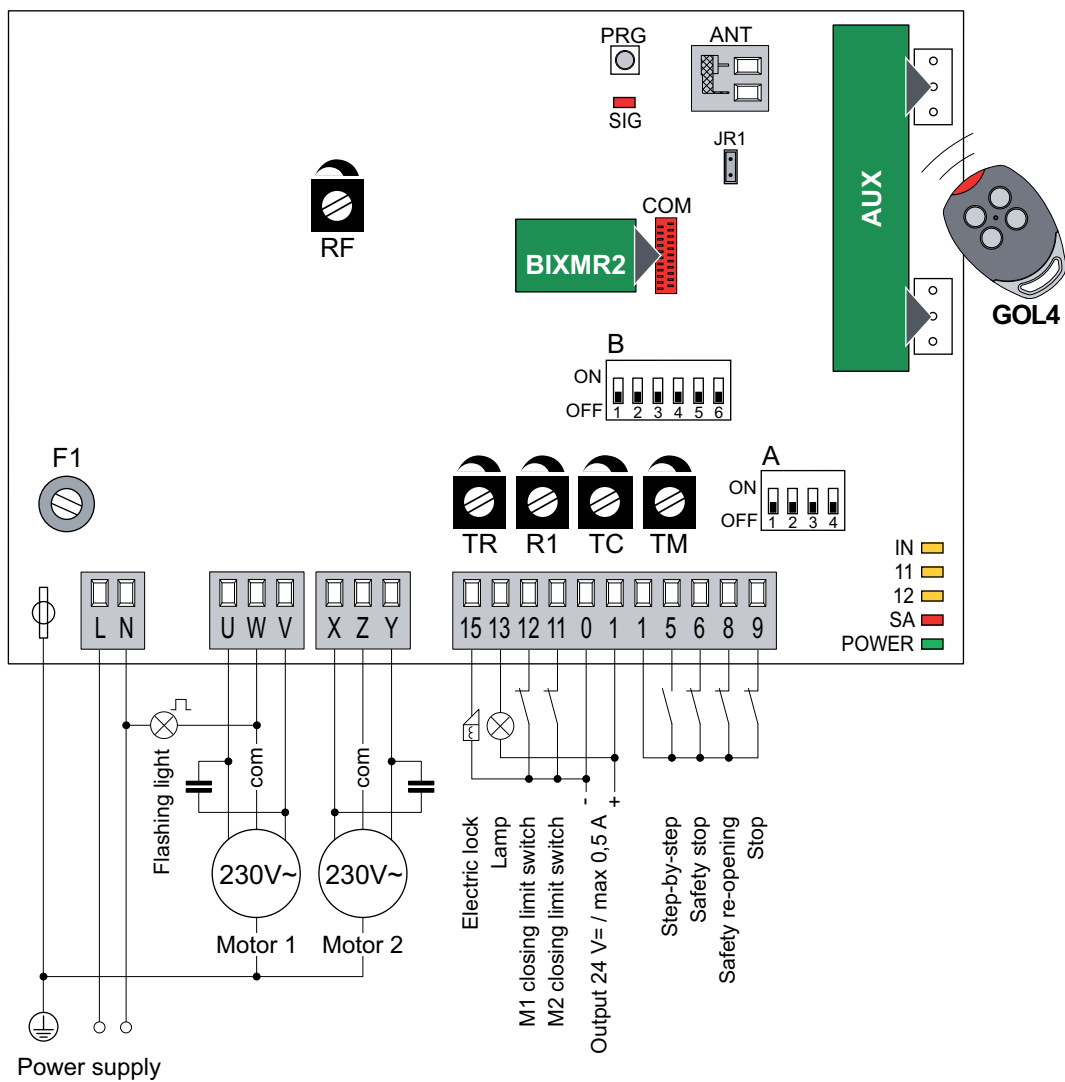


Entrematic E2

Installation manual for control panel for automations with two 230 V~ motors with built-in radio.



IP1935EN
Technical manual

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All right reserved

All data and specifications have been drawn up and checked with the greatest care. The manufacturer cannot however take any responsibility for eventual errors, omissions or incomplete data due to technical or illustrative purposes.

1. GENERAL SAFETY PRECAUTIONS



This installation manual is intended for professionally competent personnel only.

The installation, the power connections and the settings must be completed in conformity with Good Working Methods and with the regulations in force.

Before installing the product, carefully read the instructions. Bad installation could be hazardous. The packaging materials (plastic, polystyrene, etc.) should not be discarded in the environment or left within reach of children, as these are a potential source of hazard.

Before beginning the installation check that the product is in perfect condition.

Do not install the product in explosive areas and atmospheres: the presence of flammable gas or fumes represents a serious threat to safety.

The safety devices (photocells, sensitive edges, emergency stop, etc.) must be installed taking into account: the provisions and the directives in force, Good Working Methods, the installation area, the functional logic of the system and the forces developed by the automation.



Before making power connections, check that the rating corresponds to that of the mains supply. A multipolar disconnection switch with a contact opening gap of at least 3 mm must be included in the mains supply. Check that upstream of the electrical installation an adequate residual current circuit breaker and an overcurrent cut out are fitted.

When requested, connect the automation to an effective earthing system carried out as indicated by current safety regulations.

During installation, maintenance and repair operations, cut off the power supply before opening the cover to access the electrical parts.



To handle electronic parts, wear earthed antistatic conductive bracelets. The manufacturer of the motorisation declines all responsibility in the event of components which are not compatible with the safe and correct operation of the product.

For repairs or replacements of products only original spare parts must be used.

2. EC DECLARATION OF CONFORMITY

Manufacturer: DITEC S.p.A.

Address: via Mons. Banfi, 3 21042 Caronno P.Ia (VA) - ITALY

declares that the control panel E2 (with receiver 433.92 MHz) is in conformity with the provisions of the following EC directives:

R&TTE Directive 1999/5/CE;

EMC Directive 2004/108/CE;

Low Voltage Directive 2006/95/CE.

Caronno Pertusella, 19-07-2010

Silvano Angaroni
(Managing Director)

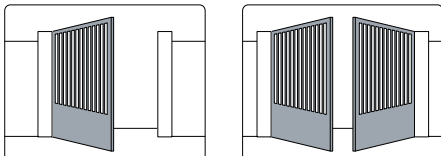
3. TECHNICAL DATA

	E2	E2J
Power supply	230 V~ / 50 Hz	120 V~ / 60 Hz
F1 fuse	F5A	F6,3A
1 motor output	230 V~ / 5 A	120 V~ / 6,3 A
2 motors output	230 V~ / 2 x 2,5 A	120 V~ / 2 x 3,15 A
Accessories power supply	24 V= / 0,5 A	
Temperature	-20 °C / +55 °C	
Degree of protection	IP55	
Memorable radio codes	200	
Radio frequency	433,92 MHz	



NOTE: the given operating and performance features can only be guaranteed with the use of DITEC accessories and safety devices.


3.1 Applications



4. CONNECTION OF POWER SUPPLY

Fix the control panel permanently. Pass the cables along from the lower side of the container.

Before connecting the power supply, make sure the plate data correspond to that of the mains power supply. An omnipolar disconnection switch with minimum contact gaps of 3 mm must be included in the mains supply. Check that upstream of the electrical installation there is an adequate residual current circuit breaker and a suitable overcurrent cutout.


Use a 3x1.5 mm FROR 450/750V type electric cable and connect to the terminals L (brown), N (blue),  (yellow/green) in the automation.

Secure the cable using a special cable clamp.

Make sure there are no sharp edges that may damage the power supply cable.

Connection to the mains power supply, in the section outside the automation, is made with independent channels and separated from the connections to the control and safety devices.

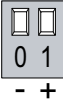

5. COMMANDS

Command	Function	Description
1 — 5	N.O. STEP-BY-STEP WITH AUTOMATIC CLOSING	With DIP1A=OFF and TC<MAX, the closing of the contact activates opening or closing operations in the following sequence: open-stop-close-open. <i>NOTE: the stop is not permanent but lasts for a duration set by TC.</i>
	STEP-BY-STEP WITHOUT AUTOMATIC CLOSING	With DIP1A=OFF and TC=MAX, the closing of the contact activates opening or closing operations in the following sequence: open-stop-close-open.
	OPENING WITH AUTOMATIC CLOSING	With DIP1A=ON and TC<MAX, the closing of the contact activates the opening operation.
	OPENING WITHOUT AUTOMATIC CLOSING	With DIP1A=ON and TC=MAX, the closing of the contact activates the opening operation. <i>NOTE: once the automation stops, the closing of the contact performs the opposite operation to the one performed before stop.</i>
1 — 6	N.C. SAFETY STOP	With DIP5B=ON, all operations are stopped and/or blocked when the safety contact is opened.
1 — 6	N.O. CLOSING	With DIP5B=OFF, the closing of the contact activates the closing operation.
1 — 8	N.C. REVERSE SAFETY CONTACT	The opening of the safety contact triggers a reversal of motion (re-opening) during closing.
1 — 9	N.C. STOP	The opening of the safety contact stops the current operation.
1 — 9	N.O. HOLD-TO-RUN FUNCTION	With DIP1A=ON and DIP5B=OFF, the opening of the 1-9 contact enables the hold-to-run function. - hold-to-run opening 1-3; - hold-to-run closing 1-4. <i>NOTE: any safety device, automatic closing and plug-in card inserted in AUX is disabled.</i>
0 — 11	N.C. M2 CLOSING LIMIT SWITCH	With TM=MAX, the opening of the contact stops the closing operation of motor 2 (M2). With TM=MAX and DIP3B=OFF, the opening of the contact stops the closing operation of motor 1 (M1).
0 — 11	N.O. M2 PROXIMITY LIMIT SWITCH	See page 12-14.
0 — 12	N.C. M1 CLOSING LIMIT SWITCH	With TM=MAX, the opening of the contact stops the closing operation of motor 1 (M1). With TM=MAX and DIP3B=OFF, the opening of the contact stops the opening operation of motor 1 (M1).
0 — 12	N.O. M1 PROXIMITY LIMIT SWITCH	See page 12-14.
PRG 	N.O. TRANSMITTERS STORAGE AND CANCELLATION	WARNING: the BIXMR2 storage module must be inserted. Transmitter storage: - press the PRG key (the SIG LED comes on), - transmit the transmitter to be stored (the SIG LED flashes), - wait 10 s to complete storage (the SIG LED goes out). Transmitter cancellation: - press the PRG key for 3 sec (the SIG LED flashes), - press the PRG key for another 3 sec (the SIG LED flashes quickly).







WARNING: make a jumper for all the N.C. contacts if not in use. The terminals with the same number are equal.


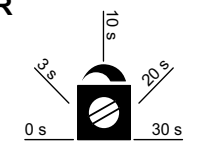

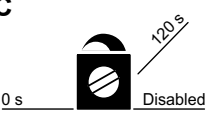

6. OUTPUTS AND ACCESSORIES







Output	Value -Accessories	Description
	24 V= / 0,5 A	Accessories power supply. Power supply output for external accessories, including automation status lamp.
1 — ⊗ — 11	24 V= / 3 W	Open automation lamp. Only with the 0-11 limit switch (N.C.) connected and DIP3B=OFF the light switches off when the automation is closed.
1 — ⊗ — 12	24 V= / 3 W	Closed automation lamp. Only with the 0-12 limit switch (N.C.) connected and DIP3B=OFF the light switches off when the automation is open.
1 — ⊗ — 13	24 V= / 3 W	Open automation lamp. The light switches off when the automation is closed.
0 — ⊗ — 15	12 V= / 15 W	Electric lock. Activated upon every opening command.
W — ⊗ — N	LAMP 230 V~ / 100 W	Flashing light. Activated during opening and closing operations.
X — ⊗ — L	230 V~ / 100 W	Courtesy light. In 1 motor mode only (with DIP3B=OFF and no motor connected to terminals X-Z-Y), an external courtesy light that turns on for 180 s with every opening (total or partial), step-by-step and closing command can be connected.
AUX		The control panel has one housing for plug-in cards such as a radio receiver type, magnetic loops, etc. Plug-in card operating is selected using DIP1A. <i>WARNING: the plug-in cards must be inserted and removed with the power supply disconnected.</i>
	BIXMR2	The storage module allows remote controls to be stored. If the control panel is replaced, the BIXMR2 storage module being used can be inserted in the new control panel. <i>WARNING: the storage module must be inserted and removed with the power supply disconnected.</i>

7. ADJUSTMENTS

	Description	OFF 	ON 
DIP1A	Command 1-5 operation. <i>NOTE: it also sets operating mode of the plugin cards connected on AUX.</i>	Step-by-step.	Opening.
DIP2A	Restore automatic closing time.	50%	100%
DIP3A	Automation status at power on. Indicates how the control panel considers automation when powered up.	Open. <i>NOTE: with limit switches installed, preferably set DIP3A=OFF.</i>	Closed. <i>NOTE: if the automatic closing function is not used, preferably set DIP3A=ON.</i>
DIP4A	Electric lock release.	Disabled.	Enabled.
DIP1B	Maximum power start.	Disabled. The motor starts with the voltage set with trimmer RF.	Enabled. The motor starts at maximum power for 1 s.
DIP2B	FUTURE USE	/	/
DIP3B	Automation type.	1 motor automation.	2 motors automation.
DIP4B	Automation model.	FACIL	Other automations.
DIP5B	Command 1-6 operation.	Closing.	Stop.
DIP6B	Reversal safety switch function.	With the automation blocked, if the contact 1-8 is open, it is possible to activate the opening operation.	With the automation blocked, if the contact 1-8 is open, any operation is impossible.

	Description	OFF 	ON 
JR1	Incorporated radio receiver.	Disabled.	Enabled.

Trimmer	Description
RF 	Power adjustment. Adjusts the voltage supplied to the motor.
TR 	Setting motor 1 (M1) closing delay time. From 0 to 30 s. When closing, motor 1 (M1) arrives after a delay set with trimmer TR relative to motor 2 (M2). When opening, motor 2 (M2) starts after a delay of 3 s relative to motor 1 (M1). With TR=MIN the door wings start simultaneously. <i>NOTE: setting TR=MIN with non-overlapping door wings and setting TR>3 s with overlapping door wings is recommended.</i>
R1 	Obstacle thrust adjustment. The control panel is equipped with a safety system that stops motion if an obstacle is encountered during an opening operation and stops or inverts the movement during a closing operation. R1=MIN gives maximum obstacle sensitivity (minimum thrust). R1=MAX disables obstacle detection (maximum thrust).
TC 	Setting automatic closing time. From 0 to 120 s. With DIP2A=OFF, once a safety switch has been activated, the counter starts as soon as the safety switch is released (for example after passing through the photocells), and lasts for a period of time set with trimmer TC (50%). With DIP2A=ON, the counter starts when automation is opened and lasts for the entire duration set with trimmer TC (100%). <i>NOTE: after the activation of the stop command, once contact 1-9 has closed again, automatic closing is only enabled after a total, partial or step-by-step opening command.</i>
TM 	Operation time adjustment. From 10 to 120 s. <i>NOTE: set TM=MAX with limit switches installed.</i>

LED	On	Flashing
SIG 	Transmitter enabling/storage phase.	Reception of a radio transmission.
		Cancellation of transmitters in progress.
		BIXMR2 memory damaged.
IN 	Receipt of command or change in status of a dip-switch.	/
11 	0-11 limit switch contact is open.	/
12 	0-12 limit switch contact is open.	/
SA 	At least one of the safety contacts is open.	Operations count performed (only when control panel is switched on): each rapid flash = 1000 operations each slow flash = 10000 operations
POWER 	Power supply on.	/

8. RADIO RECEIVER OPERATION

The control panel is equipped with a radio receiver with a frequency of 433.92 MHz. The antenna consists of a 173 mm long rigid wire.

It is possible to increase the range of the radio by connecting the external antenna of the flashing lights, or by installing the tuned antenna (BIXAL).

NOTE: to connect the external antenna to the control panel, use a coaxial cable type RG58 (max 10 m).

Up to 200 remote controls can be stored in the BIXMR2 storage module.

WARNING: if the radio receiver on the control panel is not used, set JR1=OFF and remove the storage module.

Refer to the transmitters user manual to store, clone and delete transmitters.

From one to four CH keys of a single transmitter can be stored in the control panel.

If only one (any) CH key of the transmitter is stored, command 1-5 (step-by-step/opening) is carried out.

If from two to four CH keys of a single transmitter are stored, the functions matched with the CH keys are as follows:

- CH1 = command 1-5 step-by-step/opening;
- CH2 = partial opening command, it causes the automation to open for about 8 s;
- CH3 = command to switch on/off the courtesy light;
- CH4 = stop command, equivalent to impulsive command 1-9.

If the control panel is replaced, the BIXMR2 storage module being used can be inserted in the new control panel.

WARNING: the BIXMR2 storage module must be inserted and removed with the power supply disconnected.

9. START-UP



WARNING The operations in point 5 are performed without safety devices.
The trimmer can only be adjusted with the automation idle.

- 1- Make a jumper for the N.C. safety contacts.
- 2- Check the application type selected.
- 3- If installed, adjust the opening and closing stop limit switches.
NOTE: limit switches must be kept pressed until the operation has been completed.
- 4- Set TR>3 s in case of automation with two overlapping door wings.
- 5- Switch on and check that the automation is operating correctly with subsequent opening and closing commands.
If installed, check that the limit switches are activated.
NOTE: if the direction of rotation of the motor is incorrect for the desired direction of the automation, swap the U-V or X-Y phases.
- 6- Connect the safety devices (removing the relative jumpers) and check they work correctly.
- 7- If required, adjust the automatic closing time with the TC trimmer.
WARNING: the automatic closing time after a safety device has triggered depends on the DIP2A setting.
- 8- Set RF trimmer to a position that allows the automation to function correctly while ensuring the safety of the user in the event of collision.
- 9- Set the obstacle thrust with the R1 trimmer.
NOTE: if the door wing closing second encounters an obstacle, both door wings are reopen and the subsequent closing operation is performed one door wing at a time.
WARNING: check that the working forces exerted by the door wings are compliant with EN12453-EN12445 regulations.
- 10- Connect any other accessories and check they operate correctly.
- 11- Once the start-up and check procedures are completed, close the container.

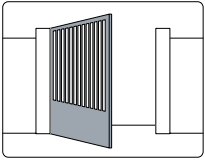


NOTE: in the event of servicing or if the control panel is to be replaced, repeat the start-up procedure.

10. TROUBLESHOOTING

Problem	Possible causes	Remedy
The automation does not open or close.	No power. (POWER led off).	Check that the control panel is powered correctly.
	Short circuited accessories. (POWER led off).	Disconnect all accessories from terminals 0-1 (voltage must be 24 V=) and reconnect one at a time.
	Blown line fuse. (POWER led off).	Replace F1 fuse.
	Safety contacts are open. (SA led on).	Check that the safety contacts are closed correctly (N.C.).
	The remote control does not work.	Check the correct memorization of the transmitters on the incorporated radio. If there is a fault with the radio receiver that is incorporated in the control panel, the radio control code can be read by removing the storage module.
The automation opens but does not close.	Safety contacts are open. (SA led on).	Check that the safety contacts are closed correctly (N.C.).
	Photocells are activated. (SA led on).	Check that the photocells are clean and operating correctly.
	The automatic closing does not work.	Check that the TC trimmer is not set at the maximum.
The automation is very weak and does not invert the movement.	The motor's condenser has an incorrect capacity value.	Replace the motor's condenser.
External safety devices not activating.	Incorrect connections between the photocells and the control panel.	Connect N.C. safety devices together in series and remove any bridges on the control panel terminal board.
The remote control has limited range and does not work with the automation moving.	The radio transmission is impeded by metal structures and reinforced concrete walls.	Install the antenna outside. Substitute the transmitter batteries.

11. EXAMPLE APPLICATION FOR GATES WITH ONE SWINGING DOOR WING



When the control panel is used in applications with one swinging door wing, one of the following operating modes may be selected:

(Fig. 11.1) Door wing stops against mechanical stops and in the event of obstacle detection.

Set an operating time of 2-3 s longer than the effective time taken by the door wing ($TM < MAX$) and bridge terminals 0-11-12 with jumpers.

In this configuration, the door wing will stop against mechanical opening and closing stops and in the event of obstacle detection.

(Fig. 11.2) Door wing stops against limit switches and in the event of obstacle detection.

The N.C. contacts of the opening and closing limit switches are connected in series with the motor phases. Set an operation time $TM < MAX$ and bridge terminals 0-11-12 with jumpers.

In this configuration, the door wing stops against the opening and closing limit switches and in the event of obstacle detection.

(Fig. 11.3) Door wing stops against limit switches and inverts in the event of obstacle detection.

Set an operating time $TM = MAX$ and connect the opening and closing limit switches N.C. contacts to terminals 0-11-12.

In this configuration, the door wing stops when the limit switches are activated. In the event of obstacle detection while opening, the door wing stops, performing a disengagement operation, whereas during a closing operation, the door wing reopens.

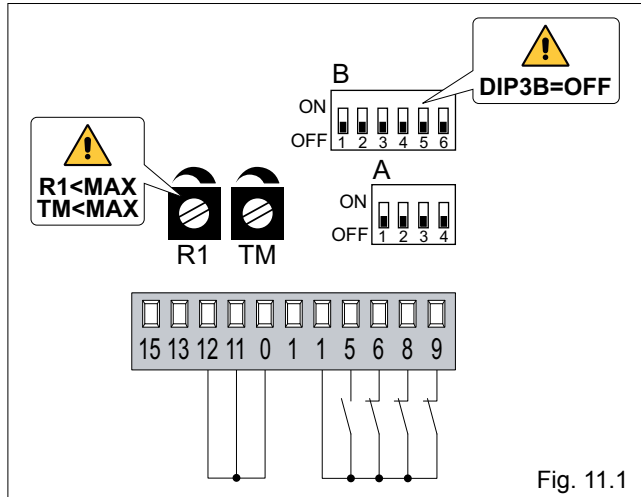


Fig. 11.1

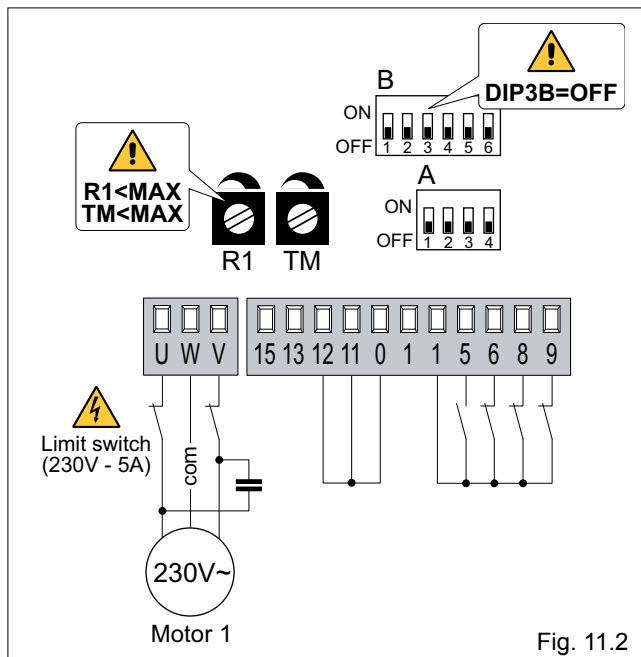


Fig. 11.2

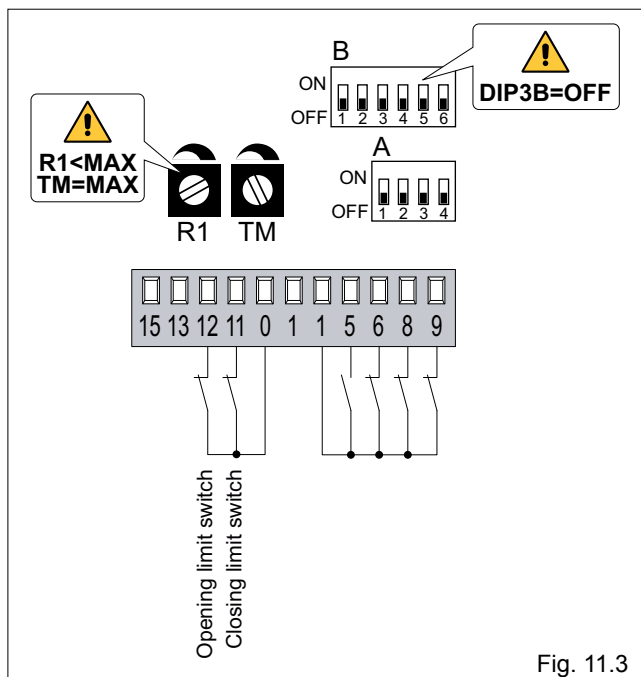


Fig. 11.3

(Fig. 11.4) Door wing stops against mechanical stops and inverts in the event of obstacle detection.

Set an operating time of 2-3 s longer than the effective time taken by the door wing ($TM < MAX$) and position the proximity limit switches 2-3 s ahead of the mechanical stop.

In this configuration, the door wing stops against its respective mechanical closing and opening stop.

In the event of obstacle detection before the activation of the proximity limit switch while opening, the door wing stops, performing a disengagement operation; after the proximity limit switch is activated, the door wing stops against the obstacle.

In the event of obstacle detection while closing and before the activation of the proximity limit switch, the door wing reopens; after the proximity limit switch is activated, the door wing stops against the obstacle.

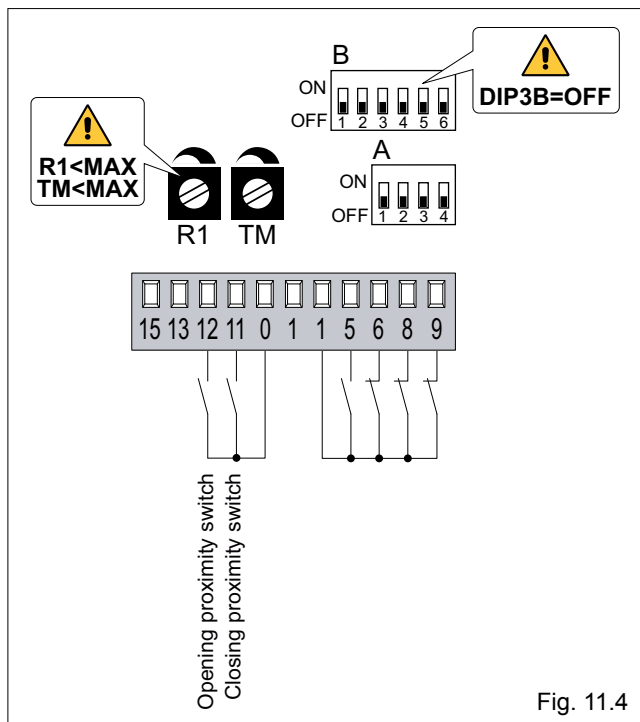


Fig. 11.4

(Fig. 11.5) Door wing stops against the limit switch when opening and against the mechanical stop when closing, and inverts in the event of obstacle detection.

Set an operating time 2-3 s longer than the effective time taken by the door wing ($TM < MAX$), and the closing proximity switch 2-3 s earlier than the mechanical stop and connect the N.C. opening limit switch in series to the opening phase of the motor.

In this configuration the wing stops on the closing mechanical stop while on the opening, it stops and releases when the relative limit switch operates.

During opening operation, in the event of obstacle detection, the wing stops, performing a disengagement operation.

During closing operation, in the event of obstacle detection before the proximity switch operates, the wing reopens; after the proximity switch operates, the wing stops on the closing mechanical stop.

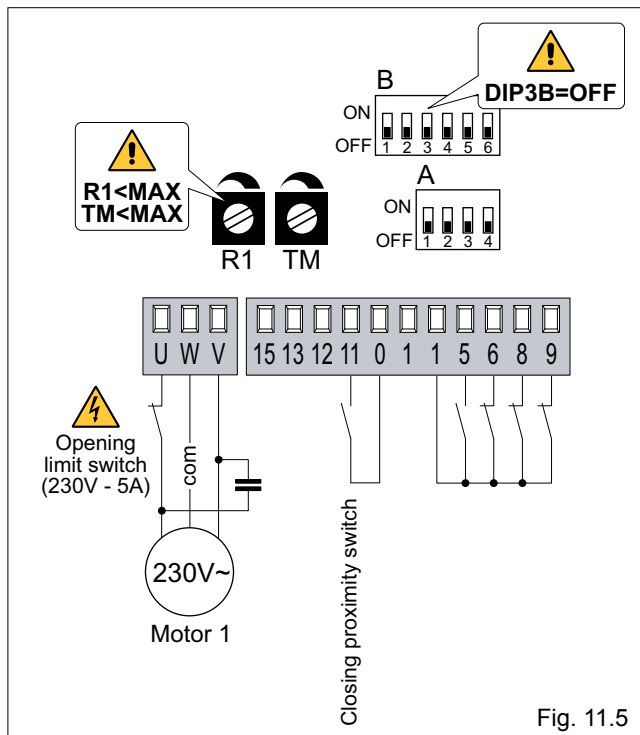
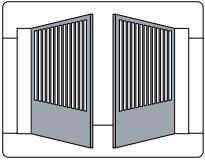


Fig. 11.5

12. EXAMPLE APPLICATION FOR GATES WITH TWO SWINGING DOOR WINGS



When the control panel is used in applications with two overlapping swinging door wings, one of the following operating modes may be selected:

(Fig. 12.1) Door wings stop against mechanical stops and in the event of obstacle detection.

Set an operating time of 2-3 s longer than the effective time taken by the door wings ($TM < MAX$) and bridge terminals 0-11-12 with jumpers.

In this configuration, each door wing will stop against mechanical opening and closing stops and in the event of obstacle detection.

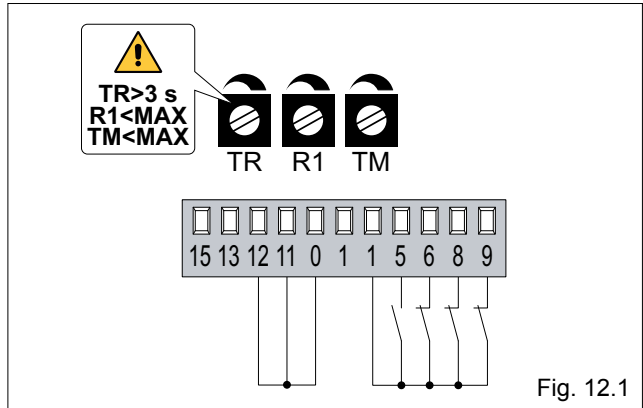


Fig. 12.1

(Fig. 12.2) Door wings stop against limit switches and in the event of obstacle detection.

The N.C. contacts of the opening and closing limit switches are connected in series with the motor phases. Set an operating time $TM < MAX$ and bridge terminals 0-11-12 with jumpers.

In this configuration, each door wing will stop against the opening and closing limit switches and in the event of obstacle detection.

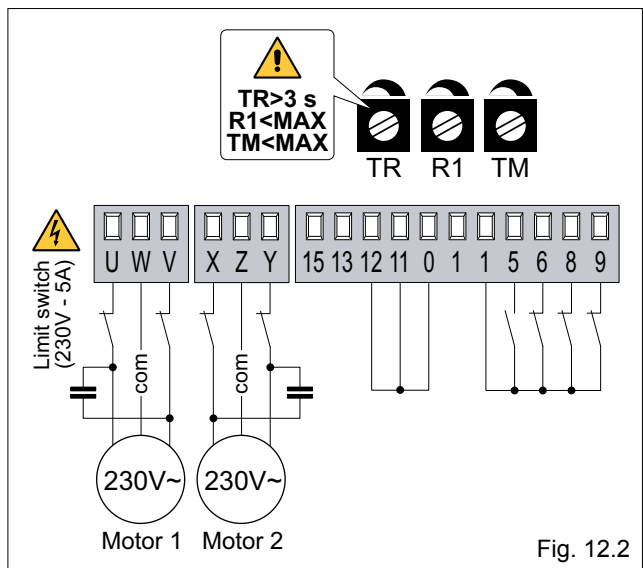


Fig. 12.2

(Fig. 12.3) Door wings stop against limit switches and invert in the event of obstacle detection.

Set an operating time $TM = MAX$ and connect the closing limit switch N.C. contacts to terminals 0-11-12 and the opening limit switch N.C. contacts in series with the open phase of each motor.

In this configuration, each door wing stops when the limit switches are activated.

In the event of obstacle detection while opening, only the door wing that detects the obstacle stops, performing a disengagement operation, whereas during a closing operation, both door wings reopen.

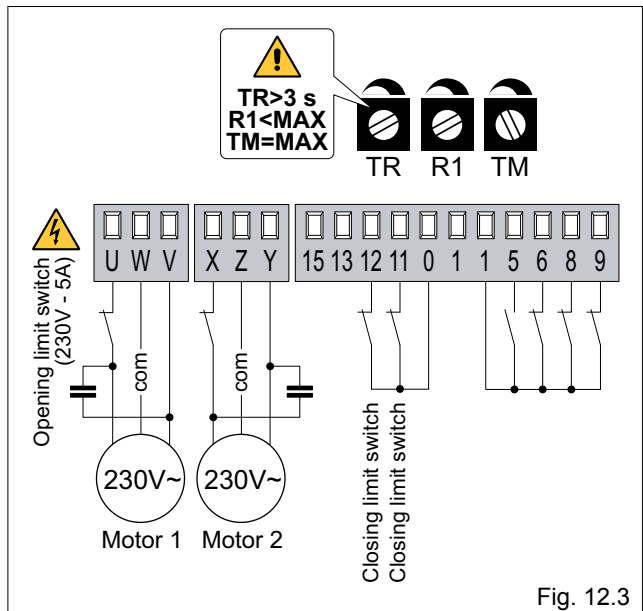


Fig. 12.3

(Fig. 12.4) Door wings stop against mechanical stops and invert in the event of obstacle detection.

Set an operating time 2-3 s greater than the effective time taken by the door wings ($TM < MAX$) and connect the closing proximity switch N.O. contacts to terminals 0-11-12, positioning the proximity switches 2-3 s ahead of the mechanical stop.

In this configuration, each door wing stops against its respective mechanical closing and opening stop.

In the event of obstacle detection while opening, only the door wing that detects the obstacle stops, performing a disengagement operation.

In the event of obstacle detection during closing and before the activation of the proximity switch, the door wings reopen; after the activation of the proximity switch, the door wings stop against the obstacle.

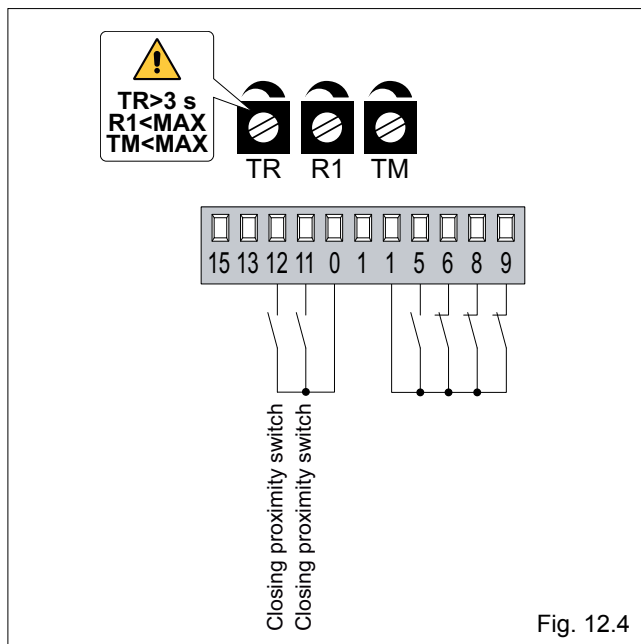


Fig. 12.4

(Fig. 12.5) Door wings stop against the limit switches when opening and against the mechanical stops when closing, and invert in the event of obstacle detection.

Set an operating time 2-3 s longer than the effective time taken by the door wings ($TM < MAX$), connect the closing proximity switches to terminals 0-11-12 and set them 2-3 s earlier than the mechanical stops. Connect the N.C. opening limit switch in series to the opening phase of each motor.

In this configuration, each wing stops on its closing mechanical stop and during opening when the relative limit switches operate.

During opening operation, in the event of obstacle detection, the wing stops and releases.

During closing operation, in the event of obstacle detection before both the closing limit switches have been triggered, both wings reopen.

After each limit switch has been triggered the corresponding wing stops on the closing mechanical stop.

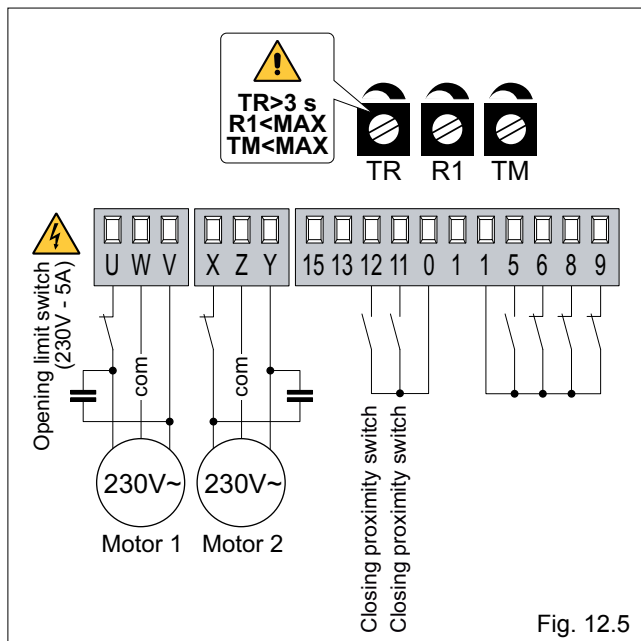
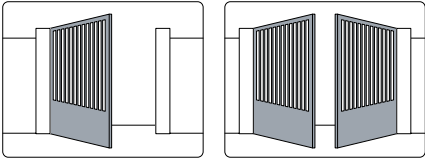


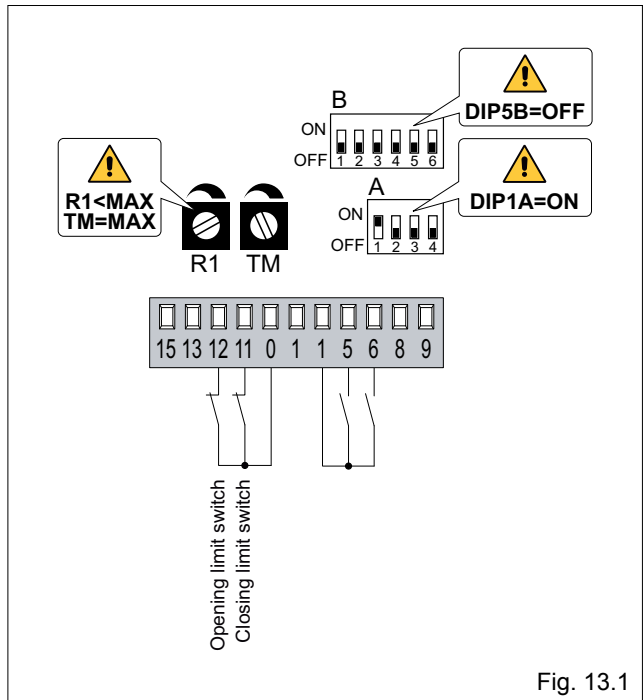
Fig. 12.5

13. HOLD-TO-RUN FUNCTION MODE



i **NOTE:** to use the control panel in hold-to-run mode, disconnect terminal 9.

In this case, the opening command (1-5) and the closing command (1-6) operate only if kept pressed, if released the automation will stop. Automatic closing and radio remote controls are disabled.



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