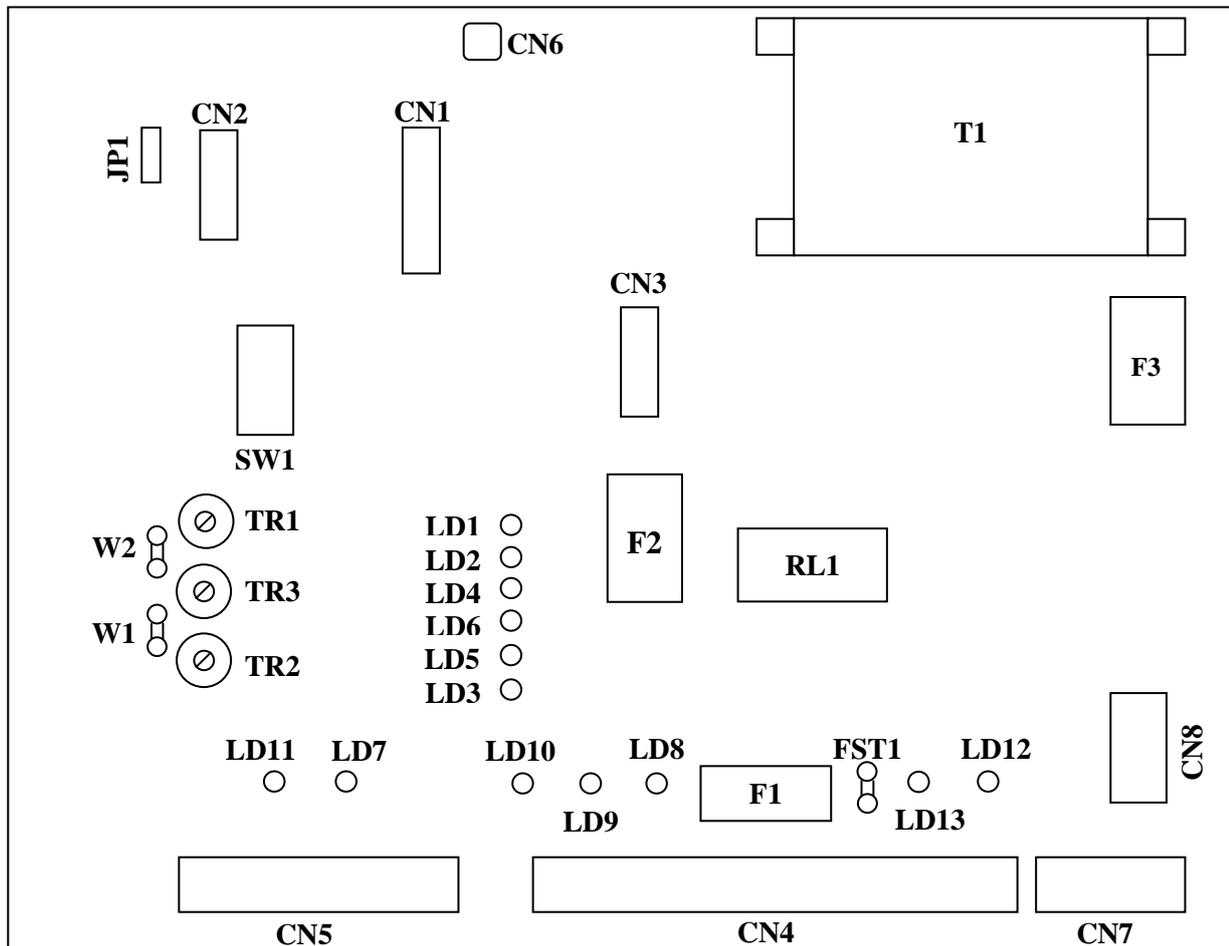


## MPU/EM ELECTRONIC UNIT

For sliding gate operators

(code 23021005)

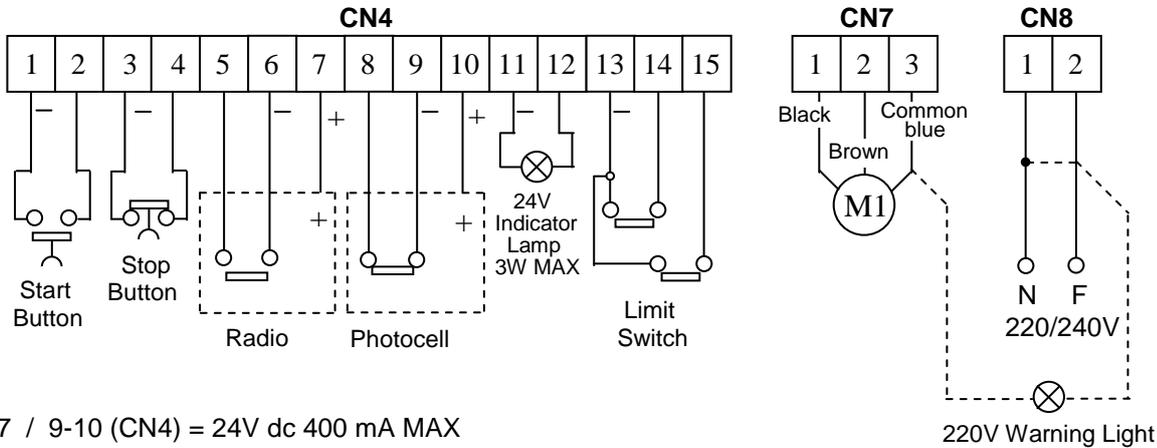


CIRCUIT BOARD LAYOUT

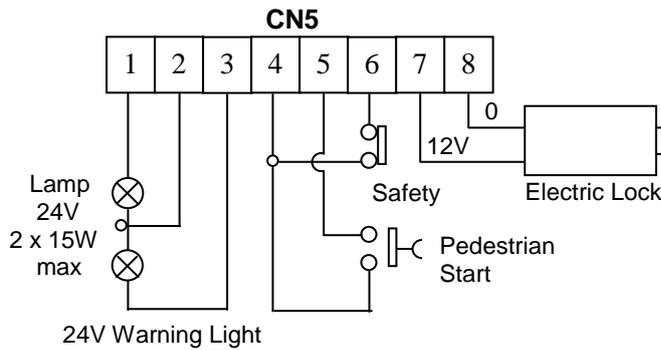
- |  |  |
|--|--|
| <b>LD1:</b> Closing Led                        | <b>CN2:</b> Photo Board Connector                                  |
| <b>LD2:</b> Opening Led                        | <b>CN3:</b> Modular Radio Connector                                |
| <b>LD3:</b> 24V Indicator Lamp Led             | <b>CN4:</b> Main Control Connectors                                |
| <b>LD4:</b> 24Vdc Warning Light Led            | <b>CN5:</b> Main Control Connectors                                |
| <b>LD5:</b> 24Vdc Warning Light Led            | <b>CN6:</b> Expansion Connector for optional 2 <sup>nd</sup> Motor |
| <b>LD6:</b> Electric Lock Led                  | <b>CN7:</b> Connector for 1 <sup>st</sup> Motor                    |
| <b>LD7:</b> Security Led                       | <b>CN8:</b> Connector for power Supply 220/240V                    |
| <b>LD8:</b> Photocell Led                      | <b>JP1:</b> Photo Board Jumper                                     |
| <b>LD9:</b> Stop Led                           | <b>FST1:</b> Earth Tag   |
| <b>LD10:</b> Start Led                         | <b>W1:</b> TR3 activation Jumper                                   |
| <b>LD11:</b> Pedestrian Start Led              | <b>W2:</b> TR3 activation Jumper                                   |
| <b>LD12:</b> Limit Switch 1 Led                | <b>RL1:</b> Motor Relay  |
| <b>LD13:</b> Limit Switch 2 Led                | <b>SW1:</b> Dip-switch Block for programming                       |
| <b>F1:</b> Electric Lock Fuse- 2A (T)          | <b>TR1:</b> Brake Adjusting Trimmer                                |
| <b>F2:</b> Accessory Power Fuse-1A             | <b>TR2:</b> Pause Time Adjusting Trimmer                           |
| <b>F3:</b> Motor Fuse-6.3A (T)                 | <b>TR3:</b> Trimmer Time - Out Adjustment                          |
| <b>CN1:</b> Expansion Circuit Board Connectors | <b>T1:</b> Transformer   |

## CONNECTION DETAILS

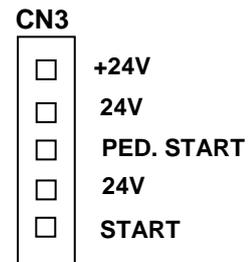
### 1 – MAIN CONNECTOR BLOCK



### 2 – CONNECTOR BLOCK CN5



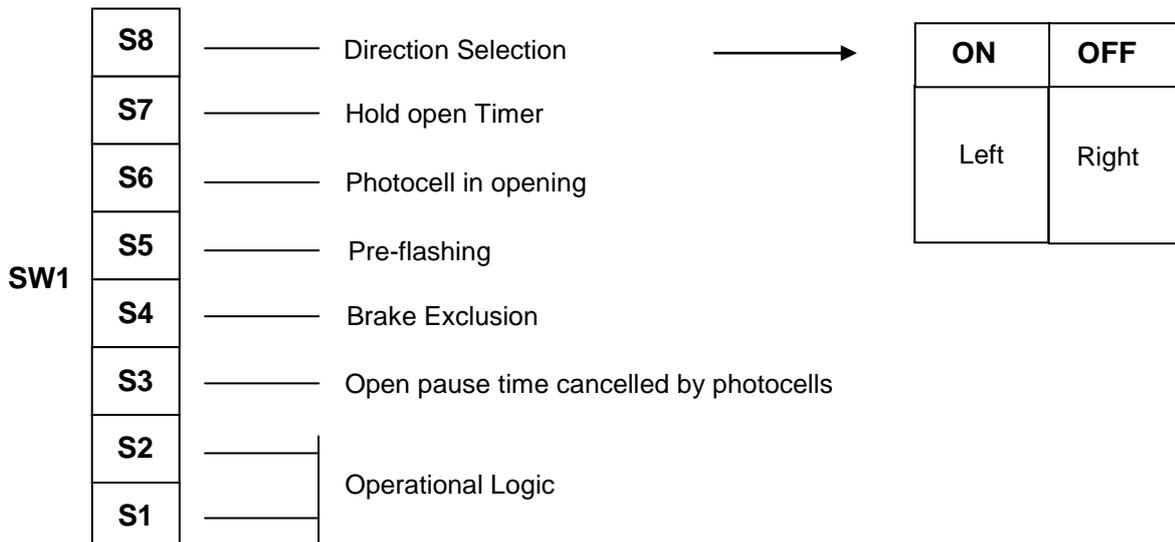
### 3 – RADIO RECEIVER CONNECTOR



**N.B. :** The Stop Button, Security or Photocells inputs require normally closed contacts (N.C.). If any of these inputs are not being used the relevant connection terminals will require wire linking out. For example 3 to 4 or 8 to 9 on Connector Block CN4 and 4 to 6 on Connector Block CN5.

## LOGIC PROGRAMMING TABLE

### 1 – LOGIC OPTIONS



## 1 – OPERATIONAL LOGIC

| S1  | S2  | LOGIC |
|-----|-----|-------|
| ON  | OFF | S     |
| OFF | OFF | A     |
| ON  | ON  | E     |
| OFF | ON  | UP    |

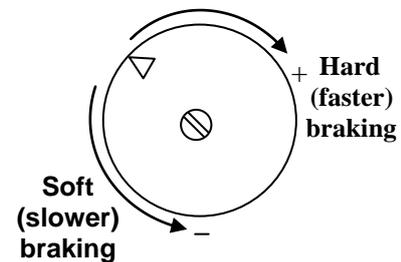
**Security**

**Automatic**

**Semi-automatic**

**Dead Man**

## 3 – ELECTRONIC BRAKE ADJUSTING TRIMMER



## MPU/EM FUNCTION DESCRIPTION

The control unit is programmed on the block of 8 Dip-switches. The 2 no. Trimmers (TR1 & TR2) provide timing adjustment for the electronic brake and open pause.

### 1. Choosing The Operational Logic

The type of operation required can be selected from the list of options as shown below. Then set the relevant Dip-Switches Logic to the position shown in Table 2.

#### \* UP LOGIC (Dead man)

Connect the Open & Close direction push buttons.

These push buttons must have Normally Open contacts (N.O.). The sliding gate operator will only drive the gate while the chosen direction push button is pushed and will immediately stop when the button is released or a direction Limit is reached. Push button “Start” for opening and push button “Pedestrian Start” for closing.

#### \* E LOGIC (Semi-automatic)

A “Start” signal given by a Push Button (or Radio Control) will start either an open or close cycle. If a second signal is given while the gate is opening, the gate movement is stopped, the next signal will close the gate. A second signal given during the closing cycle stops and automatically re-opens the gate.

#### \* A LOGIC (Automatic)

All “Start” inputs given will only start a gate open cycle. The gate will open and pause for the time set on trimmer TR2, automatically closing when the set time has elapsed. A second “Start” input given during:

- the opening cycle - is ignored;
- the open pause - overrides the pause time and immediately closes the gate;
- a closing cycle - stops and re-opens the gate.

#### \* S LOGIC (Security)

This Logic works in a similar way to Logic A excepting that a second input given during an open cycle will be accepted, will stop and re-close the gate.

### 2. Start Commands

Two types of START command can be given. A normal START input given by a Push Button via terminals 1 & 2 on block CN4 or Radio control will fully open or close the gate.

A PEDESTRIAN START input given via Push Button (4 & 6 CN5) or radio opens partially the gate.

In the event of both start inputs being given for or during the same cycle, the normal START input will take place.

**PLEASE NOTE :** All normal START input Push Buttons must have momentary contacts. If a start input is maintained or short circuit occurs, the effect on the gate will be to cycle open, then fully close and stay in this position until the constant “START” input is cleared.

### 3. Setting the Pause Time

Regulate trimmer TR2 to obtain the open pause time required.

#### TR2 (Pause)

Pause time (0 – 120 seconds)

#### 3.1 Time-out programming ( trimmer TR3)

TIME-OUT timing can be adjusted by trimmer TR3 (safety trimmer). The adjustment has to be carried out by measuring the real opening and closing working time (in case they are different, go for the bigger one).

At this stage adjust trimmer TR3 so to allow the complete leaf movement and the stopping one too, after a reasonable amount of seconds just in case the limit switches are faulty.

Ex. : Opening or closing measured working time = 12 s.  
 TIME-OUT programming time = 20 s.

#### Time programming

| W1  | W2  | Time ( s.)        | Time corresponding to a turn of the trimmer |
|-----|-----|-------------------|---|
| ON  | OFF | From 20 to 70 s.  | 50 s.                                       |
| OFF | ON  | From 70 to 120 s. | 50 s.                                       |
| OFF | OFF | From 55 to 90 s.  | 35 s.                                       |
| ON  | ON  | From 40 to 120 s. | 80 s.                                       |

#### 4. Adjusting the Electronic Brake on the gate

The brake is adjusted on trimmer TR1. The braking function is started by the limit switch having detected a limit plate passing into its sensing area. The brake should be set up to stop the gate as smoothly as possible while still keeping the limit plate in the limit sensing area.

#### 5. Security Entry

The “Security” logic is designed specifically to work with photocells. When the normally closed (N.C.) Security contact (\*Connector Block CN5) is opened the gates movement is immediately stopped and partially inverted for about 2 seconds.

#### 6. Photo board jumper

While using the control unit only with external photocells, the Jumper J1 must always be on. In case the plug-in panel is being used, the Jumper J1 must be removed.

#### 7. Programming Options

By configuring the Dip switches of SW1 the control unit microprocessor can be set-up to provide the logic functions required.

##### a) Operator Direction

Using this function the operator can be set-up to suit either a left or right hand installation (DIP 8).

##### b) Exclude braking

Switch Dip 4 ON to turn electronic braking off.

##### c) Pre-flashing

With this function selected, a 5 second warning light output is given before the operator starts an open or close cycle. It is controlled by Dip switch 5.

##### d) Photocell Control in Opening

In consequence of a start impulse, if the photocell is working while the gate is closed, the gate doesn't move. The gate starts moving after the photocell is no more working and a second start impulse is given.

##### e) Timer Presence

This option allows a permanently closed Start input to hold the gate in the open position. With this function selected a Pedestrian Start input will not cancel the pause time (DIP 7).

##### f) Open pause time cancelled by Photocell input

When this function is selected any pre-set open pause time is automatically cancelled as soon as photocell/safety input has been triggered, and when restored the gate will close (DIP3).

#### SAFETY PRECAUTIONS

All electrical installation work should conform to current regulations.

A 6A Fuse and a 16A - 0,030A differential switch must be incorporated into the source of the gate main electrical supply and the entire system must be properly earth bonded.

Remember to separate mains (240 V) carrying cables from low voltage control cables.

*Note:* Use “cable clips” and/or “duct/box pipes” fitting close to the control panel box so to protect the interconnection cables against pulling efforts.



## SPARE PARTS

To obtain spare parts contact:

**SEA s.r.l. – ZONA Ind.le, 64020 S.ATTO – Teramo – Italia**

## INTENDED USE

The MPU/EM electronic control unit has been designed to be solely used as control unit for the automation of sliding gates.

## SAFETY AND ENVIRONMENTAL COMPATIBILITY

We recommend not to spoil the environment with product and circuit packing material.

## CONFORMITY REQUIREMENTS

The electronic control unit MPU/EM conforms to the following:

89/336/CEE (Rule on the Electromagnetic Compatibility)

73/23/EC (Electric Safety)

## STORAGE

| STORAGE TEMPERATURES |           |                         |                         |
|----------------------|-----------|-------------------------|-------------------------|
| $T_{min}$            | $T_{max}$ | Humidity <sub>min</sub> | Humidity <sub>max</sub> |
| -40 °C               | +85 °C    | 5% no condensation      | 90% no condensation     |

When being transported this product must be properly packaged and handled with care.

## MAINTENANCE AND OUT OF SERVICE

The decommission and maintenance of this unit must only be carried out by specialised and authorised personnel.

## LIMIT OF GUARANTEE

The MPU/EM electronic control unit is guaranteed for a period of 24 months. The guarantee period starts from the date stamp printed on the unit. The MPU/EM guarantee will be void if the unit has been incorrectly installed, not used for the purpose intended, tampered with or modified in any way.

The validity of this guarantee only extends to the original purchaser of the unit.

**NOTE: THE MANUFACTURER CAN NOT BE DEEMED RESPONSIBLE FOR ANY DAMAGE OR INJURY CAUSED BY IMPROPER USE OF THIS PRODUCT.**

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*SEA reserves the right to do changes or variations that may be necessary to its products with no obligation to notice.*

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