

CB-6 CONTROL BOARD INSTRUCTION MANUAL

VERSION 1.01 DATE 22/9/95

A.T.A encourages you to read and understand this manual prior to attempting to install the control board. Some features and concepts are new and may seem confusing at first. So take some time to read through the manual and things will soon fall into place. Keep in mind that including some of the new features as options in your project quotation may be all that is required to turn things in your favour. In addition having a good understanding of the control board will save time during installation.

KEEP IN MIND THAT THE ELECTRICITY AND THE POWER OF THE MOTORS ASSOCIATED WITH THIS PRODUCT CAN BE FATAL OR AT LEAST CAUSE SERIOUS INJURY. A.T.A SUGGESTS THAT PHOTOELECTRIC BEAM DETECTORS BE USED AND STRATEGICALLY PLACED SO AS TO PREVENT PERSONNEL FROM BEING INJURED BY THE MOTORISED DEVICE BEING CONTROLLED. DO NOT CUT CORNERS OR COSTS IF IT IS AT THE EXPENSE OF SAFETY. MAKE SURE ALL WIRING AND OTHER ASPECTS OF THE PROJECT MEET OR EXCEED THE APPROPRIATE AUTHORITY'S STANDARDS. MAKE SURE THAT ALL PERSONNEL WHO ARE INTENDED TO OPERATE OR BE NEAR THE DEVICE BEING CONTROLLED ARE FULLY TRAINED ON ITS USE AND HOW TO PREVENT INJURY.

When installed correctly this product will provide safe and reliable operation for many years. A.T.A would like to thank you for choosing the CB-6 and will be happy to answer any questions you may have.

NOTE ABOUT MANUAL'S CONTENTS

In order to simplify this manual all operational descriptions refer to a swing gate installation. In addition all control and safety inputs except for the P.E input are described as being activated by a simple switch. Therefore it is up to the reader to extend these concepts to other operators and input devices such as time clocks, loop detectors, stand alone relay receivers, ticket machines, card readers, keypads, etc. Most of the common motor connections are shown however it is not possible or desirable to include all types.

INDEX

1 GENERAL DESCRIPTION AND FEATURES.

2 LOCATION OF INPUTS, OUTPUTS AND ADJUSTMENTS.

- 2.1 CONTROL BOARD VIEW.
- 2.2 MODE SELECTION AND ADJUSTMENT VIEW.

3 STANDARD OPERATION.

- 3.1 MOTOR CONTROL OPERATION
- 3.2 LOCK RELEASE OUTPUT OPERATION
- 3.3 COURTESY LIGHT OPERATION (REQUIRES OPTIONAL MODULE).
- 3.4 OPEN / STOP / CLOSE (OSC) INPUT OPERATION.
- 3.5 PEDESTRIAN ACCESS (PED) INPUT OPERATION.
- 3.6 CLOSE (CLS) INPUT OPERATION.
- 3.7 OPEN (OPN) INPUT OPERATION.
- 3.8 STOP (STP) INPUT OPERATION.
- 3.9 PHOTOELECTRIC SAFETY BEAM (P.E) INPUT OPERATION.
- 3.10 REMOTE CONTROL OPERATION.
- 3.11 WHAT HAPPENS WHEN MORE THAN ONE INPUT IS ACTIVATED AT A TIME.

4 MODE SELECTION.

- 4.1 SYNCHRONISED TRAVEL OF OVERLAPPING GATE LEAFS.
- 4.2 PULSE LOCK RELEASE OUTPUT.
- 4.3 EXTENDED COURTESY LIGHT TIMER (REQUIRES OPTIONAL MODULE).
- 4.4 WARNING LIGHT (REQUIRES OPTIONAL MODULE).
- 4.5 WARNING LIGHT WITH PRE-DRIVE WARNING (REQUIRES OPTION MODULE).
- 4.6 MOTOR 2 OUTPUT USED TO CONTROL GATE STATUS LIGHTS.
- 4.7 P.E INPUT STOPS MOTORS FROM BEING CLOSED BUT DOES NOT REVERSE THE MOTORS.
- 4.8 P.E INPUT PREVENTS MOTORS BEING DRIVEN CLOSED OR OPEN.
- 4.9 **AUTOCLOSE MODES.**
 - a) AUTOCLOSE AFTER REACHING THE OPEN POSITION.
 - b) AUTOCLOSE AFTER BEING OPENED FOR PEDESTRIAN ACCESS.
 - c) AUTOCLOSE AFTER CYCLE IF P.E HAS BEEN TRIGGERED.
 - d) MIXING AUTOCLOSE MODES.

(Continued over page)

5 WIRING TERMINALS AND CONNECTORS.

- 5.1 REMOTE CONTROL RECEIVER CONNECTOR AND ISOLATION SWITCH.
- 5.2 REMOTE CONTROL ANTENNA CONNECTION.
- 5.3 POWERING CONTROL BOARD (PREFERRED METHOD).
- 5.4 POWERING CONTROL BOARD (ECONOMY METHOD).
- 5.5 CONTROLLING SINGLE PHASE MOTORS.
- 5.6 CONTROLLING 3 PHASE MOTORS .
- 5.7 WIRING CONTROL AND SAFETY INPUT TERMINALS.
- 5.8 WIRING LOCK RELEASE OUTPUT TO CONTROL SOLENOID LOCKS.
- 5.9 WIRING LOCK RELEASE OUTPUT TO CONTROL ELECTROMAGNETIC LOCKS.
- 5.10 WIRING LIGHT RELAY MODULE TO CONTROL A COURTESY / WARNING LIGHT.
- 5.11 WIRING M2 OUTPUT LIGHTS TO SHOW GATE STATUS.
- 5.12 USING CONTROL INPUT HARNESS CONNECTOR.

6 ADJUSTING CYCLE AND AUTO CLOSE TIMES.

- 6.1 SETTING OPEN, CLOSE AND PEDESTRIAN ACCESS CYCLE TIMES.
- 6.2 SETTING P.E TRIGGERED AUTOCLOSE DELAY TIME.
- 6.3 SETTING PEDESTRIAN ACCESS AUTOCLOSE DELAY TIME,
- 6.4 SETTING STANDARD AUTOCLOSE DELAY TIME.

7 SPECIAL ADJUSTMENTS.

- 7.1 SETTING LOCK PULSE LENGTH.
- 7.2 SETTING TIME FROM WHEN WARNING LIGHT IS ACTIVATED TO WHEN MOTORS ARE STARTED.
- 7.3 SETTING COURTESY LIGHT TIMER DURATION.
- 7.4 SETTING MOTOR STOPPING TIME.
- 7.5 SETTING TIME FROM WHEN LOCK RELEASE OUTPUT IS ACTIVATED TO WHEN MOTORS ARE STARTED.
- 7.6 SETTING DURATION OF GATE LEAF SYNCHRONISING DELAY.

8 RELOADING MEMORY WITH FACTORY SET DEFAULT TIMES.

9 SPECIFICATIONS.

1 GENERAL DESCRIPTION AND FEATURES.

The CB-6 control board is designed to automate 1 or 2 single phase or three phase motors incorporated into drive units with or without limit switches. Typical applications include swing gates, sliding gates and roller shutter doors. The CB-6 is intended to supersede the CB-12 and CB-4 control boards. A list of some of the features of the control board follows.

- Control board constructed using state of art assembly techniques such as SMT and industrial quality materials and components.
- Each control board is visually and electronically tested after production.
- Controlled by a powerful custom programmed microcontroller.
- Conforms to Australian electrical authority safety standards. (Subject to approval)
- The microcontroller circuitry is electrically isolated from all control and limit switch inputs and outputs.
- All control and limit switch inputs accept **dry** switch contacts and have a high noise immunity.
- The limit switch inputs are physically interlocked to the motor drive relays. This means that in the unlikely event of the microcontroller malfunctioning, the motors will still be prevented from driven beyond the positions set by the limit switches (if used).
- A motor drive timer prevents the motors being driven for periods longer than is normally required.
- Fuse protection is provided for motor outputs.
- Mains transient protection provided on board.
- Terminal block and mode selection labelling is clear and informative.
- A small size of 130mm x 105mm x 30mm is smaller than CB-12 control board (130mm x 105mm x 40mm)
- Controls one or two single phase 240VAC motors of up to 2.5Amps each directly.
- Controls one or two large single or three phase motors with the addition of suitable contactors etc.
- Control inputs for open, close, stop, open/close/stop, pedestrian access and photoelectric safety beams are provided.
- Plug in remote control radio receiver provides remote open/stop/close operation via hand held or keypad transmitters.
- A Pedestrian access input is provided to partially open one gate leaf for pedestrian access. The distance the gate is opened is adjustable.
- The photoelectric safety beam input can be programmed to either stop or reverse the motors if tripped while the motors are being driven in the close direction.
- The photoelectric safety beam input can be programmed to prevent the motors being driven in the open or close directions.
- The controller can be programmed to automatically close the gate after it has been opened, partly opened for pedestrian access or after the photoelectric safety input has been triggered and then released. The time the gate stays open is adjustable and independent for each of the three autoclose types.
- On board status LEDs shows control board and gate status.
- A light control output can be selected to turn on driveway lighting each time the gates are operated and then automatically turning it off after a pre-set time.
- The light control output can be selected to control a warning light which is illuminated while the gates are in motion. A pre-motion warning can also be selected.
- A lock control output is provided which can be used to deactivate a locking mechanisms at the start of each cycle. An adjustable pulse or hold action can be selected to power the lock. The time from when the lock is activated to when the motors are started can also be adjusted.
- When over lapping gate leaves are used, a delay can be introduced so that the overlapping leaf reaches/leaves the closed position before the other leaf. The delay is adjustable.
- The motor 2 output can be selected to drive 240VAC lights to indicate the gate's status and position.

2 LOCATION OF INPUTS, OUTPUTS AND ADJUSTMENTS.

2.1 CONTROL BOARD VIEW.

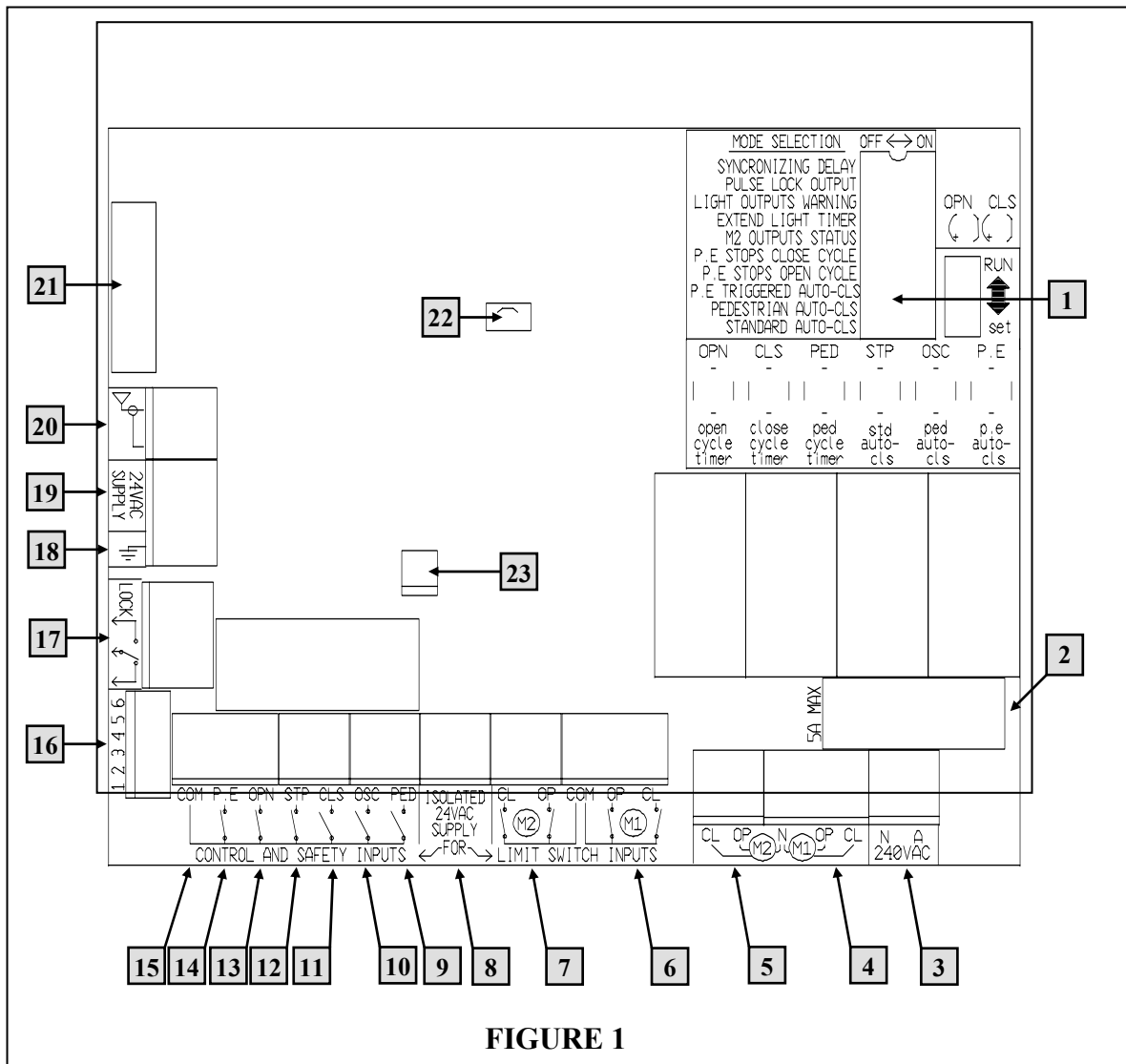
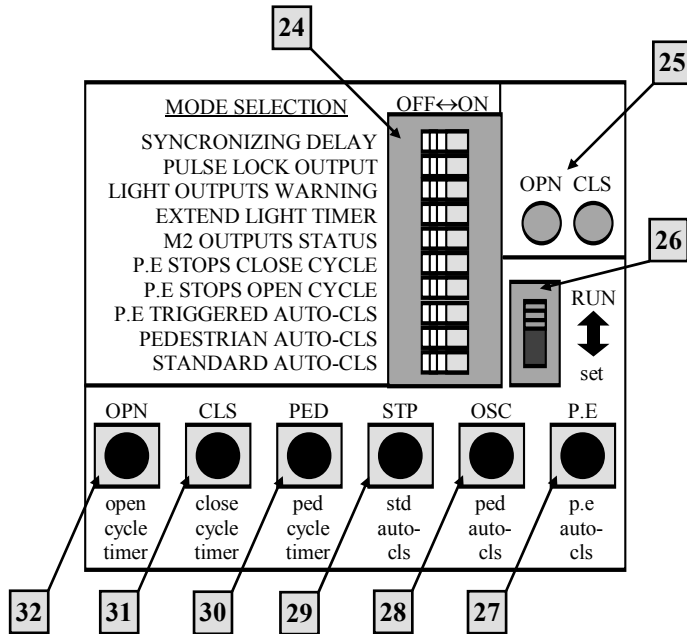


FIGURE 1

1. CONTROLS SECTION (SEE SECTION 2.2).
2. MOTOR PROTECTION FUSE.
3. MAINS 240VAC INPUT TERMINALS.
4. MOTOR 1 DRIVE OUTPUT TERMINALS.
5. MOTOR 2 DRIVE OUTPUT TERMINALS.
6. MOTOR 1 LIMIT SWITCH INPUTS.
7. MOTOR 2 LIMIT SWITCH INPUTS.
8. TERMINALS FOR ISOLATED 24VAC SUPPLY FOR LIMIT SWITCH AND CONTROL INPUTS.
9. PEDESTRIAN ACCESS CONTROL INPUT.
10. OPEN/STOP/CLOSE CONTROL INPUT.
11. CLOSE CONTROL INPUT.
12. STOP CONTROL INPUT.
13. OPEN CONTROL INPUT.
14. PHOTOELECTRIC SAFETY BEAM INPUT.
15. COMMON TERMINAL FOR [9] TO [14] ABOVE
16. CONTROL INPUT HARNESS CONNECTOR.
17. ELECTRIC LOCK CONTROL TERMINALS.
18. MAINS EARTH TERMINAL.
19. TERMINALS FOR 24VAC SUPPLY FOR CONTROL LOGIC.
20. PLUG IN RECEIVER'S ANTENNA TERMINALS WITH OPTIONAL SHIELD.
21. CONNECTOR FOR PLUG-IN RECEIVER (NOT SHOWN)
22. PLUG-IN RECEIVER'S TRIGGER ISOLATION SWITCH INPUT.
23. LIGHT CONTROL RELAY INTERFACE CONNECTOR.

1.2 MODE SELECTION AND ADJUSTMENT VIEW.

FIGURE 2



- 24. MODE SELECTION DIPSWITCHES.
- 25. STATUS INDICATION L.E.D.S.
- 26. “RUN / set” SELECTION SLIDE SWITCH.

Each of the push button switches [27] to [32] have two functions. The “RUN / set” slide switch [26] selects which function is currently selected. Table 1 shows the function of each push button with the slide switch in the “RUN” and “set” positions. See section 6 for details about using the buttons [27] to [32] to make adjustments.

	FUNCTION WHEN “RUN” POSITION IS SELECTED ON THE SLIDE SWITCH [26].	FUNCTION WHEN “set” POSITION IS SELECTED ON THE SLIDE SWITCH [26]
27	SIMULATES P.E CONTROL INPUT	P.E TRIGGER AUTOCLOSE TIMER SET
28	OPEN/STOP/CLOSE INPUT	PEDESTRIAN AUTOCLOSE TIMER SET
29	STOP INPUT	STANDARD AUTOCLOSE TIMER SET
30	PEDESTRIAN ACCESS INPUT	PEDESTRIAN ACCESS CYCLE TIME SET
31	CLOSE INPUT	CLOSE CYCLE TIME SET
32	OPEN INPUT	OPEN CYCLE TIMER SET

TABLE 1

2 STANDARD OPERATION.

This section describes the operation of the control board as it is supplied. The control board is supplied with all the mode selection dipswitches in the off position, the slide switch [26] in the “RUN” position and factory programmed parameters in memory. Refer to section 8 if you wish to return the control board’s memory to its original programmed parameters.

2.1 MOTOR CONTROL OPERATION

The controller drives the motors in the appropriate direction as instructed by the control inputs. Both motors are started at the same time and are turned off when:

- the controller is instructed to by a control input,
- the motors travel time has exceeded 60 seconds.
- a motor’s limit switch input for the current direction of travel has been activated.

The motor travel time of 60 seconds can be changed if desired for both the open and close directions, for details see section 6.1. When the motor direction is changed the controller allows 0.5 seconds for the motors to come to rest before attempting to drive the motors in the other direction. This time of 0.5 seconds can be changed if desired, see section 7.4 for details.

2.2 LOCK RELEASE OUTPUT OPERATION

The lock release output is activated at the same time as the motors are turned on at the start of each cycle and deactivated a short time after the motors are turned off at the end of the cycle. If while opening or closing the controller is instructed to change the motor direction, the lock release output remains active while the motor direction change is being made. If desired the lock release output can be activated before the motors are, for details on setting the delay see section 7.5.

2.3 COURTESY LIGHT OPERATION (REQUIRES OPTIONAL MODULE).

With the addition of a module which plugs into the control board, the control board will control courtesy lighting which will illuminate the driveway etc. each time the gate is activated (day and night). The light will be automatically turned off 1 minute after the last drive cycle has finished.

2.4 OPEN / STOP / CLOSE (OSC) INPUT OPERATION.

The OSC input can be activated by a switch connected to the OSC terminal [10] or by pressing the OSC button [28]. Table 2 shows how a gate’s motion is controlled by the OSC input

STATE OF GATE BEFORE OSC INPUT IS ACTIVATED	STATE OF GATE AFTER OSC INPUT IS ACTIVATED
GATE IS OPEN	GATE STARTS TO CLOSE
GATE IS CLOSED	GATE STARTS TO OPEN
GATE IS OPENING	GATE STOPS (WHILE OPENING)
GATE IS CLOSING	GATE STOPS (WHILE CLOSING)
GATE IS STOPPED (WHILE OPENING)	GATE STARTS TO CLOSE
GATE IS STOPPED (WHILE CLOSING)	GATE STARTS TO OPEN
GATE PARTLY OPENED FOR PEDESTRIAN ACCESS	GATE STARTS TO OPEN
POWER IS TURNED ON TO CONTROL BOARD (POSITION OF GATE IS UNKNOWN)	GATE STARTS TO OPEN

TABLE 2

2.5 PEDESTRIAN ACCESS (PED) INPUT OPERATION.

The pedestrian access operation partly opens the gate leaf driven by motor 1 to allow pedestrian access but prevent vehicle access. The gate leaf is partly opened by driving it in the open direction for 5 seconds. The gate can then be closed (pedestrian close cycle) again by reactivating the PED input. If the P.E input is activated during a pedestrian close cycle the gate leaf will stop but will not reopen. The PED input is normally activated by a switch connected to the PED terminal [9] but can also be activated by pressing the PED button [30]. The factory set drive time of 5 seconds can be changed if desired, for details see section 6.1. Table 3 shows how a gate's motion can be controlled by the PED input.

STATE OF GATE BEFORE PEDESTRIAN INPUT IS ACTIVATED	STATE OF GATE AFTER PEDESTRIAN INPUT IS ACTIVATED
GATE IS OPEN	BOTH LEAFS OF GATE START TO CLOSE
GATE IS CLOSED	GATE LEAF DRIVEN BY MOTOR 1 STARTS TO OPEN PART WAY
GATE IS OPENING	GATE STOPS
GATE IS CLOSING	GATE STOPS
GATE IS STOPPED	BOTH LEAFS OF GATE START TO CLOSE
GATE PARTLY OPEN FOR PEDESTRIAN ACCESS	GATE STARTS TO CLOSE
POWER IS TURNED ON TO CONTROL BOARD (POSITION OF GATE IS UNKNOWN)	GATE STARTS TO CLOSE

TABLE 3

2.6 CLOSE (CLS) INPUT OPERATION.

The CLS input is normally activated by a switch connected to the CLS input terminal [11] but can also be activated by pressing the CLS button [31]. Activating the CLS input will cause the gate to close.

2.7 OPEN (OPN) INPUT OPERATION.

The OPN input is normally activated by a switch connected to the OPN input terminal [13] but can also be activated by pressing the OPN button [32]. Activating the OPN input will start to open the gate.

2.8 STOP (STP) INPUT OPERATION.

The STP input is normally activated by a switch connected to the STP input terminal [12] but can also be activated by pressing the STP button [29]. Activating the STP input while the gate is moving will cause the gate to be stopped.

2.9 PHOTOELECTRIC SAFETY BEAM (P.E) INPUT OPERATION.





The P.E input is normally activated by a switch connected to the P.E input terminal [14] but can also be activated by pressing the P.E button [27]. When the P.E input is active the gate is prevented from being closed. If the P.E input is activated while the gate is closing the controller will stop the motors and then reopen the gate. The P.E input has no effect while the gate is opening. For details about how the P.E input affects a pedestrian close cycle see section 3.5 above.

2.10 REMOTE CONTROL OPERATION.

When an optional remote control receiver is fitted to the connector [21] the controller can be remotely operated by a radio transmitter etc. The controller will respond to a transmission in the same way it responds to the OSC input. See section 3.4.

2.11 WHAT HAPPENS WHEN MORE THAN ONE INPUT IS ACTIVATED AT A TIME.

Table 4 shows the action taken by the controller when multiple inputs are activated. The table shows the initial gate status at the top right. The new input state is shown on the left and the resulting gate status is shown in the shaded area. Please note that the CLS push button [31] has a slightly different effect to the CLS terminal [11] which is used in table 4.

- LEGEND:
-  INPUT IS TRIGGERED
 -  INPUT IS ALREADY ACTIVE
 -  INPUT IS INACTIVE
 -  HAS NO EFFECT (CAN BE ALREADY ACTIVE, INACTIVE OR TRIGGERED)










INPUT STATE					INITIAL GATE STATUS				
OPN	STP	CLS	OSC	PED	OPENED	CLOSED	STOPPED	OPENING	CLOSING
★	⊗	★	★	★	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>		
★		★	★	★	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>STOPS</i>	<i>STOPS</i>
⊗	.		★	★	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>STOPS</i>	
	.	⊗	★	★	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>		<i>STOPS</i>
⊗	.	.		.	<i>NO CHANGE</i>	<i>OPENS</i>	<i>OPENS</i>	<i>STOPS</i>	
⊗	.	.	.		<i>NO CHANGE</i>	<i>OPEN (PED'N)</i>	<i>NO CHANGE</i>	<i>STOPS</i>	
.	.	.			<i>CLOSES</i>	<i>NO CHANGE</i>	<i>CLOSES</i>	<i>CLOSES</i>	<i>NO CHANGE</i>
.	.	★	★	⊗	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>
.	.	★	⊗	★	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>
.	.	⊗	★	★	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>
⊗	★	⊗	★	★	<i>NO CHANGE</i>	<i>NO CHANGE</i>	<i>NO CHANGE</i>		
	.	.	⊗	.	<i>NO CHANGE</i>	<i>OPENS</i>	<i>OPENS</i>	<i>NO CHANGE</i>	<i>OPENS</i>
	.	.	.	⊗	<i>NO CHANGE</i>	<i>OPENS</i>	<i>OPENS</i>	<i>NO CHANGE</i>	<i>OPENS</i>

TABLE 4

3 MODE SELECTION

Section 4 explains user selectable modes of operation and how to select them.

3.1 SYNCHRONISED TRAVEL OF OVERLAPPING GATE LEAFS.

SYNCHRONISING DELAY > ON (DELAY = 2 SECONDS)

When dual swing gates are used it is common for a back stop to be mounted on one of the gate leaves so that the gate leaves are aligned when closed. To prevent the gate leaves interfering with each other the gate leaf with the back stop must be made to reach the close position first when closing and be made to start to open last. The controller can be made to do this by placing the mode selection dipswitch labelled "SYNCHRONISING DELAY" into the "ON" position. This will result in the gate leaf driven by motor 1 starting to open 2 seconds before the gate leaf driven by motor 2 and the gate leaf driven by motor 2 starting close 2 seconds before that of motor 1. Note, if a lock is to be mounted on a gate leaf it should be mounted on the leaf driven by motor 1. If the delay of 2 seconds is not suitable it can be altered, see section 7.6 for details.

3.2 PULSE LOCK RELEASE OUTPUT.

PULSE LOCK OUTPUT > ON (PULSE = 0.3 SECONDS)

Some locking mechanisms require a quick pulse of power to release. The controller can be made to pulse the lock release output [17] for 0.3 seconds at the start of each cycle. To select this action place the mode selection dipswitch labelled "PULSE LOCK OUTPUT" into the "ON" position. The factory set pulse duration of 0.3 seconds can be changed if desired, see section 7.1 for details. The lock release output can be made to activate before the motors are, for details about setting the delay time see section 7.5.

3.3 EXTENDED COURTESY LIGHT TIMER (REQUIRES OPTIONAL MODULE).

EXTENDED LIGHT TIMER > ON (TIMER = 3 MINUTES)

The standard courtesy light timer duration of 1 minute can be extended to 3 minutes by placing the mode selection dipswitch labelled "EXTEND LIGHT TIMER" into the "ON" position. The factory set extended light timer duration of 3 minutes can be changed if desired, see section 7.3 for details

3.4 WARNING LIGHT (REQUIRES OPTIONAL MODULE).

LIGHT OUTPUTS WARNING > ON

The light output module can be used to control a warning light. The warning light will be activated whenever the gate is moving. To select this mode place the mode selection dipswitch labelled "LIGHT OUTPUTS WARNING" into the "ON" position.

3.5 WARNING LIGHT WITH PRE-DRIVE WARNING (REQUIRES OPTION MODULE).

LIGHT OUTPUTS WARNING > ON
EXTENDED LIGHT TIMER > ON (PAUSE = 3 SECONDS)

The controller can be made to activate the warning light 3 seconds before the motors start to move. This is so personnel near the gate have time to react before the gate actually starts to move. This mode is selected by placing both the mode selection dipswitches labelled "LIGHT OUTPUTS WARNING" and "EXTENDED LIGHT TIMER" into the "ON" position. If the 3 second pause is not suitable it may be changed, see section 7.2 for details.

3.6 MOTOR 2 OUTPUT USED TO CONTROL GATE STATUS LIGHTS.

M2 OUTPUTS STATUS > ON

If only one motor is being controlled, it is possible to use motor 2's output to control two lights which can show the gate's status. This is selected by placing the mode selection dipswitch labelled "M2 OUTPUTS STATUS" into the "ON" position. The way the outputs show status is shown in table 5.

GATE'S STATUS	M2 CL OUTPUT	M2 OP OUTPUT
OPEN	OFF	ON
CLOSE	ON	OFF
OPENING	OFF	FLASHING
CLOSING	FLASHING	OFF
STOPPED IN MIDDLE	FLASHING	FLASHING
PARTLY OPENED FOR PEDESTRIAN ACCESS	ON	ON
AFTER POWERING UP (POSITION OF GATE UNKNOWN)	FLASHING	FLASHING

TABLE 5

3.7 P.E INPUT STOPS MOTORS FROM BEING CLOSED BUT DOES NOT REVERSE THE MOTORS.

P.E STOPS CLOSE CYCLE > ON

When the mode selection dipswitch labelled "P.E STOPS CLOSE CYCLE" is placed into the "ON" position the P.E input's operation is changed. When the P.E input is activated while the gate is closing the controller stops the gate leaves but does not reopen them.

3.8 P.E INPUT PREVENTS MOTORS BEING DRIVEN CLOSED OR OPEN.

P.E STOPS OPEN CYCLE > ON

When the mode selection dipswitch labelled "P.E STOPS OPEN CYCLE" is placed into the "ON" position the P.E input operation changes. In this mode, when the P.E input is active the controller prevents the motors being driven in either direction.

3.9 AUTOCLOSE MODES

The autoclose modes automatically close the gate after it has been operated. To implement this the controller sets an internal timer once the gate has reached its desired open position. The timer then counts down and when it expires the controller starts to close the gate. The timer's count down can be suspended by activating the P.E input or other inputs depending on the mode selected. When the suspending input is deactivated the timer is reloaded and the count down recommenced. The timer's count down can be stopped altogether by activating the STP input. See the sections below for details about the three autoclose modes.

a) AUTOCLOSE AFTER REACHING THE OPEN POSITION.

STANDARD AUTO-CLS > ON (DELAY = 30 SECONDS)

In this autoclose mode the gate will autoclose 30 seconds after being fully opened. The autoclose timer's count down can be suspended by both the OPN and P.E inputs. If the timer's count down has been stopped by the STP input being activated, it can be restarted by activating the OPN input.

This mode is selected by placing the mode selection dipswitch labelled "STANDARD AUTO-CLS" into the "ON" position. The delay of 30 seconds can be changed if desired, for details see section 6.4.

b) AUTOCLOSE AFTER BEING OPENED FOR PEDESTRIAN ACCESS.

PEDESTRIAN AUTO-CLS > ON (DELAY = 15 SECONDS)

In this autoclose mode the gate will autoclose 15 seconds after being partly opened for pedestrian access. If the PED or P.E inputs are active while the leaf is partly opened for pedestrian access the autoclose timer's count down will be suspended until the inputs are released. If during the pedestrian autoclose cycle the P.E input or the PED input are activated the gate leaf will stop but not reopen. A new count down will be initiated once the inputs are deactivated.

This mode is selected by placing the mode selection dipswitch labelled "PEDESTRIAN AUTO-CLS" into the "ON" position. The factory set delay of 15 seconds can be changed if desired, for details see section 6.3.

c) AUTOCLOSE AFTER CYCLE IF P.E HAS BEEN TRIGGERED.

P.E TRIGGERED AUTO-CLS > ON (DELAY = 5 SECONDS)

In this autoclose mode the controller will only autoclose the gate if the P.E input (in any mode) has been activated and then released since the gate was last closed or stopped (stopped by P.E input excluded). The autoclose timer's count down can be suspended by activating the OPN input if the gate is in the open position. This mode is selected by placing the mode selection dipswitch labelled "P.E TRIGGERED AUTO-CLS" into the "ON" position. The factory set 5 second delay can be changed if desired, for details see section 6.2. Since there are three different modes of P.E operation it is best to describe the operation of this autoclose function with respect to each of the P.E modes. The descriptions follow.

P.E TRIGGERED AUTO-CLS > ON (DELAY = 5 SECONDS)

P.E IN STANDARD MODE (P.E STOPS OPEN CYCLE and P.E STOPS CLOSE CYCLE both OFF)

The controller will autoclose the gate provided the P.E input was activated while the gate was opening or is activated while the gate is in the open position.

P.E TRIGGERED AUTO-CLS > ON (DELAY = 5 SECONDS)

P.E STOPS CLOSE CYCLE > ON

The controller will autoclose the gate if the P.E input is activated while the gate is open. In addition it will also autoclose the gate if the P.E input is activated while the gate is closing, in which case the gate stops and then autocloses from its stopped position.

P.E TRIGGERED AUTO-CLS > ON (DELAY = 5 SECONDS)

P.E STOPS OPEN CYCLE > ON

The controller will autoclose the gate if the P.E input is activated while the gate is open. In addition it will also autoclose the gate if the P.E input is activated while the gate is closing or opening, in which case the gate stops and then autocloses from its stopped position.

d) MIXING AUTOCLOSE MODES.

More than one, in fact all, autoclose mode can be selected at once. The PEDESTRIAN AUTO-CLS mode and the STANDARD AUTO-CLS mode do not affect each other as one operates during standard operation and the other during pedestrian access. However the P.E TRIGGERED AUTO-CLS mode can be selected to operate at the same time as the PEDESTRIAN AUTO-CLS and STANDARD AUTO-CLS modes. For example, it is possible to have P.E triggered pedestrian autoclose by selecting both the PEDESTRIAN AUTO-CLS and P.E TRIGGERED AUTO-CLS modes. In this mode the gate would partly open for pedestrian access and then either the P.E TRIGGERED AUTO-CLS would cause the gate to autoclose when a pedestrian walks through and activates the P.E beam or, if no one walked through the PEDESTRIAN AUTO-CLS would close the gate. This way the gate is only kept open long enough for a person to walk through, but with the backup that if no one walks through the gate will still close. The same concept can be used with standard operation by selecting both the STANDARD AUTO-CLS and the P.E TRIGGERED AUTO-CLS modes. That is, the gate would only stay open long enough for the vehicle to pass through but would still autoclose if no vehicle enters. Note P.E TRIGGERED AUTO-CLS will not operate during pedestrian access unless the PEDESTRIAN AUTO-CLS mode is also selected.

4 WIRING TERMINALS AND CONNECTORS.

4.1 REMOTE CONTROL RECEIVER CONNECTOR AND ISOLATION SWITCH.

For remote control operation an A.T.A remote control plug-in receiver can be plugged into the control board's connector [21]. The plug in receiver operates the control board via a trigger output. If desired the trigger

output can be disabled using a user supplied switch connected across the plug-in receiver's trigger isolation switch input [22]. This can be done by desoldering the wire link provided and soldering a toggle switch across the two vacated holes. If isolation is not required the wire link can be left intact.

1.1 REMOTE CONTROL ANTENNA CONNECTION.

If a remote control receiver is plugged into connector [21] an antenna must be connected to connector [20]. The standard antenna requirement is a simple wire approximately 1.5m in length connected as shown in figure 3. The wire should be stretched out and oriented for best reception. There is usually no need to use the shield terminal of [20] but it is provided for connection of other antenna types.

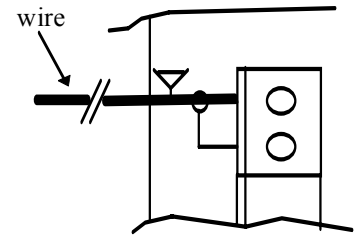


FIGURE 3

1.2 POWERING CONTROL BOARD (PREFERRED METHOD).

The control board has two 24VAC supply inputs. The control supply [19] is used to power the control circuits while the 24VAC supply [8] is used to power the control, safety and limit switch inputs as well as the motor control relays. The two halves of the control board are electrically isolated from each other so that any electrical “noise” picked up by the wiring associated with the control, safety or limit switch inputs is prevented from interfering with the control circuits. Figure 4 shows how to connect a dual secondary transformer to the control board. Note the control circuits are “EARTHED” by using the earth terminal [18]. In order to maintain electrical isolation do not earth any part of the control, safety or limit switch circuits. The 240VAC input is used to power the motors connected to the control board. If a lower voltage motor supply is required then it can be connected to the 240VAC A and N terminals instead.

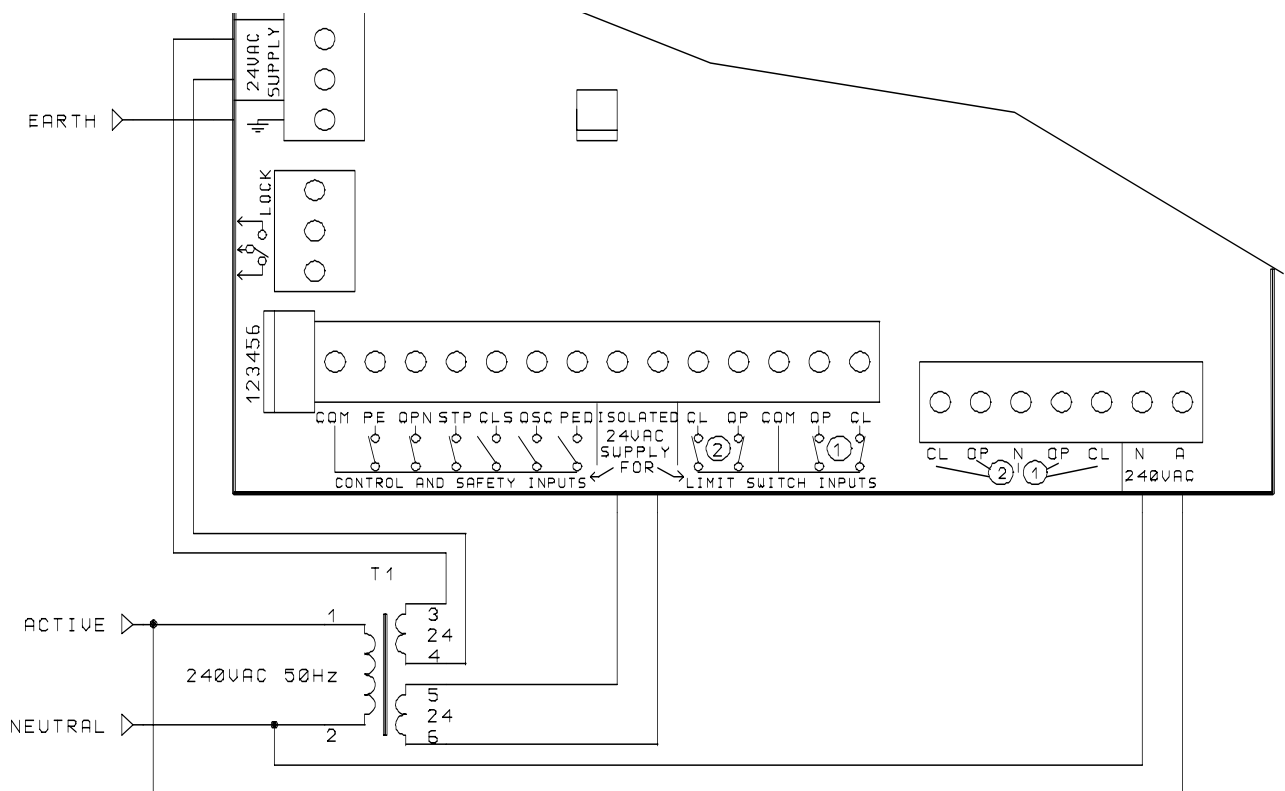


FIGURE 4

1.2 POWERING CONTROL BOARD (ECONOMY METHOD).

If the control, safety and limit switch inputs are not used or the associated wiring is very short (<0.5m) and kept away from sources of electrical interference, the control board can be powered as shown in figure 5. Note both the control board's 24VAC supplies are powered from a single secondary transformer. It should also be noted that the transformer should not be used to supply any other device, for example electric lock, lights, photoelectric beam, etc. The transformer should also be located close to the control board. The 240VAC input is used to power the motors being controlled. If a lower motor supply voltage is required it can be connected to the 240VAC A and N terminals instead of 240VAC.

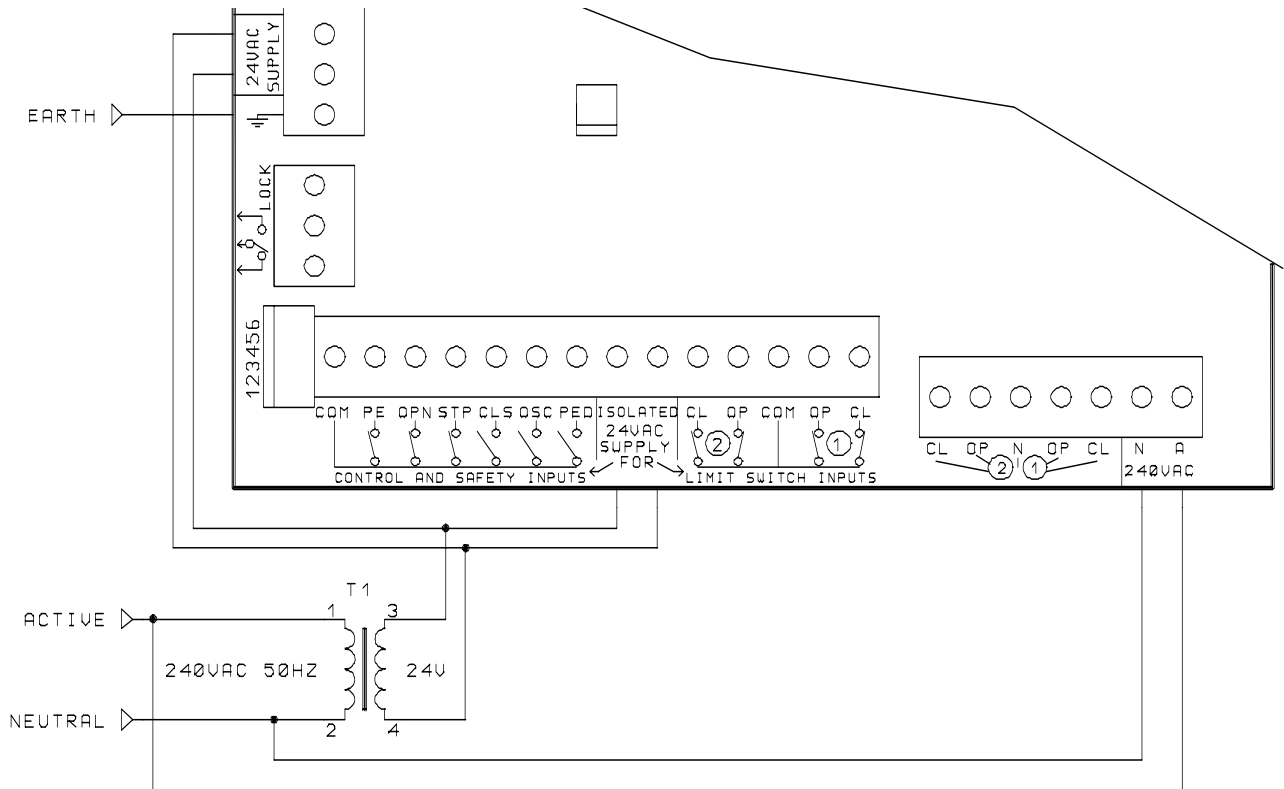


FIGURE 5

1.1 CONTROLLING SINGLE PHASE MOTORS.

Figure 6 shows how to connect two single phase motors and associated limit switches (if used) to the control board. If the limit switches are not used then simply place a wire link across the limit switch inputs. If only one motor is to be controlled simply ignore the motor and limit switch connections for motor 2.

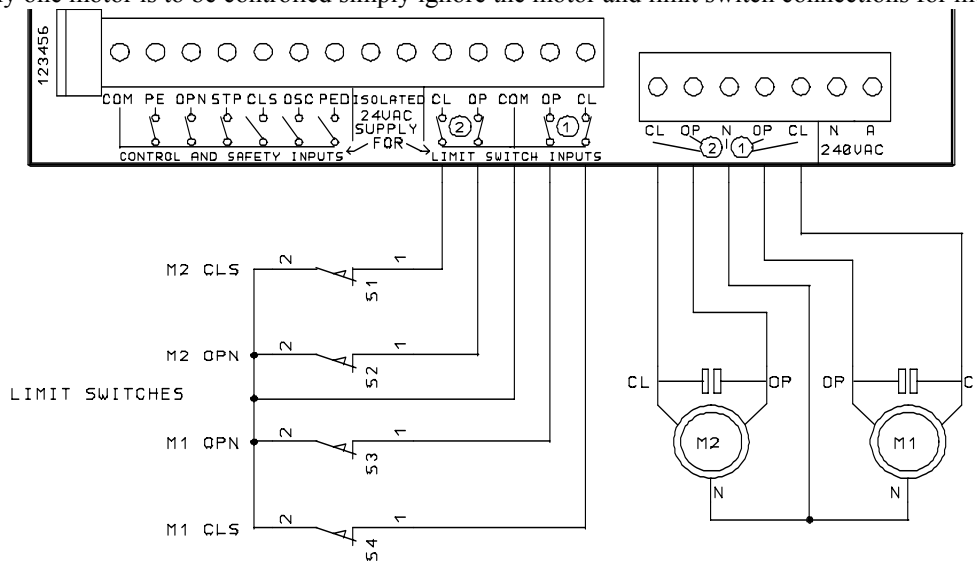


FIGURE 6

1.1 CONTROLLING 3 PHASE MOTORS.

Figure 7 shows the connections required to control a three phase motor with limit switches. The control board's motor outputs directly drive the coils of the open (K1) and close (K2) contactors. These in turn switch

the three phase power to the motor. The motor limit switches (S1 and S2) are interlocked with the contactor coils so that when a limit switch is activated the associated contactor is prevented from being operated. So that the control board is made aware of the state of the limit switches, S1 and S2 are also used to activate the relays K3 and K4. These in turn activate the control board's limit switch inputs. If two motors are to be controlled simply duplicate the limit switches, contactors, etc. for motor 2. It is possible to omit the relays K3 and K4 and use the control board's cycle timer function to synchronise the controller with the actual motor travel. By setting the controller's open and close cycle timers, so that they match the actual time required to open and close the motor, the controller will appear to be aware of the state of the limit switches. This is fine for full drive cycles, however, when a cycle is started from a position part way between the open and closed positions some problems can occur. This is because the motor's contactor will be turned off by the limit switches but the control board assumes that the motor is still running because its cycle timer has not yet elapsed. If the OSC input is activated at this time the control board will not seem to respond. This is because the control board tries to turn the motor off.

Another problem occurs when the P.E input is activated during the same period. This time the controller responds by reopening the motor (only if P.E is selected to reopen when activated on a close cycle).

In summary, K3 and K4 can be omitted provided the problems mentioned and others caused by the controller being unaware of the motors actual position are acceptable.

The motor limit switches are connected as shown below instead of the way shown in figure 6 for the following reason. Due to the power of the motors being controlled it is wise to provide extra safe guards to prevent damage in the unlikely event of the control board failing. For this reason the motor limit switches S1 and S2 directly interlock with the motor contactor coils. This system also keeps the low voltage motor wiring away from the extra low voltage limit switch wiring.

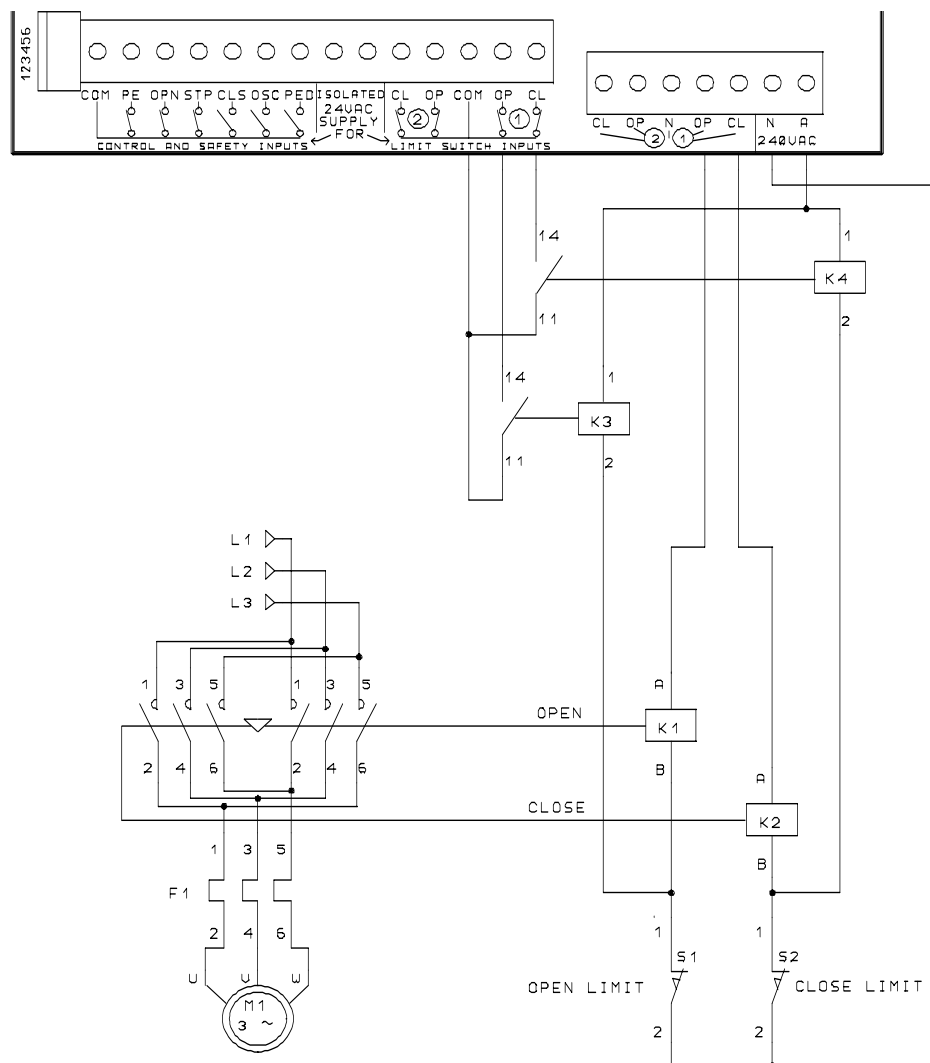


FIGURE 7

1.2 WIRING CONTROL AND SAFETY INPUT TERMINALS.

Figure 8 shows how to wire the control and safety input terminals to switches. Note that the P.E, OPN and STP inputs require a normally closed switch contact. If not used these inputs must be connected to the COM terminal. The CLS, OSC and PED inputs require a normally open switch contact. If not used these inputs should be left unconnected.

AT NO TIME SHOULD A VOLTAGE OR CURRENT BE APPLIED TO THE INPUTS AS THIS MAY PERMANENTLY DAMAGE THE CONTROL BOARD OR SEVERELY REDUCE ITS RELIABILITY. SWITCH WIRING SHOULD BE KEPT AS SHORT AS POSSIBLE AND AWAY FROM SOURCES OF ELECTRICAL INTERFERENCE AS THIS MAY FALSELY TRIGGER THE CONTROL BOARD'S INPUTS.

If the switch is to be located away from the control board or the switch supplies a voltage, the isolation module IM-1 available from A.T.A or a similar device should be used to isolate the switch and/or the long wiring from the control board input.

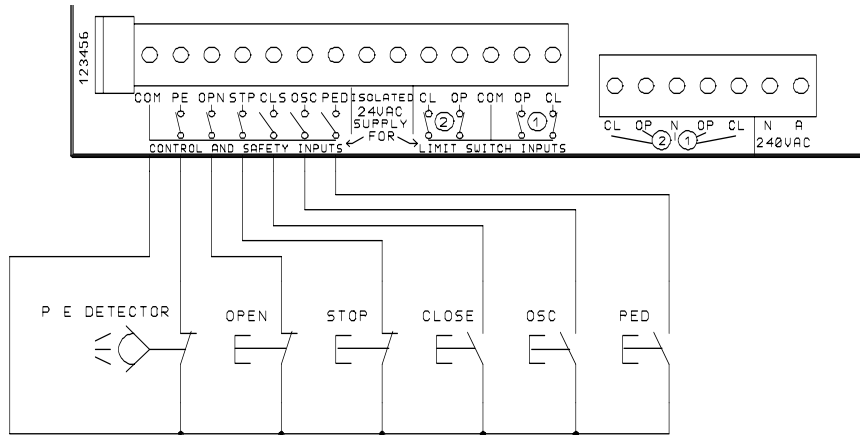


FIGURE 8

1.2 WIRING LOCK RELEASE OUTPUT TO CONTROL SOLENOID LOCKS.

Figure 9 shows how to connect an electric solenoid lock (LOPU100 available from A.T.A) to the control board's lock release output. Note the lock release output only switches the applied voltage to the lock and must be "wetted" with the appropriate voltage. The isolated 24VAC supply connected to [8] can be used to supply small pulse action locks such as the LOPU100. This should only be done if the control board is powered by a dual secondary transformer that is rated appropriately.

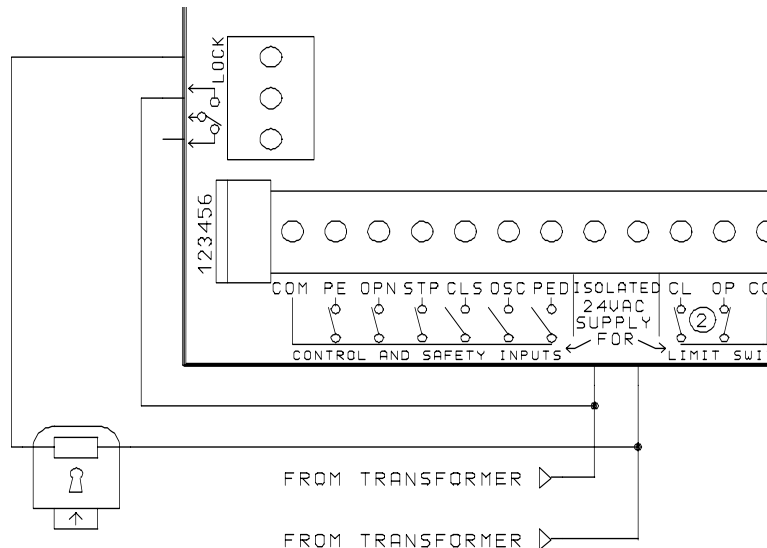


FIGURE 9

1.1 WIRING LOCK RELEASE OUTPUT TO CONTROL ELECTROMAGNETIC LOCKS.

Figure 10 shows how to connect an electromagnetic lock to the control board's lock release output. Note the lock release output only switches the applied voltage to the lock and must be wetted with the appropriate voltage. Note that the lock is connected to the normally closed contact of the lock release output as the lock is energised when the controller is idle and not driving the motors.

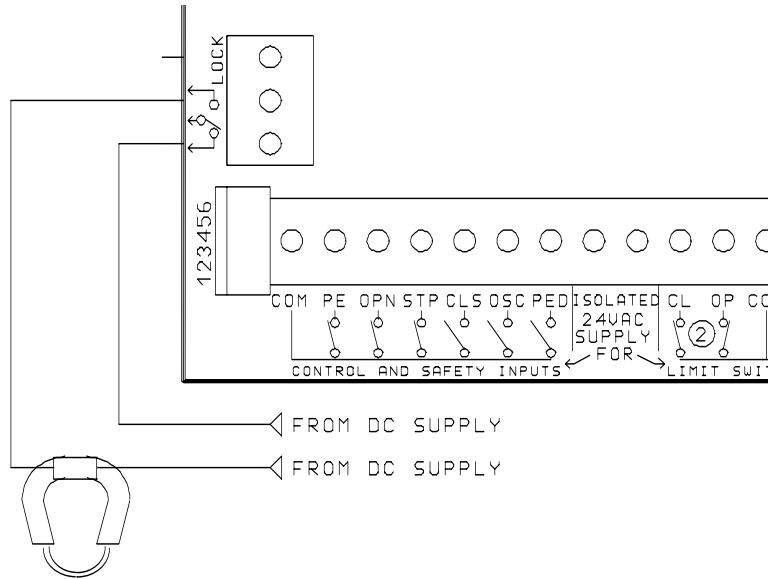


FIGURE 10

1.1 WIRING LIGHT RELAY MODULE TO CONTROL A COURTESY / WARNING LIGHT.

Figure 11 shows how to connect the optional relay module to the control board's connector [23]. It also shows how to wire a light to the relay module. The example shows a 240VAC light but any light of any voltage can be used, provided the relay module is able to switch the required voltage and current. The isolated 24VAC should not be used unless the control board is supplied by a dual secondary transformer of suitable rating.

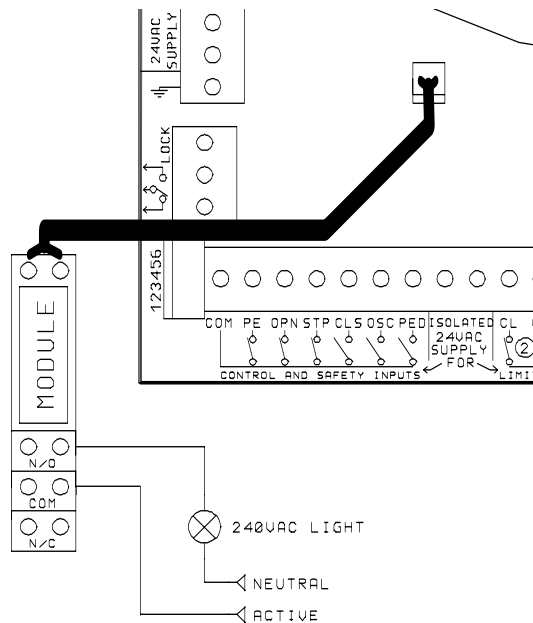


FIGURE 11

1.1 WIRING M2 OUTPUT LIGHTS TO SHOW GATE STATUS.

Figure 12 shows how to connect two 240VAC lights to the control board's motor 2 output to show the status of the gate. If desired only one of the status lights need be connected. The limit switch inputs for motor 2 can be used as extra low voltage off/on control of the status lights.

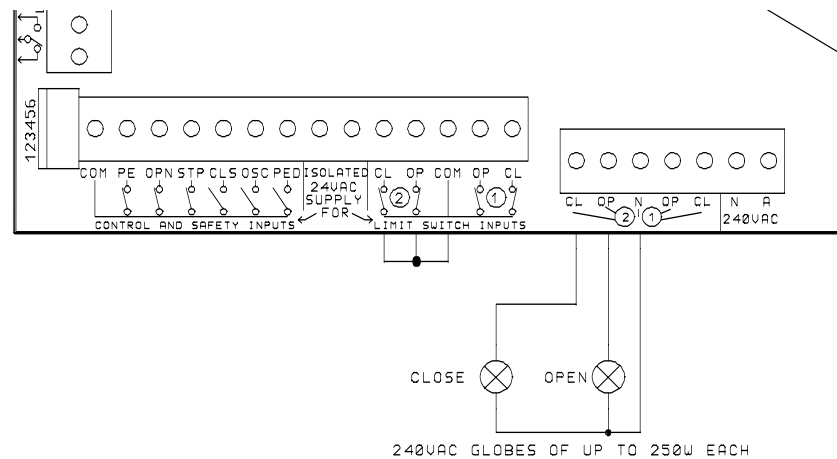


FIGURE 12

1.1 USING CONTROL INPUT HARNESS CONNECTOR.

Figure 13 shows the pin out and connection for using a control input harness connected to the control board's connector [16]. Note the normally closed switch inputs (OPN and STP) can not be used on both the harness inputs and the terminal block inputs ([12] and [13]). That is if the harness's OPN input is connected to a switch then the OPN terminal block input must be left open circuit and visa versa.

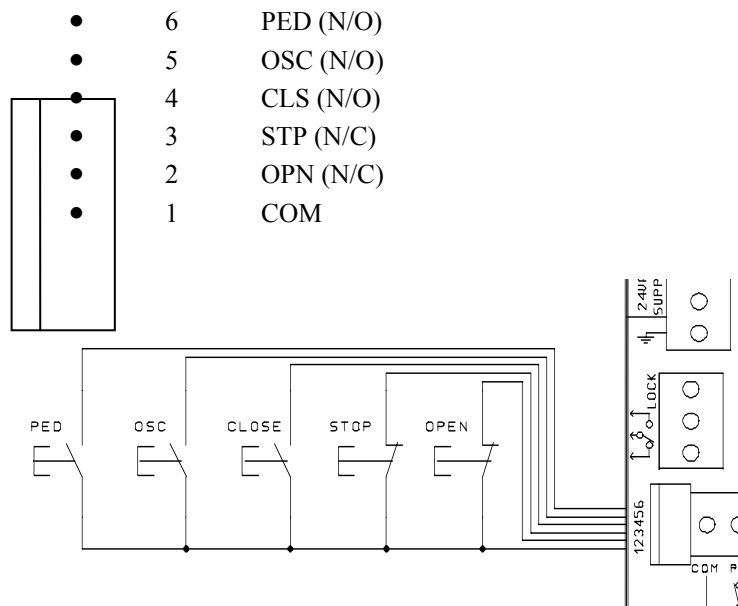


FIGURE 13

1 ADJUSTING CYCLE AND AUTOCLOSE TIMES.

When the slide switch [26] is placed into the “set” position, the buttons [27] through [32] are used to set the cycle and autoclose times. The method is the same for each time to be set and involves pressing and holding the appropriate button for the required duration. The time the button is held down for is then stored within the controller’s memory and used when the controller is in the “RUN” mode. When the motor drive cycle times are being set the controller also drives the motors as if a real drive cycle is being executed. The difference being that the motors stop as soon as the button is released. This feature can be used to help adjust and test the limit switch positions by “inching” the motors open and closed. To aid adjustment the OPN status led [25] flashes at one second intervals while adjusting. Make sure that the slide switch [26] is placed into the “RUN” position after each required timer has been adjusted and before trying to testing the new values.

1.1 SETTING OPEN, CLOSE AND PEDESTRIAN ACCESS CYCLE TIMES.

Follow the steps below to set the open, close and pedestrian access cycle times.

- Place the slide switch [26] into the “set” position.
- Close the gate by pressing and holding the “close cycle timer” button [31] until both motors are closed.
- To set the open cycle time press and hold the “open cycle timer” button [32] until the gate has reached desired open position, or if limit switches are used wait until a few seconds after the limit switches are reached before releasing.
- To set the close cycle time press and hold the “close cycle timer” button [31] until the gate has reached desired closed position, or if limit switches are used wait until a few seconds after the limit switches are reached before releasing.
- Go to last step if pedestrian access is not used
- To set the pedestrian access part open position press and hold the “ped cycle timer” button [30] until the gate leaf driven by motor 1 has opened far enough for pedestrian access.
- Place the slide switch [26] into the “RUN” position and test operation.

The open, close and pedestrian access cycle times can be set individually if desired by placing the slide switch into the “set” position and pressing the appropriate button. Make sure the slide switch is placed back into the “RUN” position before testing operation.

1.2 SETTING P.E TRIGGERED AUTOCLOSE DELAY TIME.

Follow the steps below to set the P.E triggered autoclose delay time.

- Place the slide switch [26] into the “set” position
- Press and hold the “p.e auto-cls” button [27] for the required delay time.
- Place the slide switch [26] into the “RUN” position and test operation.

1.3 SETTING PEDESTRIAN ACCESS AUTOCLOSE DELAY TIME.

Follow the steps below to set the pedestrian access autoclose delay time.

- Place the slide switch [26] into the “set” position.
- Press and hold the “ped auto-cls” button [28] for the required delay time.
- Place the slide switch [26] into the “RUN” position and test operation.

1.4 SETTING STANDARD AUTOCLOSE DELAY TIME.

Follow the steps below to set the standard autoclose delay time.

- Place the slide switch [26] into the “set” position.
- Press and hold the “std auto-cls” button [29] for the required delay time.
- Place the slide switch [26] into the “RUN” position and test operation.

2 SPECIAL ADJUSTMENTS.

As mentioned in the above text many of the operating parameter can be adjusted. This section gives instructions on how to make some of the less common adjustments. To do this the controller must be placed in the special adjustment mode. This is done following the steps below.

- Turn the control board's power off
- Place the slide switch [26] into the "set" position
- Press and hold the CLS button [31]
- Turn the control board's power on. (Keep holding the CLS button)
- Wait until both the status leds [25] turn off and the release the CLS button [31].

The controller is now ready to adjust the special parameters. As with the standard adjustment mode, the push button switches [27] through [32] are used to set various times used during normal operation. The sections 8.1 through 8.6 below give details on the adjustments and how to make them. Make sure the controller is placed back into the RUN mode after adjusting by moving the slide switch [26] to the "RUN" position. To aid adjustment the CLS status led [25] will flash at one second intervals.

2.1 SETTING LOCK PULSE LENGTH.

The lock pulse time is the time the controller activates the lock release output for at the start of each cycle. The adjustment only applies when the PULSE LOCK OUTPUT dipswitch is in the ON position. To set the pulse time - Press and hold the OPN button [32] for the required lock pulse time.

2.2 SETTING TIME FROM WHEN WARNING LIGHT IS ACTIVATED TO WHEN MOTORS ARE STARTED.

The controller can be made to turn the warning light on before the motors are started. To adjust the duration of the delay - Press and hold the CLS button [31] for the required predrive delay time.

2.3 SETTING COURTESY LIGHT TIMER DURATION.

To set the courtesy light timer duration - Press and hold the PED button [30] for the required light timer duration.

2.4 SETTING MOTOR STOPPING TIME.

The time the motors are given to come to rest after being switched off is adjusted by - Pressing and holding the STP button [29] for the required motor stopping time.

2.5 SETTING TIME FROM WHEN LOCK RELEASE OUTPUT IS ACTIVATED TO WHEN MOTORS ARE STARTED.

The controller can be made to activate the lock release output before the motors are started. To set the duration of the pause - Press and hold the OSC button [28] for the required predrive lock activation time.

2.6 SETTING DURATION OF GATE LEAF SYNCHRONISING DELAY.

To adjust the gate leaf synchronising delay - Press and hold the P.E button [27] for the required synchronising delay time.

3 RELOADING MEMORY WITH FACTORY SET DEFAULT TIMES.

The control board comes programmed with factory set values for all of its operating parameters. These values can be reloaded back into the controller's memory by following the steps below.

- Turn the control board's power off.
- Place the slide switch [26] into the "set" position.
- Press and hold the CLS button [31].
- Turn the control board's power on. (Keep holding the CLS button)
- Wait until both the status leds [25] turn off.
- While still holding the CLS button [31] place the slide switch [26] into the "RUN" position.
- Wait until the OPN status led [25] is turned on.
- Release the CLS button [31].
- Wait for status leds [25] to start flashing.
- Now ready to be used.

4 SPECIFICATIONS.

MAXIMUM RATINGS

Exceeding these values may cause serious damage to the control board.

Supply voltages

240VAC SUPPLY	450V peak
24VAC SUPPLYS	29VAC

Input voltages

CONTROL AND SAFETY inputs	min = -20V	max = 100V
LIMIT SWITCH inputs	min = -30V	max = 100V
ANTENNA input (relative to earth)	+/- 50V	

Outputs

LOCK OUTPUT switching voltage	max = 30VAC/DC
LOCK OUTPUT switching current (inductive)	max = 3A
LIGHT OUTPUT MODULE switching voltage	max = 250VAC / 30VDC
LIGHT OUTPUT MODULE switching current	max = 16A AC/DC
TOTAL MOTOR OUTPUT CURRENT (5A fuse protected)	max = 5A

TYPICAL INPUT CHARACTERISTICS

All values are DC unless stated otherwise

P.E, OPN, STP, OSC, PED inputs

Logic low input current	5mA	(input shorted to COM terminal)
Logic high input current	0mA	(input open circuit)
Logic low/high threshold	2.5mA	(4400 ohm resistor from input to COM terminals)
Response time	0.1s	

CLS input

Logic low input current	10mA	(input shorted to COM terminal)
Logic high input current	0mA	(input open circuit)
Logic low/high threshold	5mA	(2200 ohm resistor from input to COM terminals)
Response time	0.1s	

LIMIT SWITCH inputs

Logic low input current	20mA	(input shorted to COM terminal)
Logic high input current	0mA	(input open circuit)
Min low level input current	16mA	(300 ohm resistor from input to COM terminals)
Response time	0.1s	

TYPICAL POWER SUPPLY REQUIREMENTS

ISOLATED 24VAC SUPPLY	22 - 26VAC @ 250mA max
24VAC SUPPLY	22 - 26VAC @ 250mA max
240VAC SUPPLY	240VAC @ 5A max (or as required by motor)