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Safety recommendations

- The manufacturer's instructions must be strictly observed.
- The installer must check the installation and the correct functioning of the device.
- The product must not be used incorrectly or for purposes that are not envisaged.
- The product must not be tampered with or modified in any way.
- Always use original spare parts.
- Cordon off the working area to prevent the access of unauthorised persons.
- Ensure that the working area is clear of obstacles and the floor is not slippery.
- All equipment used must be in good working condition.
- The working area must be sufficiently well lit and free of health hazards.
- Unauthorised persons must not enter the working area.
- The working area must not be left unattended.

Purpose of the manual

This manual was drawn up by the manufacturer and is an integral part of the product.

The information it contains is addressed to expert operators that carry out the installation and extraordinary maintenance. They must have the specific qualifications and training to carry out the operations assigned to them correctly and under the maximum safety conditions. Strict observation of the instructions contained in the manual will ensure safety, optimum operation and prolonged functioning of the product. To avoid incorrect manoeuvres and the consequent risk of accidents, it is important to read this manual carefully, strictly observing the instructions given.

Application range

Equipment for Aprimatic swing gate operators.

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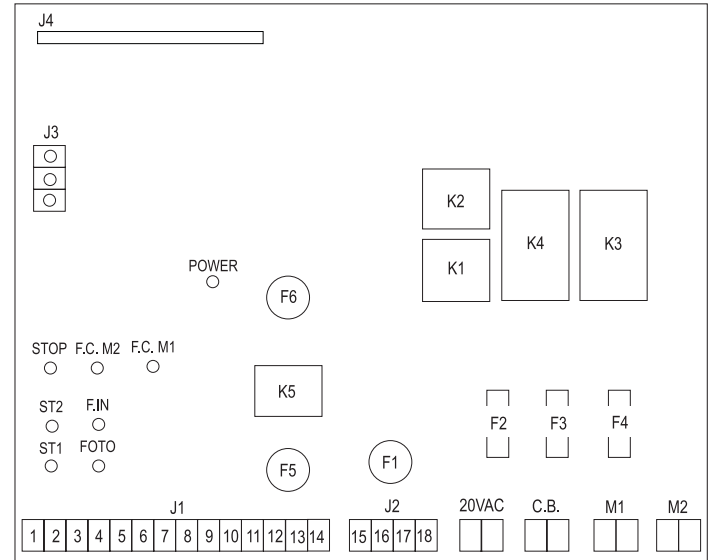
1. DESCRIPTION

Equipment supplied with a mains power supply of 230 VAC 50Hz, dedicated to piloting and control of swing gates driven by electro-mechanical operators supplied with power at 24 VDC. Stand-by consumption: 15 W. Maximum power of the operators/motors: 520 Watt.

All functioning mode selection, parameter setting and function setting is carried out using a device known as the **PROGRAMMER**, supplied **exclusively to qualified APRIMATIC installers**.

1.1 BLOCK DIAGRAM OF EQUIPMENT

J1	Signal terminal board	F6	Logic and accessories 2A fuse
J2	Power terminal board	ST1	Start input LED
J3	Radio receiver plug-in connector	ST2	Pedestrian Start/Close input LED
J4	Connector for additional cards	STOP	Stop input LED
CB	Battery charger connection terminal board	FOTO	Standard photocell input LED
		F.IN	Additional photocell input LED
M1	Motor 1 connection terminals	F.C.M1	Motor 1 limit switch input LED
M2	Motor 2 connection terminals	F.C.M2	Motor 2 limit switch input LED
20VAC	Secondary transformer terminal	POWER	24 VDC power supply present LED
F1	Mains 3.15A fuse	K1	Motor 1 ON/OFF relay
F2	20 VAC low voltage 16A fuse	K2	Motor 2 ON/OFF relay
F3	Motor 1 8A fuse	K3	Motor 1 direction relay
F4	Motor 2 8A fuse	K4	Motor 2 direction relay
F5	Electric lock 2A fuse	K5	Electric lock relay



T4Prof.EPS

The connector for the programmer is on the CPU card.

2. INSTALLATION

CAUTION - The product may only be installed by the qualified technical personnel of the assistance and/or assembly service.

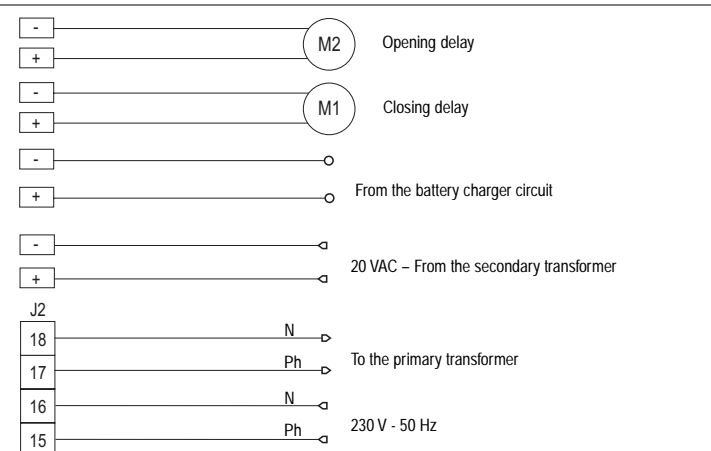
CAUTION - The electrical system must comply with current standards in the country where the unit is installed.

CAUTION - Always disconnect the power supply before opening the container.

2.1 PREPARATION

Before assembling the equipment, prepare the tools required for wall-mounting and for the electrical connections. The following are also required:

1. 6 mm diameter expansions plugs
2. Skintop type PG16 cable clamps
3. a multipole switch with minimum contact opening of 3 mm
4. an emergency push-button
5. approved cables for external use with cross-section of 0.75 minimum and 2.5 mm²



2.2 ASSEMBLY

You do not need to drill holes to fit the equipment.

1. Assemble the equipment at a height of at least 30 cm, using the holes in the plastic container.
2. Insert the connection cable, using the pre-marked holes on the bottom of the container and the cable clamp indicated.
3. Install the multipole switch upstream of the equipment.
4. Install an emergency push-button in a position which allows you to see the operator system and which ensures that the switch completely cuts off the power supply to the operator.
5. Use the 2.5 mm² minimum cross-section cable to connect the mains power supply to the motor; for connections longer than 6 m, use cable with a cross-section of 4 mm². Use the 0.75 mm² cross-section cable for the other 24 VDC devices.

2.3 ELECTRICAL CONNECTIONS

CAUTION - Before making the connections, turn OFF the mains power supply.

CAUTION - Do NOT use intercom or telephone cable.

Make the electrical connections as indicated in the diagram.

NOTE - As envisaged by current standards, separately strap the connection cable for the controls (terminals from 1 to 14) and the power cable (terminal boards M1 and M2).

3 START-UP

After making the connections as indicated and carefully checking the electrical connections, turn the mains power supply ON and check that the system is operating correctly as specified below.

3.1 FUNCTIONING TESTS

After making the connections, check the operator system: when you press the start push-button, the gate must open. If the gate closes, invert the motor connections.

3.2 ADJUSTMENTS

Use the programmer to adjust the operator work time and mode.

CAUTION - The pins on the connector must be plugged in correctly; if the connector is difficult to insert, check that it is the right way round.

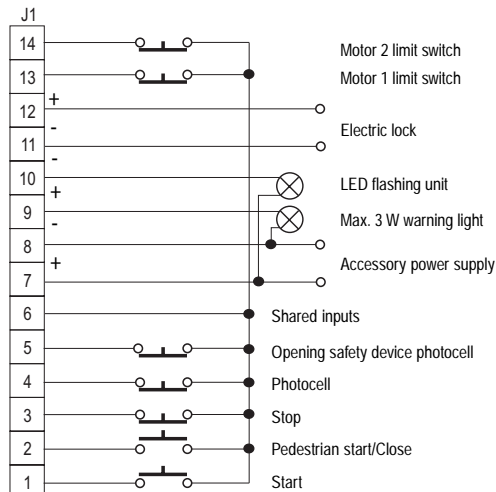
NOTE - The number indicated in front of the description for each parameter is the number which indicates the function in operation. The values are shown on the **PROGRAMMER** display (2 left-side digits).
The square brackets contain the setting range of the **PROGRAMMER** (2 right-side digits).

10 – WING OPENING DELAY (0 – 20 s) [Range: 0 – 20]

Delays opening of one wing compared to the other wing controlled by the same operator.

11 – WING CLOSING DELAY (0 – 20 s) [Range: 0 - 20]

Delays closing of one wing compared to the other wing controlled by the same operator.



N.B. All the N.C. safety contacts (Stop, photocells and motor limit switches) must be jumpered if they are not used.

CAUTION!

Strap the low voltage cables together near terminal board J1. Strap the power cables together near terminal board J2.

T4PROFMO EPS

12 - APPROACH/SLOW-DOWN SPEED [Range: 0 – 20]

The gate slows down when it reaches the limit switch (during opening or closing). This prevents violent knocking of the gates. Can only be enabled for operators with limit switches.

13 – PAUSE TIME (2 – 180 s) [Range: 1 – 90]

In the automatic operating mode, this function sets the pause time when the wings are open.

14 – WORK TIME (2 – 180 s) [Range: 1 – 90]

Adjusts the operator work time, which is especially useful for operators without limit switches.

15 – BRAKE ENABLING DELAY (0 – 2 s) [Range: 0 – 20]

This function is only used for sliding gates.

16 – ANTI-CRUSH DEVICE ADJUSTMENT [Range: 0 – 99]

Adjusts the sensitivity of the system which recognises obstacles, preventing movement of the gates.

CAUTION - Set the parameter to 99 for the maximum operator thrust force.

17 – PARTIAL OPENING SPAN (0 – 32 s) [Range: 0 – 32]

This function is only used for sliding gates.

3.3 OPERATING PROGRAMMING

NOTE - The numbers indicated in square brackets indicate the operating mode and are shown on the **PROGRAMMER** display: the number 25 (2 left-side digits) indicates the **OPERATING PROGRAM**, the 2 right-side numbers indicate the type of operating mode currently in use.

AUTOMATIC [25 – 00]

When you select this type of operating and a start pulse is given, the gate opens as far as the limit switch and stays open for the pre-set pause time and then closes automatically.

- A start pulse given during closing reverses the direction of the gate (in other words, the gate re-opens).
- A start pulse given during opening is ignored; a pulse given during the pause restarts the pause time.

SPECIAL AUTOMATIC [25 – 01]

When you select this type of operating and a start pulse is given, the gate opens as far as the limit switch and stays open for the pre-set pause time and then closes automatically.

- A start pulse given during closing reverses the direction of the gate (in other words, the gate re-opens).
- A start pulse given during opening is ignored; a pulse given during the pause restarts the pause time.
- If the photocells are triggered, there is a pause of 3 seconds and the gate then closes.

SUPER AUTOMATIC [25 – 02]

When you select this type of operating and a start pulse is given, the gate opens as far as the limit switch and stays open for the pre-set pause time and then closes automatically.

A start pulse given during any stage reverses the direction: you can close the gate with a command.

- A pulse given during the pause triggers pre-flashing and subsequent closing of the gate.

NOTE - in the Automatic and Super Automatic modes, the photocells can be set as in function 43. Photocell setting has **PRIORITY** over the operating logic.

DIAGNOSTICS [25 – 03]

The diagnostics routine is used to check the correct functioning of all the outputs and inputs, as follows. The microprocessor enables all the outputs in sequence (motor 1 ON/OFF relay, motor 2 ON/OFF relay, electric lock relay, flashing unit, warning lights) and then waits until the inputs are enabled; if no input has been enabled within 10 seconds of the end of the output test routine, the output enabling sequence is repeated.

If, on the other hand, an input is enabled and the diagnostics is OK, the microprocessor commands a number of complete flashing cycles (0.5 s ON and 0.5 s OFF) equal to the progressive number for the input enabled (start=1, start pedestrian/close=2, stop=3, standard photocell=4, additional photocell=5, motor 1 limit switch=6, motor 2 limit switch =7).

OPEN/CLOSE SEMIAUTOMATIC [25 – 04]

When you select this type of operating, terminal number 2 of the J1 terminal board assumes the Close function. In this mode, you can have separate inputs for opening (START) and closing (CLOSE). Once opened, the gate remains open until the "CLOSE" command is given.

- A start pulse during closing re-opens the gate.
- A close pulse during opening closes the gate.

THIS FUNCTION DOES NOT PERMIT PEDESTRIAN OPENING.

36 – CLOSING PRE-FLASHING (ON=1/OFF=0)

Light flashing for 3 seconds before the motors (and the warning light) start during closing.

37 – RELEASE STROKE (swing gates only) (ON=1/OFF=0)

Before opening, with the maximum force, the operator commands a brief closing movement to facilitate the release of the electric lock.

38 – REVERSE AT END OF CYCLE (ON=1/OFF=0)

This function is used for up-and-over garage doors only.

39 – AUTOMATIC START WITH ADDITIONAL SAFETY DEVICE TRIGGERED (OFF=0)

Used to complete the automatic cycle when the additional safety device has been disabled. This function prevents the gate from opening or closing when the space require for gate opening or closing (not covered by the standard photocell, terminal 5/6) is blocked by an obstacle (signalled by additional photocells).

TO USE THIS FUNCTION, YOU MUST CONNECT A PAIR OF ADDITIONAL PHOTOCELLS TO TERMINALS 5/6 ON THE J1 TERMINAL BOARD.

39 - MANUAL START WITH ADDITIONAL SAFETY DEVICE TRIGGERED (ON=1)

Operates as above with the difference that, when the photocell has been cleared, the operator must give a new pulse (START).

TO USE THIS FUNCTION, YOU MUST CONNECT A PAIR OF ADDITIONAL PHOTOCELLS TO TERMINALS 5/6 ON THE J1 TERMINAL BOARD.

40 – SLOW-DOWN BASE

This function is only used for operators commanded by motors with a power supply of 220VAC.

41 – ANTI-CRUSH DEVICE MANAGEMENT

If you set the **PROGRAMMER** to ON (1), the anti-crush device functions as an immediate STOP when there is an obstacle and the gate only starts again when a START pulse is given.

In the OFF (0) position, the anti-crush device functions as a thrust limiter until the end of the work time; the gate only starts again when a START pulse is given.

The parameter is pre-set to ON (1).

42 – STOP WITH ADDITIONAL SAFETY PHOTOCCELL TRIGGERED (0)

When the additional opening safety photocell is triggered (terminal 5/6 on the J1 terminal board), the gate STOPS immediately.

When the safety photocell is cleared, the gate starts to open again after 0.5 seconds.

To obtain this function, you must connect a pair of additional photocells to terminals 5/6 on the J1 terminal board.

42 – STOP WITH ADDITIONAL SAFETY PHOTOCCELL TRIGGERED + SLIGHT REVERSE (1)

As above the only difference being that, when the obstacle is detected, the operator reverses the direction for a brief period and then stops.

To obtain this function, you must connect a pair of additional photocells to terminals 5/6 on the J1 terminal board.

SEMI-AUTOMATIC WITH STOP (step-by-step) [25 – 05]

When you select this type of operating and a start pulse is given, the gate opens as far as the limit switch.

- The gate remains open, until a new command is given.
- A start pulse closes the gate (close command).
- A start pulse during closing and/or opening stops the gate allowing partial opening.

SEMI-AUTOMATIC WITH REVERSE [25 – 06]

This operating mode is virtually identical to the automatic mode. There is one difference: when a start pulse is given during closing, the gate is re-opened.

- A START pulse during opening STOPS the gate.

DEAD MAN (holding down the push-button) [25 – 07]

When you select this type of operating, terminal number 2 of the J1 terminal board assumes the pedestrian start function. In this mode, an operator must be present to open and close the gate. To open the gate, press and hold down the start button. Release it to stop the gates. To close the gate, press and hold down the close button; if the photocells are triggered, the gates are blocked. At this point, the operator must release the button and decide how to proceed: he can press either open or close.

The same occurs if the open and close buttons are pressed at the same time.

TRAFFIC LIGHTS [25 – 08]

To use this function, the equipment must have an optional "traffic light" card, which must be connected to the J4 connector to power the four lights (two red and two green) with a power supply of 220 VAC. This operating mode is identical to Standard Automatic, with the addition of the traffic light functions described below. You must also connect two Start push-buttons with a NO contact between terminals 1 and 6 of the T4Prof equipment and between terminals 7 and 8 of the optional card. In the "Traffic Lights" mode, when the system is in stand-by, the two traffic lights have a steady red light. When one of the two Start inputs is enabled, the corresponding traffic light starts to flash alternately red and green; when the gate is open, the light remains green until 6 seconds before the gate starts to close. It then flashes alternately red and green for 3 seconds and turns red again when the gate is fully closed.

If the two Start buttons are pressed at the same time, the device will automatically give priority to the one which was pressed first. Once the cycle has started, all start pulses are ignored.

NOTE - This operating mode disables the stop button, the additional safety device, the pedestrian start, pre-flashing, the electric lock and the release stroke.

3.4 SETTINGS/SELECTIONS

NOTE - The number indicated in front of the description for each parameter is the number which indicates the function in operation. The values are shown on the **PROGRAMMER** display (2 left-side digits).

The brackets indicate the selections possible: **ON** or **OFF** (2 right-side digits)

35 – OPENING PRE-FLASHING (ON=1/OFF=0)

Light flashing for 3 seconds before the motors (and the warning light) start during opening.

43 – PHOTOCELLS: STANDARD OR WITH RESET.

When the photocells are triggered, you can vary their function as follows:

PROGRAMMER OFF (0) the triggered photocells start the pause time count (open gate pause)

PROGRAMMER ON (1) the triggered photocells cancel the open gate pause time and, once cleared, after pre-flashing for 3 seconds, close the gate.

44 – ANTI-CRUSH DEVICE ENABLING (ON=1/OFF=0)

This function is used to enable or disable the electronic anti-crush device function.

OFF: with hydraulic operators only.

45 – NO START WHEN STANDARD SAFETY DEVICE IS TRIGGERED (start=0/no start=1)

This function is used to enable or disable an additional function and operates as follows: When the closing photocells (terminals 18/19 on the CN3 terminal board) are triggered with the gate is closed and at a standstill, and the safety device is set at 0, a START pulse opens the gates normally; if the photocells are triggered when the gate is closed and the safety device is set at 1, the equipment does not accept any type of START pulse and blocks gate movement until the photocells are cleared.

4. FUNCTIONING CONTROL

After programming the equipment, check the external devices connected to the card.

4.1 CHECKING FUNCTIONING OF THE EXTERNAL DEVICES

Start input – TERMINAL 1/6 ON THE J1 TERMINAL BOARD. N.O. contact which sends the start pulse to the operator

Stop input – TERMINAL 3/6 ON THE J1 TERMINAL BOARD. N.C. safety contact which has priority over all states and all functions. If there is a STOP pulse, the operator stops the gate in position and only starts again after START is pressed, which closes the gate. **When the STOP input is enabled, the equipment ignores all the commands.**

Photocell input – TERMINAL 4/6 ON THE J1 TERMINAL BOARD. N.C. safety contact which is only enabled during closing. If the photocell is triggered, the gate stops for 1 second and then reopens until the end of the work time. When the gate is open and the photocells are triggered, the gate cannot close.

Pedestrian start input – TERMINAL 2/6 ON THE J1 TERMINAL BOARD. N.O. contact. Use this button to open/close one wing only (pedestrian opening). This single wing will operate in the mode set for the equipment (AUTOMATIC, SPECIAL AUTOMATIC, SUPER AUTOMATIC, SEMIAUTOMATIC WITH STOP, SEMIAUTOMATIC WITH REVERSE). A START pulse given during single wing opening moves the second wing. The SINGLE WING START pulse is ignored for the entire gate movement when opening was commanded with a START pulse.

