

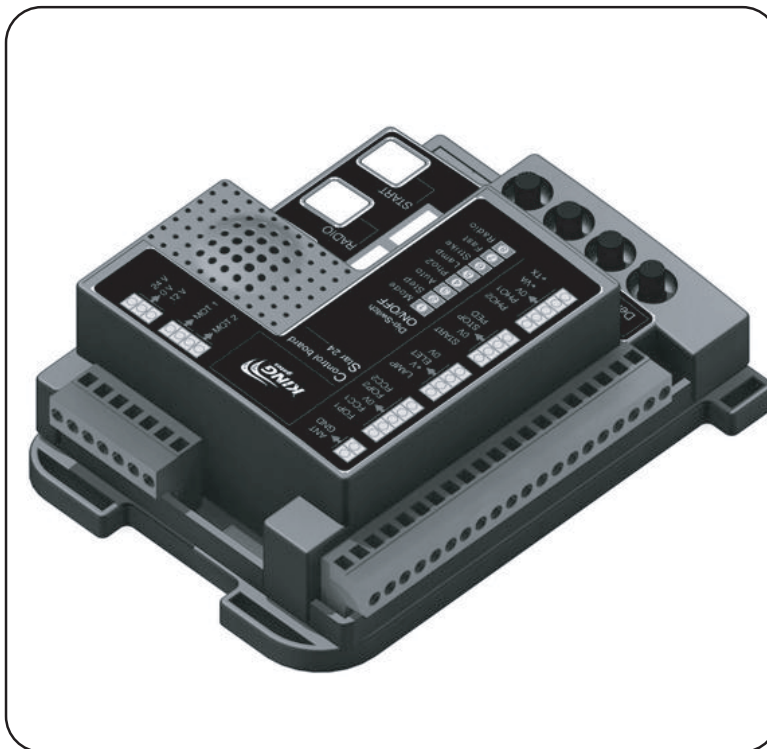
# Star D124



## SLIDING GATE CONTROL UNIT VER. AUS - MANUAL

**Star D124** Control unit for 24 Vdc Dynamos motors

Australian version V24 E



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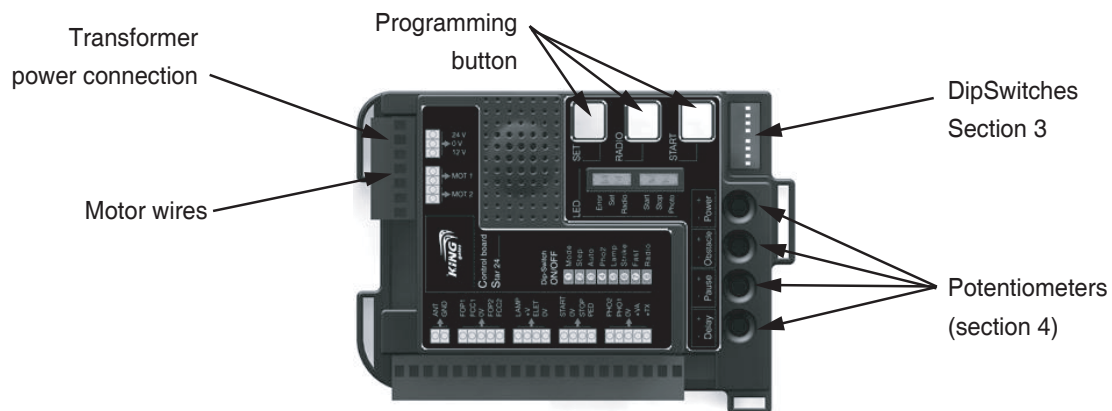
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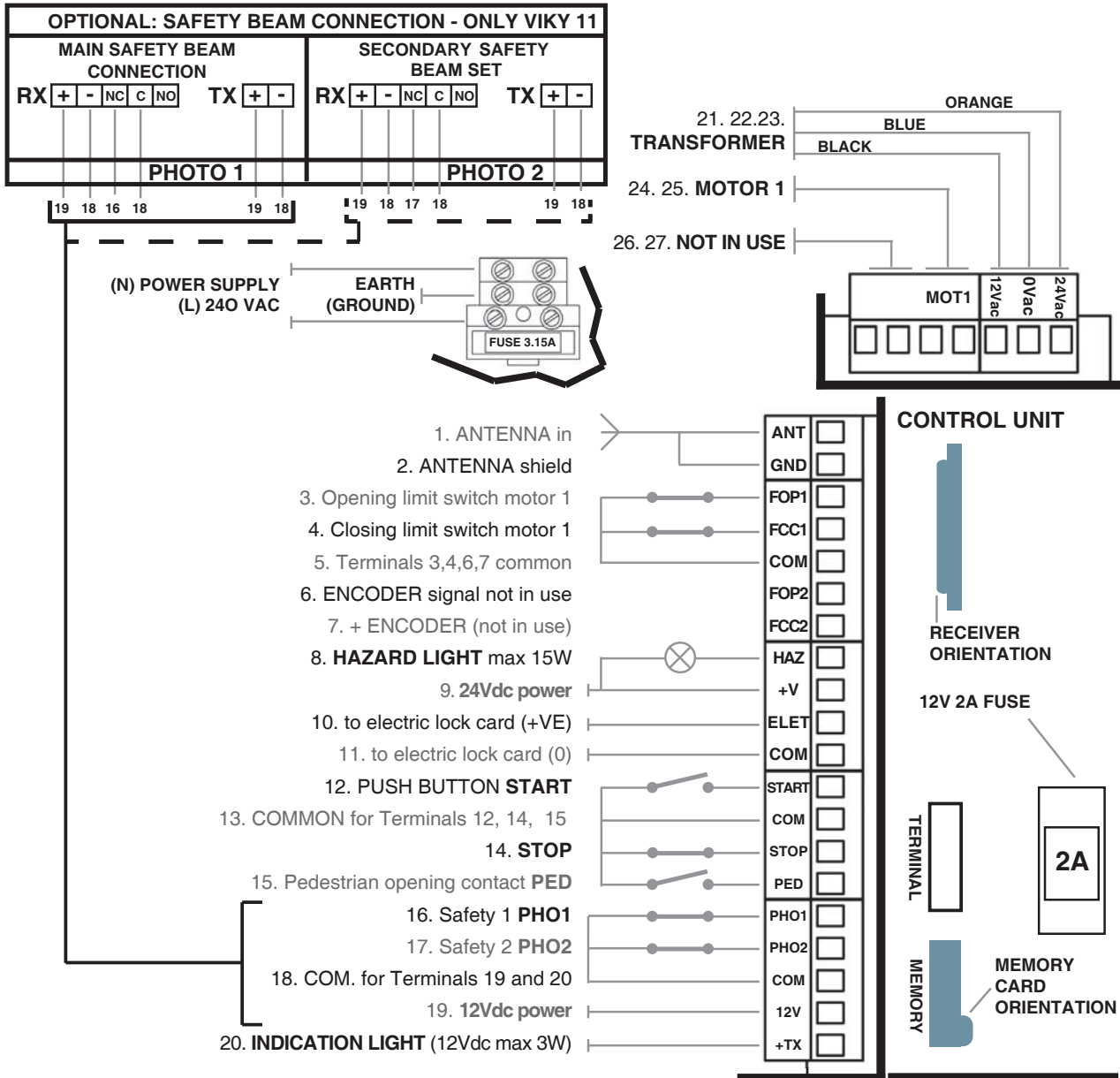
## 1 - SAFETY NOTICE

- This installation Instructions Manual (Instructions) contains important information regarding safety
  - Read the entire document before you install any of the equipment
  - Installation must be carried out by qualified installers
  - Installation must be in accordance with all state and federal laws and regulations relating to Electrical Safety in your area
  - Make sure that all cabling and wiring are in accordance with Wiring Rules AS 3000:2007
  - Do not modify the equipment unless directed to by the Instructions. Modifications may cause irreversible damage to the equipment and result in malfunction. King-Gates and LiteStart disclaim any liability for damage resulting from modified equipment.
  - Ensure that no damage will be caused by automating the gate. Pay particular attention to any damage that may be caused by impact, crushing, shearing, dragging, etc. as well as other general dangers.
- Before installing any of the equipment ensures that the gate can move freely through its motion and that nothing is blocking or interfering with its path of travel.
- During installation and use, ensure that solid objects or liquids cannot enter the control box.

## 2 - ELECTRICAL CONNECTIONS

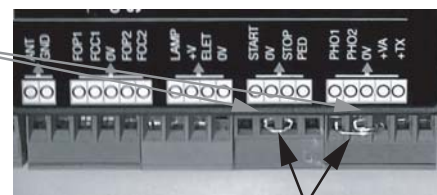
### Cable length and cross section

- Additional grounding required near the motor/ control box, if installed more than 30 meter away from grounding discharge point.
- Cables for all very low voltage and/or data: (do not connect cables in underground boxes or inside conduits)
  - \* up to 30 meter - min. 0.25 mm<sup>2</sup> copper section
  - \* 30 - 100 meter - min 0.5mm<sup>2</sup> section shielded (screened)



### NOTE:

- All connections to the board must be voltage free contacts ("dry Contacts")
- When 1 safety connected REMOVE THE LONG BRIDGE ONLY
- When 2 safeties connected - REMOVE BOTH BRIDGES
- When connecting to STOP command, remove the STOP bridge



BRIDGES

### 3 - SETTING THE DIPSWITCHES

DipSwitches settings will only take effect after the system has reached the end of a cycle. i.e. when the gate closed or when the system has been reset (power off, battery and mains)

DS-1: OPENING DIRECTION	POSITION AS PER THE OPENING DIRECTION OF THE GATE
ON	Gate open to left, motor on left side of gate looking from the motor side
OFF	Gate open to right, motor on right side of gate

DS-2: STEP	DS-3: AUTO	Operation mode setting
ON	ON	Auto-Closing with intervention by remote or command
ON	OFF	Step-by-step: open / stop / close / stop ....
OFF	ON	Fully Automatic, always close, (condominium)
OFF	OFF	Open / close /open (no stop when opening)

DS-4: Photo sensor-2	PHO2 input - terminal 17, setting
ON	Photo-sensor intervenes in opening and closing
OFF	Safety edge operation



DS-5: Hazard Light	Hazard Light output (terminals 8 & 9) setting
ON	Connected light will flash during the cycle
OFF	Connected light will be steady on during the cycle

DS-6: Encoder	Encoder setting
ON	Must be OFF
OFF	

DS-7: Close After Photo	Close immediately after vehicle clears the photocell
ON	Gate closes immediately once photo-sensor is cleared (not recommended)
OFF	Close after Photo disabled (recommended)

DS-8: Remote Control Programming	Remote Control Programming setting vehicle / pedestrian access (see sections 6, 7 and 8)
ON	To program remote control for full opening
OFF	To program remote control for pedestrian (partial) opening

### 4 - LINEAR POTENTIOMETERS

- Adjustments to the potentiometers will only take effect after the system has reached to the end of a cycle, i.e. when the gate closed or when the system has been reset (power off). Make sure that you let the adjustments take effect before readjusting.

**POWER AND SPEED** potentiometer adjusts the speed and force of the motor(s). Use this to adjust the speed and the maximum pushing-force. Adjustment range is 50% to 100%  
Adjust this potentiometer to move the gate and to have enough power to push against a 15 -35kg object.  
(If the gate is too sensitive to obstacles - increase (+) the OBSTACLE potentiometer slightly)

**OBSTACLE** potentiometer is the anti-crush adjustment. This determines the motor's pushing force limit and the time it takes the motor to cut-out after hitting an obstacle. Increase (+) this adjustment when more force is needed. Eg. for gates made of full steel, cast iron, colorbond (sheet metal), and for gates in windy areas. Cut-out time range is 0.1 to 3 seconds  
For windy arias, wooden and colorbond gates – increase the obstacle level slightly  
This potentiometer also adjust the pressure against the travel stoppers. Check manual release operation after adjusting this potentiometer

**PAUSE** potentiometer determines the time that the gate will hold open before it will close automatically. this function is active only in auto-closing modes. The hold open time is 1 to 90 seconds

**Remember: let the cycle finish before readjusting**

**DELAY: STOP IMPACT ADJUSTMENT.** minimum > instant stopping; maximum > soft stopping  
For the setup and for heavy gates: min. to middle recommended.  
For heavy gates: mid to minimum recommended.



## 5 - PROGRAMMING THE REMOTE CONTROL FOR MAIN (VEHICLE) ACCESS OPENING



- 1) Make sure that:
    - A) Power ON
    - B) DipSwitch 8 ON
    - C) the gate is CLOSED
  - 2) Press and hold the **RADIO** button until the RADIO-LED turns on and release immediately. If flashing; release and WAIT UNTIL it goes OFF, than try again
  - 3) Chose the remote control unit's button you want to use for vehicle access opening (usually the large one) and press it shortly >> RADIO-LED flashes shortly
- For programming more remotes, within 10 seconds – repeat step 3, or start the procedure again
- 4) you can press the RADIO button again to exit the programming mode, or; If no button is pressed, programming mode will automatically exit after 10 seconds!

## 6 - HOW TO ADJUST THE OBSTACLE, POWER AND SPEED WITH THE POTENTIOMETERS

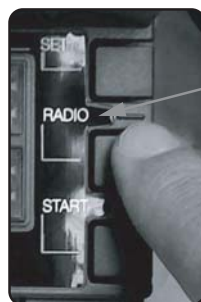
- 1) Recommended DipSwitchs positions: 2 - ON & 3 - OFF (step-by-step mode)
  - 2) Open the manual release door
  - 3) Move the gate to half way, then close the manual release door back
  - 3) Make sure that all safety requirements done (see paragraph 1)
  - 4) Operate the gate with a remote control, or with the START button, and while the gate is moving check the force, torque of the gate.  
First adjust the speed with the POWER potentiometer
  - 5) Carefully check that the gate has enough force to push against a 15 -35kg object.  
Adjust the force limit with the OBSTACLE potentiometer  
If the motor force is not sufficient, increase the power slightly with the POWER potentiometers  
For gates with sliding block, windy sites, wooden or colorbond gate – increase the obstacle level slightly (for more details see section 4)
- NOTE: different speeds for opening and for closing can be determent with the advanced programing procedure

## 7 - PROGRAMMING REMOTE CONTROL PEDESTRIAN ACCESS



- 1) Move DipSwitch 8 to OFF
  - 2) Gate should be close
  - 3) Press the RADIO button in the control box until the RADIO LED turns on, and release immediately
  - 4) Choose the remote's button you want to use for PEDESTRIAN- ACCESS opening (usually the smallest one) and press it >> RADIO LED will flashes shortly
- For programming more remotes - repaid this process one after the other
- 5) Press the RADIO button again to exit the programming mode  
If no button is pressed, programming mode will automatically exit after 10 seconds

## 8 - DELETING ALL THE REMOTE CONTROLS FROM THE CONTROL MEMORY



- 1) Press and hold the RADIO button, when the RADIO-LED starts flashing.
- 2) Release, and press again >> the RADIO-LED flashing rapidly and turn off

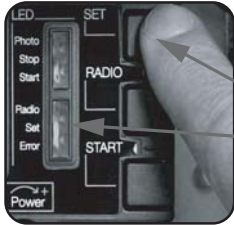
All remotes deleted

## 9 - AUTOMATIC GATE TRAVEL SETUP LEARNING



### Before the Automatic setup!

- 1) In this process, the controller “learns” the gate and automatically sets a default slowdown points
- 2) During the Automatic setup, safety devices are disabled! Keep the gate travel area clear to prevent any damage that may caused by the gate movements
- 3) Ensure that the mechanical and or electrical limit switches are in-place and functioning
- 4) You can stop the setup mode at any time by pressing the SET and RADIO buttons simultaneously
- 5) You can rapid the set up again any time
- 6) you can manually determine the slowdown points – see section 10
- 7) It is recommended to set DipSwitch 2 ON and DipSwitch 3 OFF -step-by-step mode
- 8) Looking from the motor side; Set DipSwitch 1 to the same side as the gate opening direction Eg. gate open to left – DipSwitch 1 to the left (ON) and visa-versa
- 9) Adjust the DELAY potentiometer to mid-low position 30%
- 10) Adjust the Power potentiometer to about 70%
- 11) Adjust the obstacle potentiometer to about 70%



### Automatic Gate Travel setup procedure

- 1) Open the manual release door, and move the wing half way, than close the door back
- 2) Press and hold the SET button for 2 second; release it, when the two RED LEDs blinks ones, and the SET-yellow-LED, starts flashes
- 3) Within 5 seconds, press and hold the SET button again until the gate start opening. the SET LED remain on till the end of the setup (if 5 seconds passed-re do this)  
The gate will move slightly to open ,then close, open and finish the setup at close position.  
If the gate moves first to closing, reverses DipSwitch 1 position, and re do the setup again

## Advanced Programming for special features

### 10 - CHANGING THE SLOWDOWN POINTS AND DIFFERENT OPEN / CLOSE SPEEDS

Different slowdown points can be re-set for opening and for closing. to enter this setup use the SET and RADIO buttons

#### Before the change

- \* Make sure that the operation mode is Step By Step (DipSwitch 2 ON / 3 OFF)
- \* Move the gate to about half way position

#### The change setup procedure

- 1) adjust the open travel speed with the POWER potentiometer
- 2) Press the **SET** button for 2 seconds until the two red LEDs blinks ones and the SET LED flashes
- 3) Within 5 seconds; press the **RADIO** button for 1 second and release - the **SET LED** turns steady on and gate begins to open slowly, then the gate will close and stop
- 4) Press the **SET** button, or the remote control >> gate begin to open fast speed
- 5) When the gate arrives to the new slowdown point >> press the **SET** button again (or button 1 of the remote control) the gate will go slow, arriving to full open position and stops
- 6) you can change the closing speed by adjusting the POWER potentiometer now
- 7) Press the SET button (or the remote control) >> gate begins closing fast
- 8) When arriving to the required slow point >> press the SET button again (or button 1 of the remote control) the gate is fully close - this setup done

### 11 - ADJUSTING THE PEDESTRIAN ACCESS OPENING GAP

Entering this mode is with the SET and START buttons

- \* Make sure that the remote control(s) is programmed for pedestrian access opening (program with DipSwitch 8 OFF)
- \* Make sure that the gate is in fully close position

- 1) Press the **SET** button for 2 seconds >> red LEDs blinks ones **SET LED** begins to flash
- 2) Within 5 seconds; press the **START** button >> **SET LED** turns steady on
- 3) Press the **START** or remote or push button >> gate begins to open
- 4) When the gate arrives at the desired opening point - press the **START** (or remote) again- gate stops and close

The new Pedestrian opening gap is now set  
you can repeat this procedure at any time

## 12 - PEDESTRAIN ACCESS ONLY BY WIRE COMMAND

\* Make sure that the gate is in the closed position

- 1) Press the **SET** button for 2 sec. and release >> **SET LED** begins to flash
- 2) Press the **START** button >> **SET LED** turns steady on
- 3) Press the **SET** button >> **SET LED** flashes rapidly and turns off

**Pedestrian access by remote control deleted** (push button command-terminal 15, still active)

## ADVANCE FEATURES

### 13 - SAFETY DEVICES DETAILED DESCRIPTION

#### PHO1- SAFETY DEVICES DURING CLOSING

Input PHO1 (terminal 16 and 18) is used for connecting photo-sensors as safety devices to intervene during closing.

#### PHO2: SAFETY DEVICES DURING OPENING AND CLOSING

Input PHO2 (terminals 16 and 17) intervene both in closing and in opening

There are two options determined by DipSwitch 4:

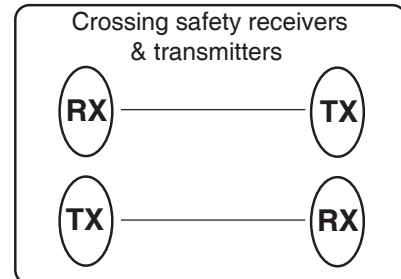
DipSwitch 4 **ON**: if triggered by safety device >> gate stops and when path is cleared keeps going to the same direction

DipSwitch 4 **OFF**: (for Safety Edge in Opening):

- Triggered in opening >> stops and closes for 2 seconds  
Triggered in closing >> no effect

#### NOTE:

If more than one pair of photo-sensors is used, it is recommended to have the position of the transmitters and receivers alternated between the pair, in order to avoid cross triggering.



#### SAFETY AUTO TEST

The Auto safety test is recommended in Europe. The control unit has a Safety Device Test mode for checking the operation of the devices connected to inputs PHO1 (terminals) and PHO2 (terminals).

#### ENTER THE SAFETY DEVICE TEST:

- 1) First connect the Photo-sensor's +VE end to the TX input (terminal 20) instead of the VA input (terminal 19), for which it should be connected during normal operation.
  - 2) Press the **RADIO** button for 2 seconds >> RADIO-LED Red turns on
  - 3) Press the **SET** button 4 times >> SET LED Yellow turns on
  - 4) Wait for 10 sec >> SET LED and RADIO LED both turn off
- Safety Auto Test is now activated**

**EXIT THE SAFETY AUTO TEST MODE** (if error LED on press the SET button, and wait until the SET LED turns off) then:

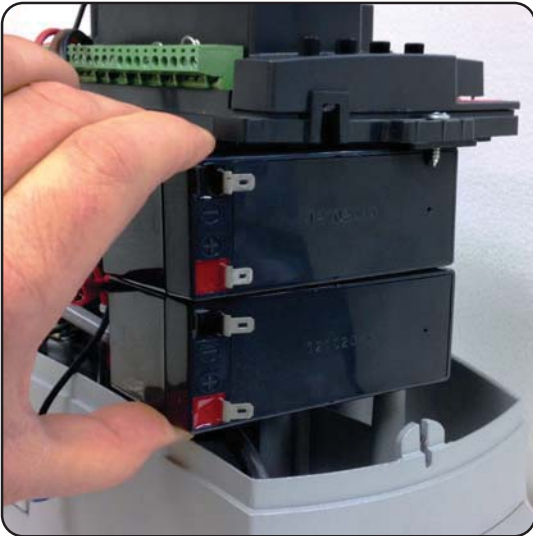
- 1) Press the **RADIO** button for 2 seconds >> SET LED and red RADIO LED both turn on
  - 2) Press the **START** button and hold for 6 seconds >> SET LED turns off
  - 3) Wait for 10 sec >> RADIO LED turns off
- Safety Auto Test is now deactivated**

**NOTE:** Entering the test with the safety devices not properly connected will cause the unit to malfunction.

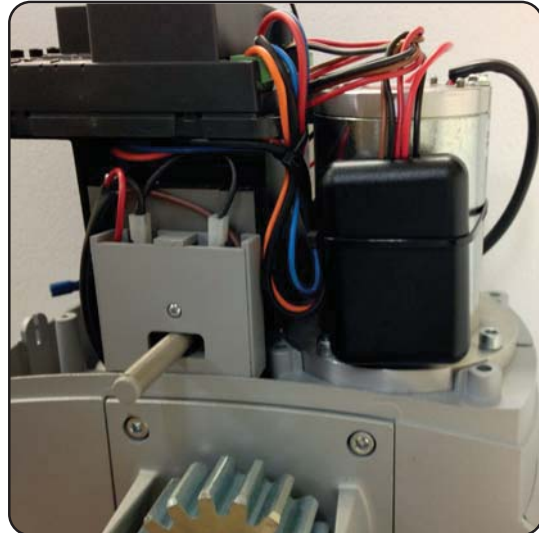
To determine whether the unit is in the test mode press the RADIO button for 3 seconds: if the RADIO LED turns on then the self-test is disabled. If **both** the red RADIO led and the yellow SET led turn on then the test is active.

## 14. Optional: Adding battery backup (buffer) and charger set

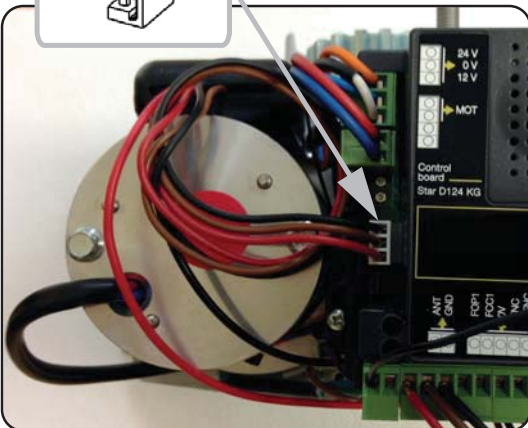
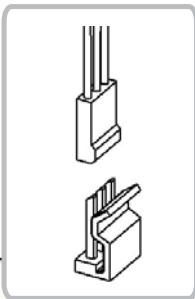
1 Slide in the two batteries together



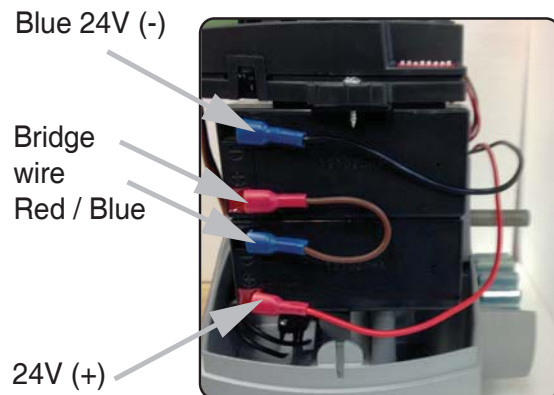
2 Place the charger unit near the motor



3 Plug-in the charger socket  
pay attention to the direction see  
the charger unit instructions



4 Connect the batteries terminals;  
match the terminal by their colours





## 15 - OPTIONAL ACCESSORIES

**HAZ – HAZARD LIGHT output:** terminals 8, 9; 24 VDC Max 15W. (0.6Amp); for connection of hazard light.  
Turns on seconds before the wings move. DipSwitch-5 setting: ON: Flashing // OFF: steady on

**ANTENNA input :** terminals 1,2 - for increasing reception range connect an external antenna (Item code: ANT 433) and remove internal antenna (the wire from the terminal)

**TX – MOTION INDICATION LIGHT output:** terminal 18, 20 – 12 Vdc Max 3W (0.25W)  
Gate opening >> Light flashes // Gate closing >> Fast flashing  
Gate open or closed (stand still) >> no output  
also used for the Safety Auto Test mode (section 14).

### BATTERY BACKUP KIT

Battery backup kit available in two options:

2X1.2A/H (Buffer) internal batteries and charger provide emergency power for about 3 hours  
2X7A/H batteries and charger provide emergency power for about 8 hours.

**COURTESY LIGHT output** –optional card connected to lock terminals 9,10,11  
Voltage free (dry) contact Max 250Vac 500W \*\* Time range: (0) to 120 Seconds

## 16 - STATUS LED'S

### SET Yellow LED

FLASHING for 5 seconds after power is turned on and after pressing the SET  
ON > during Gate Travel Learning  
OFF> when unit operates normally

### RADIO Red LED

OFF > the control unit is functioning normally  
FLASHING briefly when a remote transmits  
ON > the unit is ready to store a new remote to memory  
FLASHING fast while deleting all remotes from memory

### PH Red LED one indication for photo 1 and photo 2 inputs

ON > ok, photo-sensor connected properly  
(if safety devices are not connected, the links must be in place, Section 2)  
OFF> Safety (photocell) sensor is triggered (or not correctly installed)

### START Green LED

ON > START command received contact close (shorted) terminal 12  
OFF> no START command

### STOP Red LED

ON > ok, the STOP input (terminal 14) is closed (shorted)  
OFF> the STOP input (terminal 14) is opened

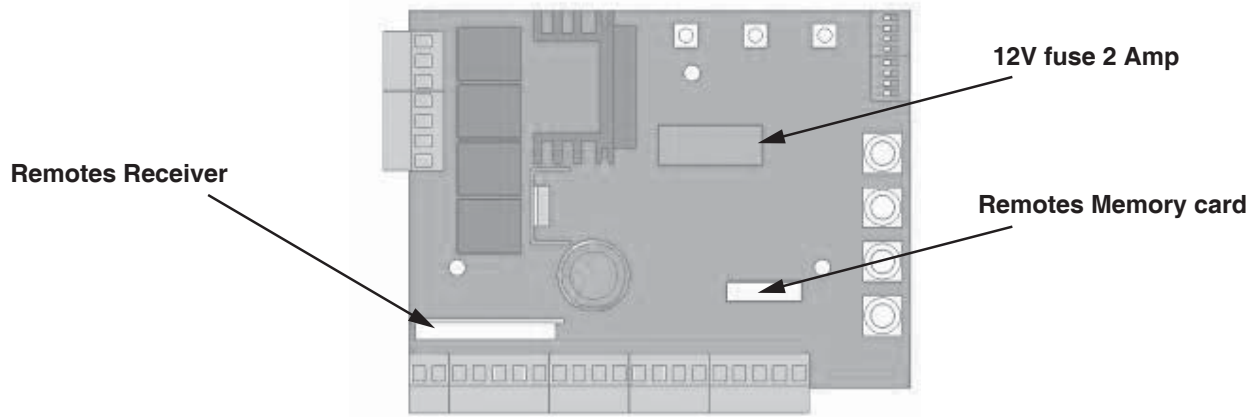
### ERR red LED (Error)

#### Flashing Status

0	The control unit is working normally
1	Memory card issue
2	Autotest function not passed
3	Encoder is not working (Dip-6 must be OFF!)
4	The learning procedure needs to be done again
5	Limit switch or manual release switch issue

## 17 - INSIDE THE CONTROL UNIT (advanced only)

**NOTE:** Opening the board box may cancel the warranty on the board



## 18 - DIY Remote control learning

New remote controls can be programmed to the motor without opening the motor cover  
A remote that already programmed and working on this motor need to be available for this procedure  
This learning is done by pressing buttons on a new and existing remote  
Existing remotes is one that already activating the motor  
This procedure should be done near the gate

Please read the instructions fully before commencing the procedure:

1. Make sure that the gate is close
2. Stand safely few meters away from the gate
3. Take the NEW remote control and press and hold the button for more than 3 seconds
4. Take the OLD remote control and:
  - press and release the button > wait for the red indicator on the remote to go off
  - then press and release again > wait for the indicator to go off
  - press & release again > wait for indicator to go off
5. Now within few seconds, take the NEW remote control and press and release the button  
Repeat this procedure for programming more remotes

## 19 - Control unit RESET

This procedure will reverse the control unit to the default factory settings, but it has no effect on the remote controls already stored.

Please read the instructions fully before starting the procedure:

1. Press START button and hold down for 10 seconds >> all LEDs turn off
2. Within 3 seconds, press the RADIO button >> all LEDs light up in sequence during the reset. 3.
3. The control unit is back to factory default settings.

## 20 - Control unit LOCK/UNLOCK

This procedure allows you to disable all the learning procedures and the memorization of new remote controls.

Please read the instructions fully before this procedure:

1. Press START button and hold for 10 seconds
  - if all the LEDs are ON, the control unit is already locked >> press SET button to UNLOCK
  - if all the LEDs are OFF, the control units is unlocked >> press SET button to LOCK

**THE RED ERROR (ERR) LED FLASHES, AND THE CONTROL UNIT DOES NOT FUNCTION**

- 5 flashes: Manual override is open - close the manual release
- 5 flashes: Faulty manual release switch - check the switch and connection wires
- 5 flashes: Faulty limit switch – check limit switch unit and connections
- 4 flashes: Gate travel setup needs to be done – refer to section 9
- 3 flashes: Dip-6 to be OFF / gate travel setup needs to be done, refer to section 3
- 2 flashes: Safety device test not passed - reset the board to factory default section 20
- 1 flash: Memory card missing (advanced only)

**GATE DOES NOT MOVE AT ALL**

- Check power to the motor
- Check the main fuse. **IMPORTANT: TURN OFF POWER BEFORE CHECKING FUSE**
- Verify that the STOP LED is on. If not check connection on the STOP input (terminal 14).  
This is a Normally Closed contact, check that the bridge wire connected well if not in use
- Check that the remote control is programmed for the system (Section 5)
- Check power at the transformer output wires on the board terminal 12 and 24V AC
- Check that no wired command is connected to START or PED input and the GREEN LED is off.

**GATE OPEN BUT NOT CLOSE**

- Check that the photo sensors are properly connected (PHO LED is on). If the LED is off ensure that the photo-sensors are connected properly and that nothing is blocking the beam's path.
- Check that the green START LED is off. If it is on then check connection to the START input (terminal 12).
- Check that no wired command is connected to START or PED input and no GREEN LED turned on.  
This is a Normally Open contact.

**THE REMOTE CONTROL DOES NOT WORK**

- Check that the LED on the remote is flashing. If not replace the remote's batteries.
- Check that the red RADIO LED on the control board briefly flashes when the remote transmits. If it does then re-program the remote.

**GATE CLOSSES BY ITSELF (WITHOUT THE REMOTE BEING PRESSED)**

- Check the operation mode – DipSwitches 2 ON , DipSwitch 3 OFF >> Step-By-Step mode
- Check that DipSwitch 7 (Close after Photo) is OFF.

**GATE STOPS HALFWAY AND THEN MOVES IN THE OPPOSITE DIRECTION**

- Open the manual release and check that the gate travels freely all the way.
- The obstacle sensitivity is too low: Increase the Obstacle Sensitivity Potentiometer.
- Check that the gate does not cut the photo sensor beam when moving.
- Increase the power with the POWER potentiometer

**GATE STOPS HALFWAY**

- Not enough force; Increase the POWER potentiometer.
- The gate stops after they reach the slow down point. Manually set (or remove the slow down) points (Section 10).
- increase the obstetrical turn the potentiometer clockwise

**SHORT RECEPTION RANGE**

- The remote control batteries are weak or dead. Replace batteries and drop into a designated recycle bin
- Verify that the internal antenna wire is well tighten to the antenna terminal
- An external antenna needs to be added to the system.

NOTE: External interferences from power lines and other emitting devices can influence the reception range. Installing an external antenna may improve the reception range.

**THE MANUAL RELEASE IS JAMMED**

- Adjust the mechanical stopper actuators that are on the gear racks, to stop the motor at about 10 mm before the gate final stop position. - The release mechanism is too tight.
- Decrease the Obstacle Sensitivity potentiometer.



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