



# **:BE24**

CE

BE24 - (AS05870)

Electronic control unit INSTRUCTIONS FOR INSTALLATION

| Control unit           | BE24 / AS05870   |
|------------------------|--|
| Туре                   | Electronic control unit for automation<br>of a double swing gate with 24VDC motors |
| Power supply           | 230 VAC single-phase 50/60 Hz  |
| No. of motors          | 1 - 2  |
| Motor power supply     | 24 Vdc   |
| Flashlight             | 24 Vdc 10W max   |
| Accessory power supply | 24 Vdc 10W max   |
| Radio receiver         | Integrated, 200 trasmitters maximum  |
| Operating temperature  | -20°C +60°C  |
| Run time               | ENCODER or TIME  |

#### 2 - TECHNICAL SPECIFICATIONS/FUNCTIONS

- · Red warning LEDs for N.C. contacts and for programming.
- Blue LED for times programming.
- · Buttons on the circuit board for programming and learning the radio controls.
- Automatic run time learning with simplified procedure.
- · Onboard radio receiver that can store up to 200 radio controls.
- · Control of the radio transmitter channels via dip switches.
- Deceleration during opening and closing.
- Deceleration speed adjustable via DIP switch.
- Stop and motion inversion after intervention of the safety devices.
- · Anti-crushing function both at normal speed and in deceleration.
- Amperometric reading of motor absorption for the anti-crushing function adjustable via DIP switch.
- Pedestrian operation with motor 1 opening.
- Two N.C. inputs, photocell 1, photocell 2.
- One 8K2 input (SAFETY) programmable as STOP 8K2 or EDGE 8K2.
- Two possible operating logics: step-by-step with stop or condominium selectable via DIP switch.
- · Gate phase shift time adjustable via DIP switch.
- Programming of automatic closing and pause time via DIP switch.
- Provision for use with buffer batteries.
- · Soft-Start and Soft-Stop to limit mechanical shock.

#### Thank you for choosing GIBIDI.

#### READ CAREFULLY THESE INSTRUCTIONS BEFORE PROCEEDING WITH INSTALLATION.

#### WARNINGS:

This product has been tested by GI.BI.DI. for full compliance with the requirements of the directives in force. GI.BI.DI. S.r.I. reserves the right to change the technical data without prior notice in relation to product development.

DISPOSAL: GI.BI.DI. advises recycling the plastic components and to dispose of them at special authorised centres for electronic components thus protecting the environment from polluting substances.



#### **3 - INSTALLATION WARNINGS**

- Before proceeding with installation, fit a differential magnetothermal switch with a maximum capacity of 10A upstream of the system. The switch must guarantee omnipolar separation of the contacts with an opening distance of at least 3mm.
- To prevent possible interference, differentiate and always keep the power cables (minimum cross-section 1.5 mm<sup>2</sup>) separate from the signal cables (minimum cross-section 0.5 mm<sup>2</sup>).
- Make the connections referring to the following tables and to the attached screen-print. Be extremely careful to connect in series all the devices that are connected to the same N.C. (normally closed) input, and in parallel all the devices that share the same N.O. (normally open) input.
- Incorrect installation or improper use of the product may compromise system safety.
- · Keep all the materials contained in the packaging away from children since they pose a potential hazard.
- The manufacturer declines all responsibility for improper functioning of the automated device if the original components and accessories suitable for the specific application are not used.
- · When installation is complete, always carefully check proper functioning of the system and the devices used.
- This instruction manual addresses professionals qualified to install "live equipment" and therefore requires good technical knowledge and installation in compliance with the regulations in force.
- Maintenance must be carried out by qualified personnel.
- · Before carrying out any cleaning or maintenance operation, disconnect the control unit from the mains.
- The control unit described in this document may only be used for the purpose for which it was designed.
- · Check the intended end use and take all the necessary safety precautions.
- Use of the products for purposes different from the intended use has not been tested by the manufacturer and is therefore on full responsibility of the installer.
- Mark the automated device with visible warning plates.
- Warn the user that children or animals should not play or stand near the gate.
- Appropriately protect the dangerous points (for example, using a sensitive frame).

## **4 - WARNINGS FOR THE USER**

- In the event of an operating fault or failure, cut the power upstream of the control unit and call Technical Service. Periodically check functioning of the safety devices. Any repairs must be carried out by specialised personnel using original and certified materials.
- The product may not be used by children or persons with reduced physical, sensorial or mental capacities, or lacking experience and knowledge, unless appropriately instructed.
- · Do not access the circuit board for adjustments and/or maintenance.



WARNING: IMPORTANT SAFETY INSTRUCTIONS. It is important for the safety of persons to follow these instructions. Keep this instruction manual.

#### **5 - ELECTRICAL CONNECTIONS: CONNECTORS**

| FASTON | Description             |
|--------|-------------------------|
| CF1    | 0 VAC from transformer  |
| CF2    | 24 VAC from transformer |

#### 6 - ELECTRICAL CONNECTIONS: TERMINAL BOARDS

| Terminal | Position | Signal         | Description  |  |
|----------|----------|----------------|--|--|
|          | 1        | M1+            | Motor 1+   |  |
|          | 2        | M1-            | Motor 1-   |  |
| M1       | 3        | M2+            | Motor 2+   |  |
|          | 4        | M2-            | Motor 2-   |  |
|          | 5        | EL+            | + Electric lock power supply 12V   |  |
|          | 6        | EL-            | - Electric lock power supply 12V   |  |
|          | 7        | LAMP/SPIA      | + FLASHLIGHT power supply 24 VDC MAX 10W.  |  |
| M2       | 8        | LAMP/SPIA      | <ul> <li>FLASHLIGHT power supply 24 VDC MAX 10W.</li> </ul>  |  |
|          | 9        | +ACC           | +24Vdc External accessory power supply MAX 10W   |  |
|          | 10       | -ACC           | External accessory power supply common   |  |
|          | 11       | 5V             | Motor 1 ENCODER +5VDC power supply.  |  |
|          | 12       | S1             | Motor 1 ENCODER signal.  |  |
| M3       | 13       | COM            | Motor 1 ENCODER power and signal common.   |  |
| INIJ     | 14       | 5V             | Motor 2 ENCODER +5VDC power supply.  |  |
|          | 15       | S2             | Motor 2 ENCODER signal.  |  |
|          | 16       | COM            | Motor 2 ENCODER power and signal common.   |  |
|          | 17       | START          | START input (N.O.).  |  |
|          | 18       | PED            | PEDESTRIAN input (N.O.) (DIP 2_7)  |  |
|          | 19       | PHOTO 1        | PHOTOCELL 1 input (N.C.). Input active only during closing. It stops and inverts the motion, opening the gate completely. If the gate is closed, it does not affect its functioning. If intercepted during pause, it reloads the pause time.   |  |
| M4       | 20       | PHOTO 2        | PHOTOCELL 2 input (N.C.). Input active during both opening and closing.<br>If intercepted, it immediately stops the motion and holds it stopped until the photocell<br>is freed. Upon release, motion always restarts in opening. If intercepted during pause, it<br>reloads the pause time. |  |
|          | 21       | STOP<br>SAFETY | Programmable 8K2 INPUT (STOP 8K2 – EDGE 8K2).  |  |
|          | 22       | COM            | Accessory common.  |  |
|          | 23       | COM            | Accessory common.  |  |
|          | 24       | IN1            | Unused imput.  |  |
|          | 25       | IN2            | Unused imput.  |  |
| M5       | 26       | COM            | Antenna braid input.   |  |
| GINI     | 27       | ANT            | Antenna signal input.  |  |
| Me       | 28       | +BAT           | +Battery 24V MAX 3Ah.  |  |
| WIC      | 29       | -BAT           | -Battery 24V MAX 3Ah.  |  |

# 7 - PROTECTION FUSES

| Position | Value | Туре | Description  |  |
|----------|-------|------|--|--|
| F1       | 10A   | F    | Protects battery power circuit.                                  |  |
| F2       | 3,15A | F    | Protects external accessories, electric lock and flashing light. |  |
| F3       | 8A    | F    | rotects the circuit board.                                       |  |
| F4       | 2A    | F    | Protects the transformer.  |  |

#### 8 - WARNING LEDs

| Position    | Colour | Signal  | Description   |  |
|-------------|--------|---|---|--|
| L1          | GREEN  | START   | Comes on when the START control is activated from the terminal board or the receiver.   |  |
| L2          | GREEN  | PED   | Comes on when th  | e PED control is activated from the terminal board or the receiver.                                    |
| L3          | RED    | PHOTO1  | Always on. Comes  | off when the contact of terminal PHOTO 1 is opened.  |
| L4          | RED    | PHOTO2  | Always on. Comes  | off when the contact of terminal PHOTO 2 is opened.  |
| L5          | RED    | SAFETY  | Always on. Comes off when the resistance value of terminal SAFETY is wrong.             |  |
| L6          | RED    | RX  | Always off, comes   | on when LEARN button is pressed.   |
| L7 BLUE INF |        | 0,2s ON 0,2 OFF                                       | The control board is locked, it's necessary to execute a new travel learning procedure. |  |
|             | 2005   | BLUE INFO   | 30s ON  | The control board is in pre-learning phase, aftre pressing MEMO button.                                |
|             |        |   | 0,2s ON-4s OFF  | During sleep time, the control board is set to work with KUDA - AGO424E - AGO624E. operator.           |
|             | BLUE   |   | 0,2s ON - 0,2s OFF<br>0,2s ON - 4s OFF  | During sleep time, the control board is set to work with SERRA320 -<br>SNAPPER - AGO424E/S - AGO624E/S |
|             |        |   | 1s OFF - 0,6s ON - 1s OFF<br>X2   | Motor 1 encoder error, travel learning procedure failed.   |
|             |        | 1s OFF - 0.6s ON - 0.6s OFF<br>0.6s ON - 1s OFF<br>X2 | Motor 2 encoder error, travel learning procedure failed.                                |  |

#### 9 - DIP SWITCH DIP1

The settings are stored during the rest phase (gate closed). The default settings are highlighted in the boxes with grey background.

| DIP | Function                   | Status     | Description  |  |  |
|-----|----------------------------|------------|--|--|--|
|     | AUTOMATIC                  | ON         | Operation in response to the START command:         • Gate closed       → OPENS         • During opening       → UNINFLUENTIAL         • Gate open       → Reloads the automatic closing time if automatic closing is enabled, otherwise it closes.  |  |  |
| 1_1 | STEP-BY-STEP<br>WITH STOP  | OFF        | Operation in response to the START command:         • Gate closed $\rightarrow$ OPENS         • During opening $\rightarrow$ STOPS         • Gate open $\rightarrow$ CLOSES         • During closing $\rightarrow$ STOPS         • After a STOP $\rightarrow$ inverts the motion   |  |  |
| 1_2 | TERMINAL 21<br>AS 8K2 EDGE | ON         | Operation :         • Gate closed       →       UNINFLUENTIAL         • During opening       →       Immediate motion inversion for 2s at low speed, when contact is freed, the gate will continue with inverted movement at low speed.         • Gate open       →       UNINFLUENTIAL         • During closing       →       Immediate motion inversion for 2s at low speed, when contact is freed, the gate will continue with inverted movement at low speed, when contact is freed, the gate will continue with inverted movement at low speed. |  |  |
|     | TERMINAL 21<br>AS 8K2 STOP | OFF        | Operation :• Gate closed $\rightarrow$ • During opening $\rightarrow$ • Gate open $\rightarrow$ • During closing $\rightarrow$ STOP  |  |  |
|     |                            | OFF<br>OFF | Very High sensitivity.   |  |  |
| 13  | ANTI CRUSHING              | OFF        | High sensitivity.  |  |  |
| 1_4 | SENSITIVITY                | ON<br>OFF  | Medium sensitivity.  |  |  |
|     |                            | ON<br>ON   | Low sensitivity.   |  |  |
|     |                            | OFF<br>OFF | Automatic closing disabled.  |  |  |
| 1_5 |                            | OFF<br>ON  | 10 seconds.  |  |  |
| 1_6 | PAUSE HIME                 | ON<br>OFF  | 30 seconds.  |  |  |
|     |                            | ON<br>ON   | 60 seconds.  |  |  |

7

#### 9 - DIP SWITCH DIP1

The settings are stored during the rest phase (gate closed). The default settings are highlighted in the boxes with grey background.

| DIP              | Function               | Status   | Description  |
|------------------|------------------------|--|--|
| 1_7 PRE-FLASHING |                        | ON   | Enables pre-flashing of 3 seconds before motor activation during opening and closing.  |
|                  |                        | OFF  | Disables pre-flashing.   |
|                  |                        | OFF<br>OFF   | Disables gate phase shift time.  |
| 1_8              | GATE PHASE             | OFF<br>ON  | Motor 2 delay during opening: 3 seconds.<br>Motor 1 delay during closing: 3 seconds.   |
| 1_9              | 9 SHIFT TIME ON<br>OFF | ON<br>OFF  | Motor 2 delay during opening: 3 seconds.<br>Motor 1 delay during closing: 6 seconds.   |
|                  | ON<br>ON               | Motor 2 delay during opening: 3 seconds.<br>Motor 1 delay during closing: 9 seconds. |  |
| 1_10             | WATER HAMMER           | ON   | Enables the water hammer function during opening to help electric lock release.<br><b>Operation:</b> at the START command, the following will occur in sequence:<br>- electric lock activation;<br>- closing pulse of <b>1 sec</b> ;<br>- opening;<br>- electric lock release after <b>2 sec</b> . |
|                  |                        | OFF  | Disables the water hammer function.  |

### 10 - DIP SWITCH DIP2

The settings are stored during the rest phase (gate closed).

The default settings are highlighted in the boxes with grey background.

| DIP   | Function                               | Status   | Description   |
|---|--|--|---|
| 2 1   | DECELERATION                           | ON   | Deceleration speed equal to 50% of the maximum speed.   |
| <u>د_</u> ۱                                 | SPEED OFF                              |  | Deceleration speed equal to 30% of the maximum speed.   |
| MOVEMENT SPEED<br>changing this setting wil | ON                                     | Speed during normal movement equal to 100% of the maximum speed. |   |
| 2_2   | a new learning cycle will be required. | OFF  | Speed during normal movement equal to 80% of the maximum speed.   |
| 2_3   | FAST CLOSING ON                        |  | Enables fast closing function.<br>Operation: Reduces the stand-by time to 3 seconds following interception and<br>subsequent freeing of the photocells. Active only on photocell 1. |
|   |  | OFF  | Fast closing disabled.  |

#### **10 - DIP SWITCH DIP2**

The settings are stored during the rest phase (gate closed).

The default settings are highlighted in the boxes with grey background.

| DIP   | Function   | Status  | Description   |  |
|---|--|---|---|--|
| FUNCTIONING<br>changing this setting will   | ON   | ENCODER   |   |  |
| 2_4   | a new learning cycle will be required.                                   |   | TIME  |  |
| 2_5 ANTI<br>CRUSHING  |  | ON  | Anti crushing active.<br>-It is not active in the proximity of mechanical end stops.<br>-After anti crushing intervention the gate will reverse its movement for 1s, after a short<br>pause the movement will continue at slow speed.<br>-Subsequently to 3 consecutive anti crushing interventions the control board will<br>STOP and a user command will be required to start again the motion.<br>-Anti crushing is not active when working by time (DIP2_4 = OFF) |  |
|   |  | OFF   | Anti crushing disabled.   |  |
| 2.6   | SPIA   | ON  | Terminal M2_7 and M2_8 work as WARNING LIGHT.   |  |
| <sup>2_0</sup> FLASHING LIGHT   |  | OFF   | Terminal M2_7 and M2_8 work as FLASHING LIGHT.  |  |
|   |  | ON  | Terminal 18 works as START input, but it will not make the automatic closing even if enabled.   |  |
| 2_7 FUNCTIONING<br>TERMINAL 18  |  | OFF   | Terminal 18 works as PEDESTRIAN input.<br>The pedestrian manoeuvre is made with condominium logic on leaf 1 and is not<br>modifiable. The automatic closing is active if the automatic general closing is active.   |  |
| 2_8         FINAL STROKE<br>IN CLOSING         ON         Enables the final stroke in closing function<br>Operation:<br>After slowing down, the movement continues in slow down mode fo<br>the locking of the electric lock.<br>During the final stroke in closing the safety devices and the comman<br>active (PHOTO, EDGE, START, etc.) |  | Enables the final stroke in closing function<br>Operation:<br>After slowing down, the movement continues in slow down mode for 1s to facilitate<br>the locking of the electric lock.<br>During the final stroke in closing the safety devices and the commands are not<br>active (PHOTO, EDGE, START, etc.) |   |  |
|   |  | OFF   | Disables the final stroke in closing function   |  |
| 2_9   | DECELERATION<br>DISTANCE<br>changing this setting will                   | ON  | Long deceleration (~33% of the total stroke).<br>Irrelevant if DIP2_4=OFF.  |  |
|   | reset the control board and<br>a new learning cycle will be<br>required. | OFF   | Short deceleration (~25% of the total stroke).  |  |
| 2_10  | UNUSED   |   |   |  |

9

#### 11 - DIP SWITCH DIP3

#### In order to store the new settings It's necessary to power down and power up the control board.

The default settings are highlighted in the boxes with grey background.

| DIP  | Function  | Status     | Description                   |
|--|---|------------|-------------------------------|
| 3_1<br>3_2<br>3_2<br>START COMMA<br>ALLOCATION<br>TRANSMITTE<br>BUTTON | START COMMAND   | OFF<br>OFF | Transmitter button 1.         |
|  |   | OFF<br>ON  | Transmitter button 2.         |
|  | TRANSMITTER<br>BUTTON   | ON<br>OFF  | Transmitter button 3.         |
|  |   | ON<br>ON   | Transmitter button 4.         |
| 3 3  | PEDESTRIAN<br>COMMAND<br>ALLOCATION TO<br>TRANSMITTER<br>BUTTON           | OFF<br>OFF | Transmitter button 1.         |
|  |   | OFF<br>ON  | Transmitter button 2.         |
| 3_4  | If this setting is the same as DIP3_1 and DIP3_2, DEDESTRIAN is dischool. | ON<br>OFF  | Transmitter button 3.         |
|  | FEDES I RIAN IS UISADIEU.   | ON<br>ON   | Transmitter button 4.         |
| 3_5  | UNUSED  | OFF        | Keep this OFF, do not change. |
| 2.6  |   | ON         |                               |
| 3_0  |   | OFF        |                               |

#### **12 - ONBOARD RADIO RECEIVER CONTROL**

#### Storing a new transmitter in memory:

- 1 Press and release Learn button.
- 2 Led L6 will come on.
- 3 Press button 1 of the transmitter to be stored for 2 seconds.
- 4 The new transmitter is stored.
- 5 Led L6 will stay on for another 5 seconds; during this period, you can store other transmitters, restarting from step 3.

It is possible to store up to 200 transmitters.

#### Clearing the memory:

- 1 Press and hold down Learn button for 12 seconds.
- 2 Led L6 will initially come on and then go off after 12 seconds.
- 3 All the transmitters have now been deleted.

#### Assigning START and PED commands to the transmitter buttons:

Refer to Figure 17-18 and DIP3 configuration.

#### **13 - GATE TRAVEL LEARNING**

The procedure has two phases, completely automatic: the first one of OPENING and CLOSING SPACES learning and the second one of motors' amperometric values learning.

If using only one motor, it must be connected to the terminals M1.

Intervention of START, PED, PHOTO1, PHOTO2, SAFETY inputs during learning procedure will abort the procedure and it will be necessary to repeat it from the beginning.

During learning procedure FLASHING LIGHT / WARNING LIGHT will be on.

Travel learning movement is slowed down (50%).

Learning procedure cannot be executed while running on battery.

#### Learning procedure:

- Release the operators and move the gates to halfway their travel.
- · Lock the operators.
- Check that the mechanical opening and closing stops are present on the ground (KUDA AGO) or on the operator (SERRA320 - SNAPPER).
- Remove any obstacles in the range of action of the automated device.
- Check that leds L3, L4, L5 and L8 are on.
- Press and release MEMO button.
- · Led L7 will come on, after 30 seconds of no user interaction the control board will quit learning procedure.
- Within 30 seconds press again MEMO button in order to choose operator type. At the first stroke L7 will blink once every 4 seconds and that means KUDA - AGO424E - AGO624E is the installed operator; at the second stroke L7 will blink twice every 4 seconds and that means SERRA320 - SNAPPER - AGO424E/S -AGO624E/S is the installed operator. The operator selection sequence is cyclic.
- Press button 1 of the radio control or give a START pulse from the terminal board.
- VCheck that motors' movement is in the correct direction (at the beginning in opening). On the contrary, block the learning cycle with any safety device, invert the motor cables and repeat the procedure.

#### Movements during learning with 2 motors:

- Motor 1 opens until meeting the mechanical end-stops.
- · Motor 2 opens until meeting the mechanical end-stops .
- · 5 seconds pause.
- · Motor 2 closes until meeting the mechanical end-stops.
- Motor 1 closes until meeting the mechanical end-stops.
- Full open-close cycle.
- End of learning; L7 will goes off.

#### Movements during learning with 1 motor:

- Motor 1 opens until meeting the mechanical end-stops.
- 5 seconds pause .
- · Motor 1 closes until meeting the mechanical end-stops.
- It makes a complete manoeuvre, opening, 5 sec. pause and closing.
- · End of learning; L7 goes off.

#### In case the learning procedure cannot be completed, please check LED L7 status (chapter 8).

# 14 - FLASHING LIGHT SIGNALS SUMMARY

| Meaning   | Signal                       | Effect                 |
|---|------------------------------|------------------------|
| Opening   | 0,8s ON, 0,8s OFF continuous | The gate is opening    |
| Closing   | 0,4s ON, 0,4s OFF continuous | The gate is closing    |
| Photo 2 intercepted in stand-by<br>in presence of START command                       | 5 fast flashings             | When released it opens |
| Edge intercepted in stand-by<br>in presence of START command                          | 3 slow flashings             | Blocked closed door    |
| Edge intercepted in pause in presence of<br>START command or at the closing beginning | 3 slow flashings             | Blocked open door      |
| Low Battery before closing (21V).   | 4 slow flashing              | Blocked door           |
| Low Battery before opening or closing(16V).   | 4 slow flashing              | Blocked open door      |

# **15 - TROUBLESHOOTING**

| The gate does not move after a START command. | <ul> <li>Check that L3, L4 and L5 are off; if not, check the devices connected to terminals 19-20-21.</li> <li>Check fuses.</li> <li>Check that the battery voltage is not below 22VDC.</li> <li>If L7 is blinking fast, learning procedure must be executed.</li> </ul> |
|---|--|
| The gate moves slowly.                        | Check the control board is not running on battery.   |
| Transmitter range is short.                   | Check terminals 26-27 screws are tight.<br>Check and replace transmitter battery.  |
| The gate does not fully open/close.           | Check the motor and encoder connections.   |
| The gate moves slowly during opening.         | The first maneuvre after a power failer is slowed and with automatic logic.  |

# **Declaration of conformity CE**

The manufacturer:

GI.BI.DI. S.r.I.

Via Abetone Brennero, 177/B, 46025 Poggio Rusco (MN) ITALY

declares that the products:

#### **ELECTRONIC CONTROL UNIT BE24**

are in conformity to the following CEE Directives:

- Directive LVD 2006/95/CE and subsequent amendments;
- Directive EMC 2004/108/CE and subsequent amendments;

and that the following harmonised standards have been applied:

- EN60335-1,
- EN61000-6-2, EN61000-6-3

Date 08/02/2019

The legal Representative Michele Prandi

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# 14 **G:B:D:**

# NOTES

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