CB-9 CONTROL BOARD INSTRUCTION MANUAL

The CB-9 control board is designed to automate 1 or 2 A.T.A swing gate or sliding gate drive units. This instruction manual gives detailed instructions on how to get the most out of the CB-9 control board using both its standard features and special features not disclosed in the standard installation guides.

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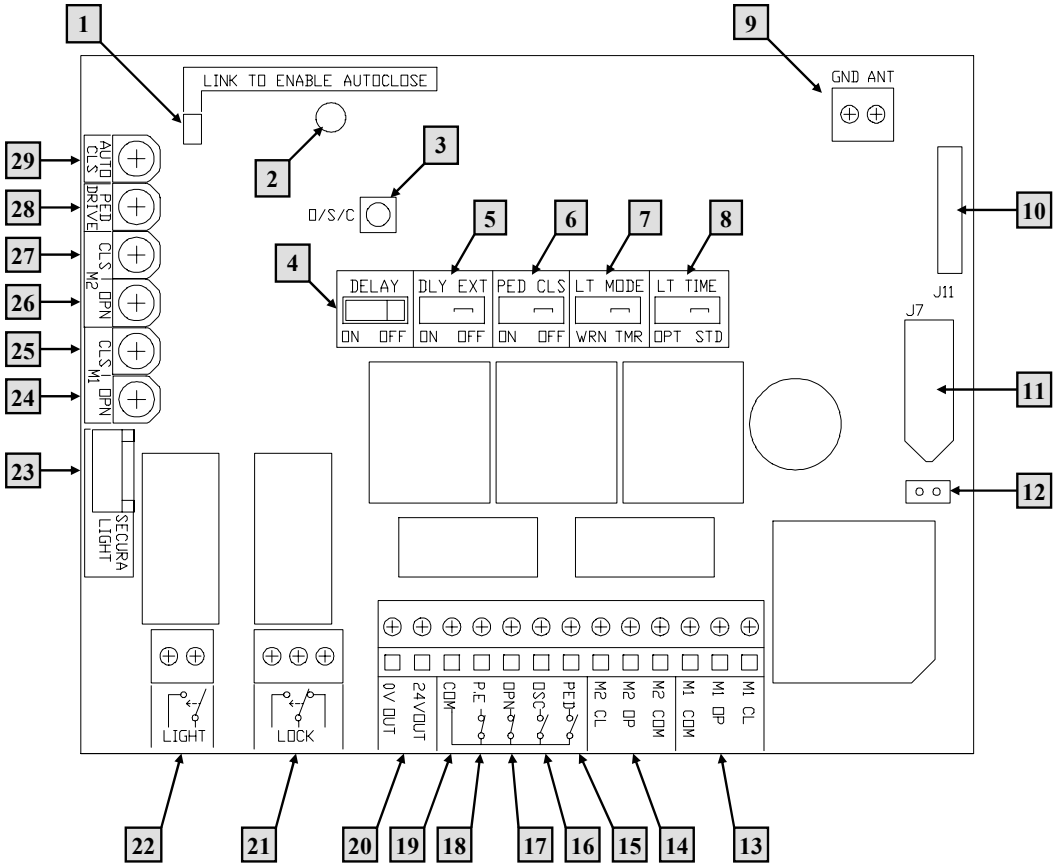
1. CB-9 CONTROL BOARD FEATURES

The CB-9 control board is designed to control two motors incorporated within gate drive units. The controller provides gate control via several different command inputs. Functions such as motor overload detection and safety beam provisions ensure safe operation. Accessories such as driveway lights and electric locks can also be controlled. A expanded list of features is provided below.

- Control board constructed using state of art assembly techniques such as SMT and industrial quality materials and components.
- Controlled by custom designed microcontroller.
- Safe extra low voltage 24VAC supply
- Controls one or two 24VDC gate drive units.
- Uses fail safe three wire motor / limit control wiring system.
- Aborts motor drive if travel limit is not reached within 60 seconds.
- Independent open and close overload adjustments for each drive unit.
- If overload occurs on closing cycle, motors are reversed back to open position.
- If overload occurs on opening cycle, motors are stopped.
- Selectable autoclose feature will automatically close gate after an adjustable delay.
- Photoelectric safety beam input prevents closure of gates and suspends autoclose feature until cleared.
- An Open input is provided for “free exit”, time clock , etc. functions
- Open/Stop/Close terminal input allows controller to be activated via a remotely located push button switch, key switch, card reader, etc.
- Plug in remote control radio receiver provides remote Open/Stop/Close operation via hand held or keypad transmitters.
- A convenient onboard push button provides Open/Stop/Close operation during installation.
- A Pedestrian control input is provided to partially open one gate leaf for pedestrian access. The distance the gate is opened is adjustable.
- The controller can be programmed to automatically close after pedestrian access.
- Onboard power indicator shows that power is supplied to control board.
- The light control output can be selected to control drive way lighting by switching it on each time the gates are operated and then automatically turning it off after 1 or 3 minutes.
- The light control output can be selected to control a warning light which is illuminated while the gates are in motion.. A 3 second pre-motion warning can also be selected.
- A lock control output is provided which can be used to activate/deactivate a solenoid/magnetic locking mechanism for 1.5 seconds at the start of each open cycle.
- 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 can be set to 0, 2, 4 or 8 seconds.
- A 24VDC unfiltered output is provided for powering external accessories such as Photoelectric beams, magnetic locks, stand alone relay output receivers, etc.
- Solar powered operation is available via an optional solar battery charger (solar cells and batteries not included).
- An optional battery backup system is available to maintain operation in the event of power failure.
- Optional SECURALIGHT status and control monitor available.

Comment:

2. LOCATION OF CONTROLS, OUTPUTS AND ADJUSTMENTS



1. AUTOCLOSE AFTER OPEN CYCLE MODE SELECTION LINK.
2. POWER INDICATOR
3. OPEN / STOP / CLOSE BUTTON
4. GATE SYNCHRONISING DELAY SELECTION SWITCH
5. GATE SYNCHRONISING DELAY EXTENSION SELECTION SWITCH/LINK
6. PEDESTRIAN MODE AUTOCLOSE SELECTION SWITCH/LINK
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17. OPEN CONTROL INPUT
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24. MOTOR 1 OPEN DIRECTION OVERLOAD ADJUSTMENT DIAL
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28. PEDESTRIAN MODE DRIVE TIME ADJUSTMENT DIAL
29. AUTOCLOSE DELAY ADJUSTMENT DIAL

3. CONTROL FUNCTIONS AND OPERATION

3.01 OPEN / STOP / CLOSE OPERATION

The most common method of control is via the open / stop / close operation. This can be initiated by:
-pressing the O/S/C button [3] on the control board.
-activating a receiver plugged into the receiver connector [10]. (See section 5.01 AND 5.02).
-activating a switch connected to the OSC terminal block [16]. (See section 5.07).
-pressing the OSC button on a securalight module connected to connector [23]. (See section 5.05).
Note: the control board will not respond to a second OSC input if one OSC input is already active.
The table below explains how the gate's motion is controlled by the open / stop / close operation.

STATE OF GATE BEFORE OPEN / STOP / CLOSE INPUT IS ACTIVATED	STATE OF GATE AFTER OPEN / STOP /CLOSE 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

3.02 PEDESTRIAN ACCESS OPERATION

The pedestrian access operation partly opens the gate leaf driven by motor 1. The extent to which the gate leaf is opened is adjustable and normally set so that vehicle access is prevented but pedestrian access is permitted. The pedestrian access operation is activated by a switch or similar device connected to the PED terminal [15]. The table below shows how the gates motion is controlled by the pedestrian access operation. Autoclose after pedestrian access can be selected. For details see section 3.04.

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 START 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

A close cycle from the programmed partly open position differs from a normal close cycle in two ways: 1, If the P.E input is activated while the gate leaf is closing the controller will stop the gate leaf but no reverse cycle will be initiated.
2, If a motor overload is detected while the gate leaf is closing the controller will stop the gate leaf but no reverse cycle will be initiated.

See section 4.02 for details about how to set the position at which the gate leaf stops for pedestrian access. See section 5.07 for details about connecting a control switch to the PED terminal block.

3.03 AUTOCLOSE AFTER OPEN CYCLE FUNCTION

The control board can be programmed to automatically close the gate after reaching the open position. When the gate reaches the open position a timer is started which counts down to zero and then automatically closes the gate. If while the count down is in progress either the photoelectric safety beam input [18] or the open control input [17] is activated the count down sequence will be suspended. The timer will only be restarted when both inputs [18] and [17] have been deactivated. When the gate is automatically being closed and either the photoelectric safety beam input [18] or the open control input [17] are activated the gate will be stopped and then reopened where a new autoclose count down sequence will be started. The number and duration of interruptions by the photoelectric safety beam input [18] and open control input [17] is unlimited. If a motor overload is detected while the gate is closing, the gate will be reopened but no autoclose count down sequence will be started. See section 4.01 for selecting this function and setting the timer duration.

3.04 AUTOCLOSE AFTER PEDESTRIAN ACCESS FUNCTION

The control board can be programmed to automatically close the gate leaf driven by motor 1 after pedestrian access has been provided. When the gate leaf reaches the partly open position a timer is started which counts down to zero and then automatically closes the gate leaf. If while the count down is in progress the photoelectric safety beam input [18] is activated, the count down will be suspended. The timer will only be restarted when the photoelectric safety beam input [18] is deactivated. When the gate leaf is automatically being closed and the photoelectric safety beam input [18] is activated the gate leaf will be stopped and a new count down sequence started. The number and duration of the interruptions caused by the photoelectric safety beam input [18] is unlimited. If a motor overload is detected while the gate leaf is being automatically closed the gate leaf will be stopped and the autoclose function will be temporally disabled until the gate is closed and a new pedestrian access cycle is performed. The count down duration and instructions for selecting this function are shown in section 4.03.

3.05 OPEN COMMAND INPUT OPERATION

The open control input [17] is provided to open the gate from any position. If the input is held active while the gate is open then the gate will be prevented from being closed by any of the other control inputs or the autoclose after open cycle function. See section 5.08 for details about how to connect a switch or similar device to activate the open control input [17].

3.06 PHOTOELECTRIC SAFETY BEAM INPUT OPERATION

When the photoelectric safety beam input [18] is active the gate is prevented from being driven closed by any of the other control inputs or autoclose functions. The input is normally connected to a device which detects objects obstructing the gateway. See section 5.08 for details about how to connect a switch or similar device to activate the photoelectric safety beam input [18].

3.07 MOTOR OVERLOAD OPERATION WHEN GATE IS OPENING

The control board has motor overload detectors for each motor to be controlled. If the motor current of a motor exceeds a pre-set level while driving a gate leaf open, the controller stops both motors in order to prevent damage. The overload level is adjustable for both motors and instructions are given in section 4.04. Note the overload detectors are disabled while the motors are starting up.

3.08 MOTOR OVERLOAD OPERATION WHEN GATE IS CLOSING

As with the motor overload on opening mentioned in section 3.07 the control board also has motor overload detectors for the close direction. If the motor current of a motor exceeds a pre-set level while driving a gate leaf closed, the controller stops both motors and then reopens the gate so as to move away from the obstruction. Note if the gate was being closed after pedestrian access the motors are stopped and not reopened. The overload level is adjustable for both motors and instruction are given in section 4.04. Note the motor overload detectors are disabled while the motors are starting up.

3.09 WARNING LIGHT / ALARM FUNCTION

The control board's light relay terminals [22] can be programmed to activate while the motors are running thus providing the necessary controls for a warning light or alarm to alert people near the gate that it is moving. An additional feature can be selected which will activate the warning light or alarm three seconds before the gate is actually moved, giving people extra time to avoid danger. See section 4.05 for details about how to select these features and section 5.11 for how to connect a light, alarm, etc. to the light control relay [22].

3.10 COURTESY LIGHT FUNCTION

The control board's light relay terminals [22] can be programmed to activate each time the gate is operated and then remain on for a pre-set time. This provides the necessary controls for a courtesy light to be used to illuminate the gate and driveway. See section 4.06 for details about how to select this mode and the pre-set time. See section 5.11 for details about how to use the light relay [22] to control lighting etc.

3.11 ELECTRIC LOCK RELEASE

The control board's lock relay output [21] can be used to release an electrically operated lock each time the gate is to be opened. At the start of each open cycle the lock terminals [21] will be activated for 1.5 seconds. See section 5.10 for details about how to connect your lock to the lock terminals [21].

3.12 OVERLAPPING GATE LEAF SYNCHRONISING DELAY

When two gate leaves are used it is common for one leaf to overlap the other. As a result one gate leaf must be moved before the other leaf when opening and one leaf must reach the closed position before the other when closing. To achieve this the control board can be programmed to introduce a delay between starting the motors. When selected the motor connected to motor 1 terminal block [13] is started to open before the motor connected to motor 2 terminal block [14]. Similarly, the motor connected to the motor 2 terminal block [14] is started to close before the motor connected to motor 1 terminal block [13]. See section 4.07 for details about how to select this function and section 5.06 for details about wiring the motors for correct movement.

3.13 OPTIONAL SECURALIGHT MONITOR

The securalight monitor is a gate control and status indicator designed to display the gate's position to an observer in a remote location. A push button switch located on the front panel can be used to operate the gate via the open / stop / close operation. The gate's status and position is indicated by red and green lights on the front panel. A beeper is also incorporated which sounds when the gate is opening or closing. The beeper can be disabled via a switch located under the unit. The table below shows how the various positions of the gate are indicated. See section 5.05 for connection details.

GATE'S STATUS	RED LIGHT	GREEN LIGHT
OPEN	OFF	ON
CLOSE	ON	OFF
OPENING	OFF	FLASHING
CLOSING	FLASHING	OFF
STOPPED IN MIDDLE	OFF	ON
PARTLY OPEN FOR PEDESTRIAN ACCESS	OFF	ON
AFTER POWER UP (GATE'S POSITION UNKNOWN)	OFF	ON

4. MODE SELECTION AND ADJUSTMENTS

4.01 SELECTING AUTOCLOSE AFTER OPEN CYCLE FUNCTION.

Shipped with this mode disabled.

1. Connect pins of JP2 [1] together using jumper provided.
2. Adjust autoclose delay adjustment dial [29] so that gate automatically closes after desired time (clockwise for longer delay). Delay range is 0 ~ 100 sec.

4.02 SELECTING THE LEAF POSITION FOR PEDESTRIAN ACCESS

Adjust the pedestrian drive time dial (clockwise for more open) so that the gate leaf stops at the desired position for pedestrian access. Drive time is 0 ~ 20 sec.

4.03 SELECTING AUTOCLOSE AFTER PEDESTRIAN ACCESS FUNCTION

Shipped with this mode disabled.

1. Turn power to control board off.
2. Cut wire link of pedestrian autoclose selector [6] or if a switch is fitted place the switch in the ON position.
3. If autoclose after open cycle function is selected the autoclose delay for this function is set to the same duration. If the autoclose after open cycle is not selected then the delay is pre-set set to 15 seconds.
4. Turn the power to control board back on and test operation.

4.04 SETTING MOTOR OVERLOAD LEVELS

Using the overload dials [24, 25, 26 and 27] adjust (clockwise for harder) the overload level of each motor in each direction so that an overload is detected when each gate leaf is restricted by firm hand pressure in each direction. Do not set the level to lightly as wind, temperature changes and other factors may cause false overload detection. Overload range is 0.1 ~ 10amps. If only one motor is used, set the motor overload dials for the unused motor to the fully clockwise position.

4.05 SELECTING WARNING LIGHT / ALARM FUNCTION

Shipped with this mode disabled.

1. Turn power to control board off.
2. Cut wire link of light mode selector [7] or if a switch is fitted place the switch in the WRN position.
3. If the light control output [22] is to be activated three seconds before the motors are to be started cut the wire link of the light timer duration selector [8] or if a switch is fitted place the switch in the OPT position. If no delay is required leave the wire link intact or the switch in the STD position.
4. Turn the power to the control board back on and test operation.

4.06 SELECTING COURTESY LIGHT FUNCTION

Shipped with this mode selected.

1. Turn power to the control board off.
2. Leave wire link of light mode selector [7] intact or if a switch is fitted place the switch in the TMR position.
3. For a timer duration of three minutes leave the light timer duration selection link [8] intact or if a switch is fitted place the switch in the STD position.
   For a timer duration of one minute cut the light timer duration link [8] or if a switch is fitted place the switch in the OPT position.
4. Turn the power to the control board back on and test operation.

4.07SELECTING OVERLAPPING GATE LEAF SYNCHRONISING DELAY

Shipped with no delay selected.

1. Turn the control boards power off.

2. Using the table below select the synchronising delay.
3. Turn the power to the control board back on and test operation.

DELAY (sec)	DELAY SELECTOR [4] SWITCH POSITION	DELAY EXTENSION SELECTOR [5] WIRE LINK / SWITCH POSITION
0	OFF	INTACT / OFF
2	ON	INTACT / OFF
4	OFF	CUT / ON
8	ON	CUT / ON

5. TERMINAL BLOCK WIRING AND CONNECTORS

5.01 REMOTE CONTROL RECEIVER ANTENNA CONNECTOR [9]

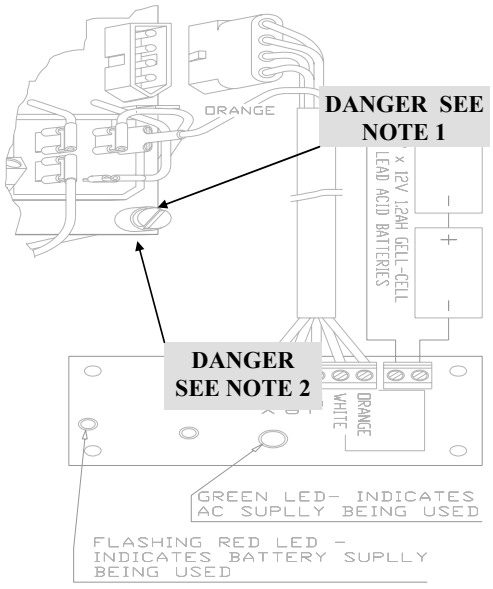
A terminal block [9] is provided for connection to an antenna for the remote control receiver plugged into connector [10]. The antenna normally consists of a length of wire connected to the ANT terminal block. The GND terminal block is provided for antenna configurations which require shielding or a ground plane.

5.02 REMOTE CONTROL RECEIVER CONNECTOR [10]

A connector is provided on the control board for connection to a plug in remote control receiver. The receiver can be operated from many A.T.A transmitters models. The receiver activates the control board's open / stop / close operation when a transmission is received. See section 3.01 for open / stop / close operation details. Contact A.T.A or one of there distributors for details about compatible receivers and transmitters.

5.03 OPTIONAL STANDBY BATTERY BACKUP SYSTEM

The SBY-1 is a specialised battery backup and charger system designed to maintain full operation in the event of a mains power failure. The charger is designed to prevent over and under charging of the batteries thus extending battery life and improving the performance of the system.



INSTALLATION OF BATTERY CHARGER SYSTEM

1. Complete installation and setup of control board without the battery charger system connected and then turn the power off.
2. Mount batteries in a ventilated enclosure away from any source of heat, flame or spark (including control board and charger module).
3. Remove control board jumper on JP1 [12]

NOTE 1 Failure to do so can result in battery explosion.

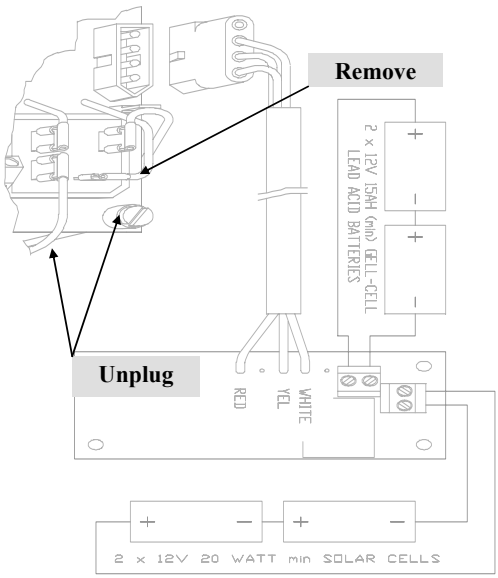
4. Without batteries connected to charger module mount charger module and connect to J7 [11] as shown in the figure to the left.
5. Connect orange lead of charger module to bridge rectifier and transformer lead as shown in the figure to the left.

NOTE 2, Failure to do so can result in battery explosion.

6. Turn power to the control board on. Check that green LED on charger module is on and power indicator on the control board [2] is on.
7. Turn the power to the control board off.
8. Connect batteries to charger module taking care that they are connected in the correct polarity. Note the control board power indicator [2] should not come on.
9. Turn mains power on for 15 seconds then turn off again. Note the control board should now operate from the battery backup and the red light on the charger module should be flashing to indicate that the backup is being used. Installation is complete, turn mains power on.

5.04 OPTIONAL SOLAR BATTERY CHARGER SYSTEM

The SOL-1 is a specialised solar powered battery charger. The system uses light collected from solar cells to charge batteries. The stored energy is then used to power the control board and motors without the need for a mains power connection. The SOL-1 insures that the batteries are never over or under charged so that reliable operation is maintained. The SOL-1 does not include the solar cells or batteries required for operation.



INSTALLATION OF SOLAR BATTERY CHARGER SYSTEM

1. Mount batteries in a ventilated enclosure away from any source of heat, flame or spark (including control board and charger module).
2. Mount solar cells so as to gain the maximum amount of sun light.
3. Remove control board jumper on JP1 [12]. **Failure to do so can result in the batteries be under charged.**
4. Unplug transformer leads as shown in figure to the left.
5 Without batteries connected to charger module mount charger module and connect to J7 [11] as shown in the figure to the left.
6 Connect batteries and solar cells to charger module as shown in the figure to the left.
7 The control board should now operate and be ready for final setup and installation.

Note:

1. **The minimum recomended battery capacity is 2 x 12V 15Ah, however requirements of 2 x 30Ah are common.**
2. **The minimum recomended solar cell capacity is 2 x 12V 20W.**

5.05 SECURALIGHT MONITOR CONNECTOR [23]

Connecting the securalight monitor is a simple as plugging it in the control board's SECURALIGHT connector [23], see figure below. The securalight is supplied with a length of cable which should not be extended as this may cause the control board to be activated by electrical transients picked up by the long wire length.