

elfatek



WIRELESS HANDWHEEL USER MANUAL

EN



This manual must be read carefully before commissioning the device!

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1. ABOUT THE COMPANY

Elfatek Elektronik, established in 2006, has quickly become a leader in its sector, exporting its products worldwide with local production and capital. Elfatek pioneered the production of Turkey's first 80-channel crane remote control with over 240 hours of operating time.

As of October 27, 2017, Elfatek was certified as the 41st R&D center in Turkey by the Ministry of Science, Industry, and Technology, and the 1st in Konya in the Industrial Electricity Sector.

Continuously developing with an experienced and dynamic team, Elfatek meets industry needs with high-performance and quality products. Elfatek remains committed to customer satisfaction during both the sales process and after-sales support, offering spare parts and repair services with great dedication and providing detailed training on its products.

Elfatek's mission is to "develop high value-added industrial products based on R&D to increase Turkey's competitive power." Its vision is to "develop industrial products at an international level and be a leading company in R&D," maintaining its position as a leader and preferred company in its sector.

Quality Policy:

Elfatek aims to be a constantly renewing and developing company through R&D and technological advancements, producing quality and safe devices, and prioritizing customer satisfaction by meeting customer needs and expectations.

- Documenting, certifying, and continuously improving our quality management system according to ISO 9001 standards.
- Achieving company and unit goals in a team spirit based on the philosophy of Total Quality.
- Reviewing our business processes with self-assessment and determining
- Preventive approaches to improve our performance.
- Raising the efficiency of all our processes to a level that can compete internationally through continuous improvement.
- Encouraging innovative and creative approaches and implementing training to enhance technical and behavioral competencies, while managing our activities in an integrated manner with Environmental, Occupational Health, and Safety Management Systems, we strive to be a leading establishment in quality within our sector.

We are committed to being an organization that ensures the trust and satisfaction of our customers by prioritizing customer demands and expectations.

2. GENERAL SAFETY RULES

Thank you for your trust in purchasing our Wireless Handwheel device. We hope you find our device beneficial.

This manual contains the necessary information to obtain the best performance from our device and to ensure long-term and proper use from its shipment.

Elfatek Elektronik cannot be held responsible for any harm to people or the environment due to failure to comply with the instructions in this manual or incorrect use of the device. **Elfatek Elektronik** reserves the right to make changes to the features and dimensions of the device.

This User Manual specifies the instructions for the installation, operation, and maintenance of the Wireless Handwheel. For occupational safety and health regulations, the instructions in this manual must be strictly followed during the installation and maintenance of the products. Upon receiving the device, it should be visually inspected, and any damage or errors should be reported to the manufacturer within 7 days. The manufacturer is not responsible for damages caused by the recipients or for any damage resulting from ignoring the recommendations and warnings specified in this manual.

Knowledge of the information contained in this manual is a prerequisite for protecting personnel from dangers, preventing errors, and ensuring the fault-free and safe operation of the device.



“Danger Describes a sudden hazardous situation that, if not avoided, could result in serious injury and could result in death or serious property damage.



The term “Warning” is used to refer to factors that, if ignored, could result in serious and/or fatal injuries and property damage.



The term "Note" is used to highlight factors that are not dangerous, but require close attention during installation, use, and maintenance.



Do not work with the device without reading the user manual.

Reviewing the User Guide

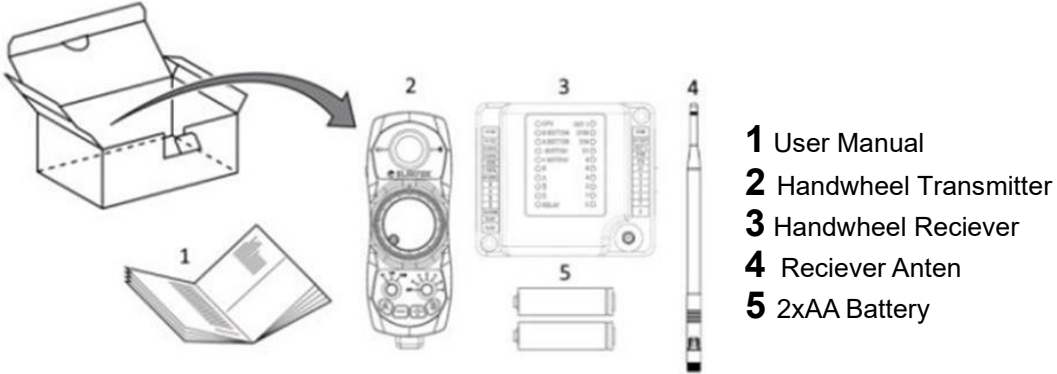
Knowing the information contained in this manual is a prerequisite for protecting personnel from hazards, preventing errors, and ensuring that the system operates safely and without malfunction.

- The operating instructions must be available at all times. In case of loss of this manual, another copy can be obtained from the manufacturer at any time.
- All persons responsible for transportation, installation, start-up, operation, maintenance, and repair must be informed of the user manual. The operator must be aware of the user manual.
- If you think that there are statements or sections in the manual that you do not understand, request support from an authorized specialist or the manufacturer as soon as possible. A complete and accurate understanding of this manual is essential for occupational safety.

Warranty Terms

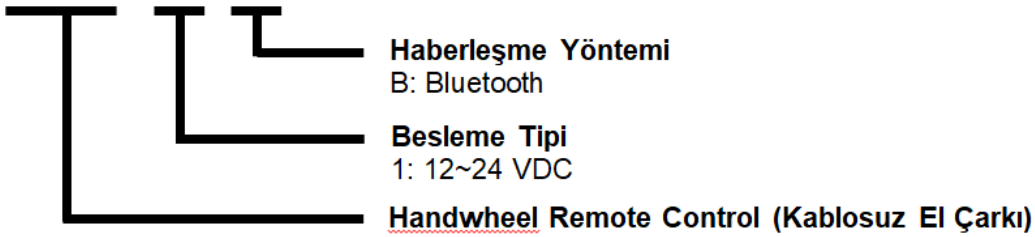
- Seller warrants that the Wireless Handwheel delivered to Buyer will be free from any damage or defect in design, manufacture, or workmanship.
- If the buyer detects any easily visible or hardly visible damage on the product, including transportation damage, the buyer must notify the seller in writing with detailed explanations within 7 days.
- Unless stated otherwise, the stated warranty period is 24 months from the date of the seller's invoice/delivery note. If there is a delay of more than 1 month in receiving the product, the warranty period begins.
- The seller guarantees the equipment delivered to the buyer against material, manufacturing, and workmanship defects within the specified warranty period. Unpaid or incomplete materials are not covered by the warranty.
- The buyer cannot repair, modify, or replace the product or its accessories within the warranty period without the written permission of the seller, and the repaired and/or replaced product is out of warranty. Problems caused by incorrect use are not covered by the warranty.
- The seller's liability under the warranty conditions is limited to repairing or replacing defective parts or equipment within the conditions specified here in.
- In no case can the warranty period of the part repaired by the seller exceed the warranty period of the original part.
- Work arising from warranty terms is carried out at the seller's factory when the buyer sends the damaged/faulty product to the seller for repair or replacement. It is the buyer's responsibility to transport the damaged/faulty product from its location to the seller's factory without any damage.
- The seller is not obliged to cover any other damages that may arise directly or indirectly from the product delivered as damaged and/or faulty, and cannot be held responsible in any way.
- All rules and conditions specified in this manual and its annexes include the rules that the buyer must comply with for the warranty to be valid during the warranty period specified in the sales contract.

3. PRODUCT PACKAGE CONTENT



4. PRODUCT CODE DESCRIPTION

HRC - 1 - B



5. PRODUCT LABEL



- **Section number 1** indicates the product model.
- **Section number 2** indicates the serial number of the product.
- **Section number 3** indicates the MAC address of the devices. Only receiver and transmitter products with the same last 4 digits of the MAC address can communicate with each other.
- **Section number 4** indicates the device supply voltage.

6. PURPOSE OF USE AND PRODUCT DESCRIPTION:


The handwheel is a control device used for a CNC machine or CNC machining center. CNC machines are programmed to process workpieces automatically, usually with CAD/CAM software. However, there are instances where manual control or guidance of the CNC machine is necessary. This is where the handwheel comes into play.


The handwheel allows the machine operator to control the process manually and precisely. The handwheel typically includes buttons or controls to select different movement directions such as the x, y, and z axes. It may also feature buttons or wheels to adjust speed or feed rate.

The handwheel is especially useful when precise adjustments are needed during machining. These situations can include checking the final shape of the workpiece, correcting edges, improving surface roughness, etc. The handwheel lets the operator manually control the machine without being bound to predetermined programs, providing a more flexible machining process.

Elfatek Wireless Handwheel is used to control CNC machines more easily and quickly and to make precise adjustments. The device allows wireless communication between the receiver and transmitter, enabling the operator to remotely control the CNC machining center, offering a more comfortable working environment. The device's axis and speed selection buttons allow movement control in 6 different axes and 3 different speed options.

7. Technical Specifications

Transmitter Technical Specifications		
	Operating Frequency	2.4 GHz Bluetooth
	Working Distance	100 m
	Number of Axis Steps	6 Pcs
	Number of Speed Steps	3 Pcs
	Button Number	4 Pcs
	Device Operating Voltage	3VDC (2xAA)
	Power Consumed	0.14 W
	Continuous Working Time at 20°C with Fully Charged Battery	40 Hours
	Continuous Operation Time After Battery Low Warning	2 Hours
	Body Construction	Polyamid
	Device Mechanical Dimensions	197 x 75 x 75 mm
	Operating and Storage Temperature	-10 °C to 60 °C

Receiver Technical Specifications		
	Operating Frequency	2.4 GHz Bluetooth
	Working Distance	100 m
	Digital Output Type	SSR (100mA)
	Encoder Output Type	A / B (100PPR)
	ACS Output Number	2 Adet
	Device Operating Voltage	12~24 VDC
	Power Consumed	1.5 W
	Body Structure	Polyamid
	Device Mechanical Dimensions	89 x 77 x 35 mm
	Operating and Storage Temperature	-40 °C to 85 °C

8. PRODUCT TRANSPORTATION, STORAGE AND INSTALLATION INFORMATION

8.1 Product Transportation and Storage:

- Elfatek Wireless Handwheel product is kept in a box to prevent it from being affected by the external environment during transportation and storage.
- Always store the product in a dry and cool environment following the conditions specified in the table in the "Technical Specifications" section.
- When the product reaches you, check the contents of the box and make sure that the components shown in the "Product Package Contents" section are complete.
- For device installation, follow the steps below carefully.



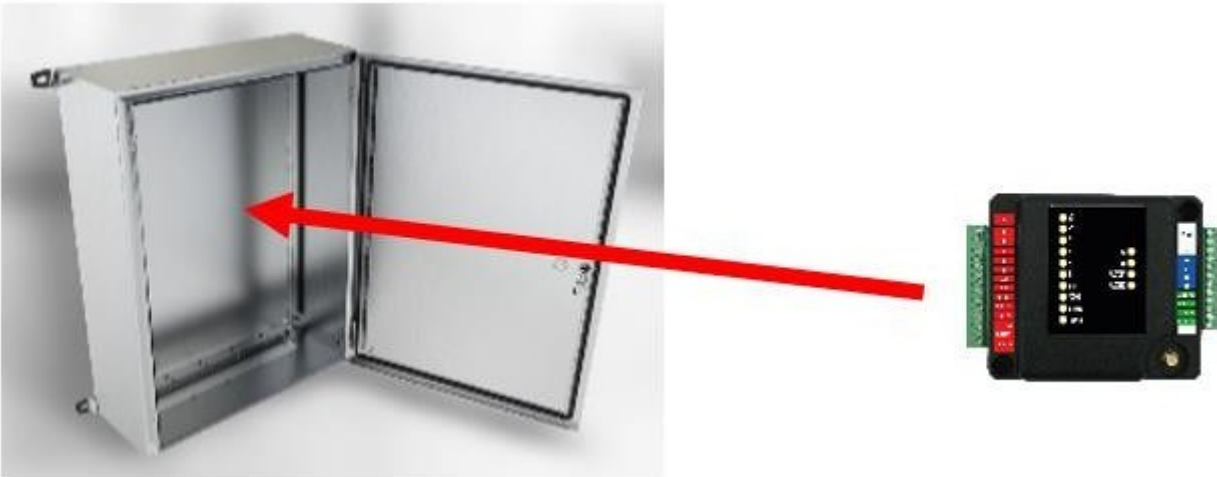
When transporting the device, attention should be paid to the label information and warning signs on it.

- If spare parts or sub-assemblies have not been assembled after delivery, they should be unloaded and stored in a place that is not exposed to open air, rain, or sun, and should be stored in the workshop in places protected from moisture and dust. Additionally, dust and moisture should be prevented from entering the device.
- During transportation, standard transportation rules must be followed and safety precautions must be taken.
- Care should be taken not to stack them on top of each other during storage and shipment.
- It must be protected against corrosion and precautions must be taken.
- Electrical components must be stored in a way that they are not damaged.



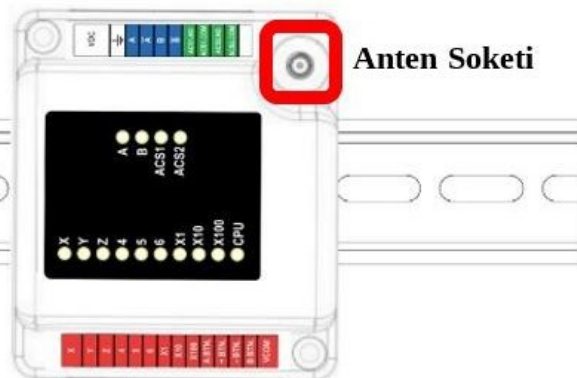
8.2 Receiver Device Setup

- Before starting the installation, make sure that the machine to which the wireless handwheel device will be connected is not in use and is turned off. After making the necessary checks, start the installation.
- Carefully remove the receiver device from the product box.
- The receiving device can be connected to the electrical/control panel of the machine to which the wireless handwheel will be connected. If the machine does not have such an electrical panel, a small electrical panel should be made and the device should be connected inside the panel. The device prevents the machine from dust, sawdust, water, etc. It should not be connected to parts affected by external factors.



- Check that there is appropriate space and DIN rail apparatus in the panel for mechanical connection. The wireless handwheel product requires a DIN rail piece for mechanical mounting.

DIN Ray

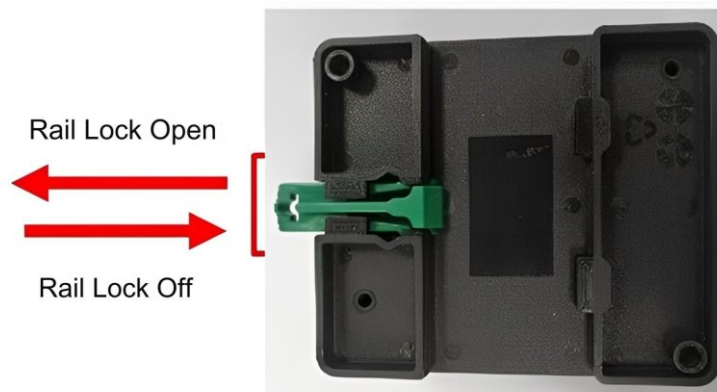


Anten Soketi

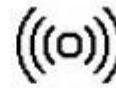
- You can use the handwheel receiver product as high power draw driver, power supply, etc. Do not connect it near interference-emitting devices.



- Unlock the rail apparatus on the back of the device by lifting it up.



- Place the unlocked handwheel receiver device on the rail inside the panel in a diagonal way, first the lower part of the rail and then the upper part.
- Make sure that the device is fully seated on the rail and push down the rail apparatus at the top behind the device to ensure that the device is locked to the rail.
- Since the Elfatek handwheel product works by wireless communication between the receiver and transmitter, both products must have antennas on them. The transmitter device contains an internal antenna. However, the receiver does not have an internal antenna on the device.
- Fix the antenna part, which comes out of the box and has a magnet at the bottom, on the machine in a way that it can directly see the transmitter.
- Never position the antenna between metal surfaces, inside a panel or in a closed environment. Otherwise, problems may occur in the wireless communication system.



- Sealing glands are recommended to insert the antenna into the panel.



- Connect the socket at the end of the antenna cable by turning it to the antenna socket on the receiving device you positioned inside the panel.
- After completing the mechanical assembly, make the electrical connection of the receiver device.
- Please review the machine technical documentation regarding how to make the electrical connection of the handwheel device and consult the manufacturer of the machine.
- For device power, use a power supply that is reliable and has voltage and current capacity that can power the handwheel receiver device.
- When connecting the cable to the terminals on the receiving device, use a cable ferrule and secure the cable tightly to the terminal. Otherwise, the cables may come out of the terminal block, causing a short circuit and causing serious damage to the machine.



- In order to prevent any interference that may occur in the system from affecting the handwheel device, use separate shielded (armored) cables for the connection of the encoder and axis-speed outputs. And shield the cables by connecting them to ground.



- If there is an interference problem despite using a shielded cable and there is a motor driver in the system used, change the operating frequency of the motor in the driver parameters.
- Power cables and signal cables should not be next to each other.
- All connections must be checked carefully before operating the device.



8.3 Transmitter Device Setup

- Before starting the transmitter installation, make sure that the machine to which the wireless handwheel device will be connected is not in use and is turned off. After making the necessary checks, start the installation.
- Carefully remove the transmitter device from the product box.
- In order for the transmitter device to work, only the battery connection is sufficient.
- To access the battery compartment on the back of the transmitter device, loosen the 2 bolts on the battery cover using a flat-head screwdriver.



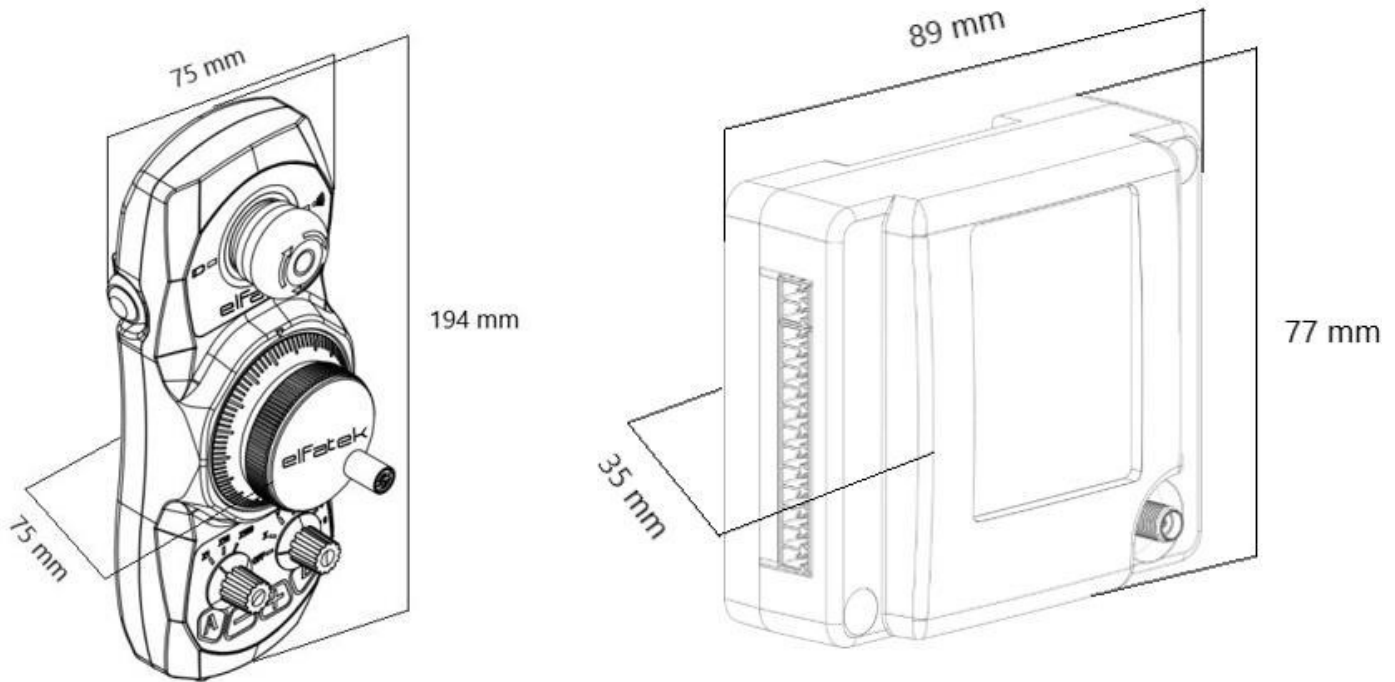
- The loosened battery cover is removed by pulling upwards and the battery compartment is accessed.
- Insert 2 AA batteries into the socket by paying attention to the direction.
- After inserting the battery, make sure that the information LEDs on the front of the transmitter light up. If the LEDs are not lit, check the battery connection, check the battery charge, and replace the battery.



- Take care to use industrial batteries recommended by the manufacturer. The most efficient and suitable batteries for the device have been determined by the manufacturer (VARTA Industrial Pro AA LR6 1.5V, DURACELL Industrial AA 1.5V)

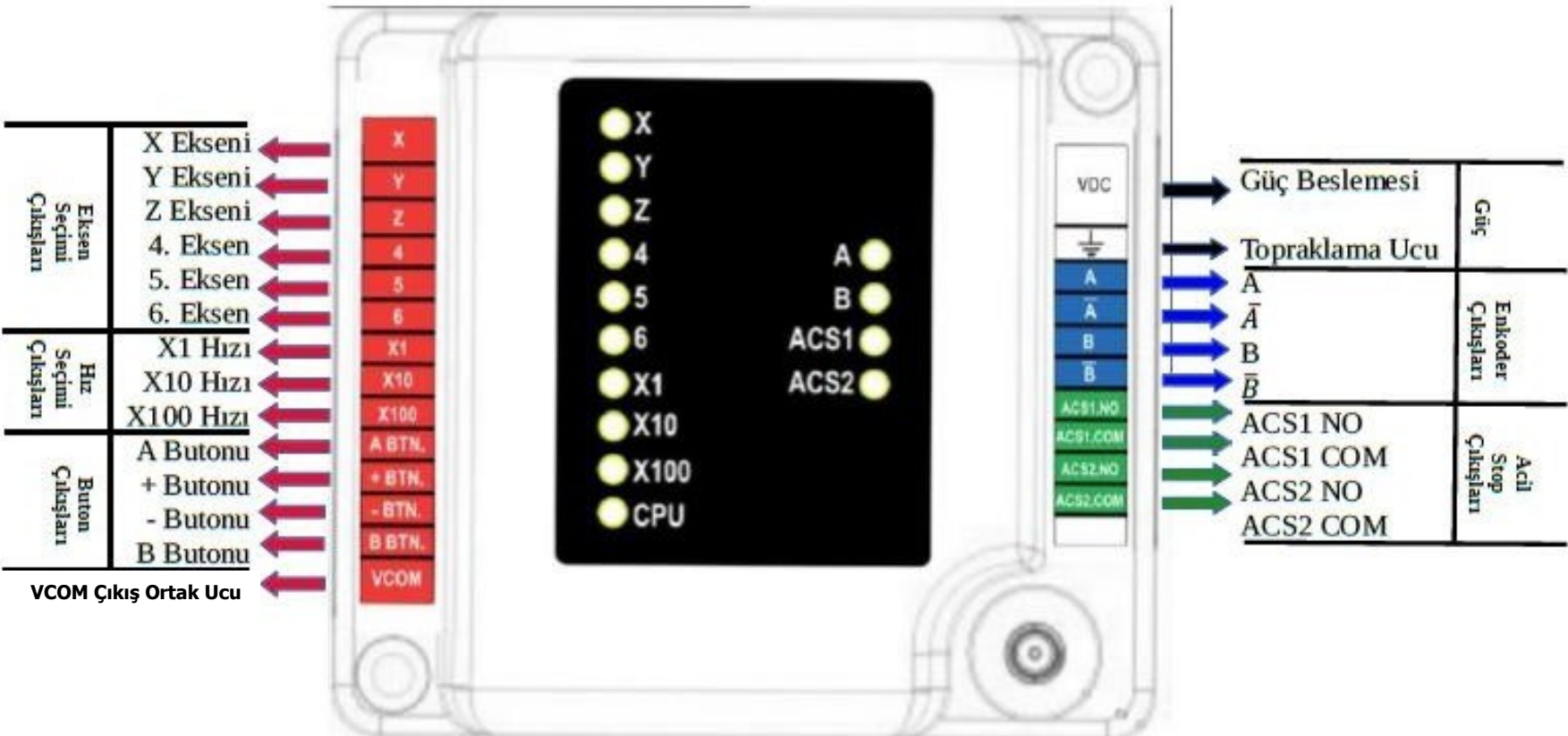


9. DEVICE MECHANICAL DIMENSIONS

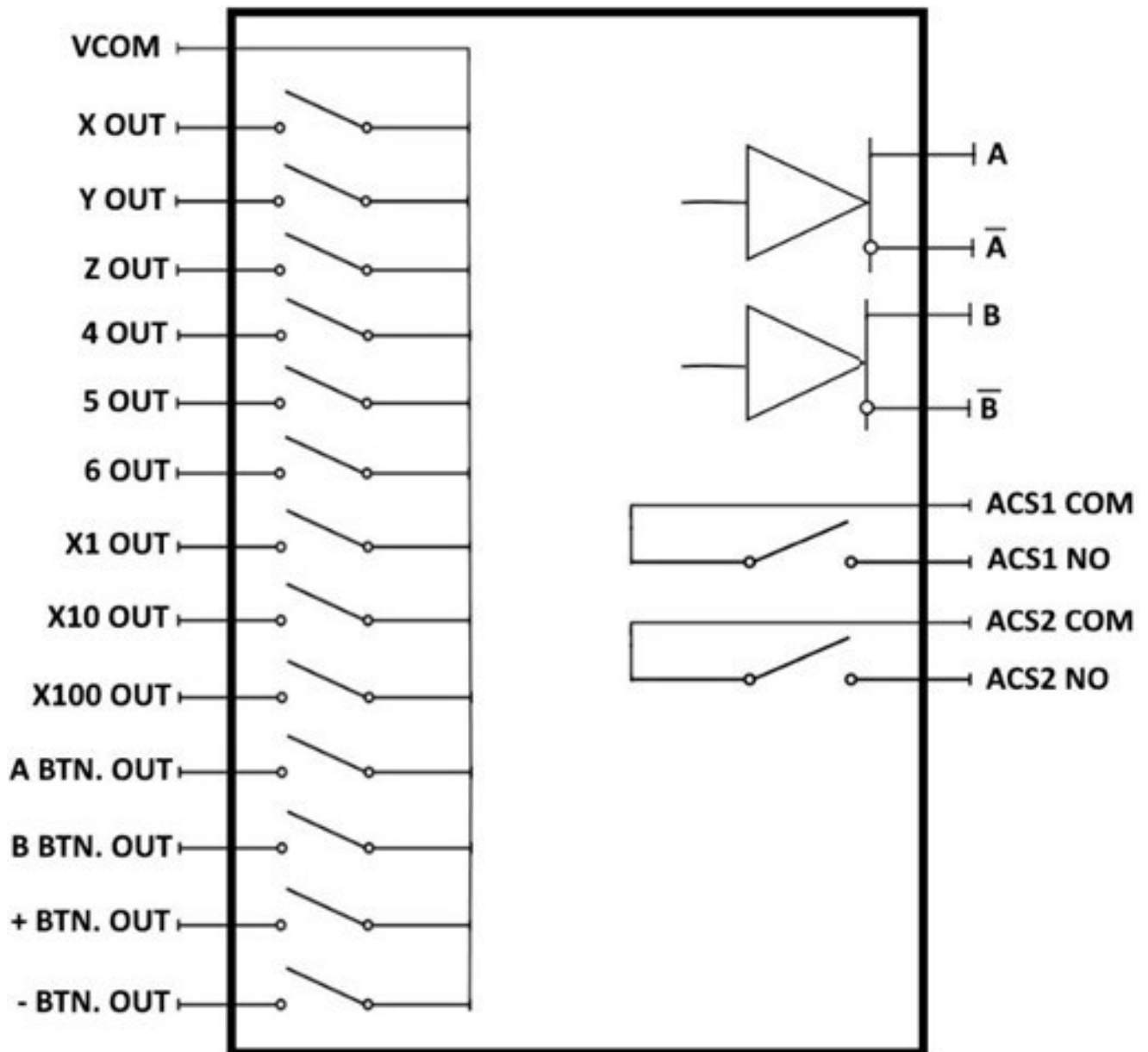


10. ELECTRICAL CONNECTION DIAGRAM

- The electrical connection to the device must be made as specified in the manual.
- The electrical connection to the device should not be made while the device is operating.
- After all connections have been checked, the device must be energized.
- The device power supply value should be checked and the power supply of the device should be made from a suitable source (12-24 VDC).
- The VCOM terminal must not be energized beyond its capacity (maximum +30 VDC)
- At the encoder outputs of the device, +3.3 VDC square wave signal is generated from channels A and B. A' and B' connection terminals have fixed GND.
- There are 2 ACS outputs on the receiving device. According to the application, these 2 emergency stop button outputs can be connected in series.
- The image on the next page shows the connection points on the receiving device.



- The electrical schematic of the device outputs is shown in the image below.



11. OPERATING INSTRUCTIONS AND ORDER OF OPERATION

11.1 Transmitter Instructions for Use



- 1- Emergency stop connection
- 2- Start Button
- 3- Communication Notification LED
- 4- Battery Warning LED
- 5- Handwheel Encoder
- 6- Axis Selection
- 7- Speed Selection
- 8- Buttons

- The communication LED on the device works to inform the operator about the communication status between the transmitter and receiver devices. When the device works, the communication LED on the device will light up. Communication LED can work in 2 colors.

Red (Continues): The transmitter and receiver failed to match.

Green (Continues): Transmitter and receiver successfully matched.

- The battery warning LED works to inform the operator that the battery capacity has dropped below the critical level. The battery warning LED can only light up in red color.
- If the battery warning LED flashes red, the battery has started to drop below the critical level. When the operator receives this notification, the operator should prepare a spare battery or install a new battery.
- If the battery warning is on continuously, the battery capacity of the handwheel transmitter is too low to operate the device. In this case, the operator must install a new battery.
- In order for the handwheel transmitter to operate, the emergency stop button must be pulled. If the emergency stop button is pressed, the device controls will be blocked for safety purposes and the transmitter will automatically put itself into sleep mode within 5-10 seconds to save power. Sleep mode allows the transmitter battery to operate the device for a longer period. When the device is in emergency stop mode, the communication LED is red (Side-Front).
- In order to take the transmitter out of sleep mode, the start button on the side of the device must be pressed. When the start button is pressed, the device will wake up again and continue this cycle by checking the emergency stop status.
- In order to take the device out of emergency stop mode and put it into motion mode, the emergency stop button is rotated and then the start button is pressed. When these operations are done, the device will switch to motion mode and will be ready for the operator's commands. When the device is in motion mode, the communication LED is green (Side-Front).

- There are 4 different actions in motion mode. These are axis selection, speed selection, button selection, and encoder movement.
- There are 7 different options on the axis selection step switch. These are OFF, X, Y, Z, 4, 5, 6. Whichever axis is selected in this step, that axis selection output on the receiver will be active, and possible operator commands will be applied on that axis. Only 1 axis can be selected at the same time and when the axis selection switch is OFF, no movement command can be given in any axis.
- There are 3 different options in the speed selection step switch. These are X1, X10, X100. Whichever speed is selected in this step, that speed selection output on the receiver is activated and possible operator commands will be applied at that speed.
- Button outputs are used to control electronic or electromechanical units connected to the system on the machine. These push-button outputs work digitally and as push-pull buttons. There is no function of working as a permanent button.
- The encoder on the handwheel transmitter is used to give precise movement to the device. If this encoder is rotated clockwise, the machine axis will move positively, and if it is rotated counterclockwise, the machine axis will move negatively.
- There are 100 steps on the encoder. When the encoder is turned 1 turn, the selected machine axis will move a unit distance of 100 steps.
- The start button must be kept pressed while the machine axis is moved with the encoder. Otherwise, the given movement command will not be received by the receiver. This function works to prevent the transmitter device from causing any undesirable movement on the machine as a result of falling or hitting something.



11.2 Receiver Operating Instructions

- The handwheel receiver device pairs with the transmitter device and establishes a wireless communication path, electrically producing the commands given by the operator via the transmitter device in a format that the machine can understand.
- There are connection points and information LEDs for axis selection, speed selection, button selection, emergency stop output, and encoder outputs on the receiving device.
- Thanks to these information LEDs, it is understood that the commands given on the transmitter have been successfully sent to the receiver.
- For the receiving device to communicate successfully with the transmitting device, the antenna coming out of the device box must be fixed in a position visible to the transmitter and its cable must be plugged into the socket on the receiver. Otherwise, communication problems may occur between the receiver and transmitter device.



12. SAFETY WARNINGS

- The cables of the device must be enclosed in such a way that they cannot be crushed or stepped on in any way.
- The receiver must be located in an environment free of water and dust.
- During device installation, make sure that the machine is turned off and there is no one around.
- After completing the installation and checking everything, start the machine.
- Maintenance and repair work on electrical devices must be carried out by an expert electrician.
- Cut off the device power during installation, maintenance, and service.
- Use materials recommended by the manufacturer during maintenance or service.
- Only persons authorized to operate the machine should use the handwheel device. Persons who are not authorized to operate the machine should never use the handwheel device.

13. MAINTENANCE AND CLEANING

- Maintenance, cleaning, and repair work must be carried out after taking precautions to prevent accidental operation of the device.



**Electricity
Danger**



**Intervention by other
than authorized electrical
maintenance personnel
is prohibited.**



**It is forbidden to work on
the equipment while it is
energized.**



**In cases where work under
energy is required, the
necessary safety precautions
to be taken by the energy
maintenance manager must be
determined and approved.**

- Maintenance and repair work on electrical devices must be carried out by a qualified electrician.
- Replace worn and deformed parts with new ones to prevent malfunctions.
- In case of suspicious situations encountered in the operation of the device, the device must be stopped immediately and the technical service must be informed.
- Clean the device daily from sawdust, dust, etc. with a dry soft cloth or brush at the end of the usage period.

- Have spare batteries ready when the device gives a possible battery warning and continue to use the device by inserting the spare batteries into the transmitter when it stops working at the next level of battery warning.
- When changing the battery, do it in a clean place. Do not put sawdust etc. into the battery compartment. Be careful not to let any conductive object escape. Otherwise, this may cause major damage to the device.



Please dispose of used batteries in battery waste bins.



14. WHAT TO DO IN CASE OF FAILURE

If you find that the device malfunctions or operates outside of its intended mode of operation, read the possible simple malfunction and solution section below and correct it if it is a correctable fault. If the malfunction is not included in this list or if it is a malfunction that cannot be solved simply, contact the technical service and follow the instructions provided.

- If your device's battery drains quickly, verify that the battery you are using is the recommended brand and original.
- If the communication between the receiver and transmitter is interrupted, check the antenna socket on the receiver and tighten it securely. Also make sure that the antenna cable is not damaged, crushed, scratched, etc., and that the antenna is fixed in a place where the operator can see it while using the transmitter.
- If there is an interruption in movement, etc., the electrical connections must be checked. Lack of contact, short circuits in cables, etc. may cause this error. Cables should be checked and corrected.

15. SPARE PART LIST



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WARRANTY CERTIFICATE

The device is guaranteed for 2 (two) years against any manufacturing defects.

The following items are not covered by the warranty:

Buttons, relays and switches, as well as any intervention inside the device or misuse or misuse for purposes other than those specified in the user manual, are outside the scope of warranty. In case of any malfunction or complaint that may occur in our device, you can contact us at the address or phone number in the manual. You can ask for help.

The seller's liability under the warranty conditions is limited to the repair or replacement of defective parts or equipment within the conditions specified herein.

Devices that come to the service for repair and maintenance are shipped within 5 business days.

Selling Company Stamp / Signature



Serial number :
Barcode No. :
History : / /
Manufacturer : Elfatek Elektronik Ltd. Ltd.
Maximum Repair Time: 20 business days
Warranty Period : 2 (two) Years

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