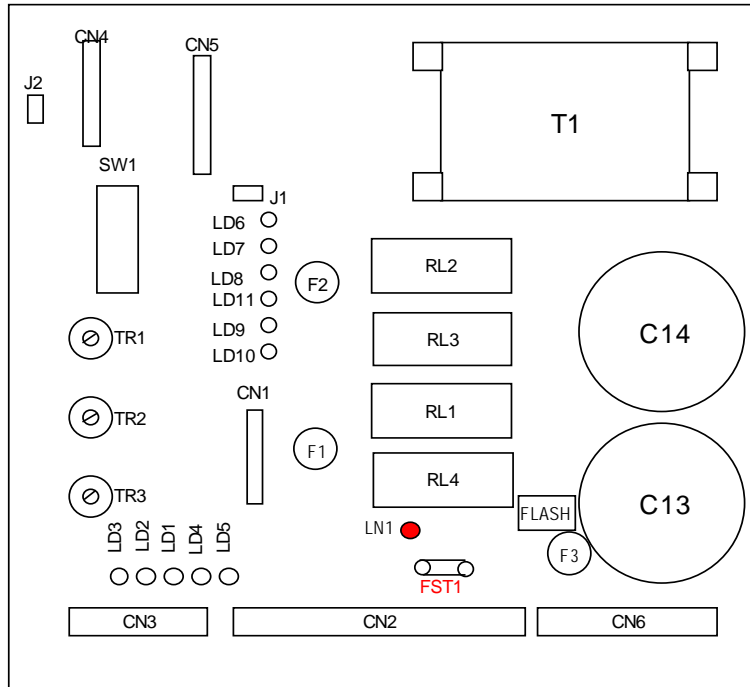


MPU/0 ELECTRONIC CONTROL UNIT FOR SWING GATE OPERATORS

PLEASE READ THESE INSTRUCTIONS FULLY BEFORE STARTING INSTALLATION

Layout Legend



LD1: Security Led
LD2: Photocell Led
LD3: Stop Led
LD4: Start Led
LD5: Pedestrian Start Led
LD6: Motor 1 Led
LD7: Motor 2 Led
LD8: Indicator Lamp Led
LD9: Flashing Lamp Led
LD10: Flashing Lamp Led
LD11: Electric Lock Led

LN1: Incoming Mains Warning Indicator – If Illuminated – POLARITY IS WRONG

F1: Lock Fuse = 3.15 Amps (T)
F2: Accessories Fuse = 1 Amp
F3: Motor Fuse = 3.15 Amps

CN1: Modular Radio Connector
CN2: Accessories Connector
CN3: Sec. Ped. Flashing Light Connector

CN4: Photocell PCB Port (not used in UK)
CN5: Expansion Port
CN6: 230Vac Supply – Motor Connector

FST1: PCB Earth Connection – MUST BE CONNECTED

Flash: 230Vac Flashing Light Output

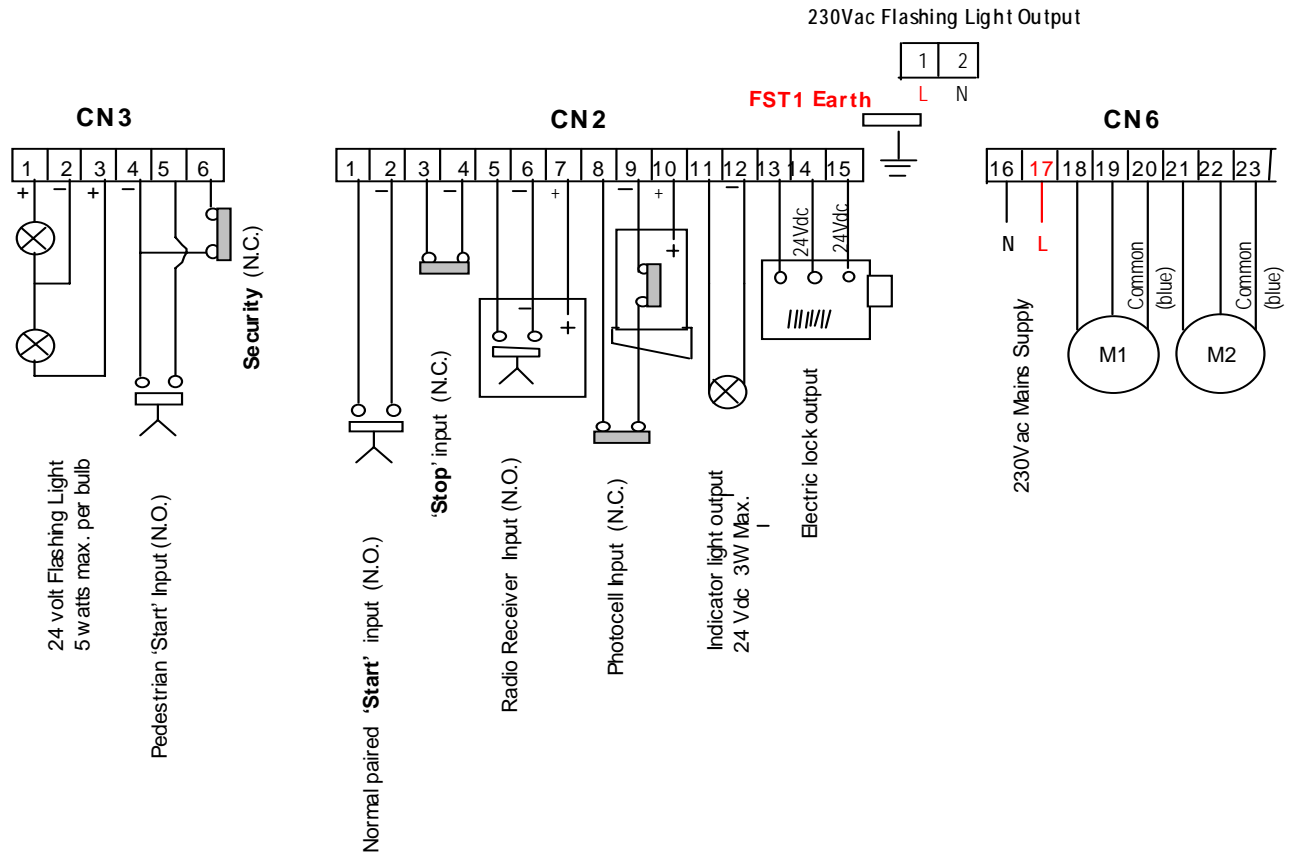
RL1: Motor 1 Relay
RL2: Motor 2 Relay
RL3: Motor Direction Relay
RL4: 230Vac Flashing Light Relay

SW1: Programming Dip-switches

J1: Electric Lock Jumper Link
J2: Photocell PCB Jumper Link

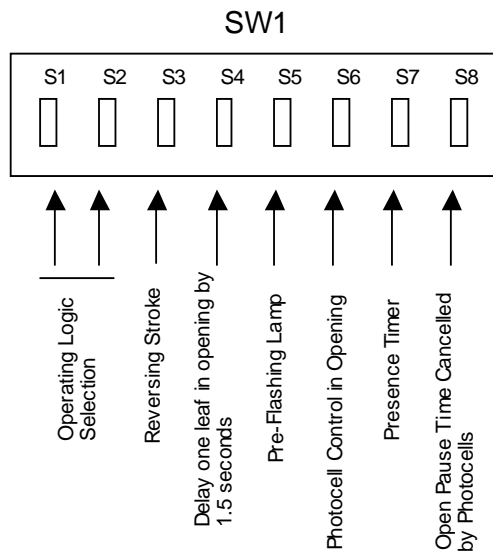
TR1: Motor Run Time Trimmer
TR2: Open Pause Time Trimmer
TR3: Leaf Delay in Closing Trimmer

MPU/O CONNECTION DETAILS



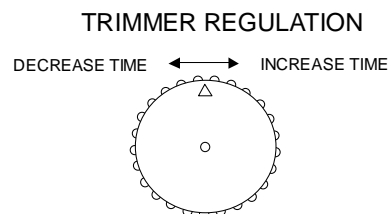
N.B. Terminals 6-7 & 9-10 24Vdc. The total load must not exceed 400mA.

Logic Selection Dip-switches



Operating Logic Chart

S1	S2	LOGIC
ON	OFF	S
OFF	OFF	A
ON	ON	E
OFF	ON	DM



MPU/0 FITTING INSTRUCTIONS

These instructions must be fully read before commencing installation of this unit. If you have any queries contact your Supplier.

The installation of this unit must only be undertaken by qualified persons, and in accordance and with I.E.E. 16th Edition Regulations, BS7671

The 230Vac electrical supply to this unit must have incorporated into it:

- 1 A locally situated & labelled method of electrical isolation, preferably double pole.
- 2 A trip or fuse rated at 6 amps
- 3 Current protection device (RCD/ELCB) rated at not more than 30 mA.
- 4 Adequate earth bonding to both motors, and Control Panel (MPU/0)

Always use separate ducts for 230V & Low voltage cables. Always electrically isolate the MPU/0 before commencing any work on the PCB or motors.

The MPU/0 enclosure should be fitted at a minimum height of 500mm from ground level.

All cables entries should be made in the bottom of the enclosure.

When fitting to an uneven surface, care must be taken to avoid distorting the enclosure.

Enclosure fixings should be via the fixing holes provided at each corner of the enclosure. Never put enclosure fixings behind the MPU/0 Printed Circuit Board (PCB).

If it is necessary to remove the Printed Circuit Board (PCB) from the enclosure:

- 1 Remove the four PCB retaining screws.
- 2 Lift the PCB by holding the transformer. Take care not to touch any of the printed circuits as there may be a residual charge on the PCB capacitors.
- 3 Place the board on a soft, non conducting surface (bubble wrap etc).

GENERAL DESCRIPTION

The MPU/0 is a micro-processor control unit specifically designed to control SEA electro-hydraulic gate operators and traffic barriers.

It contains:

- 1 Dip Switch selection of operating logics and control features.
- 2 Potentiometers (trimmers) to adjust the motor run, gate open pause and leaf delay in closing times.
- 3 The MPU/0 will control a single operator or two operators working as a pair.
- 4 Pedestrian logic: One gate of a pair can be controlled for pedestrian only use.
- 5 Volt Free control inputs.
- 6 Low voltage (24Vdc) supplies for Radio Receiver, Photocells and Loop Detectors.
- 7 230volt capacitor start motor outputs.
- 8 Electric lock Feed.

MPU/0 TERMINATIONS - FUNCTIONS & DESCRIPTION.

CN3 Terminal Block (low voltage)

1 – 2 – 3 FLASHING LIGHT. This output provides a 24Vdc supply when the motors are running. The Positive (+) feed alternates between terminals 1 & 3 at approximately 1 second intervals. Maximum output 5 watts.

4 – 5 (N.O.) PEDESTRIAN START. This input provides operation of one leaf of a pair.

4 – 6 (N.C.) SECURITY. A SAFETY INPUT which when activated immediately arrests operator movement and runs the operator in the opposite direction for 2 seconds, thus backing away from any obstruction. This logic operates in both the open & close directions. **PLEASE NOTE.** Terminals 4 – 6 are Normally Closed (N.C.) inputs and must be wire linked out if no device is being installed.

CN2 Terminal block (low voltage)

1 – 2 START INPUT (N.O.) This input requires a volt free momentary pulse to provide operation to both motors.

3 – 4 STOP (N.C.) This input requires a momentary input to stop the operating cycle. If a permanent input is applied the operating cycle will be stopped for the duration of the input; following which another start input is required to re-commence the operating cycle.

5 – 6 – 7 RADIO RECEIVER (N.O.) This input momentarily connects negative (6) to switch line (5) on receipt of a signal from a radio receiver, providing operation of both motors.

8 – 9 - 10 SAFETY INPUT (N.C.) This input, when removed from negative (9) and safety line (8), stops both motors from running in the closed direction, and starts them running in the open direction. When the input is restored, the motors will restart running in the closed direction.

11 – 12 Warning Light Output. This 24Vdc output provides:-

- 1 Motors running open - Permanent supply
- 2 Motors paused open – Permanent supply
- 3 Motors running closed – supply alternating on/off at 1 second intervals

There is no feed when the PCB cycle is finished.

13 – 14 – 15 LOCK FEED. 24Vdc pulsed feed to power a single electric lock.

PLEASE NOTE. Terminals 3 – 4 & 8 - 9 are Normally Closed inputs. If Stop and/or Safety Circuits are not being used then wire links must be inserted.

FST1 PCB EARTH connection – MUST be connected.

CN6 Terminal block (230 Volts)

16 Neutral 230Vac Supply
17 Live (P)

18 Open
19 Close Motor 1
20 Common (blue)

21 Open
22 Close Motor 2
23 Common (blue)

LN1: POLARITY WARNING LIGHT. Incoming 230Vac Mains Power Supply to the control board is polarity critical.

If this neon is illuminated – polarity is wrong.

NEON UNLIT



230V Mains Polarity OK

NEON LIT



WARNING. This is an indication of incorrect 230V Mains Polarity Connection

Timing Functions

TR1 – Motor run time. 0 – 120 seconds

TR2 – Open pause time. 0 – 120 seconds

TR3 – Motor leaf delay time. 0 – 16 seconds.

Adjust timing trimmers when the operators are at rest in the closed position.

Operating Logic Selection (SW1)

Switches S1 & S2 set operating logic.

*E Logic (push to open – push to close)

With the operator stopped, a START input will run the operator in the opposite direction to its last cycle.

If a START or SAFETY input is received during the closing cycle the operators will stop and automatically re-open.

If a START input is received during the open cycle the operators stop, the next input run the operators closed. SAFETY inputs are ignored during an opening cycle.

*A Logic – (Automatic)

With the operator at rest in the closed position, a START input will initiate the operators on an opening cycle – pause for the time set – then initiate a close cycle.

START inputs given during an open cycle are ignored.

When a START input is given during a closing cycle, the operators stop and re-open.

A START input given during the open pause time cancels the pause time set and the closing cycle begins.

*S Logic (Security)

This logic is similar to 'A' Logic with the following differences.

If a START input is given while the operators are opening, the operators stop and if the SAFETY circuit is made the operators run towards close.

If a START input is given during the open pause time the pause time is cancelled and the operators close.

DM Logic (Deadman)

1 & 2, CN2 Terminal block. A maintained input across these terminals will run the motors in the open direction for as long as the input is maintained.

4 & 5 CN3 Terminal block. A maintained input across these terminals will run the motors in the close direction for as long as the input is maintained.

Additional Logic Selections

When switched to the ON position Dip Switches 3 – 8 select the following functions.

S3 REVERSING STROKE. This feature is used to relieve face pressure on an electric lock, normally caused by wind loadings against the gate leaf.

S4 DELAY IN OPENING. Delays Motor 2 in opening by approximately 1.5 seconds. Normally used when gates are rebated or have an electric lock fitted.

S5 PRELAMP This feature is active in automatic logic; activating the Flashing Light circuit & Status Indicator Light circuit for 5 seconds before operator movement.

S6 PHOTOCCELL CONTROL IN OPENING. A Photocell input (obstruction) will stop the operators opening movement. This logic is normally used to prevent gates opening back on to cars, for example a congested courtyard.

S7 PRESENCE. This feature is active in 'Automatic logic'. When selected, a permanent START input will hold the operators in the open position. Typically used with a 'time clock'.

S8 INTERRUPTION OF PAUSE TIME. With 'A' logic selected. Activation of the Photocell/Safety circuit cancels the open pause time set.

For example, a car drives through a set of Safety Photocells, the gates will close immediately the car clears the photocells.

Jumper Link J1

Link Closed – Electric lock feed only occurs in the closed position.

Link Open – Electric lock feed occurs in the closed & open positions.

Useful Information & Tips

Normally Closed Links

When powering-up for the first time and before giving a START input the following should be observed:-

Only three Leds should be lit:

LD1 Security

LD2 Photocell

LD3 Stop



N.C. Input

All the above are Normally Closed (N.C.) inputs and must be wire linked-out if no device is being installed. If all or any links are missing the MPU/O will not function correctly.

Two Sets of Photocells

If two sets of Photocells are being installed to provide hold open safety and vehicle protection, then the normally closed relay contacts of both photocell receivers must be connected in series.

Phasing The Motors with the MPU/O Control Unit.

The motors will require to be correctly phased with the MPU/O.

The following procedure should be adopted to ensure correct direction phasing:-

- 1) Power up the board and send a START signal. Both motors should run in the open direction.
- 2) If motor 1 runs in the closed direction, turn off the power supply, change over the black and brown motor lines in terminals 18 & 19 and retry.
- 3) If motor 2 runs in the closed direction, turn off the power supply, change over the black and brown motor lines in terminals 21 & 22 and retry.

Under no circumstances move the blue motor lines in terminals 20 & 23.

Adjusting Logic & Time Settings

Alterations to Logic setting or timings are best carried out when the operators are at rest in the closed position.

If an alteration is made during an opening or pause cycle, the changes will not take effect until the operators have switched off in the closed position and a new opening cycle is initiated.

DO NOT weld on metal gates or doors if the operators are installed and connected electrically.

DISCONNECT the operator cables before starting to weld. If left connected the operator earth cable/conductor may be damaged/burnt if the welding clamp fails to make good contact with the metal of the gate/door.