possible) levels are signalized in the same way.

14 WARRANTY

The manufacturer guarantees correct device functioning. It also undertakes to repair or replace faulty device if its defects result from material or structural faults. The warranty period is 24 months form the date of purchase, fulfilling the following conditions:

- Installation has been performed by an authorised individual, as per manufacturer recommendations.
- Seals remain intact and no unauthorised structural changes have been made.
- The device has been used in accordance with its intended use as per user manual.
- Damage is not a result of improperly made electrical system or atmospheric phenomena.
- The manufacturer is not liable for damage which occurred as a result of improper use or mechanical damage.

In case of failure, the device must be submitted for repair with a Warranty Card. Defects revealed within the warranty period will be removed free of charge no longer than 14 days after accepting the product for repair. Warranty and post-warranty repairs are performed by the manufacturer i.e. FAKRO PP. Sp. z o.o..

Quality Certificate:
Device

Model.....
Serial Number.....
Seller.....
Address.....
Date of purchase.....

.....
Signature (stamp) of installing person