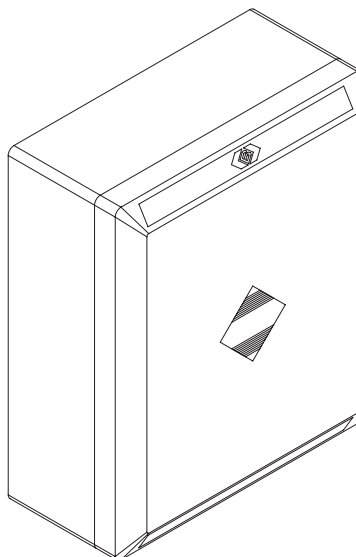


L8542338  
Rev. 11/04/04

# BENINCA®

CENTRALINA A MICROPROCESSORE  
**CONTROL UNIT WITH MICROCONTROLLER**  
*MIKROCONTROLLER-STEUERUNG*  
**CENTRALE A MICROCONTRÔLEUR**  
CENTRALITA A MICROPROCESADOR  
**CENTRALKA Z MIKROPROCESOREM**

## DA.BA



Libro istruzioni  
**Operating instructions**  
*Betriebsanleitung*  
**Livret d'instructions**  
Libro de instrucciones  
**Książeczka z instrukcjami**



UNIONE NAZIONALE COSTRUTTORI  
AUTOMATISMI PER CANCELLI, PORTE,  
SERRANDE ED AFFINI

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**Dichiarazione CE di conformità**  
**EC declaration of conformity**  
**EG-Konformitätserklärung**

**Déclaration CE de conformité**  
**Declaracion CE de conformidad**  
**Deklaracja UE o zgodności**

Con la presente dichiariamo che il nostro prodotto  
We hereby declare that our product  
Hiermit erklaren wir, dass unser Produkt  
Nous déclarons par la présente que notre produit  
Por la presente declaramos que nuestro producto  
Niniejszym oświadczamy że nasz produkt

**D.A.BA**

è conforme alle seguenti disposizioni pertinenti:  
complies with the following relevant provisions:  
folgenden einschlagigen Bestimmungen entspricht:  
correspond aux dispositions pertinentes suivantes:  
satisface las disposiciones pertinentes siguientes:  
zgodny jest z poniżej wyszczególnionymi rozporządzeniami:

Direttiva sulla compatibilità elettromagnetica (89/336/  
CCE, 93/68/CEE)  
EMC guidelines (89/336/EEC, 93/68/EEC)  
EMV-Richtlinie (89/336/EWG, 93/68/EWG)  
Directive EMV (89/336/CCE, 93/68/CEE) (Compatibilité  
électromagnétique)  
Reglamento de compatibilidad electromagnética (89/336/  
MCE, 93/68/MCE)  
Wytyczna odnośnie zdolności współdziałania elektromagne-  
tycznego (89/336/EWG, 93/68/EWG)

Direttiva sulla bassa tensione (73/23/CEE, 93/68/CEE)  
Low voltage guidelines (73/23/EEC, 93/68/EEC)  
Tiefe Spannung Richtlinie (73/23/EWG, 93/68/EWG)  
Directive bas voltage (73/23/CEE, 93/68/CEE)  
Reglamento de bajo Voltaje (73/23/MCE, 93/68/MCE)  
Wytyczna odnośnie niskiego napięcia (73/23/EWG, 93/  
68/EWG)

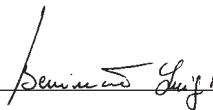
Norme armonizzate applicate in particolare:  
Applied harmonized standards, in particular:  
Angewendete harmonisierte Normen, insbesondere:  
Normes harmonisée utilisées, notamment:  
Normas armonizadas utilizadas particularmente:  
Normy standard najczęściej stosowane:

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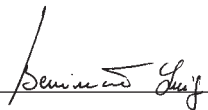
EN 55022, EN 61000-3-2, EN 61000-3-3, EN 50082-1

EN 60204-1, EN 60335-1

Data/Firma



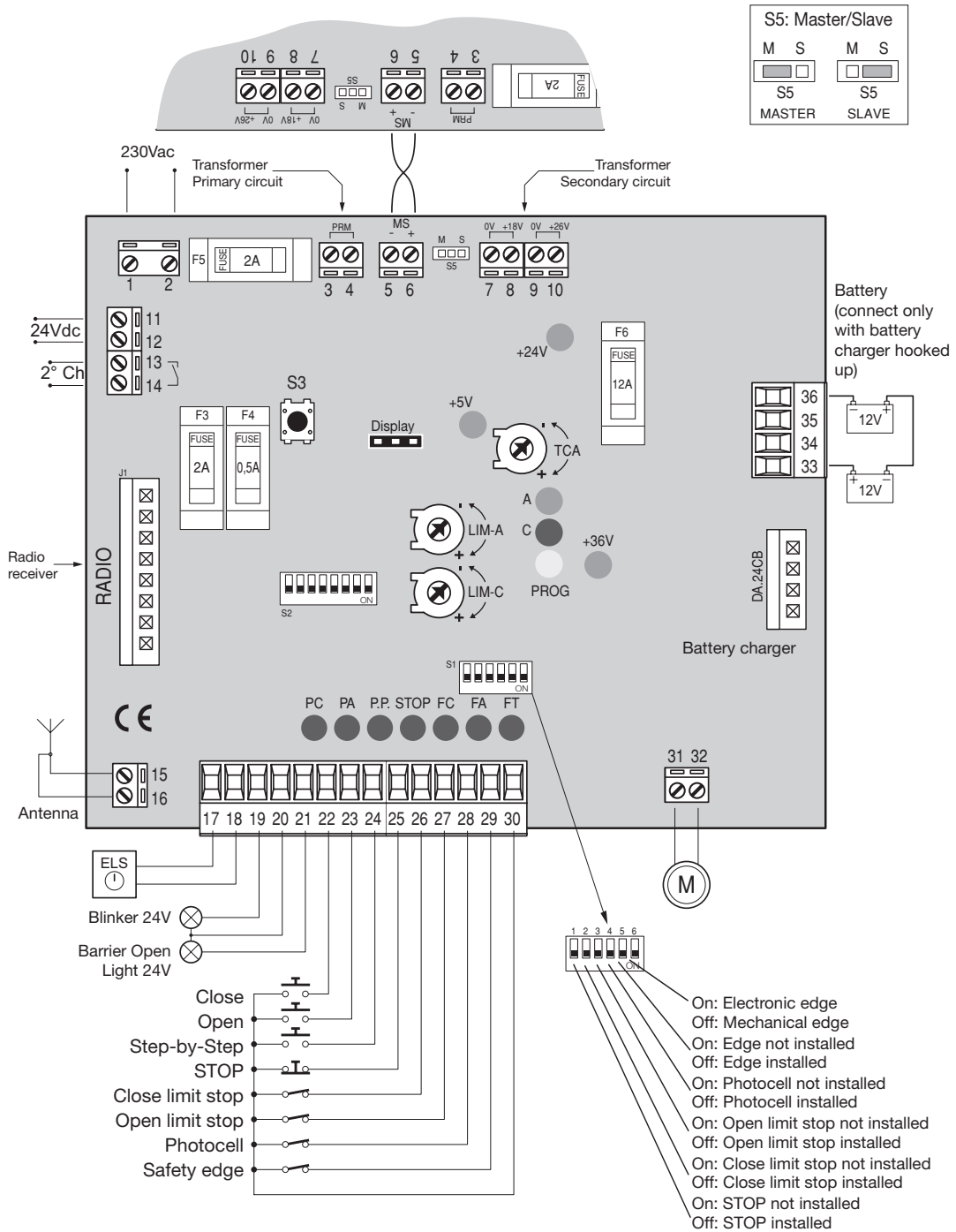
Data/Firma



**BENINCA®**

Automatismi Benincà SpA  
Via Capitello, 45  
36066 Sandrigo (VI)  
ITALIA

# DA.BA Control unit



## DA.BA Control unit

The "DA.BA" microcontroller control unit can be used with 24Vdc motors having a power no higher than 100W.

### Characteristics:

This control unit is designed to operate a 24Vdc, 100W motor for actuating road barriers.

- Controls can be given separate pushbuttons (i.e. APRE-OPEN, CHIUDE-CLOSE, P.P.-STEP BY STEP, STOP).
- Designed to receive photocells so that when the infrared beam is interrupted during the close cycle the barrier changes direction.
- Designed to receive a safety edge (mechanical or electronic) in close cycle.
- Output for a beacon and a Barrier Open Light signal.
- Output to operate a 24V electrolock.
- Automatic close function with adjustable delay.
- Limit stop slowdown with programmable speed adjustment.
- Amperometric obstacle detector with adjustable sensitivity.
- Operation with buffer batteries during mains power cuts (using the special battery charger).
- 7 barriers can be connected in series as slaves using just one master barrier.
- Safety edge fault detector transfers operation to manned mode.

### Power Supply:

- 230Vac,  $\pm 10\%$
- 22÷27Vdc, 12A, supplied by 2 sealed lead batteries, 12Vdc - 6.5Ah each connected in series.

### Safeties:

- Overload fuse on main power supply
- Overload fuse on auxiliary lines
- Overload fuse on high voltage line
- Converter against peak voltages on high and low voltage
- Electronic overload limiter on motor

**ATTENTION: The protection against inverting the battery poles is only effective if the correct fuses are used. Surge currents are nevertheless generated, being hazardous for both circuit and operator. Special care must be taken in ensuring the correct poles are respected.**

**If the control unit is not fitted with a battery charger board it will not operate with buffer batteries.**

### Installation instructions.

- Wire according to wiring diagram in the figure, paying special care in ensuring the correct poles are respected.
- Inhibit all normally closed inputs that are not required: Stop (25), Fc (26), Fa (27), Ftc (28), Asc (29) using the 6 dip-switches next to the removable terminal block. Their related functions are:

<b>DSW1</b>	Stop push button test
<b>DSW2</b>	Close limit stop test
<b>DSW3</b>	Open limit stop test
<b>DSW4</b>	Photocell test
<b>DSW5</b>	Safety edge test (With safety edge: Dip5= Off; without safety edge: Dip5= On)
<b>DSW6</b>	Select edge type (set Dip5 to Off and one type of edge MUST be connected to the ASC input) Off= <b>Mechanical safety edge</b> On= <b>Electronic safety edge</b>

N.B.: If no kind of edge is installed set dip 5 to ON.

If a mechanical edge is connected set dip 5 to OFF and dip 6 to OFF.

If an electronic edge is connected set dip 5 to OFF and dip 6 to ON.

**ATTENTION: DO NOT FIT EXTERNAL JUMPERS ON UNUSED INPUTS.**

N.B.: If the edge remains armed for at least 10 seconds (therefore also in the event of malfunction), the control unit will enter the "HOD TO RUN" operating mode, i.e. to action the barrier hold down the **APRE (OPEN)** pushbutton to open the barrier and the **CHIUDE (CLOSE)** pushbutton to close the barrier. When the pushbuttons are released the barrier will stop. The **PROG LED** will light up without blinking. After the edge is deactivated, the control unit returns to normal operation after about 3 sec.

- Connect the control inputs: PP "Step by Step" (24), Apre "Open" (23), Chiude "Close" (22).
- Connect the 24Vdc supply (11,12) to any accessories connected to the control unit (e.g. photocells, receivers, etc) respecting the correct poles. Connect the beacon and any "Barrier Open Light" SBA (24V lamp, max 3W).
- After having checked the connections, power the control unit at the 230Vac input terminals (1,2). When powered, the Input LED's should light up: STOP, FT and at least one of the FC or FA LED's. The PROG LED should blink.

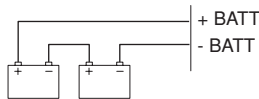
- f) Adjust trimmers LIM-A and LIM-C, which limit the maximum current to the motor.  
LIM-A to regulate current in the opening phase, LIM-C to regulate current in the closing phase.

#### Caution

**To power the control unit with buffer batteries it is mandatory to use the battery charger which has to be connected to the special connector (J3).**

#### Buffer batteries

- If the buffer batteries are being used (2x12V in series), to shutdown completely all power to the control unit just disconnect terminal “+BATT, -BATT” (33, 34).
- The battery charger needs a few days to completely recharge the batteries.
- During battery operation, the motor will run at a slightly slower speed than normal, regardless of the battery charge.
- Correct battery connections:



#### Input/Output functions

1,2	Input 230Vac	Power supply of the control unit 230Vac, 50Hz
3,4	Primary output	Output to primary circuit of transformer 220V/ 0-18V/0-26Vac
5,6	Serial input	Input of serial communication with various road barriers (5=GND; 6=+)
7,8	Secondary 18V input	Input from secondary circuit of transformer 0-18Vac
9,10	Secondary 26V input	I Input from secondary circuit of transformer 0-26Vac
11,12	24Vdc output	Stabilised 24Vdc output for auxiliary power supply (11= GND; 12=+24V)
13,14	Channel 2 output	N.O. contact actuated by second channel of radio control
15,16	Antenna Input	Antenna connection for radio control receiver board (15=+ant; 16=GND))
17,18	Electrolock output	Output terminals for electrolock (17=+ser; 18=-ser)
19,20	LP1 output	Output terminals for beacon. 24V lamp - max 10W
21,20	SBA output	Output terminals for “Barrier Open Light”. 24V lamp - max. 10W.
22	Input CHIUDE (CLOSE)	N.O. contact
23	Input APRE (OPEN)	N.O. contact
24	P.P. input	Step by Step input. Connected in parallel with radio control output. N.O. contact
25	Input STOP	N.C. contact
26	Input FC	Input, closing limit switch. N.C. contact
27	Input FA	Input, opening limit switch. N.C. contact
28	Input FTC	For connection to photocell output contact. N.C. contact.
29	Input for safety edge or device.	When it trips the motor changes direction for 1 second if it is in the close cycle. N.C. contact.
30	Output COM	Common terminal for all inputs.
31,32	Output Motor	To the motor, 24Vdc
33,34 35,36	Input battery	Direct connection for buffer battery (2x12V), (33= +24V; 34,35,36= GND)

**J1** Connector for radio control receiver board  
**J3** Connector for battery charger board

#### LED functions

<b>+36V</b> (green)	Power on signal for +36V power circuit; if it does not light up check fuses F6, F5.
<b>+24V</b> (green)	Power on signal for +24V circuit; if it does not light up check fuse F5.
<b>+5V</b> (green)	Power on signal for +5V logic circuit. If it does not light up check fuse F5.
<b>A</b> (green)	Signals motor is in open cycle.
<b>C</b> (red)	Signals that motor is in close cycle.
<b>PROG</b> (yellow)	Blinking during normal operation of control unit.

#### Trimmer functions

<b>LIM-A</b>	It regulates the intervention threshold of the torque regulator of the motor in the opening phase (max in clockwise direction).
<b>LIM-C</b>	It regulates the intervention threshold of the torque regulator of the motor in the closing phase (max in clockwise direction).
<b>TCA</b>	It regulates the automatic closing time from 0 to 240 seconds (max in clockwise direction).

#### Dip-switch functions S2

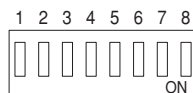
<b>DSW1</b>	Function " <b>Forewarning</b> ": the flashing light is activated 3 seconds before the beginning of each operation. Off= Disabled On= Enabled
<b>DSW2</b>	" <b>Automatic close</b> " function: for safety reasons the "Automatic Close" function is always disabled after a signal is given to the "STOP" inputs. A signal to the "ASC" input will not interrupt the "Automatic Close" function if the motor is off. Off= Disabled On= Enabled
<b>DSW3</b>	" <b>Condominium</b> " Function: the "P.P." input will not stop the motor during the open cycle. When the open cycle is completed, the "P.P." input is enabled to close the barrier. Off= Disabled On= Enabled
<b>DSW4</b>	Electric lock enabled Off= Disabled On= Enabled
<b>DSW5</b>	Operating mode for the "P.P." input. Off= Open/Stop/Close/Stop sequence On= Open/Close sequence
<b>DSW6</b>	ASC edge trips in close cycle Off= When edge trips the barrier changes direction. On= When edge trips the barrier changes direction for 1 sec. and stops.
<b>DSW7</b>	Photocell trips (Dip2 set to ON) Off= When photocell trips the automatic close delay remains unchanged. On= When photocell trips the automatic close delay is shortened to 1 sec.
<b>DSW8</b>	Beacon operating mode Off= During open cycle the beacon goes out. On= During open cycle the beacon keeps flashing.

The functions linked with dip-switches are active after a full operation from the change in dip-switch settings.

#### ADVANCED PROGRAMMING

##### IMPORTANT NOTE:

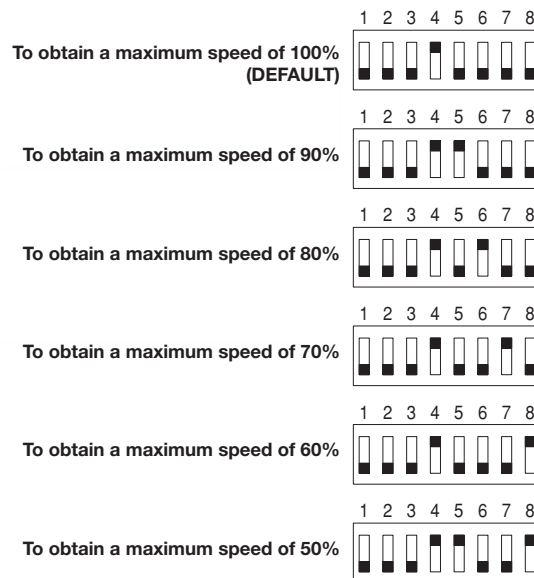
To program the advanced functions, a special Dip-Switch combination should be provided for selector switch S2. The function should then be stored in memory by pressing button S3 until the yellow PROG LED switches off. At completion of the advanced programming procedure, the Dip-Switches S2 should be moved to the original position. To facilitate this operation, take note of the basic settings in the following table.



### 1 - Programming the maximum speed

This allows to select the maximum speed of the motor. The motor speed can vary from 100% to 50% of the rated speed.

- With the motor off set the function dips as in the figure below:



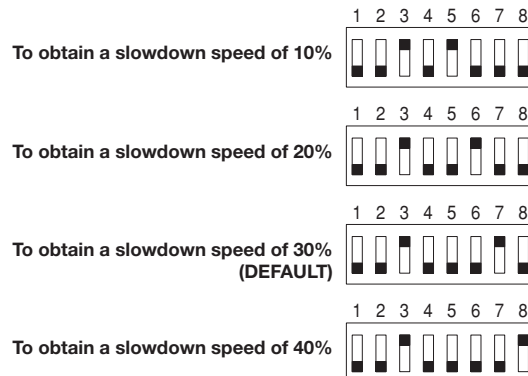
- Hold down the pushbutton next to the microprocessor; the YELLOW LED will stay on.
- When the YELLOW LED goes out, release the pushbutton. The program settings have been stored.
- Return the dip-switches to their original settings

**IMPORTANT: For mod.VE.650 barriers**  
 with 6.50 m rod never set the speed over 70%  
 with 6.00 m rod never set the speed over 80%  
 with 5.50 m rod never set the speed over 90%

### 2 - Programming the slowdown speed

This allows to select the speed of the motor during slowdown. The motor speed can vary from 10% to 40% of its rated speed. When using a slowdown speed of 10% and 20% it is best to opt for the increasing slowdown setting (advanced function 3).

- With the motor off set the function dips as in the figure below:



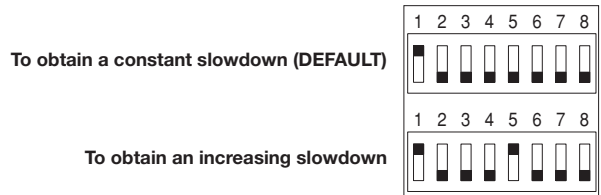
- Hold down the pushbutton next to the microprocessor; the YELLOW LED will stay on.

- When the YELLOW LED goes out, release the pushbutton. The program settings have been stored.
- Return the dip-switches to their original settings

### 3 -Programming type of slowdown

This allows to select how the barrier will slowdown after it trips the limit stop (both in open and close cycles). The options are a constant slowdown (DEFAULT) or increasing, recommended in cases where the barrier in slowdown is unable to fully close.

- With the motor off set the function dips as in the figure:

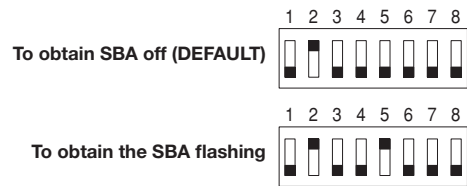


- Hold down the pushbutton next to the microprocessor; the YELLOW LED will stay on.
- When the YELLOW LED goes out, release the pushbutton. The program settings have been stored.
- Return the dip-switches to their original settings

### 4 - Programming the sba flashing mode when fully closed

This allows to select the operating mode of the Barrier Open Light (SBA) when the barrier is fully closed. The options are: the SBA lights up every 3 sec. or it goes out (DEFAULT).

- With the motor off set the function dips as in the figure below:



- Hold down the pushbutton next to the microprocessor; the YELLOW LED will stay on.
- When the YELLOW LED goes out, release the pushbutton. The program settings have been stored.
- Return the dip-switches to their original settings

### Positioning slowdown cams and limit stop

Shift the cams to calibrate the slowdown angle of the barrier during the open and close cycles.

When the barrier closes it may stop suddenly if the close slowdown cam only allows a very tight slowdown space. To eliminate this problem shift the close slowdown cam to increase the slowdown space thereby allowing the barrier to complete its cycle.

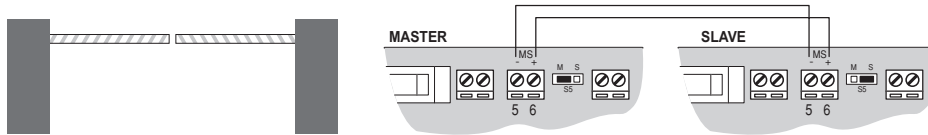
Adjust trimmers LIM-A and LIM-C until the current limiter trips both when the barrier is fully open and fully closed: when the limiter trips in the open cycle green LED A goes out and in the close cycle red LED C goes out.



### CONNECTING SEVERAL SYNCHRONISED BARRIERS

For a synchronized operation of two or more road barriers (up to 7) a main barrier has to be designated (i.e. connected to the controls) as **MASTER** by setting dip-switch S5 to "M" (to left). The other barriers have to become **SLAVES** by setting S5 to "S" (to right).

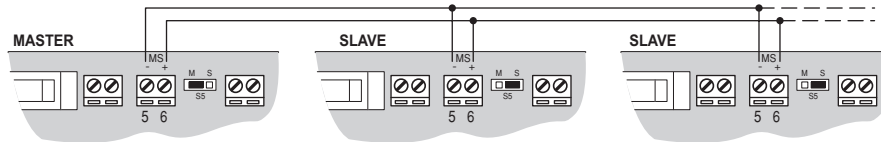
To connect two opposite barriers:



The **Master** barrier operates independently from the **Slaves** and vice-versa the **Slave** barriers depend on the Master.

The **Master** barriers must be connected to the input controls and any accessories (e.g. photocells, electrolock, edge, radio receiver).

To connect three (or more) road barriers:



The **Slave** barriers **MUST** only have the limit switches and only if required, inputs STEP BY STEP, OPEN, CLOSE, STOP, PHOTOC. and EDGE, the battery charger, electrolock, beacon and Barrier Open Light and the dip-switches next to the terminal block have to be set to ON to inhibit the normally closed inputs (i.e. 1 STOP, 4 PHOTOCCELL, 5 EDGE).

N.B.: If the **MASTER** is programmed with **AUTOMATIC CLOSE**, the **SLAVES must not be enabled**. If the **MASTER** is programmed with Warning, it also has to be programmed on the **SLAVES**

N.B.: It is best to use a 2x1mm shielded cable for connections and always keep the power cables separate from the control and serial communication cabling to avoid interference, using 2 individual conduits.