

724MPS - MICROPROCESSOR CONTROL UNIT FOR 24 Vdc SLIDING GATES WITH ENCODER

4. GENERAL CHARACTERISTICS

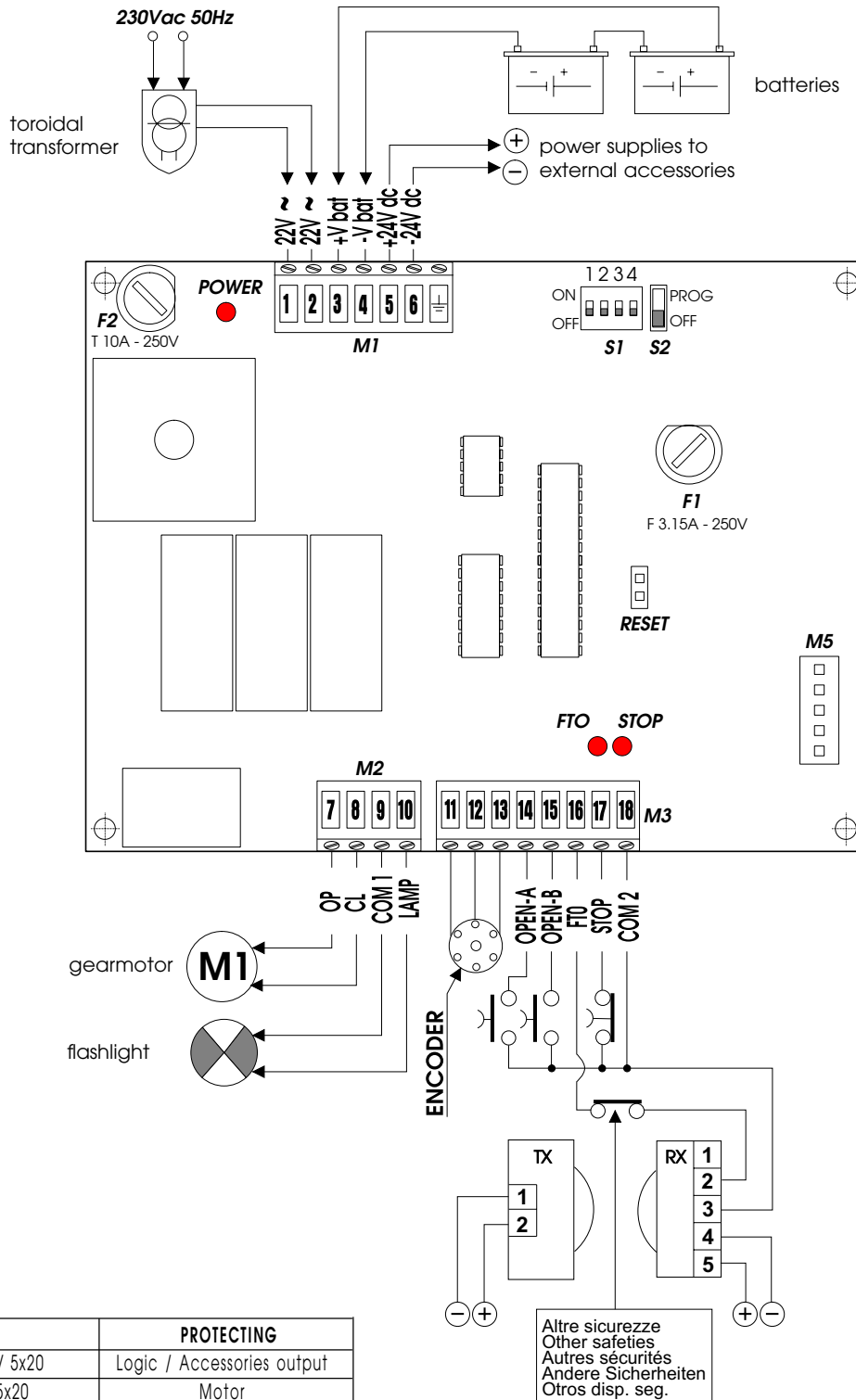
Thank to its high powered microprocessor, this control unit for 24 Vdc sliding gates offers a wide range of functions and adjustments, including deceleration and motor control.

A sophisticated electronic control monitors the power circuit at all times and disables the control unit in the event of malfunctions that could impair efficiency of the electronic clutch.

Main settings and function modes are executed by dip switches, whereas timing, and also power of motor are adjusted through self-learning at installation.

3 built-in LEDs constantly indicate status of both control unit and gearmotor.

The control unit is designed for installation in a container on the gearmotor itself or in the watertight container for outdoor use, which is also designed to house 2 optional batteries and a toroidal transformer, with the characteristics in the table below.



FUSE	PROTECTING
F1 = F 3.15A 250V 5x20	Logic / Accessories output
F2 = T 10A 250V 5x20	Motor

Fig. 12

5. TECHNICAL SPECIFICATIONS

Supply voltage of transformer	230V~ (+ 6 % - 10 %) 50Hz
Supply voltage of control unit	22V~ (+ 6 % - 10 %) 50Hz
Power consumption	3 W
Motor max. load	70 W
Accessories max. load	24Vdc 500mA
Flashlight max. load	24Vdc 15W max
Ambient temperature	-20 ÷ +55 °C
Fuse	2
Function logics	Automatic / Stepped
Opening / closing time	Through self-learning at installation
Pause time	Through self-learning at installation
Thrust force	Two levels selected by Dip-switch
Deceleration	At opening and closing through self-learning
Terminal board inputs	Encoder / 22V~ Power supply / Battery power supply Total opening / Opening for pedestrians / Stop / Photocells
Quick connector	For decoding - RP receivers card
Terminal board outputs	24 Vdc accessories power supply / 24Vdc Motor 24 Vdc Flashlight
Card dimensions	150 x 130 mm
Characteristics of toroidal transformer	
prim. 230V~ sec. 22V~ / 150VA / dimens. Ø 105 x 40 mm	
Characteristics of optional batteries	
12V 4.5Ah / dimensioni 90 x 70 x 108 mm	
Characteristics of outdoor container	
305 x 225 x 125 mm - IP55	

6. INSTRUCTIONS

WARNING: To ensure people's safety, all warnings and instructions in this booklet must be carefully observed. Incorrect installation or use of the product could cause serious harm to people.

Make sure there is an adequate differential switch upstream of the system as specified by current laws, and install a thermal breaker with all-pole switch on the electrical mains.

To lay electrical cables, use adequate rigid and/or flexible tubes.

Always separate connection cables of low voltage accessories from those operating at 230 V~.

To prevent any interference whatever, use separate sheaths.

In the version with control unit installed on the gearmotor, some connections and units described in these instructions (motor, transformer, encoder, etc) are factory prewired.

In the version with control unit housed in the watertight outdoor use container, maximum length of connection cables between control unit and motor/encoder must not exceed 3 m., using 2x2.5mm² cables for the motor and 3x0.5mm² cables for the encoder.

Procedure (referring to fig. 13) for securing components in the watertight container:

1) Secure the support of the toroidal transformer in position **A** by fitting three Ø3.9x6.5 self-tapping screws (supplied) in the guides of the watertight container.

N.B.: the support is sized to house a transformer with characteristics and dimensions specified in the table in paragraph 5.

2) Secure the transformer on the support with 2 clamps (supplied).

3) If using floating batteries, secure the relevant support in position **B** by fitting four Ø3.9x6.5 self-tapping screws (supplied) in the crossover holes of the guides of the watertight container.

N.B.: the support is sized to house two batteries (not supplied) with characteristics and dimensions specified in the table in paragraph 5.

4) Position the batteries on the support.

5) Secure the control unit in position **C** by fitting four Ø3.9x6.5 self-tapping screws (supplied) in the guides of the watertight container.

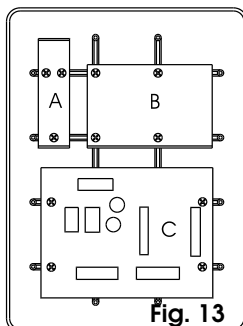


Fig. 13

Procedure for securing the encoder on the gearmotor (fig. 14) :

- Using the four M4x10 screws **C** (supplied), secure card **B** on cover **A**, locating the spacers **D** between cover and card.
- Using the M4x30 screw **F** (supplied), secure encoder **E** directly on the thread on the rotor of the gearmotor.
- Wire up terminal board **G** as described below.

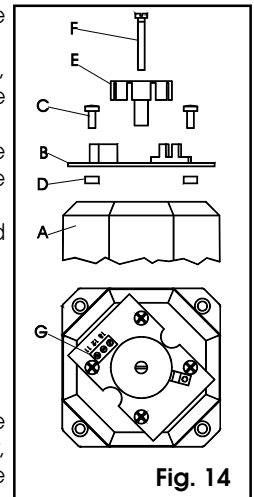


Fig. 14

7. CONNECTIONS

7.1 TERMINAL BOARD M1

22V~ Power supply

Terminals "1-2". This is the input to which the secondary winding of the transformer, powered at 22 V~ 50Hz, should be connected. When power is supplied by the transformer, this is signalled by the POWER LED lighting up.

Batteries

Terminals "3-4". The control unit is designed to operate with two floating batteries (optional item) with minimum characteristics as indicated on the table in paragraph 5.

When powered, the control unit keeps the batteries charged. The batteries begin to operate when the transformer no longer supplies power.

N.B.: power supplied by batteries should be considered an emergency situation - the minimum number of gate operations is about 10/15.

In any event, the number of possible operations depends on the quality of the batteries, structure of gate, and time elapsing since mains power failed, etc, etc..

N.B.: observe the power polarity of the batteries

Accessories

Terminals "5-6". Output for powering external accessories (24 Vdc).

N.B.: maximum load of accessories is 500 mA.

7.2 TERMINAL BOARD M2

Gearmotor

Terminals "7-8". Connect the motor to the power supply of 24Vdc 70W max.

Flashlight

Terminals "9-10". Use a flashlight with fixed light operating voltage of 24Vdc 15W max. We advise you to connect it before programming, as it indicates programming stages.

On opening, it pre-flashes steadily for 0.5 seconds, and for 1.5 seconds at closing.

If the automatic logic is on, when the gate reaches the opening gate stop, the flashlight stays on for 5 sec to inform the user it will re-close automatically.

When the gate is open, the flashlight is off, and only flashes when the safety devices are in use.

If the devices are in use for a long time, flashing only lasts 10 sec.

7.3 TERMINAL BOARD M3

Encoder

Terminals "11-12-13". Use the encoder supplied with the control unit. Connect the return signal from encoder terminal "11" to terminal "11", connect encoder terminals "12-13" to terminals "12-13".

N.B.: the control unit will not operate without an encoder.

N.B.: observe the encoder's cable terminals.

Open-A

Terminals "14-18". Any device (e.g. push-button, remote control, etc.) can be connected to this circuit.

By closing a contact, the circuit generates a pulse for total opening and/or closing of the gate. Its operating mode is set by dip-switch 3 - see paragraph 9.

N.B.: a OPEN-A pulse during the pedestrian stage always has priority over that stage

N.B.: to install several pulse generators, connect the contacts in parallel.

Open-B (For pedestrian use)

Terminals "15-18". Any device (e.g. push-button, remote control, etc.) can be connected to this circuit.

By closing a contact, the circuit generates a pulse for partial opening (30% of total opening) of the gate.

N.B.: an OPEN-A pulse during the pedestrian stage always has priority over that stage.

N.B.: to install several pulse generators, connect the contacts in parallel.

Photocells

Terminals "16-18". Any safety device (e.g. photocell, sensitive strip, etc.) can be connected to this circuit.

By opening a contact, the circuit protects closing motion.

The status of this input is signalled by the FTO LED.

It also has an effect on opening motion, depending on how dip-switch 4 was set - see paragraph 9.

N.B.: if safety devices are not connected, fit a jumper at input. To install several safety devices, connect the NC contacts in series.

Stop

Terminals "17-18". Any device (e.g. push-button, remote control, etc.) can be connected to this circuit.

By opening a contact, the circuit stops gate movement.

The status of this input is signalled by the STOP LED.

The set cycle will restart only if a successive opening or closing pulse is received.

N.B.: if STOP devices are not connected, fit a jumper at input. To install several STOP devices, connect the NC contacts in series.

8. FITTING DECODING/RP RECEIVER CARDS

Installation procedure: turn off power and fit the module in container M5 inside the control unit. Then observe the radio-receiver instructions to store data on the remote-control. After the necessary data has been stored, the remote-control activates OPEN-A like any other command device.

9. SETTINGS WITH DIP-SWITCH S1

SW1	ELECTRONIC CLUTCH	
	ON	Maximum force, minimum sensitivity
	OFF	Minimum force, maximum sensitivity
SW2	FUNCTION LOGIC	
	ON	Automatic
	OFF	Stepped
SW3	OPERATION OF OPENING COMMAND	
	ON	One state only at each pulse: open, stop, close, stop, open etc.
	OFF	One movement only at each pulse: open, close, open, close, etc.
SW4	OPERATION OF PHOTOCELLS	
	ON	Stops at opening, restarts on release, stops at closing and reverses
	OFF	Stops and reverses at closing only

10. CONTROL LEDS

LED	LIGHTED	OFF
POWER - power	with transformer	on battery (if used)
FTO - photocells	photocells not covered	photocells covered
STOP - stop	command inactive	command active

N.B.: LED status shown in bold with gate closed and control unit powered.

11. PROGRAMMING

Programming of work times, deceleration and electronic clutch is executed during self-learning. At this stage, leaf movement is at slow speed.

Procedure:

- 1) Release the leaf, take it to about midway through opening travel, and then lock it.
- 2) Power up the control unit (power ON is signalled by the POWER LED).
- 3) Turn switch **S2** to **PROG**: the flashlight goes on at steady light to signal programming.
- 4) Press the push-button connected to the OPEN-A terminals or the remote-control, if already programmed. The first operation the automation performs must be CLOSING.

5) If the gate moves to open, touch the two **RESET** pins with a screwdriver - the control unit will immediately stop the movement generated by the automation.

6) Cut power to the control unit, reverse polarity of the two cables powering the motor, and repeat the operation at point 1.

7) After the OPEN-A command is given, the gate moves to close, until it reaches the closing gate stop.

8) After about two seconds, the gate restarts opening automatically until it reaches the opening gate stops.

9) The control unit begins counting pause time. After the required time has elapsed, press the OPEN-A command again, and the gate will close completely.

10) Programming is now finished. Turn switch **S2** back to **OFF** - the flashlight goes off.

11) Fit the cover on the operator by means of the screws provided, as shown in figure 15.

12. OPERATION OF ELECTRONIC CLUTCH

This is a very important device for safety. Its setting does not alter through time, as the device is not subject to wear or setting changes.

It is active both at closing and opening. When it operates it reverses motion direction without inhibiting automatic closing if enabled.

If it operates twice in succession, it moves to STOP position, disabling any automatic command.

This is why: if the clutch operates twice, this means the obstacle is still present and any further manoeuvres could be dangerous, thus obliging the user to give an opening or closing command.

In that case the control unit executes an EMERGENCY procedure as follows: full opening at slow speed up to the opening gate stop, followed by automatic closing to enable the gate stops to re-synchronise independently.

13. MANUAL OPERATION

Should the need arise to operate the gate manually because of a power failure or malfunction, release it by means of the releasing device (fig. 1 - ref. 6).

Proceed as follows:

- open the lid of the lock and insert the relative key in the lock (fig. 16);
- turn the key clockwise and open the cover of the releasing device as shown in figure 16.

To re-lock the system, return the cover of the releasing device to its initial position.

Important: before giving a signal, ensure that the gate cannot be moved manually.

N.B.: re-lock always the operator with gate in closed position.

