1 Table of contents

2 Introduction

Since 1987, DYNACO has concentrated its know-how on a unique and patented system of automatic, high-speed doors that have the following characteristics:

- Perfect seal
- Total safety
- Guaranteed to be self-repairing
- Wind proof
- Very high speed
- Smooth operation

DYNACO continuously develops its products to accurately meet the specific needs of every sector of the industry.
DYNACO has an experienced team for design, customer advice, production, and providing service with the shortest possible lead times.

In the context of this policy of continuous development of its products, DYNACO reserves the right to change the characteristics of its products or parts, without prior notice.

3 Directives and standards

The following guidelines and standards are followed in the construction of DYNACO doors.

98/37/EC	Machinery guidelines.
89/106/EEC	Construction products guideline.
89/336/EEC	EMC – guideline.
73/23/EEC	Guideline related to low voltage.
EN 13241-1	Industrial, commercial and garage doors without fire and smoke resistant characteristics.

Dynaco doors can be controlled in various ways. The Dynalogic control units offer a number of options for connecting hand operated and/or automatic opening controls. The choice of opening commands depends on a large number of factors, including intensity of use, the environment, and the type of traffic using the door.

DYNACO Europe offers a wide range of opening controls. The installer, in consultation with the user, can offer added value within his or her area of responsibility by selecting the most appropriate actuators.

The opening controls meet the low voltage guideline, **73/23/EEC**, and the Guideline for Electro-magnetic compatibility, **89/336/EEC.** For remote control using a radio frequency, guideline R&TT E, **99/5/EC**, also applies.

The opening controls selected by the installer or end user must meet the same standards, and must be adapted for the use and environment in which they are to be used. They may not influence the control box. Neither must their operation in turn be impacted by environmental factors or the control unit. The control and safety components that are built-in as standard, must be replaced with identical replacement parts.

The connections, the working methods and materials used must meet the required standards listed under the guidelines set out above, or those imposed by local authorities.

4 Safety instructions

4.1 General instructions.

Please carefully read the safety instructions and the manual before starting any work.

The description below uses symbols to draw the reader's attention to the various dangers and to provide useful advice.

	Indicates a potential danger to persons; please take all possible precautions against risks associated with working with electrical materials, it may have power connected.
	Please follow exactly; ignoring this advice can cause a fault or a dangerous situation.
	Important information.
	Only to be performed by DYNACO-certified persons.
	May only be performed by a technician who is authorised to operate a forklift.

4.2 Precautions during installation

- Electrocution may lead to death. Never touch parts that are 'live'. Be very careful during the installation and maintenance of electrical components of the door.
- For the safety of the user and the proper operation of the door, the door must be installed in accordance with the instructions contained in this manual.

- Only authorised personnel may work on DYNACO doors. Personnel concerned must be properly informed about the contents of the manual, remarks and warnings regarding transport, and about the installation and commissioning of this door. Work by unauthorised personnel can bring about risks for the users. Install the door with the assistance of qualified forklift drivers and electricians.
- Installation by unauthorised personnel may lead to damage of the door components and poor operation of the door.
- Not following the manual during installation, or installation by unauthorised personnel will lead to an invalidation of the warranty.
- Please ensure that all accessories meet IEC standards.
- The equipment and accessories must be installed in accordance with the manufacturer's instructions, as well as national and other standards.

4.3 Precautions during operation.

- Electrocution may lead to death. Never touch parts that are 'live'. Be very careful during the installation and maintenance of electrical components of the door.
- For the safety of the user and the proper operation of the door, the door must be used in accordance with the instructions contained in this manual.
- Only use the door when the control box is locked.
- Ensure the safety warnings, covers and protections are kept in good condition. Safety warnings must remain visible at all times.
- Avoid all contact with moving parts.
- Sometimes, safety equipment needs to be removed for maintenance. Reinstall them after commissioning.

4.4 Precautions during maintenance.

- Electrocution may lead to death. Never touch parts that are 'live'. Be very careful during the installation and maintenance of electrical components of the door.
- Only personnel certified by DYNACO are allowed to carry out maintenance on DYNACO doors. If maintenance is carried out by persons who have not been trained by DYNACO, the warranty will be invalidated.
- All parts used in DYNACO doors have been designed for this application. Only use original DYNACO parts.
- Sometimes, safety equipment needs to be removed for maintenance. Reinstall them after commissioning.
- In case of intervention (with regard to the electrical and/or mechanical section of the installation), the power supply must be interrupted and locked.

	Beware: the cables between main switch and power supply always remains live.

4.5 Precautions for the frequency inverter.

	**The frequency inverter.**

- When a frequency inverter has power supplied to it, the electrical elements and a number of operating controls are also 'live'. Never touch these elements. This is extremely dangerous.
- When the emergency stop is activated, the frequency inverter remains 'live'. If this is a threat to the safety of the staff, the power circuit must be interrupted by locking the main switch on the control box.
- After locking the main switch, it is always necessary to wait **15 minutes** before starting work. This is the time required for discharging the capacitors of the frequency inverter.
- The frequency inverter has integrated safety systems for stopping the door. A mechanical blockage, fluctuations in voltage and interruptions of the power supply can also bring the door to a stop.
  This is shown with a fault message on the frequency inverter screen.
  Lock the main switch before removing the cause of a blockage.
  Unlock the main switch to put the door into service again.
  An impulse via the ‘'Open' push button on the control box will reset the controller.
- For more detailed information, please check the manuel of the frequency inverter in the control box.

4.6 Automatic opening during power failure

	For doors with the 'automatic opening during power failure' option, it is not enough to interrupt the general feed from the electricity supply, because the UPS current will continue to flow. In order to carry out work on the door, the door must be shut down completely by locking the main switch on the control box. The cable that connects the UPS with the main switch will then remain 'live'.

Consult the manual of the UPS for interrupting the current on the cable between the UPS and the main switch.

4.7 AUTO/MANUAL switch (dead man's operation) (Optional)

The door will close based on the dead man principle in the manual (Manu) mode: the Close pushbutton must remain pressed. The photocell and the WDD remain active. A single press of the 'open' button will open the door again.

5 Controlboxes

5.1 Technical specifications.

Housing dimensions (W x H x D)	0.75kW to 1.5kW: 380x380x210 mm 2.2kW 600x600x210 mm	
Installation:	Vertically within reach	
Power supply via L, N, PE:	230 V AC ±10%, 50…60 Hz Fuse 0.75kW : 16A 1.50kW : 25A 2.2kW : 25A	
Personal use of the control:	Max. 100W with full equipment and without the motor running.	
Control voltage/external power supply 1:	24V AC (±10% at nominal voltage 230 V) Max. 700 mA with automatic circuit breaker.	
Control voltage/external power supply 2:	For encoder. Nominal voltage 20V/max. 100mA	
Control inputs	24 V AC All inputs can be connected are potential free (NO). Min. Signal duration for input control commands: > 100 ms. Galvanic separation by opto-coupling on the printed circuit board.	
RS485 A and B:	Only for encoder. RS485 level, locked with 100 Ω.	
Safety range/Emergency stop	All inputs must be connected potential free (NC). When the safety range has been interrupted, movement of the drive system is no longer possible, not even in dead man use configuration. Connection available at terminals/bridged by the factory.	
Relay outputs:	If inductive loads are activated (for example, other relays), they must be equipped with the corresponding interference measures (freewheeling diodes, voltage variable, RC modules).	
Relays: **"Faults/Messages door positions/Traffic light functions":**	Two-way contact, potential free min. 10 mA max. 230 V AC/5A	The relay may only be activated with voltages that have the same reference potential. If one contact is used with 230V, it may not be used afterwards for 24V.

Drive system output:	Motor (kW/HP)	Nominal current (A)		(*) Max. transfer current (A)	
		230V	400V	230V	400V
	0.75 / 1	3.6	2.3	5.4	3.5
	1.5 / 2	6.8	4.1	10.2	6.2
	2.2 / 3	9.6	5.5	14.4	8.3
	(*) Can be overloaded for a brief period of up to 60 seconds Max. length of motor cable: 30m				
Temperature range **In use** **In storage**	+1…+ 50°C -25…+ 70°C				
Humidity:	Max. 80% non-condensing.				
Vibration:	Low vibration installation, e.g. on a brick wall.				
Protection category:	IP54				
Weight:	Approximately 16 kg				

Guidelines		**Standards**	
EMC-Guideline: **Amended by:**	**89/336/EEC** **91/263/EWG** **92/031/EWG** **93/068/EWG**	EN 50081-2/03.94: EN 61000-6-2/2001:	Radiation interference, standard industry range. Interference resistance, standard industrial range.
Low voltage guideline: **Amended by:**	**73/023/EWG** **93/068/EWG**	EN 60204-1/2003:	Safety of machines, electrical equipment of machines.
Test type in accordance with:		EN 12453 / 2001 EN 12445 / 2001	Safety with use of power operated doors. Requirements. Safety with use of power operated doors. Inspection procedures.
Technical specifications applied with regard to the abovementioned guidelines.		EN 12978/2003	Doors - safety settings – requirements and inspection procedures.
Certification		EN 12978/2003	Doors - safety settings – requirements and inspection procedures.
Manufacturer		DYNACO Europe n.v. Waverstraat 21 9310 Moorsel Belgium	

5.2 Frequency inverter.

5.2.1 Technical properties.

The frequency inverter is suitable for 3-phase asynchronous motors. Together with the reduction gear, we will get an electronic drive with variable speed and very high functionality.

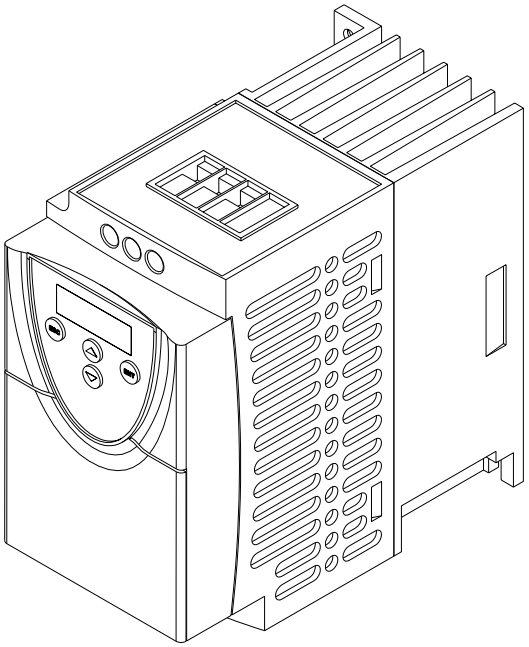


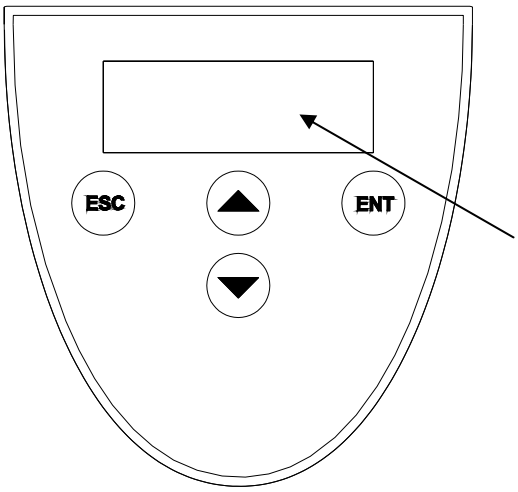
Figure 5-1: The frequency inverter.

DYNACO has adjusted the frequency inverter to be synchronised with the motor and the mechanical part of the door.

Current	Voltage: 200-15% to 240+10% single phase Frequency: 50Hz ± 5% or 60Hz ± 5%.
Output voltage:	The maximum output voltage is equal to the mains voltage.
Galvanic separation:	Galvanic separation between the electrical power and the controls (inputs, outputs and sources).
Protection of the motor:	Thermal protection integrated into the frequency inverter through constant calculation of I^2t, with memorising of the thermal condition of the motor when the power drops out.
Isolation resistance:	>500MΩ (galvanic separation).
Primary protection through the inverter:	Thermal protection against overheating. Protection against short circuits between output phases. Protection against power surges between output phases and earthing, only when connecting power. Protection against a rise or fall in voltage of the mains.

Compliance with the following standards:	The inverter was developed in accordance with the strictest international standards and recommendation in the area of industrial, electrical control equipment (IEN,EN), including EN50178, ability to withstand electromagnetic interruptions. IEC/EN 61000-4-2 Level 3 IEC/EN 61000-4-3 Level 3 IEC/EN 61000-4-4 Level 4 IEC/EN 61000-4-5 Level 3 (input voltage) IEC/EN 61800-3, environments 1 and 2 CE low voltage guide lines (73/23/CEE and 9368CEE) and CEM (89336CEE).
Certificates:	UL, CSA, NOM 117 and C-TICK
Shock proofing:	15 gn for 11 ms in accordance with IECEN60068-2-27.

5.2.2 Control panel.



Display with 3 digits and 7 segments showing:
- dCb when the inverter is ready for use.
- or an error message.

Figure 5-2: Front view of the control panel.

6 Diagrams

6.1 Explanation of abbreviations in the diagrams

Abbre-viation	Description	Manufacturer	Terminal	Para-graph
Q1	Main switch (connection of power supply)	Télémécanique	L1, L2(L3)	6.2
X1	Terminal block	ABB		10
TR1	Mains power transformer from 230 or 400VAC to 24VAC	Block		
Q5	Protection of heating wires (Freezer)	Télémécanique	80-81	6.18
VF1	Frequency inverter	Télémécanique		5.2
Abenpc01	Control unit	Declerck		
WDD	Wireless DYNACO detector	DYNACO		7.1
DBD	Unwinding detector (D311, D313)	Cherry	16-17	6.15
RFE	Relay orange flashing light (option)	Releco	40-41	6.11
RSO	Relay “door open” signal (option)	Releco	NO 60-61 NC 62-63	6.9
RSF	Relay “door closed” signal (option)	Releco	NO 64-65 NC 66-67	6.10
RS1	Relay red light (traffic light option)	Releco	68-69	6.21
RS2	Relay green light (traffic light option)	Releco	70-71	6.21
RS1	Relay “Interlock on/off” status (interlock option)	Releco	52-53	6.20
RS2	Relay door status (interlock option)	Releco	54-55	6.20
RFR	Relay brake (D313)	Finder	F+-F-	6.3.3
	Bridge rectifier	INTORQ	F+ F-	6.3.3 6.3.4
REC1	Receiver for remote control RF (option)	Nestor		6.26
S1	Contact manual control	Cherry		
S2	Emergency stop on the control panel	Télémécanique		6.19
S20	Connection of an additional emergency stop		34-35	6.19
S3	Opening button with reset	Télémécanique		6.12
S30	Connection of additional opening button with reset		30-31	6.12
S4	Selector switch AUTO/MANU on control panel (option)	Télémécanique		6.7
S40	Connection of external selector switch AUTO/MANU (option)		36-37	6.7
S5	Closing button on the control panel (option)	Télémécanique		6.14
S50	Connection of an additional closing button (option)		32-33	6.14

S6	Cleaning button on the control panel (D311) (option)	Télémécanique		6.22
S7	Button for intermediate opening height on the control panel (option)			6.13
S70	Connection of an additional “intermediate opening height” button (option)		46-47	6.13
S10	Selector switch INTERLOCK ON/OFF on the control panel (option)	Télémécanique		6.20
SY1,SY2	Connection of opening controls (radar, remote control, additional photoelectric cell, etc.)		24,25-27,28	6.16
UPS	Emergency backup battery (option)	GE	57-58	8.2
C1	Safety photocell with transmitter and receiver	Carlo Gavazzi	8-9-10-11	6.6.1
C2	Additional safety photocell with transmitter and receiver (option)	Carlo Gavazzi	12-13-14-15	6.24
C3	Photocell with transmitter and receiver as opening control (option)	Carlo Gavazzi	82-83-84-85	6.25
P3	Reflex photoelectric cell (Emergency 2 in each door)	Banner	44-45	6.17
BO1	Magnetic loop detector (option)	Capsys	48-49	6.8

6.2 Connecting the power supply.

6.2.1 Connection 2 x 230 V

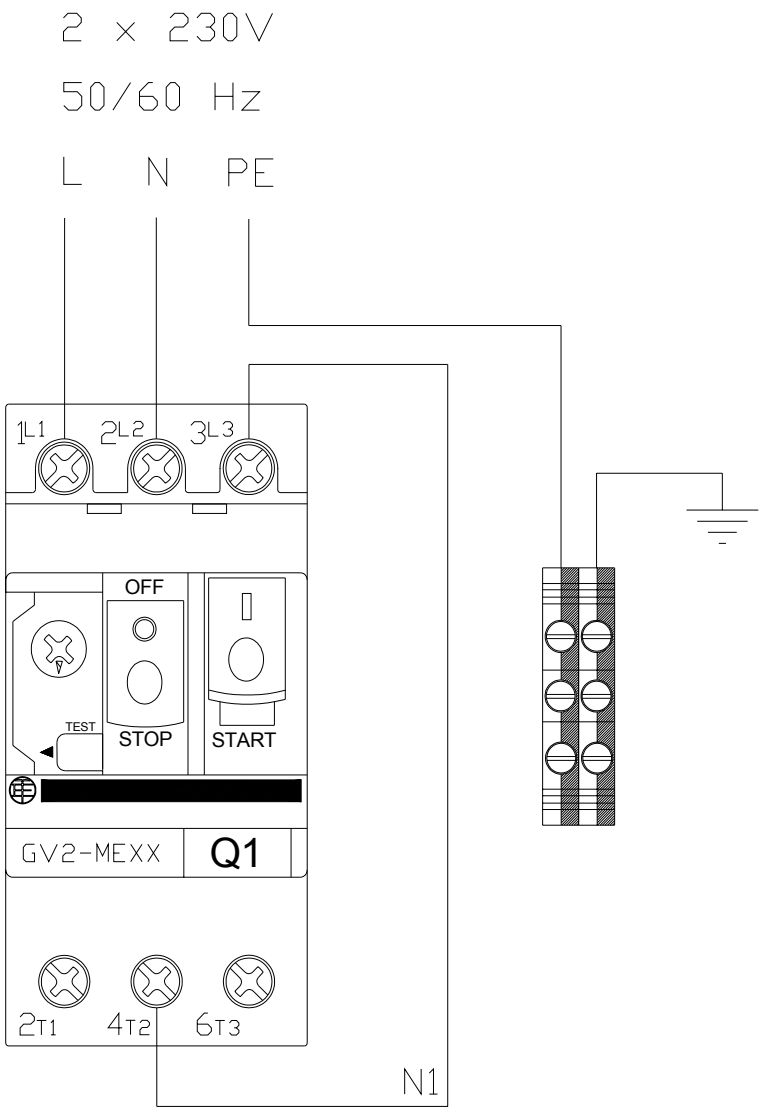


Figure 6-1: Connection 2 x 230V

6.2.2 Connection 3 x 400 V without neutral.

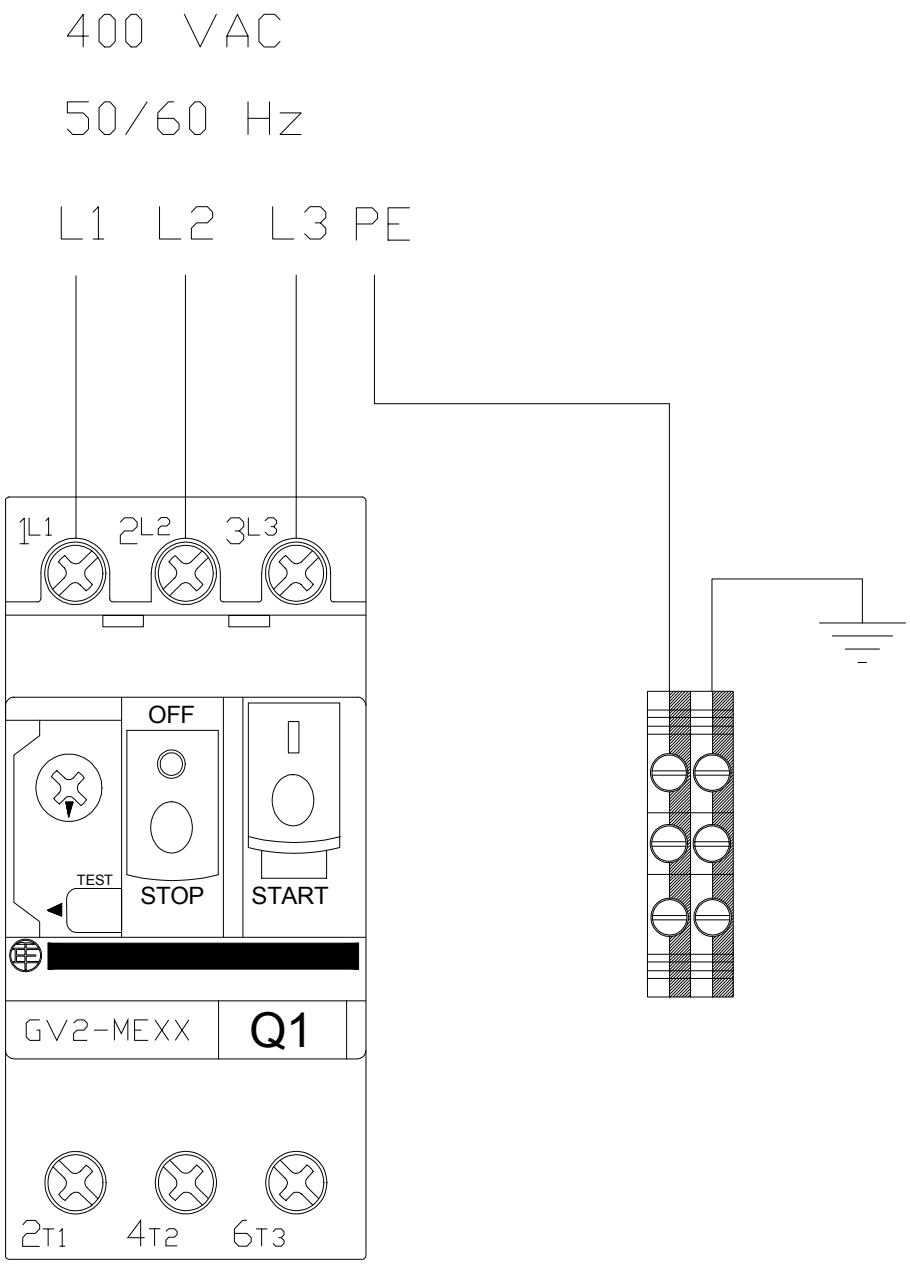


Figure 6-2: Connection of power supply 3 x 400V. without neutral.

6.3 Connecting the motor.

6.3.1 Connection of motor to ATV 11 for D121-311-M2-M3

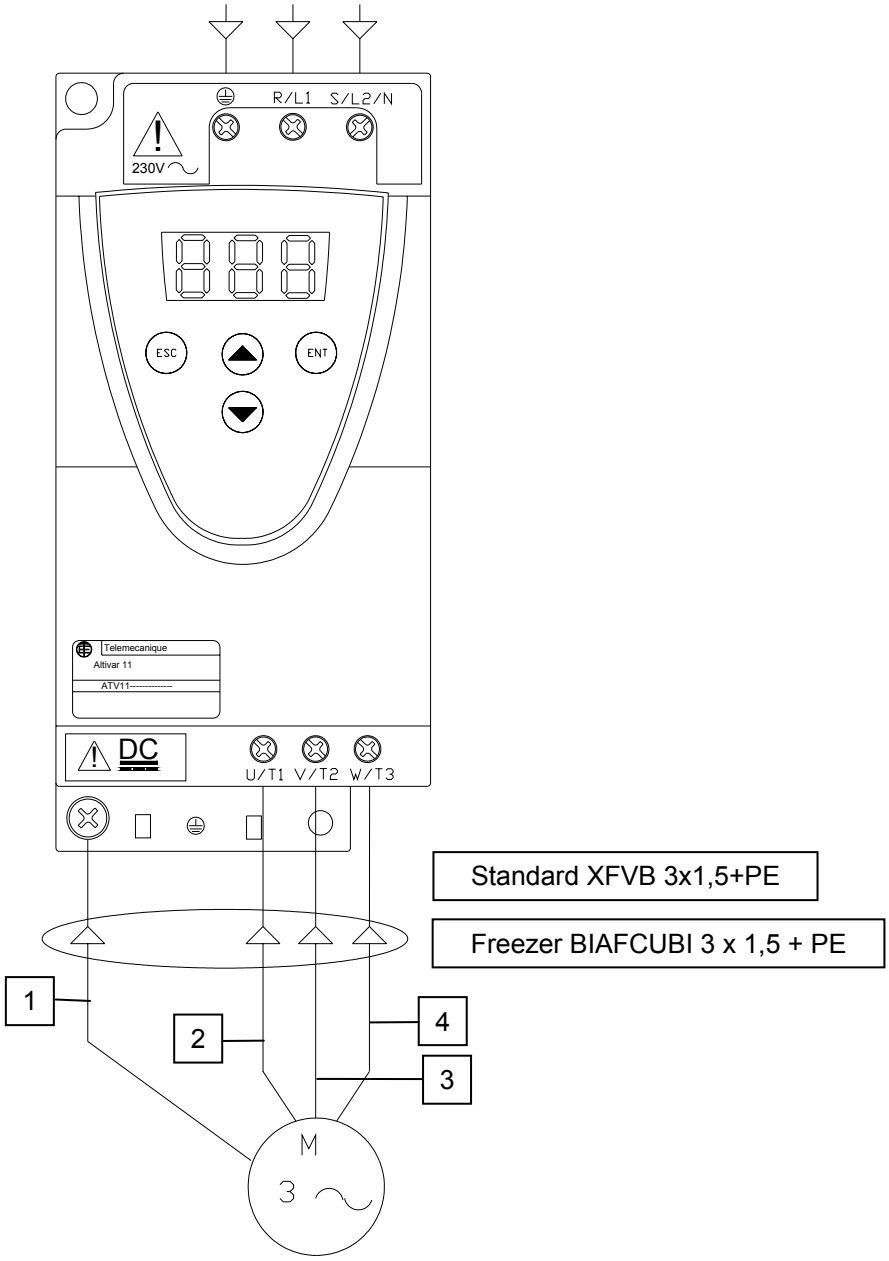


Figure 6-3: Connection of motor to ATV 11 for D121-311-M2-M3.

1	Earthing	3	Brown
2	Black	4	Grey

6.3.2 Connection of motor to ATV 31 for D121-311-M2-M3

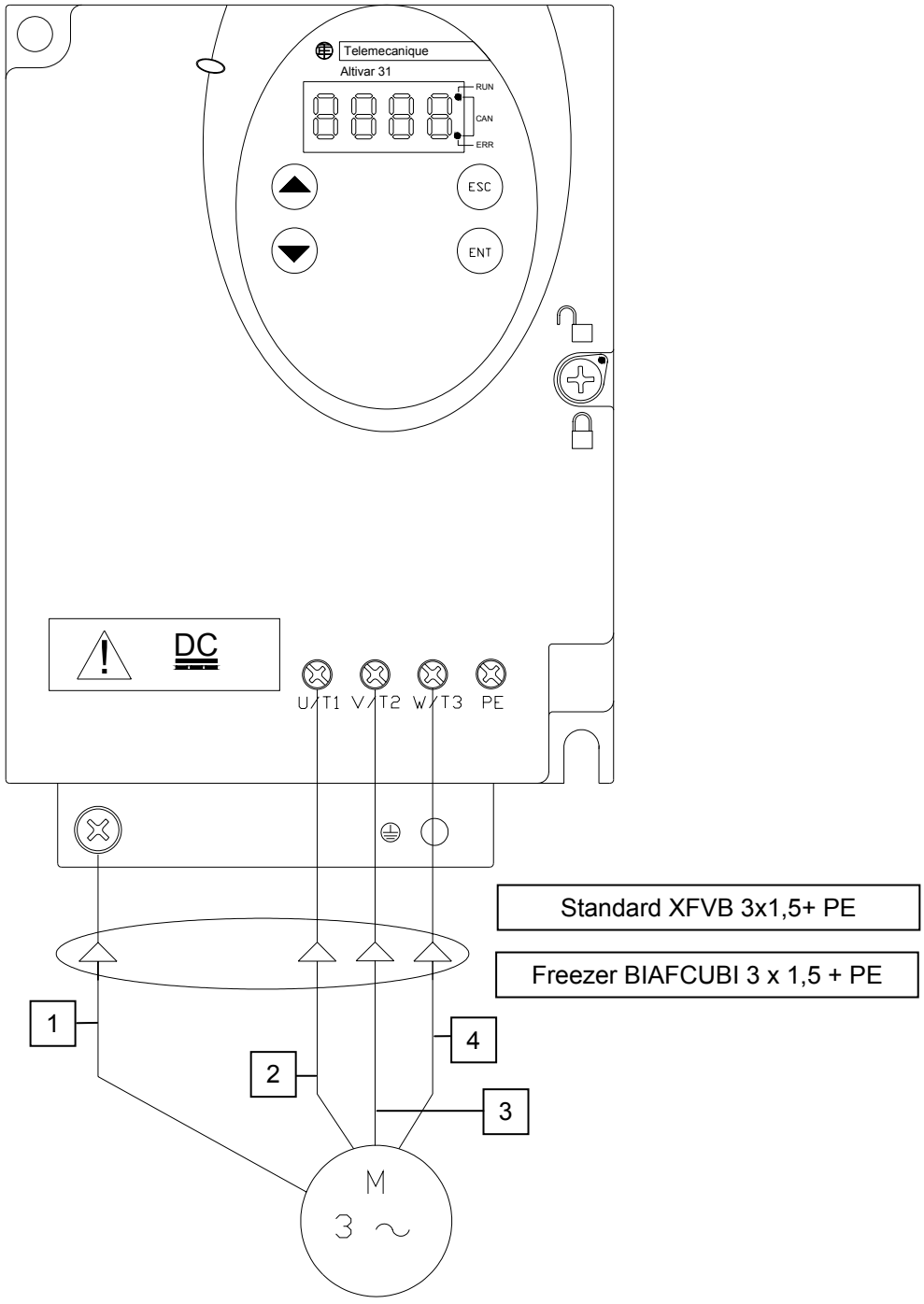


Figure 6-4: Connection of motor to ATV 31 for D121-311-M2-M3.

1	Earthing	3	Brown
2	Black	4	Grey

6.3.3 Connection of motor to ATV 31 for D313.

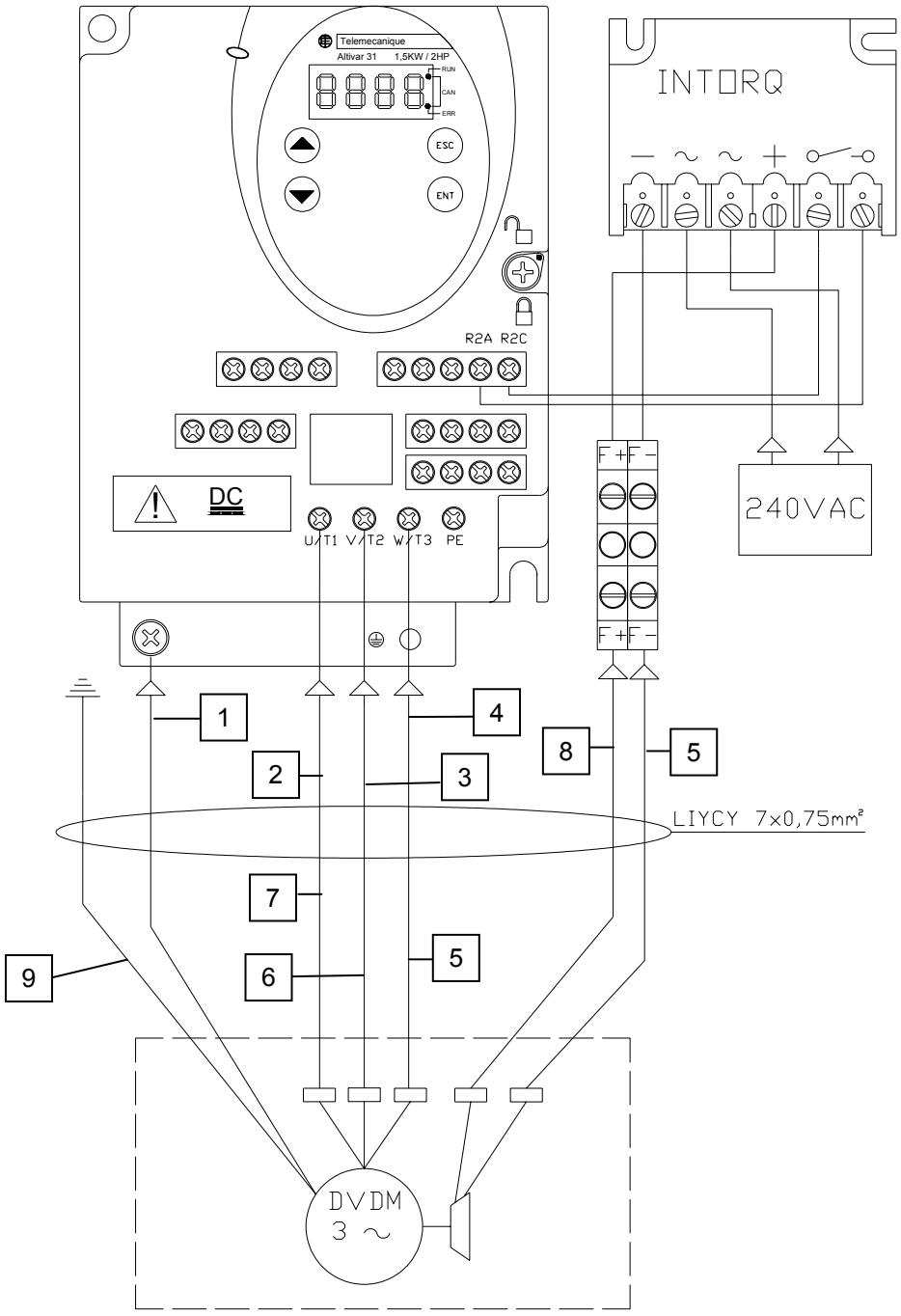


Figure 6-5: Connection of motor to ATV 31 for D313

1	Green	4	Grey	7	Black
2	Blue	5	White	8	Yellow
3	Brown	6	Red	9	Shield

6.4 Connection between frequency inverter and control card.

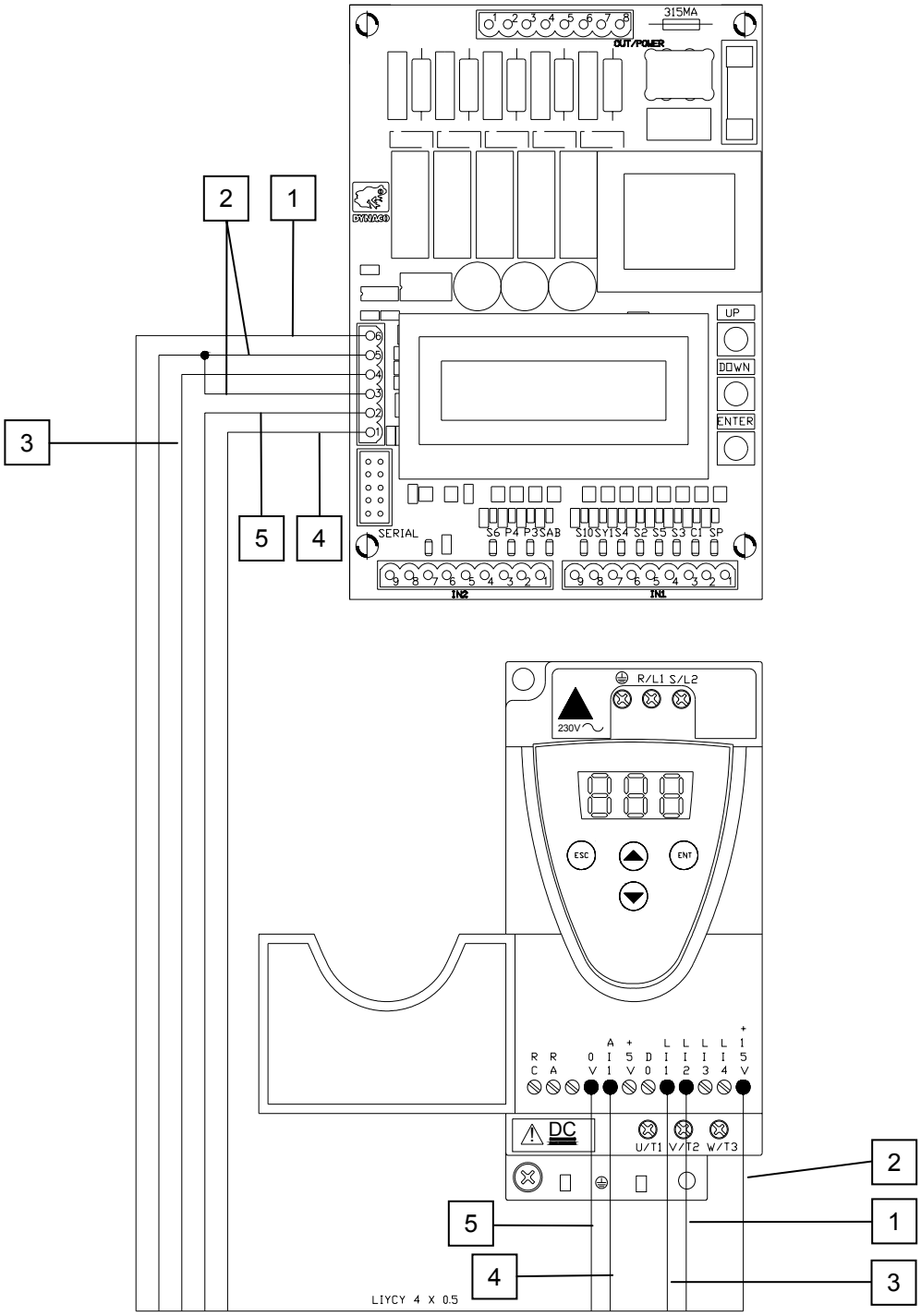


Figure 6-6: Connection between frequency inverter and control card.

1	White	3	Yellow	5	Shield
2	Green	4	Brown		

6.5 Connecting the encoder and control card.

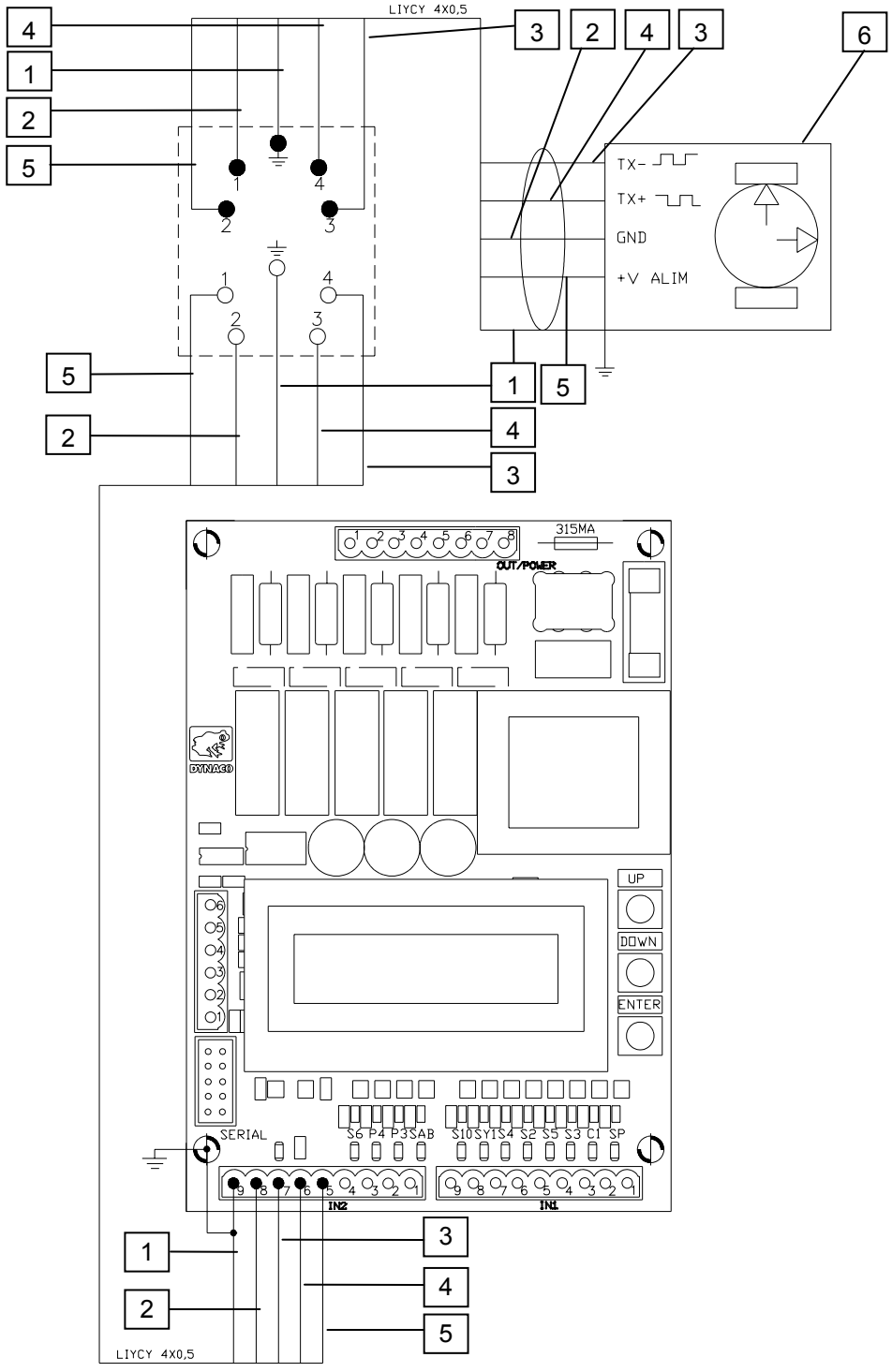
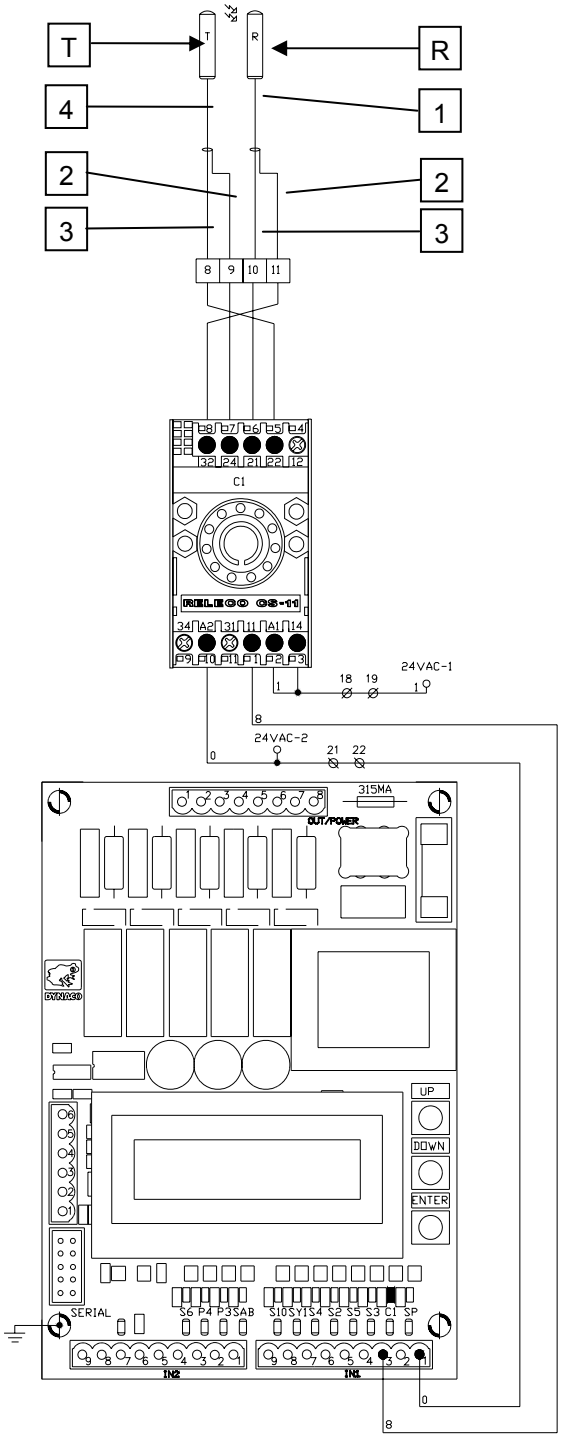


Figure 6-7: Connecting encoder and control card.

1	Shield	3	Yellow	5	White
2	Brown	4	Green	6	Encoder

6.6 Photocell C1.

6.6.1 Connection of photocell to control card.

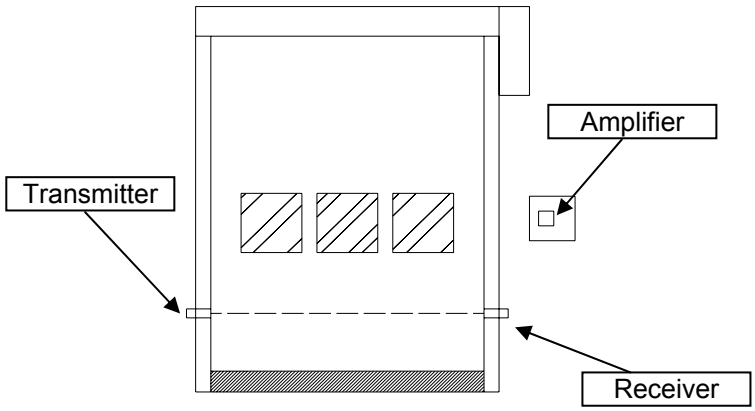


1	Black
2	Shield
3	White
4	Grey
T	Transmitter
R	Receiver

Figure 6-8: Connection of photocell to control card.

6.6.2 Description.

The photocell consists of a transmitter placed on the opposite side of the control panel, and a receiver on the side of the control panel. The transmitter sends an infrared signal to the receiver; if the signal is interrupted, the receiver will de-activate the electric contact in the amplifier.



6.6.3 Properties.

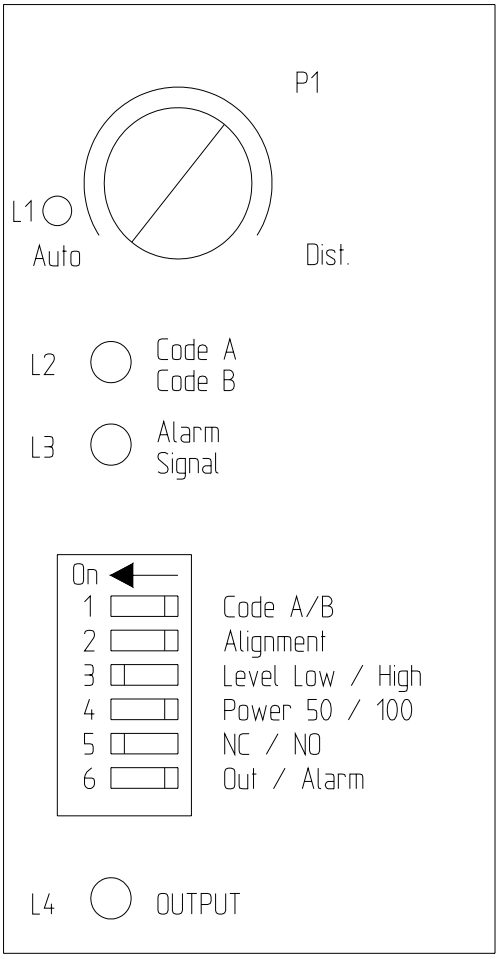
Amplifier:

- Power supply voltage: 24V AC ±15%, 45 - 65 Hz
- Power consumption: 2 VA
- Output contact:
  - AC: 10A/250V AC resistance load
  - DC: 2A/25V DC resistance load

Sender/Receiver

- Max. range: 20m
- Degree of protection: IP67
- Opening angle: 5° max
- Housing: M 12 head in steel

6.6.4 Help with diagnostics.



P1: Control potentiometer

Warning lights:

L1: LED mode.

- Green light on: automatic mode (potentiometer completely on the left).
- Flashing green light: finalising automatic operation.
- Light off: manual mode.

L2: LED indication of operating method.

- Orange: working OK
- Slow flashing in yellow: the receiver has short cut.
- Fast flashing in yellow: the receiver is not connected, the wiring has been interrupted, the contact is open.
- Slow flashing in green: the sender has short cut.
- Fast flashing in green: the sender is not connected, the wiring has been interrupted, the contact is open.

L3: LED diagnostics

- Red = alarm
- Yellow = signal OK

L4: LED exit signal

- Yellow = output is active
- Off = output is inactive

6.6.5 Functions.

1. Code A/B: only useful if two pairs of photoelectric cells are used (one pair on code A, and one pair on code B)

2. Alignment.

- Switching to ON (left) allows the alignment between the two photoelectric cells to be checked.
    - L3 off: the two photoelectric cells are not aligned
    - L3 flashing slowly: poor alignment
    - The faster LED 3 flashes, the better the alignment
    - L3 is lit continuously: perfect alignment.

After completing the adjustments, the switch must be set to OFF again (right)

3. Level LOW/HIGH and Power 50%/100%: adjustment of sensitivity

4. NC/NO stays at OFF (right)

5. OUT/ALARM stays at OFF (right)

6.6.6 Normal operation.

In AUTO mode:

- All LEDs are on (L1 green, L2, L3 and L4 yellow)
- When the beam is cut, L3 and L4 will be OFF.

In MANU mode:

- L1 is off, L2, L3 and L4 are yellow.
- When the beam is cut, L3 and L4 will be OFF.

If the cables are not long enough, lengthening the transmitter cable is the preferred option. Lengthening the receiver cable definitely requires shielded (or faradised) cable.

6.7 Connection of auto/manual switch (option).

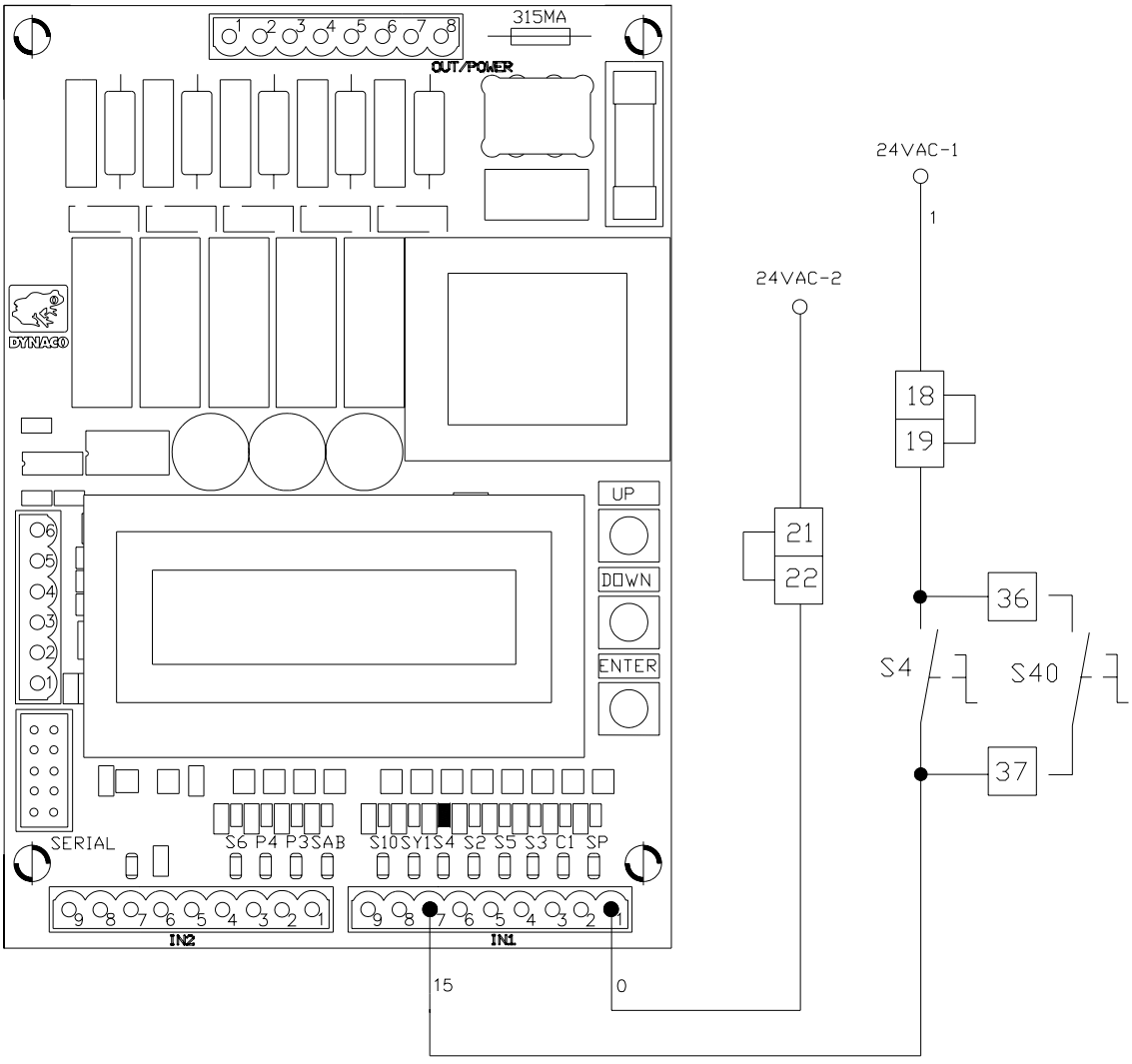


Figure 6-9: Connection auto/man.

6.8 Connecting the magnetic loop (option).

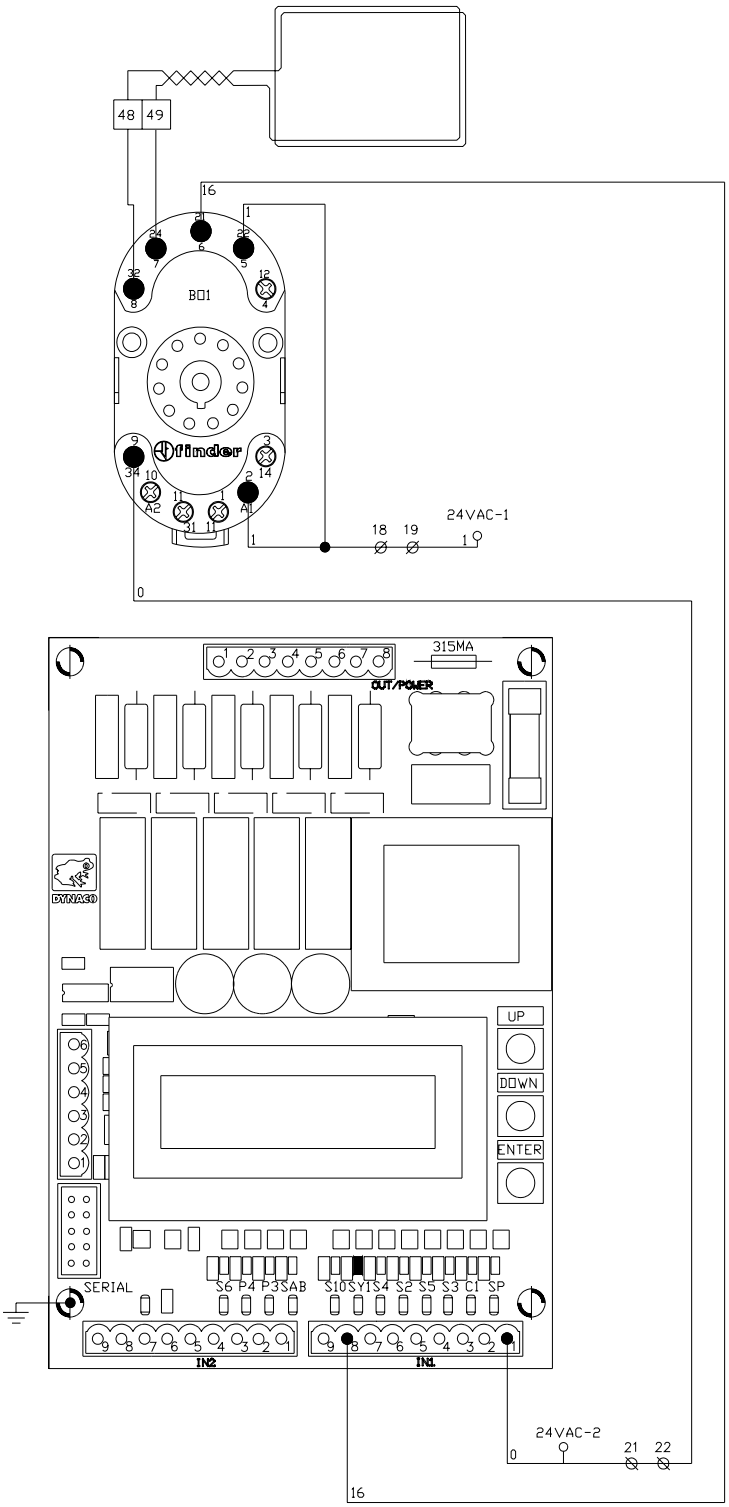


Figure 6-10: Connection of magnetic loop (Option)

6.9 Connection of "door open" signal (Option).

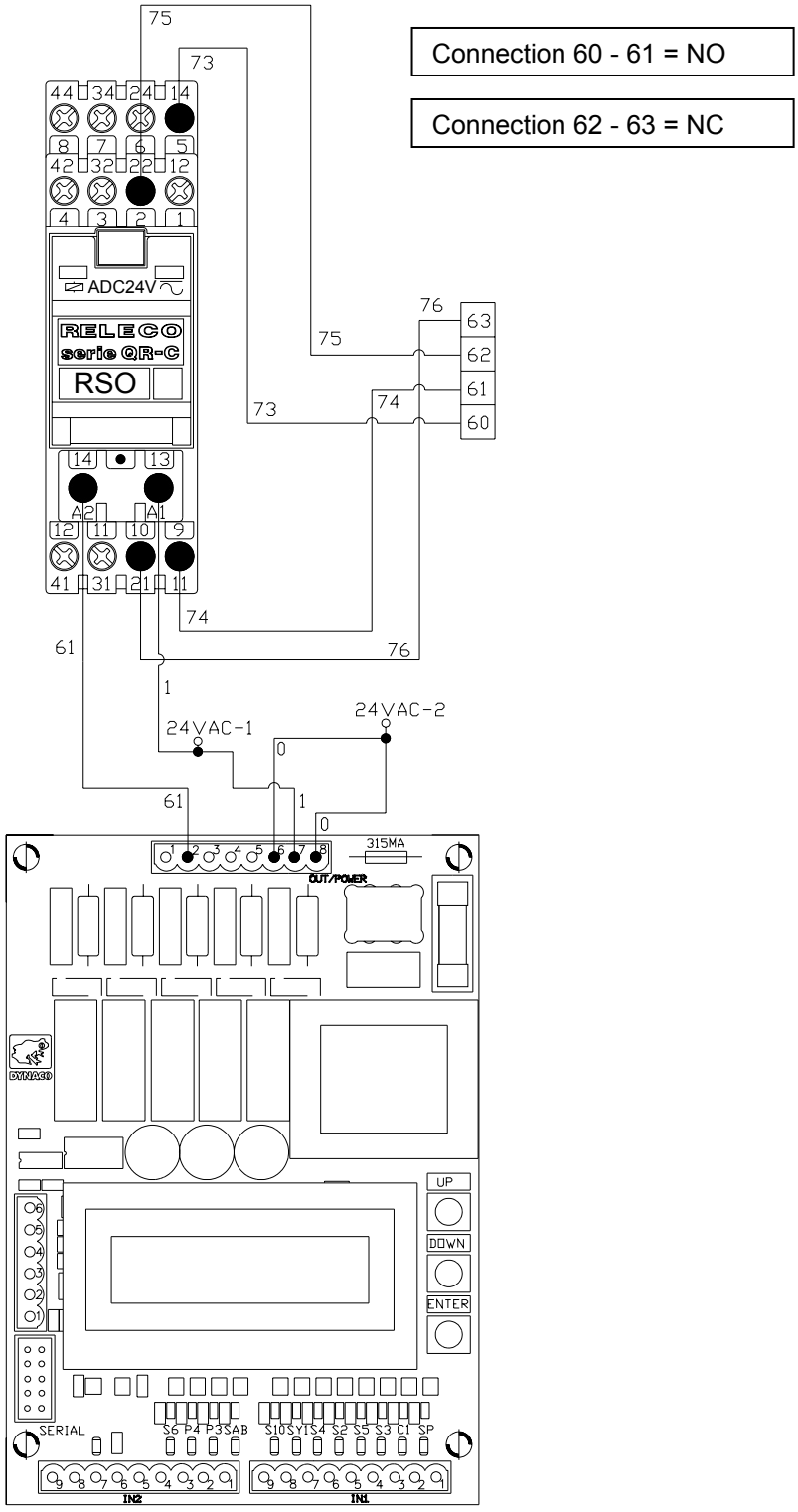


Figure 6-11: Connection "door open" signal (option).

6.10 Connection of "door closed" signal (Option).

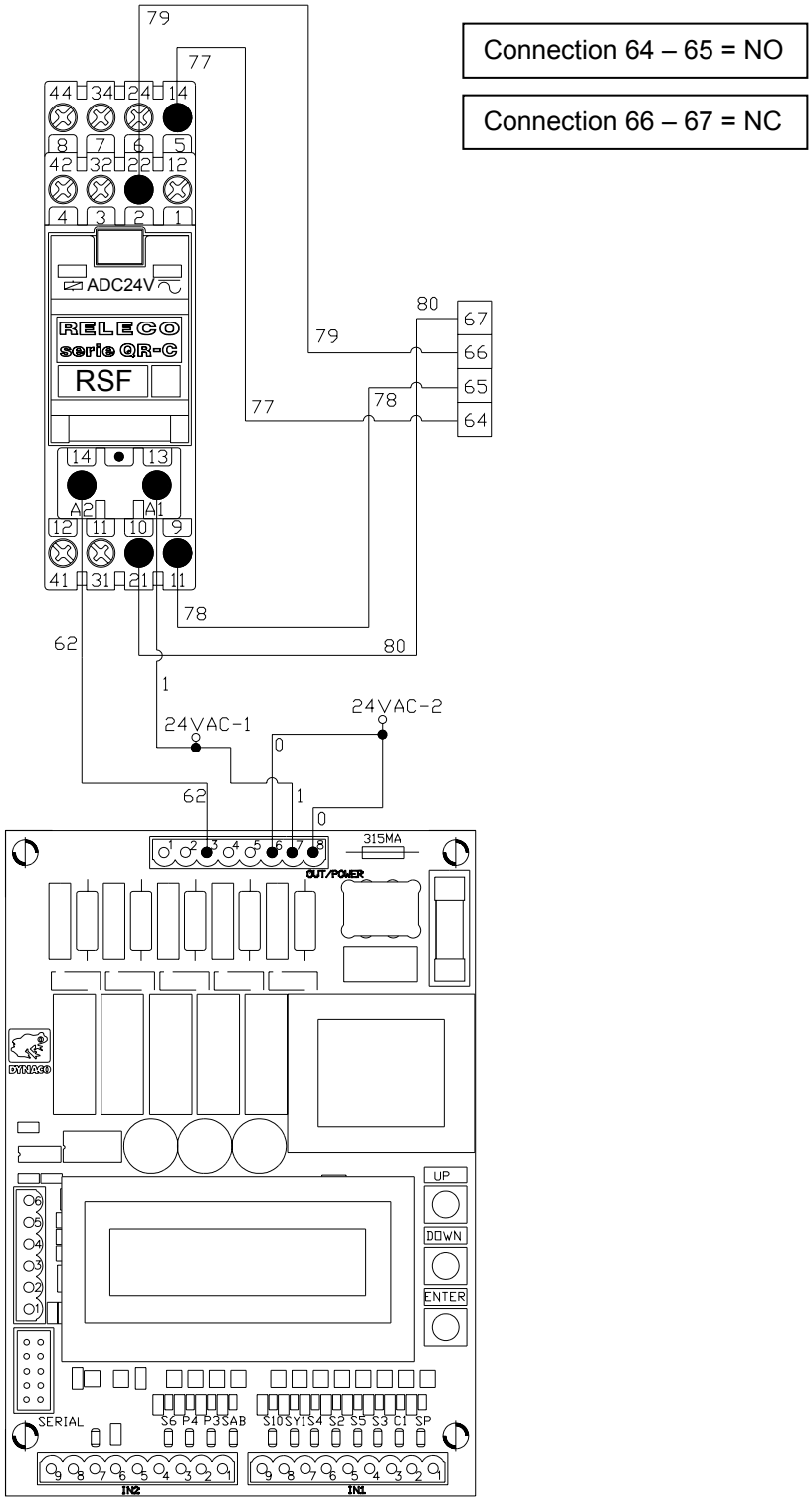


Figure 6-12: Connection "door closed" signal (option).

6.11 Connection of orange flashing light 24V. (Option)

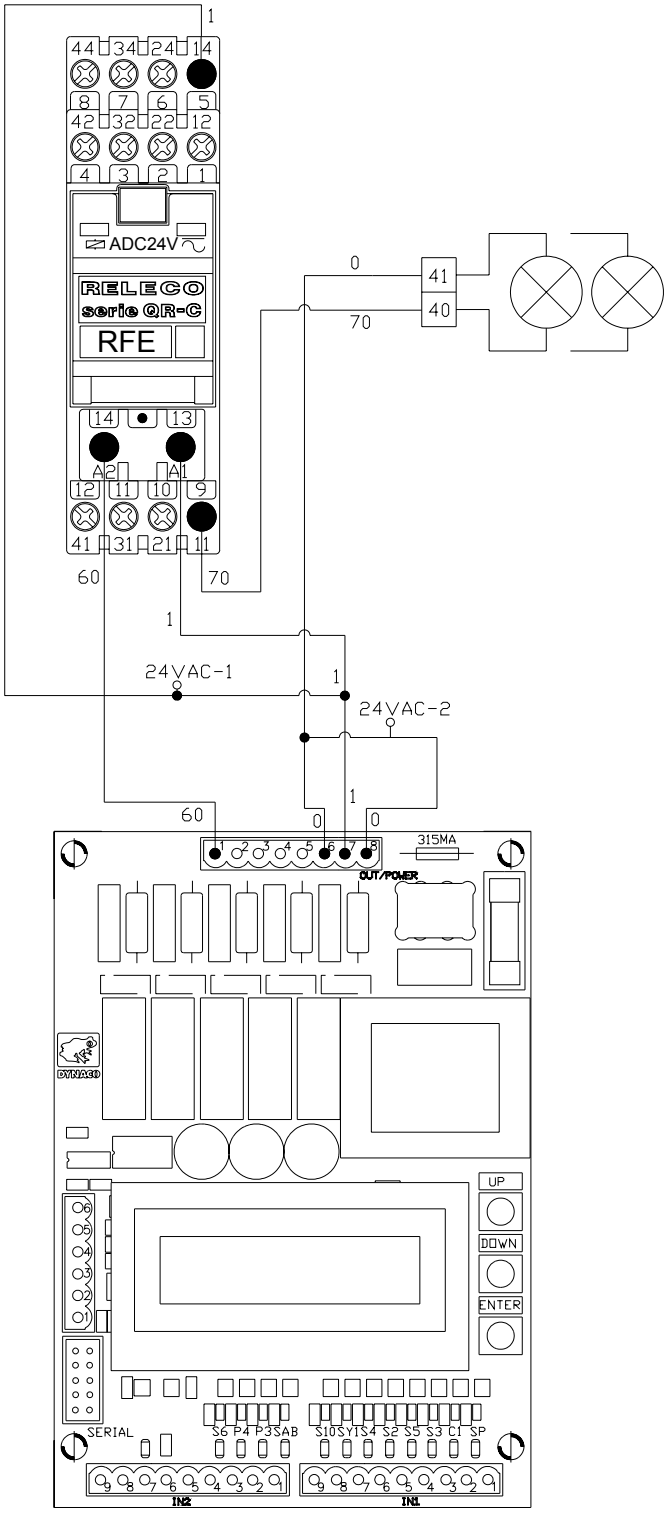


Figure 6-13: Connection of flashing light 24V.

6.12 Connection “door open” push button.

With “reset” after “emergency stop” or power interruption.

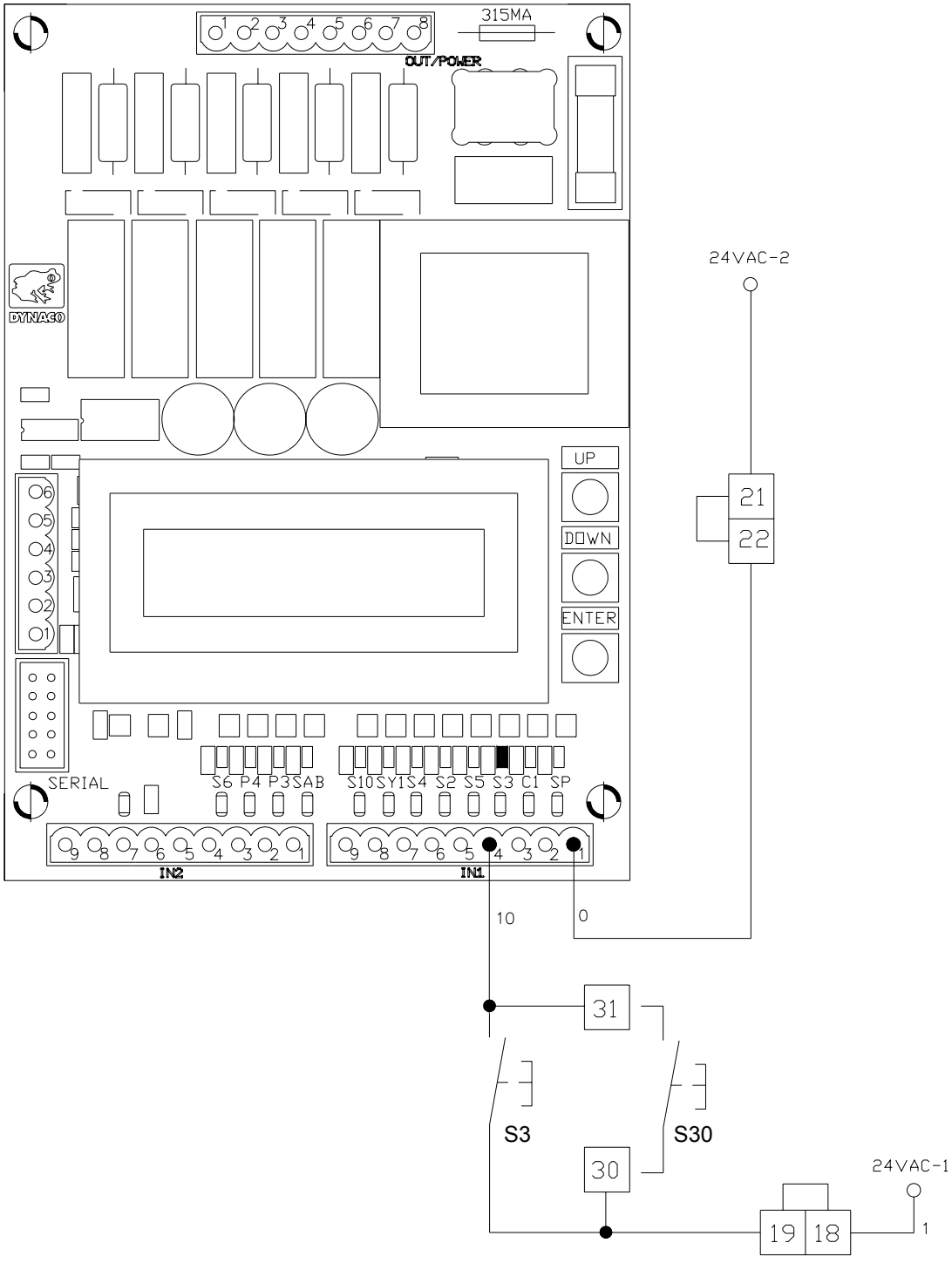


Figure 6-14: Connection “door open” push button.

6.13 Connection of "second opening height" push button (Option).

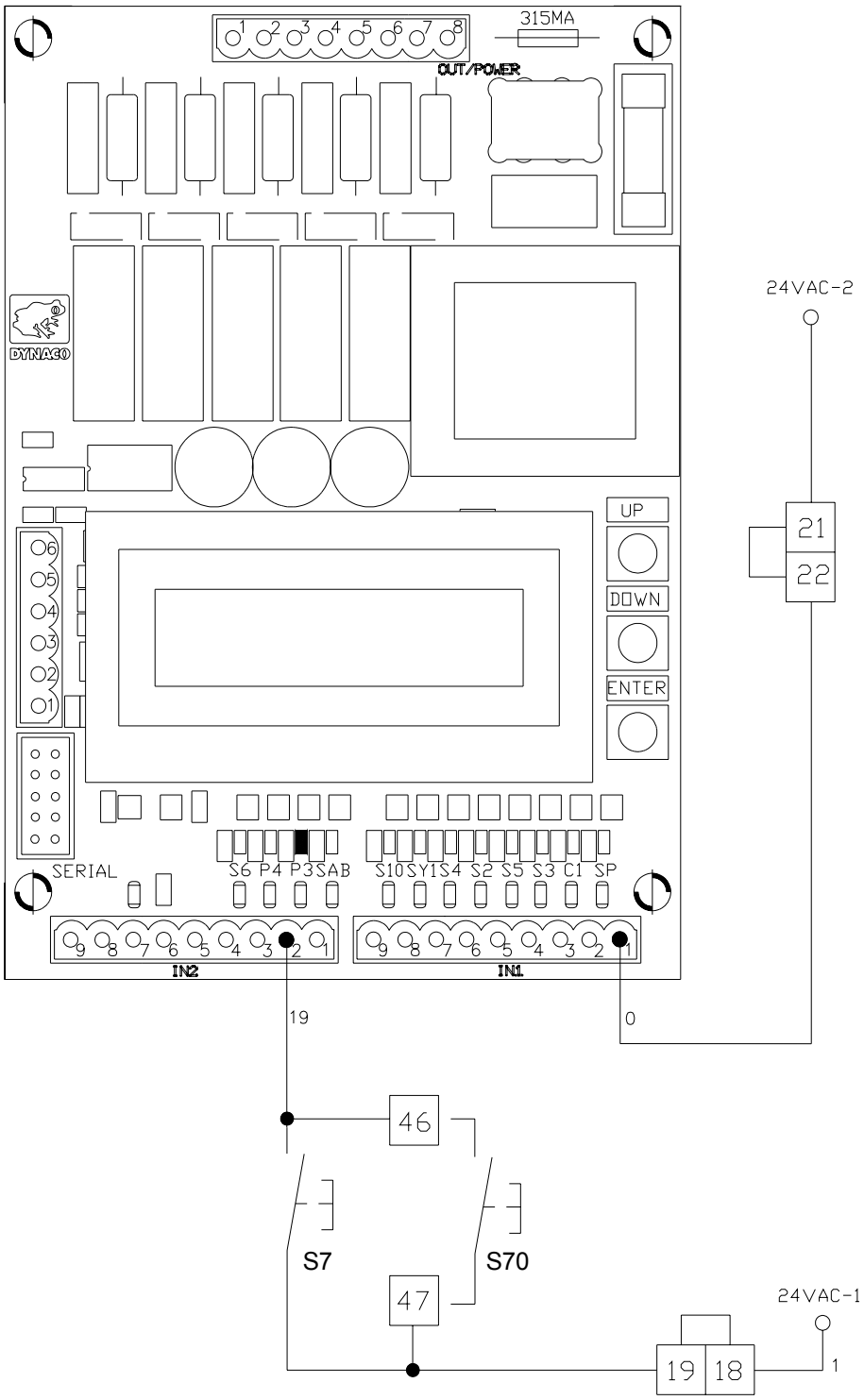


Figure 6-15: Connection "second opening height" push button.

6.14 Connection of "door close" push button (Option).

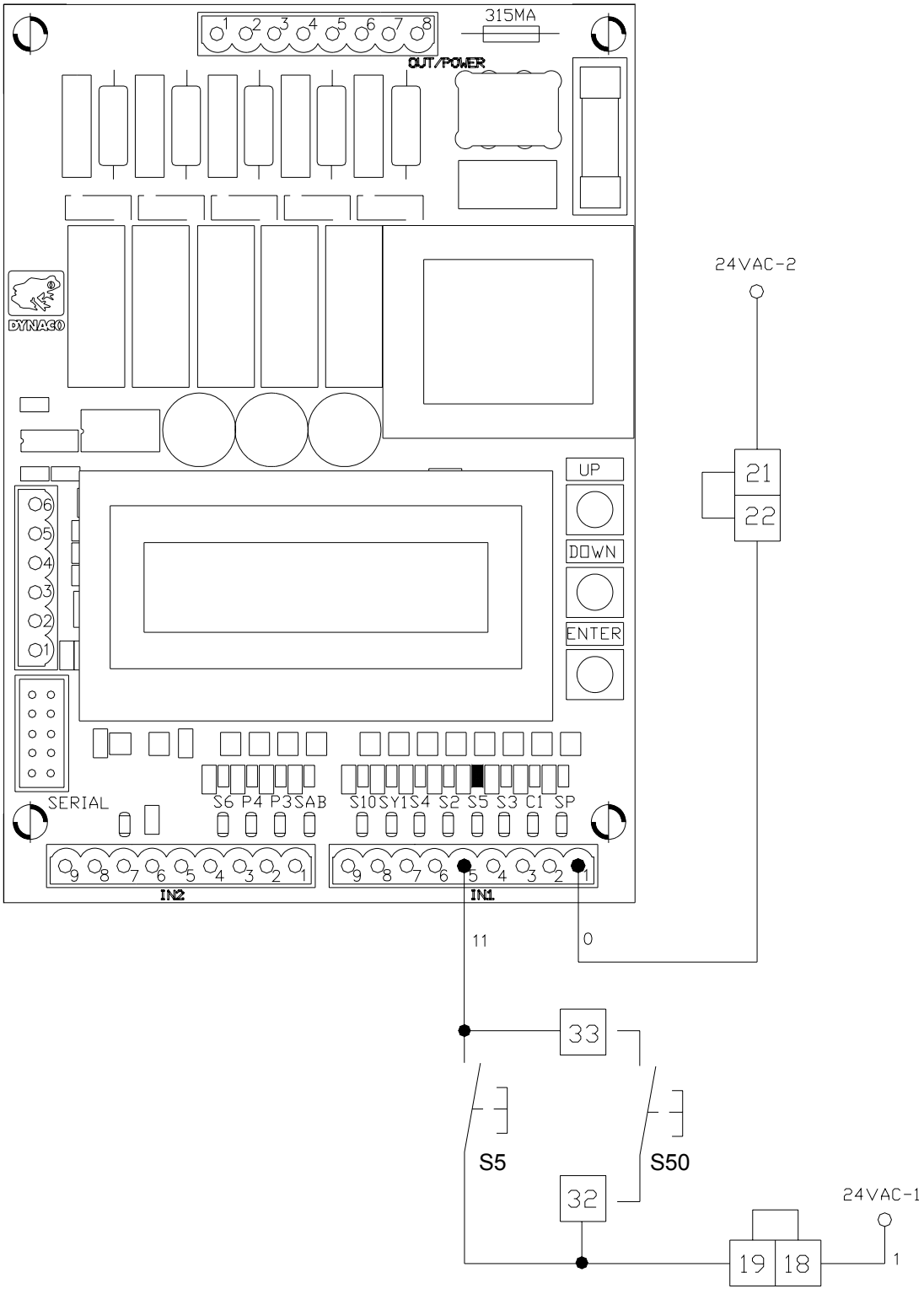


Figure 6-16: Connection "door close" push button.

6.15 Connection of unwinding detector DBD (D311 - D313).

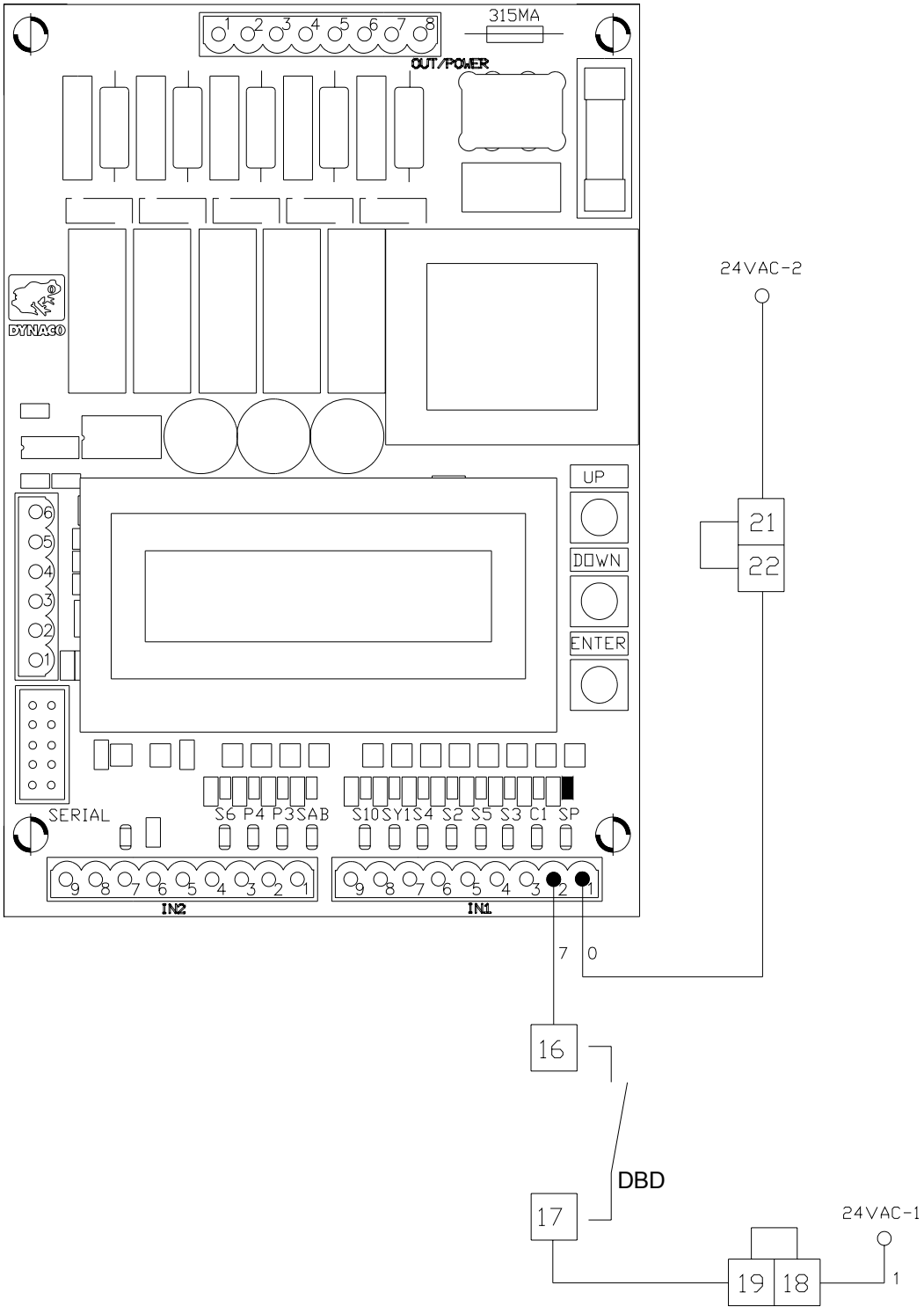


Figure 6-17: Connection of unwinding detector DBD.

6.16 Connection of automatic opening controls (Option).

(Radar, photoelectric cell, existing remote control, etc.)

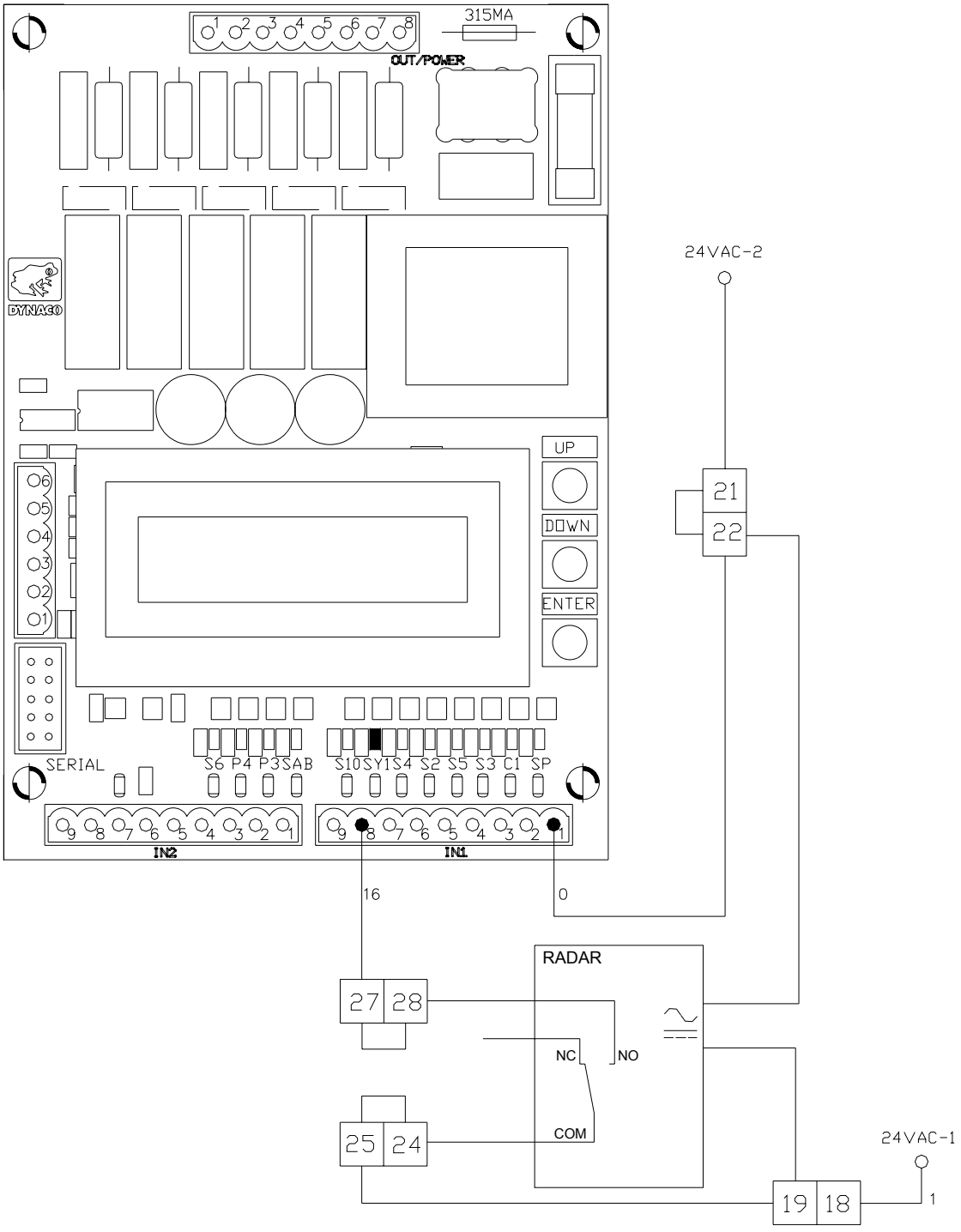


Figure 6-18: Connection of automatic opening controls.

6.17 Connection of emergency 2 in 1 photocell.

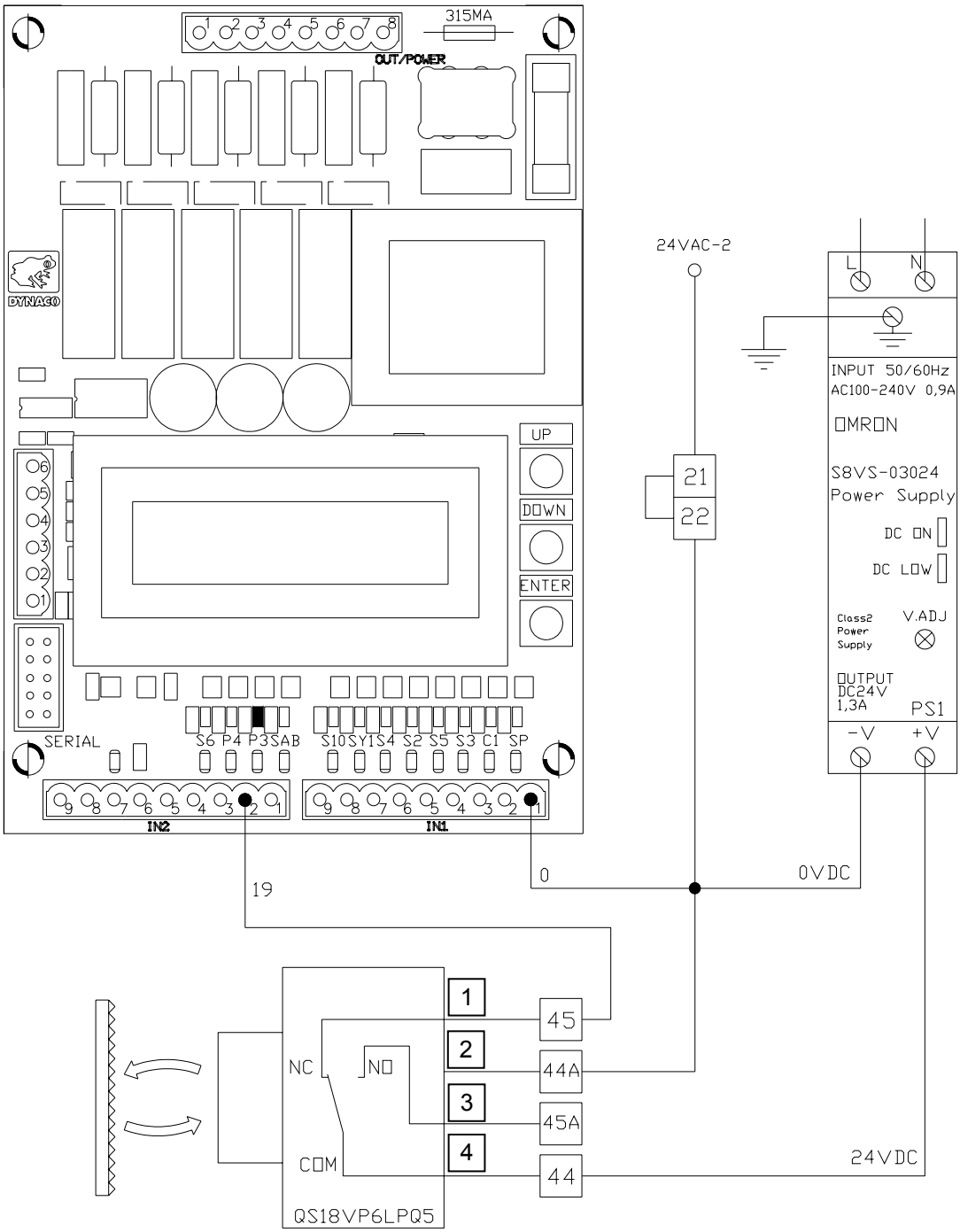


Figure 6-19: Connection emergency 2 in 1 photocell.

1	White	3	Black (not required)
2	Blue	4	Brown

6.18 Connection of heating cables Freezer.

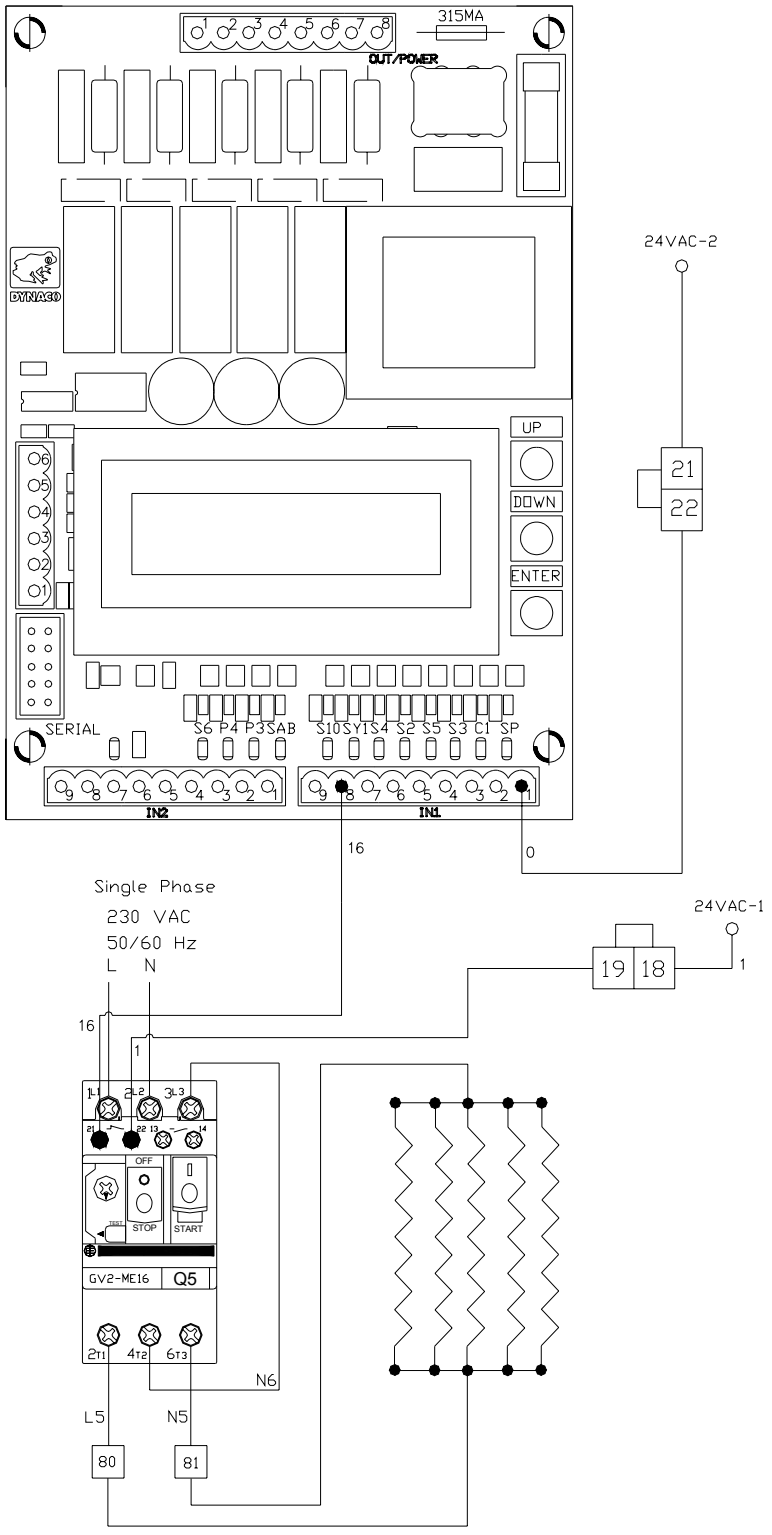


Figure 6-20: Connection of heating cables Freezer.

6.19 Connection Additional EMERGENCY STOP.

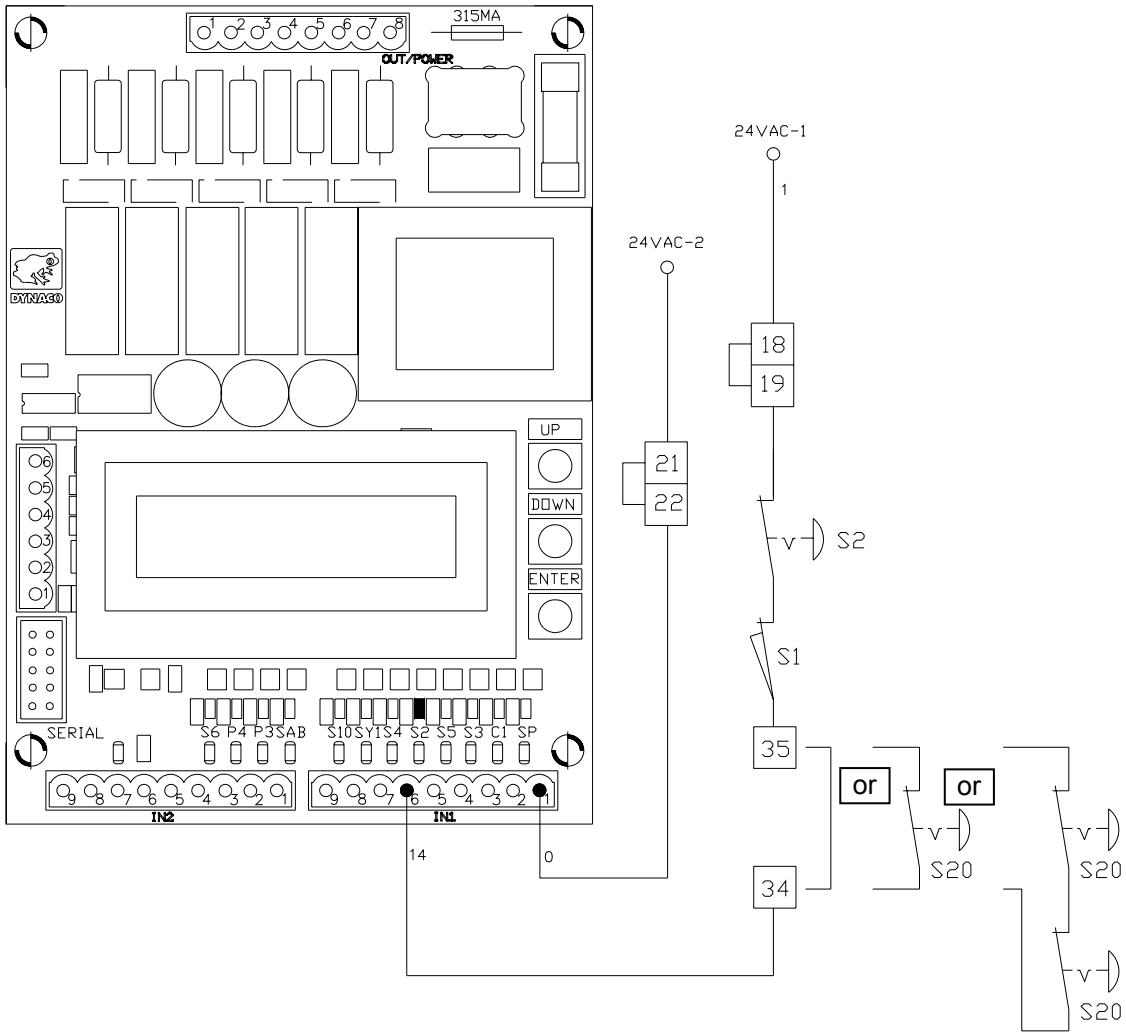


Figure 6-21: Connection Additional EMERGENCY STOP.

6.20 Connection of interlock (option).

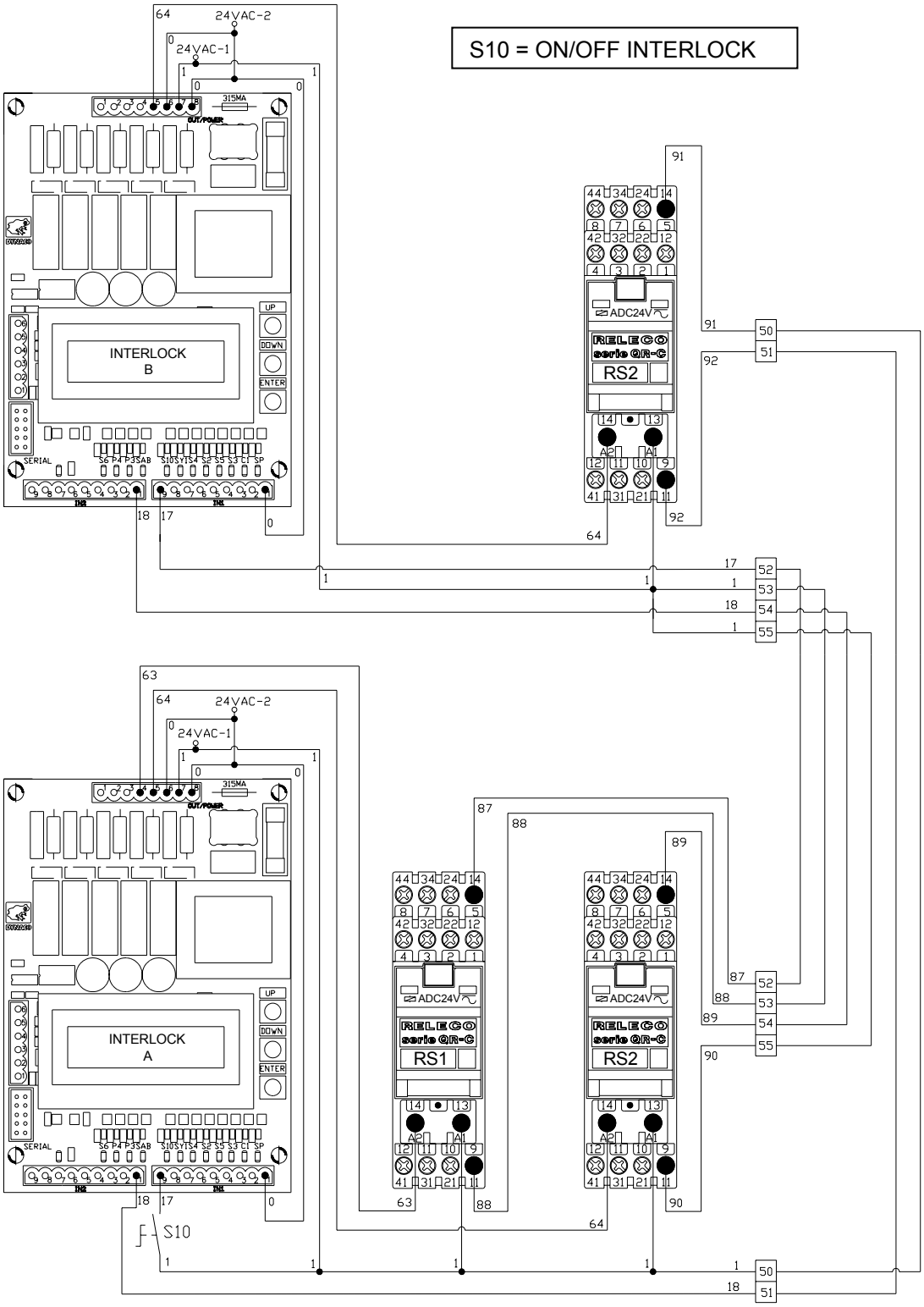


Figure 6-22: Connection of interlock.

6.21 Connection of red and green traffic lights.

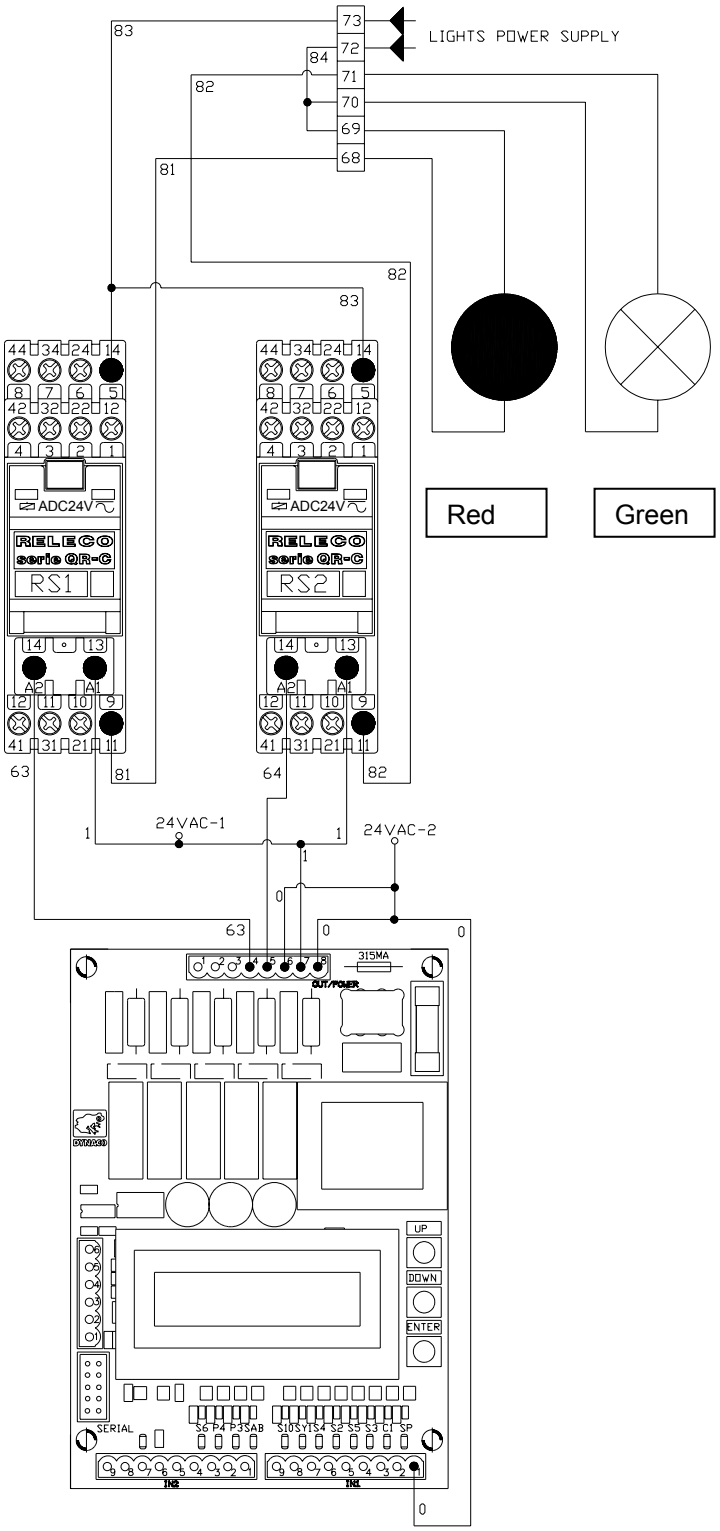


Figure 6-23: Connection of red and green traffic lights.

6.22 Connection of "S6 cleaning" push button (Option).

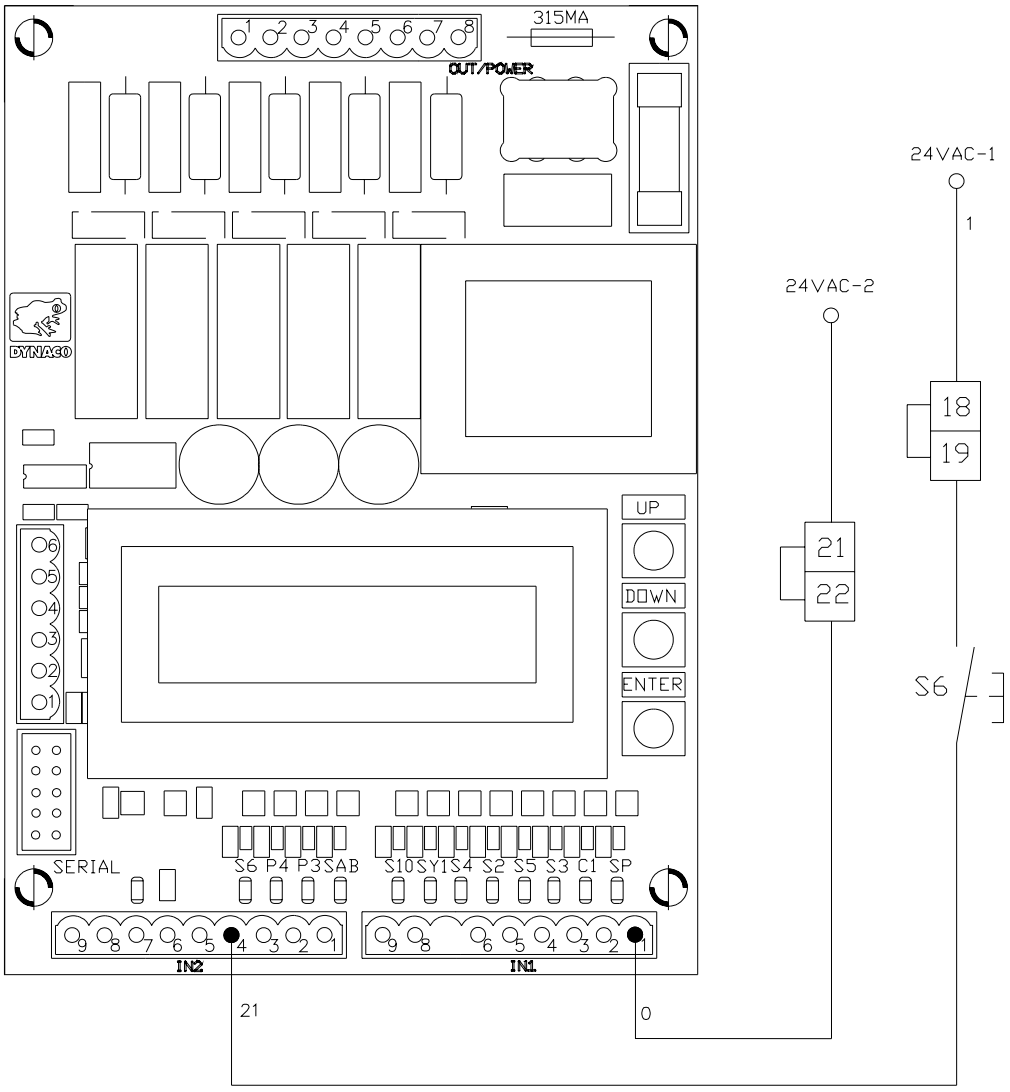


Figure 6-24: Connection "S6 cleaning" push button.

6.23 Connection of permanent opening (option).

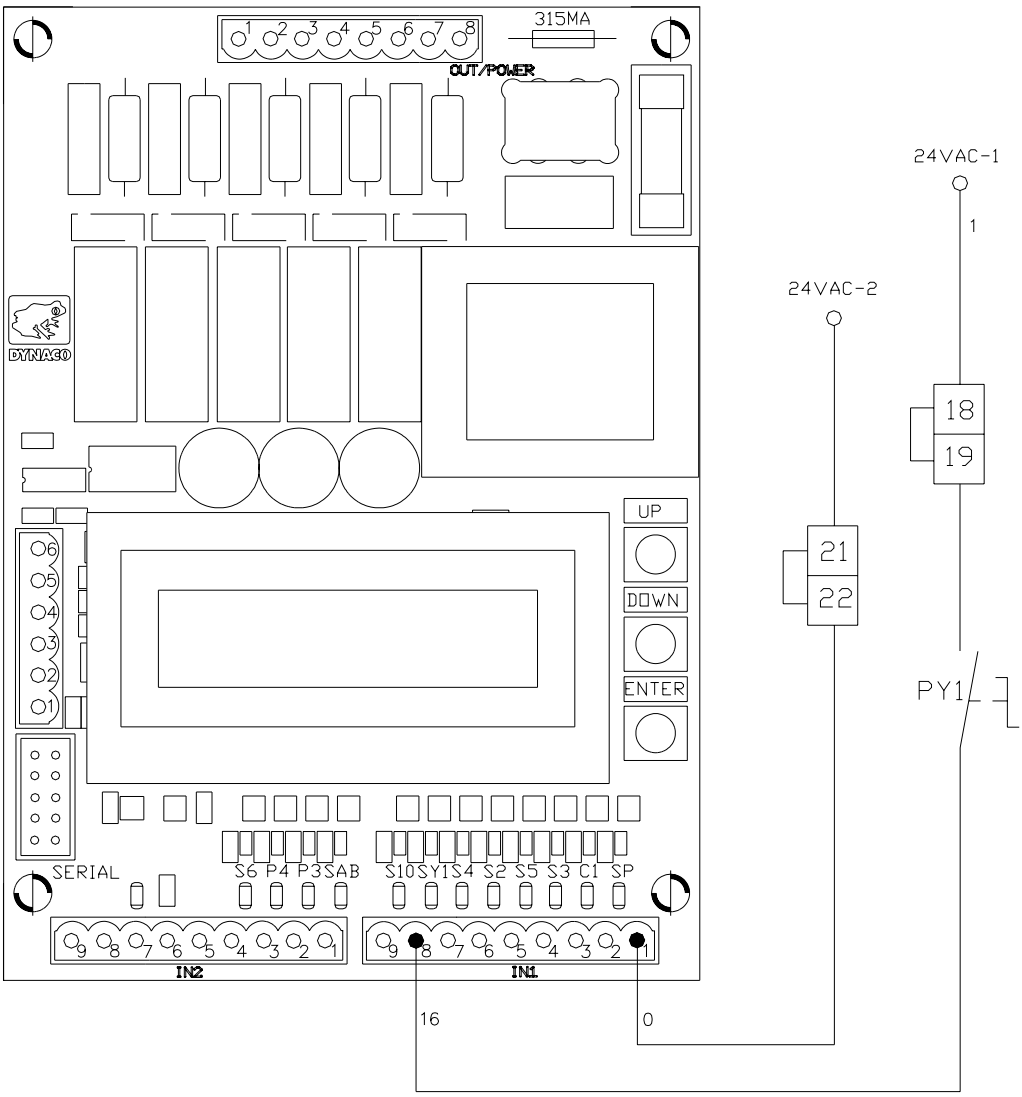
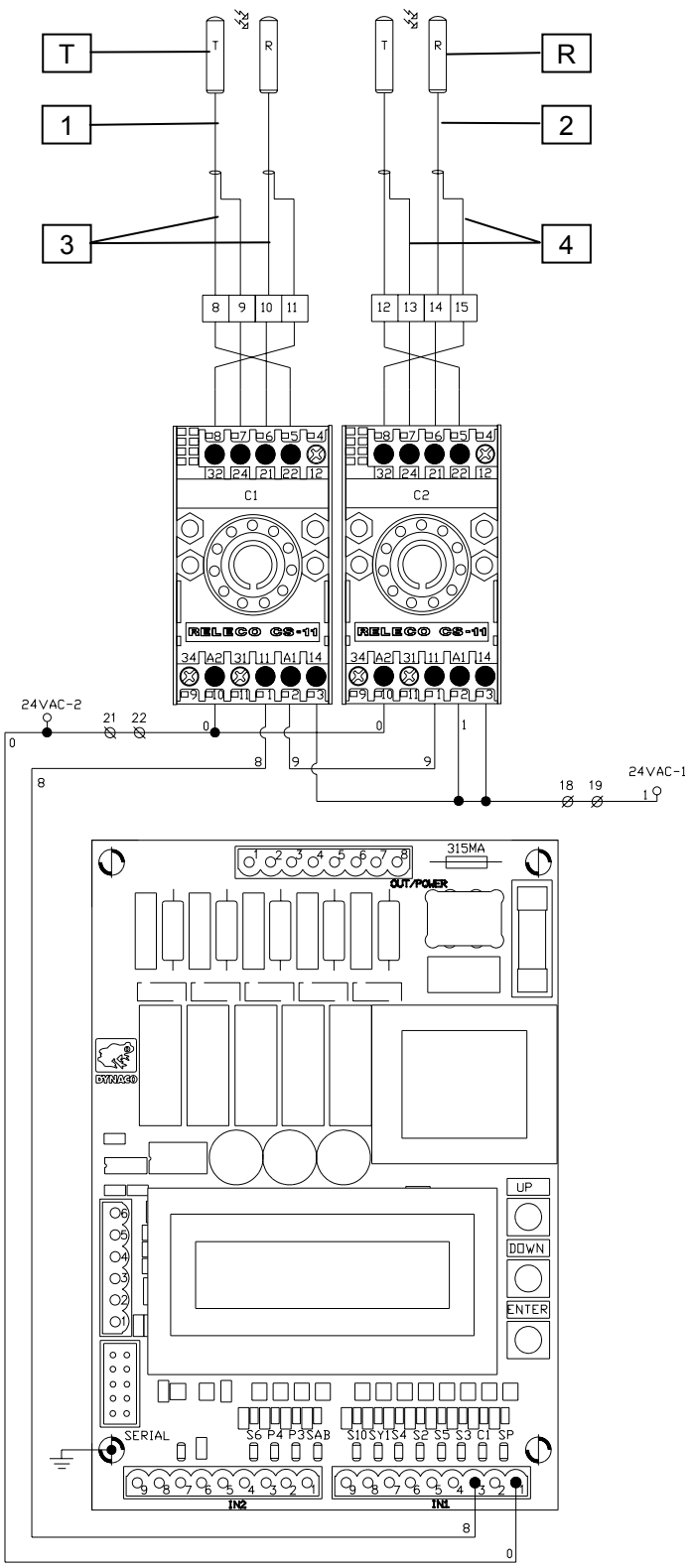


Figure 6-25: Connection of permanent opening.

6.24 Connection of two presence detectors.



1	Grey
2	Black
3	White
4	Shield
T	Transmitter
R	Receiver

Figure 6-26: Connection of two presence detectors..

6.25 Connection photocell as opening command.

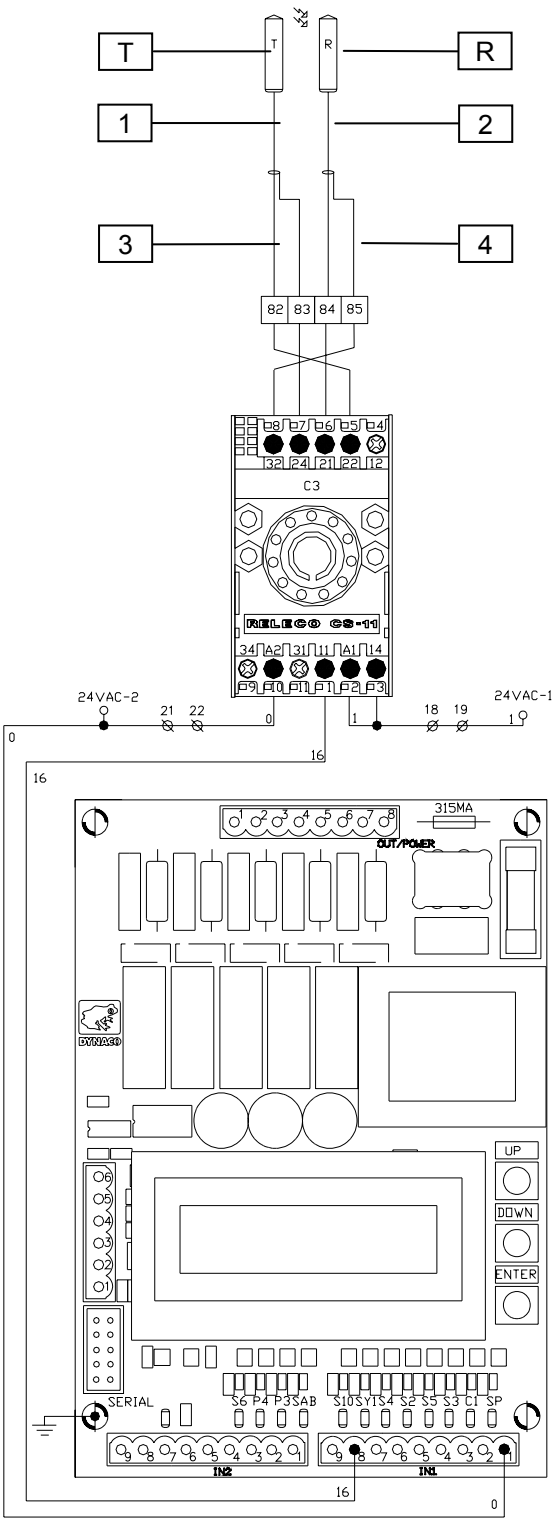


Figure 6-27: Connection photocell as opening commandl.

1	Grey
2	Black
3	White
4	Shield
T	Transmitter
R	Receiver

6.26 Connection of remote control REC1.

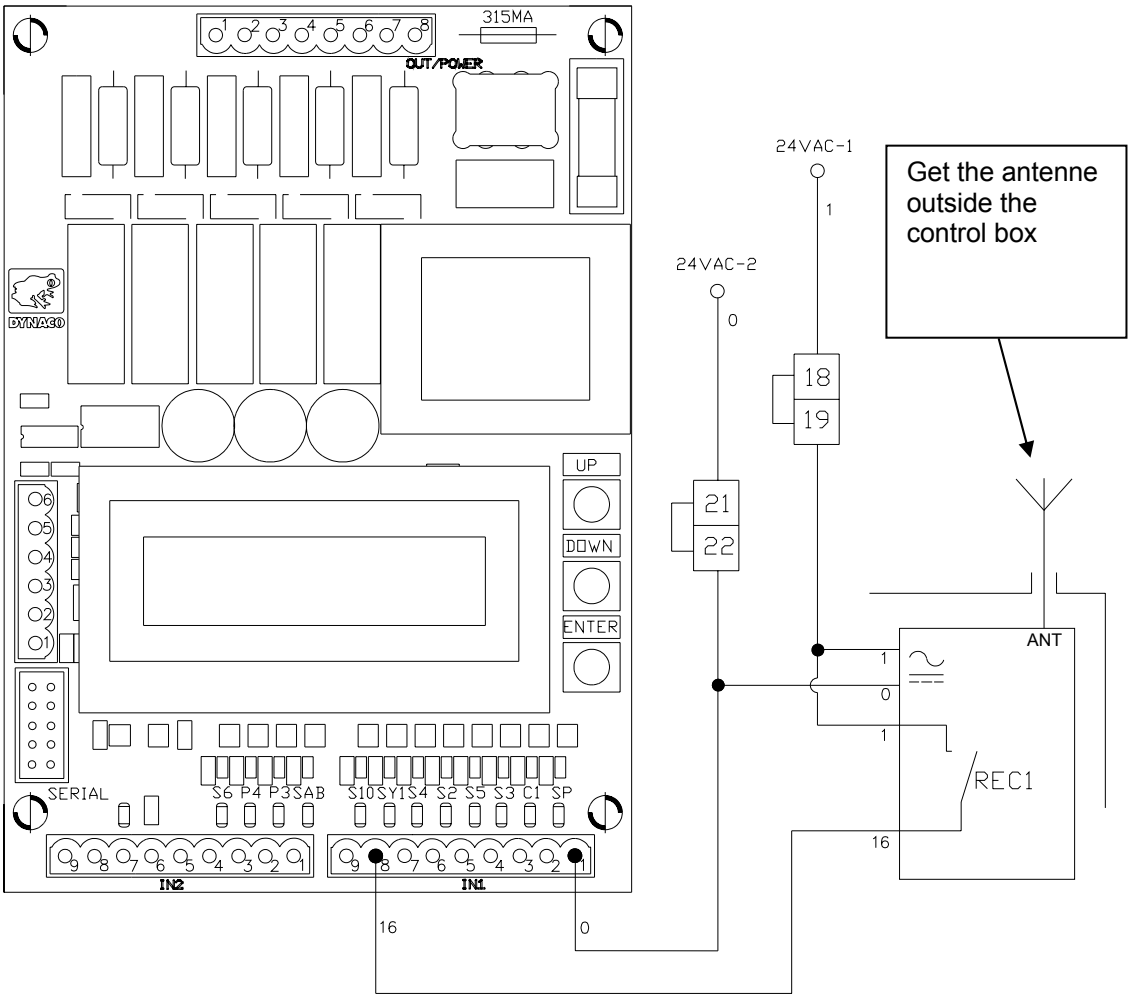


Figure 6-28: Connection of remote control REC1

6.27 Connection of "door out of service RPS" signal.

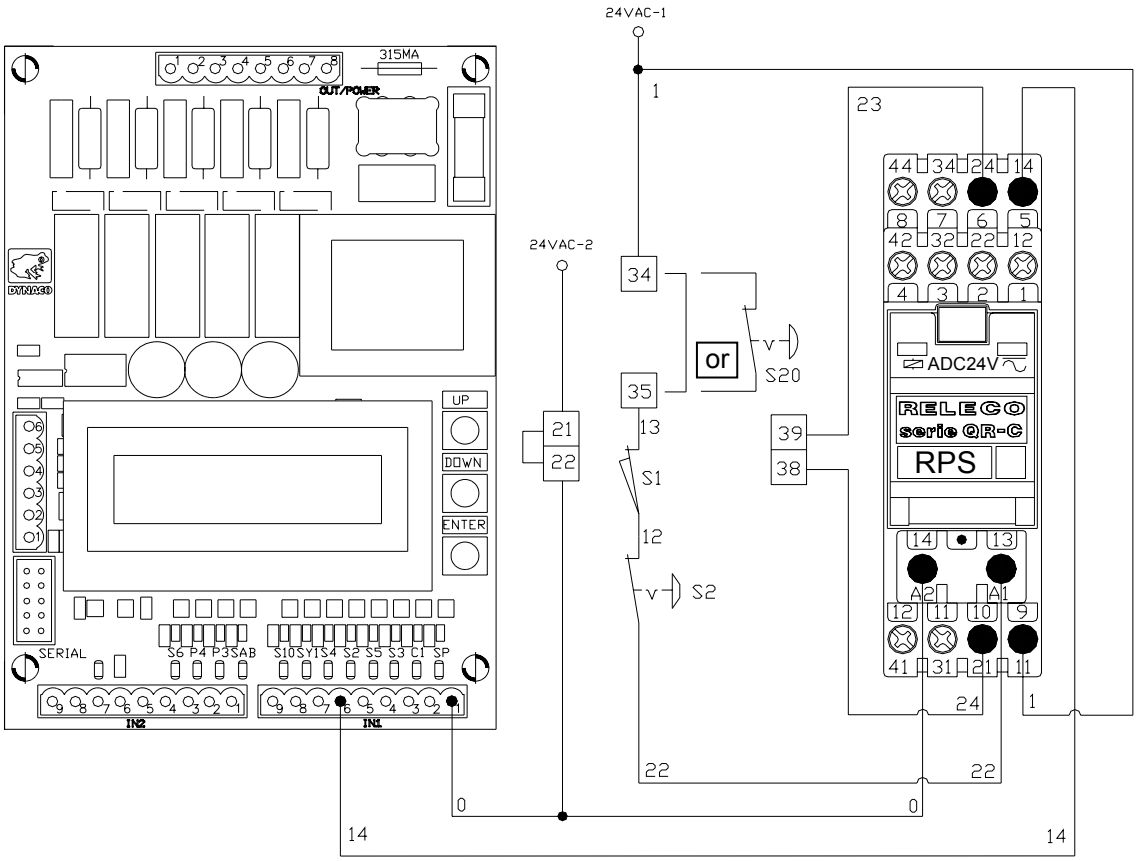


Figure 6-29: Connection "door out of service RPS".

7 Wireless DYNACO detector

7.1 Connection of WDD.

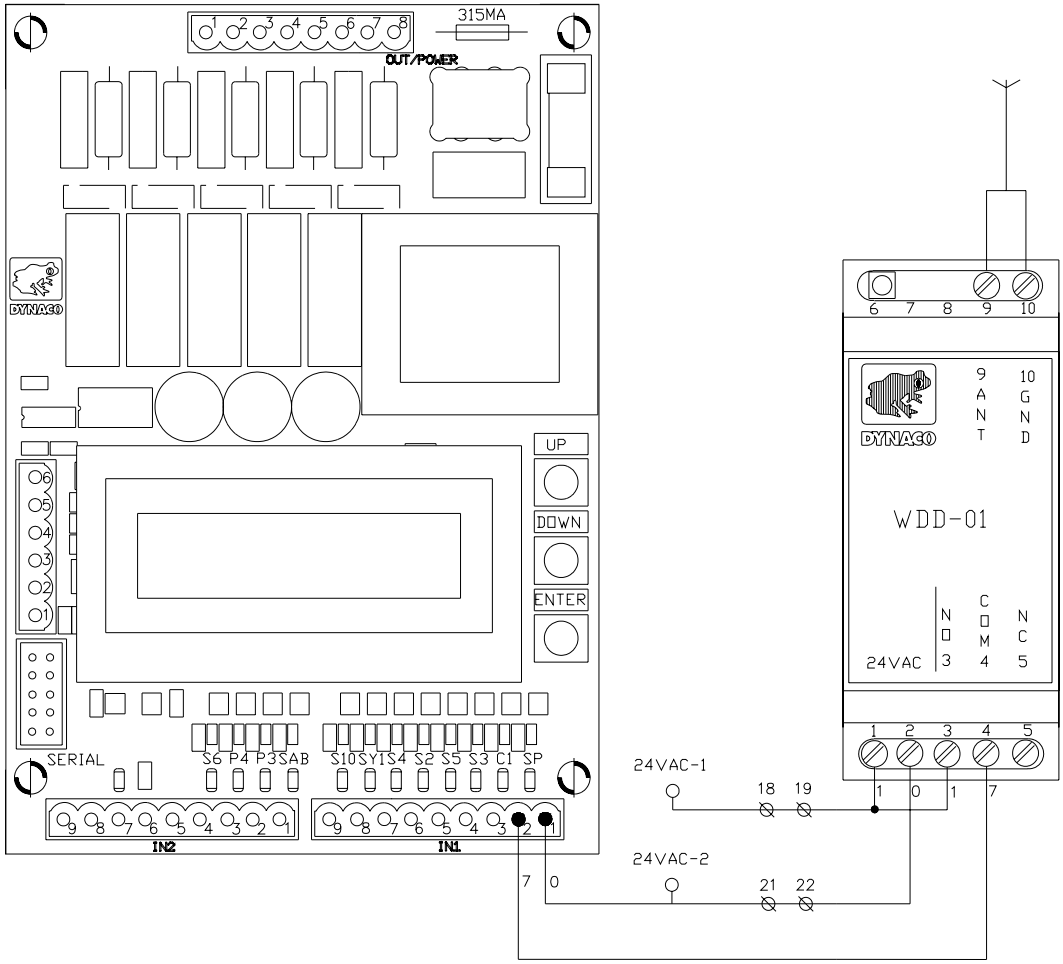


Figure 7-1: Connection of WDD

Antenna:
Pre-cables to terminals 9 & 10, cable passage PG7 at the bottom of the panel.
End is insulated.

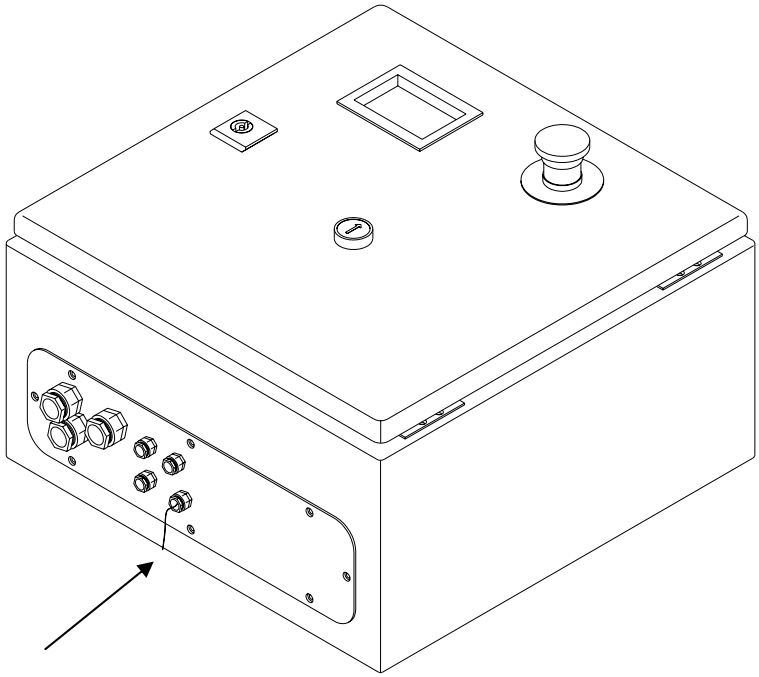


Figure 7-2: Antenna of WDD

7.2 Operation

The wireless DYNACO detector is a wireless system with a sensor. A conductive rubber profile located in the bottom bag and over the whole width of the door is connected to a transmitter. When the sensor hits an obstacle, the transmitter will leave the waiting mode and it will sends a signal to the receiver in the control box, which will immediately reopen the door.

7.3 WDD transmitter description

Power supply:	3.6 V 1.2 Ah lithium battery
Frequency:	868.35 MHz.
Effective radiated ERP power:	-20 dbm or 10 µW.
Transmitting mode:	100% or ASK amplitude modulation
Battery independence:	10 years without transmission or at least 100,000 detections.
Packaging:	Fully coated in UV-hardened resin.
Performance	Transmission speed of 2400 bps NRZ 100 m operating radius in an open space.

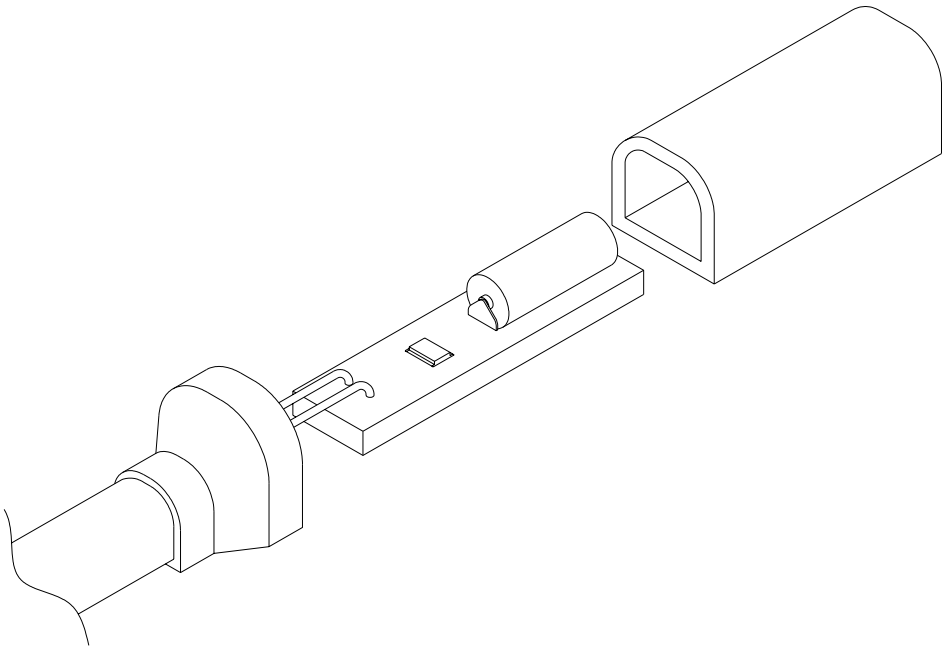


Figure 7-3: WDD transmitter

The transmitter is positioned in a watertight rubber enclosure that forms a whole with the sensor in the sealed bag on the door.

7.4 WDD receiver description

Power supply:	24 V AC and DC
Frequency:	868.35 MHz sensitivity 0.7 µV for 12 dB.
Bandwidth:	<400 kHz.
Receiving mode:	Demodulation of the amplitude superheterodyne receiver with easy frequency change.
Relay output:	NO-NC

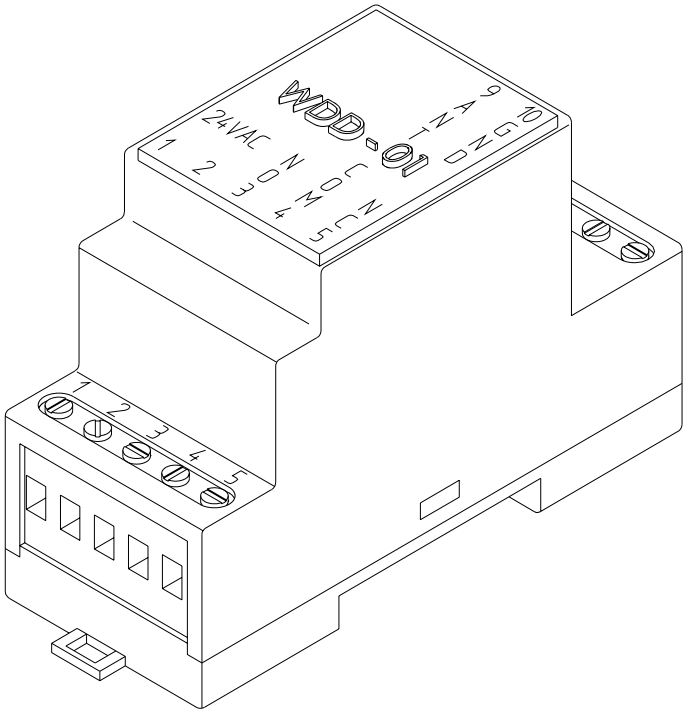


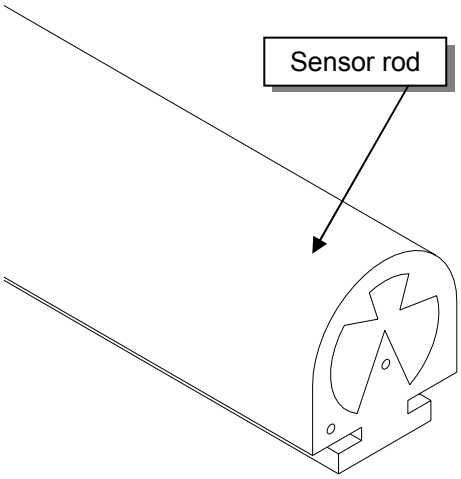
Figure 7-4: WDD receiver

Response time of the whole system:	<500 ms
Full compliance of the system with the following standards:	EN 300-220-1/ETS 300-683

7.5 Adjustment procedure.

Programming:
Apply current to the receiver: the L2 red light will come on.
Press the S1 button at the same time put pressure on the sensor rod: the green light will flash to indicate that the code has been registered correctly.
Release S1: the L1 green light will go off.
The programming is OK.

Test: Press the sensor rod; the green light will come on. OK



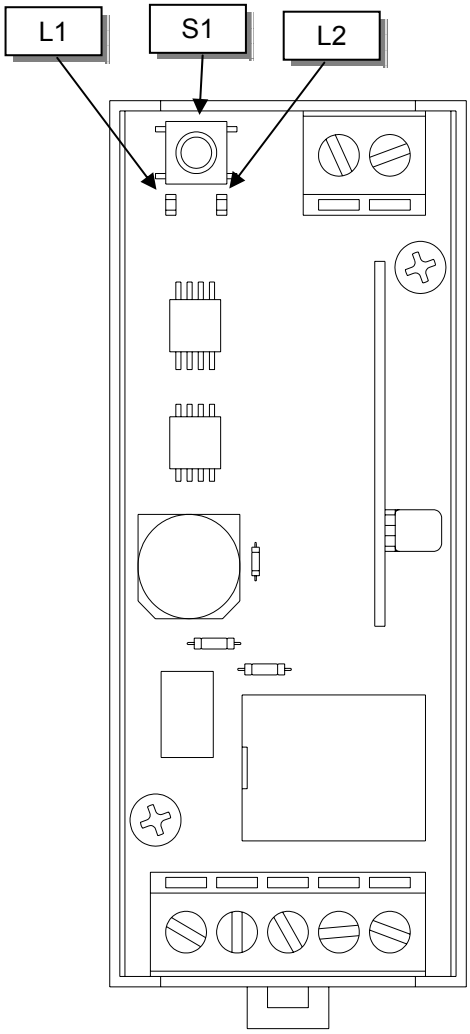


Figure 7-5: Adjustment procedure.

8 UPS (option)

8.1 Connecting the UPS.

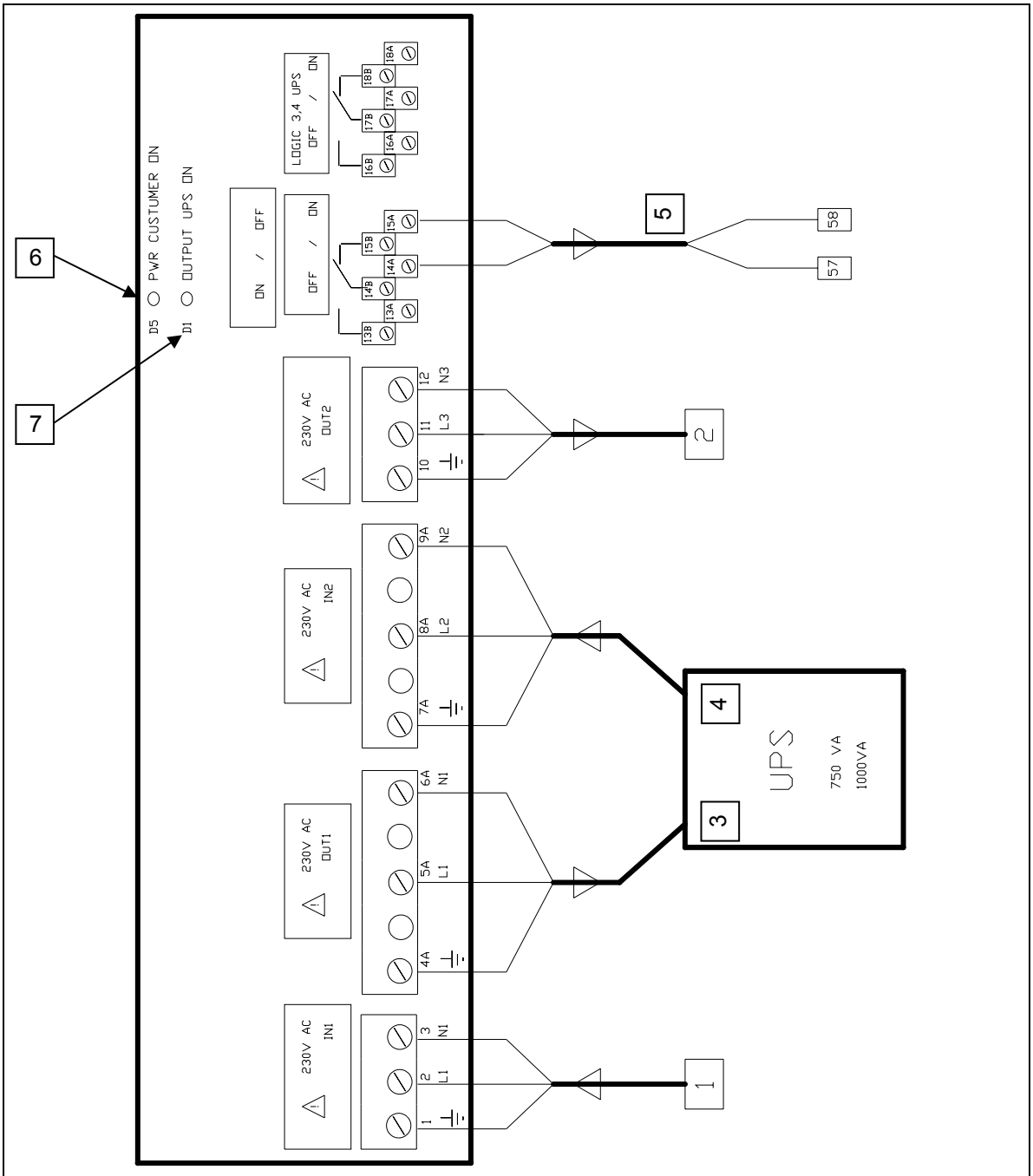


Figure 8-1: Connection of the UPS

1: Power from the mains	4: Emergency power supply from the UPS
2: Power supply to DYNALOGIC control panel	5: Opening command
3: Power supply to the UPS	Δ: Direction of power supply
6: D5 green = mains power supply is available	
7: D1 red = output power supply from the UPS is available	
Both are lit under normal circumstances	

8.2 Connecting the UPS to the control panel.

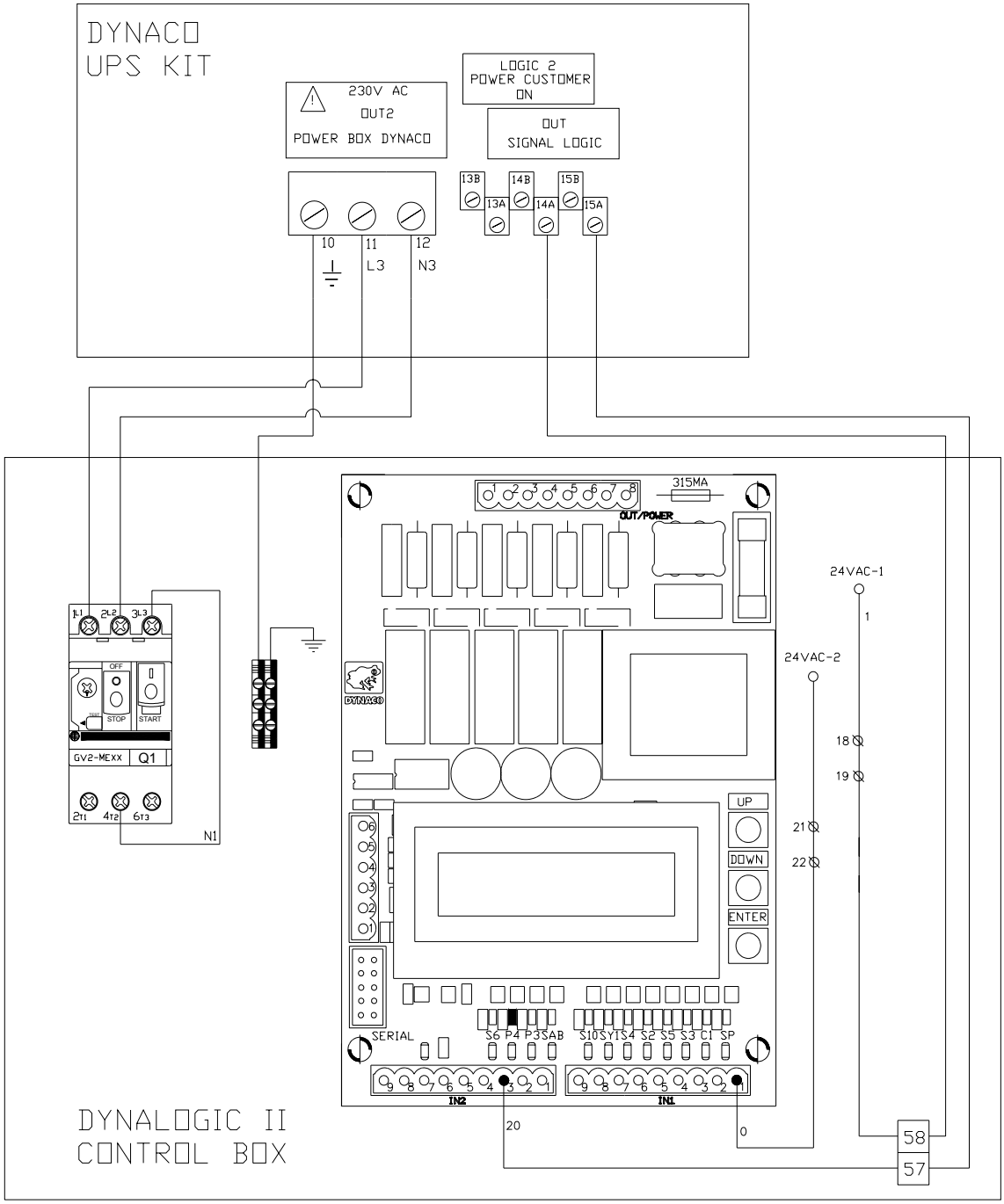


Figure 8-2: Connection of UPS to the control panel

8.3 UPS specifications (recommended by DYNACO)

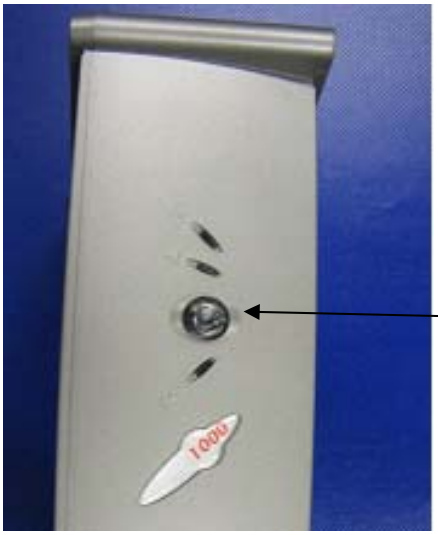
Figure 8-3: UPS

This document provides an overview of the cabling for the UPS option with “UPS kit option” as the external interface for the DYNALOGIC control panels. It also contains general information concerning the use of the “UPS kit option” and the UPS itself.

	Before you carry out any work on the “UPS kit box” or the power supply of the DYNACO control panel, you must switch off the mains power supply and the output power supply of the UPS.

Cabling diagram:	A cabling diagram showing the matching colours of the terminals, is located at the back of the “UPS Kit Box” cover.
Fuse “UPS Kit Box”:	- Function: protection of the internal logic. - Type: Miniature glass fuse, 250V, 100mA, 20mmx5mm
Housing dimensions “UPS Kit Box”:	External dimensions: 130 x 130 x 99 mm
Terms of supply:	To be provided by the customer: The mains power supply cable (230V AC CLIENT) The power supply cable to the DYNALOGIC control panel (230V AC POWER BOX DYNACO)

8.4 Switching the UPS on/off.



Push button on/off. Push and hold the button for 2 seconds.

Figure 8-4: Switching the UPS on/off

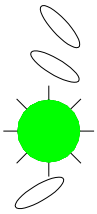
8.5 Main fuse.

Replaceable main fuse (10 A)

Figure 8-5: UPS replaceable main fuse

8.6 Diagnosis UPS.

<table>
<tr>
<td> 
OFF
OFF
Bright green
Dark green

Correct net mode.
Net present, UPS ON</td>
<td> 
OFF
OFF
Bright green, flashing
OFF

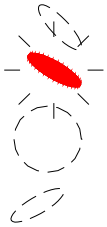
Correct UPS mode.
Net fail, UPS ON
<u>Remark:</u> if net tension is available, check the UPS fuse.</td>
</tr>
<tr>
<td> 
RED

Sound signal every 30 seconds.

Overload at UPS output</td>
<td> 
RED

Sound signal every 30 seconds.

UPS failure</td>
</tr>
<tr>
<td> 
OFF
OFF
OFF
Dark green

Net present, UPS OFF.</td>
<td> 
RED, flashing

Battery low</td>
</tr>
<tr>
<td> 
OFF
OFF
OFF
OFF

Net absent, UPS OFF.
<u>Remark:</u> if net tension is available, check UPS fuse.</td>
<td></td>
</tr>
</table>

8.7 Replacement and protection of the batteries.

	**Danger of electrocution!** **The elements of the batteries may only be replaced by authorised personnel.**

To replace the batteries the UPS must be switched off and the mains cable must be disconnected. The waste from the battery must be disposed of in accordance with the applicable regulations.

	**If the + (red) and - (black) battery poles are reversed during replacement of the elements of the battery, the device will be damaged.**

Charging the batteries requires approximately 3 to 8 hours. It is recommended that the UPS be charged for 8 hours before first use and that the UPS be completely discharged and recharged once every 6 months to ensure proper operation and a long lifespan.

The average lifespan of the batteries is 4 years and depends on the number of charge cycles and the temperature.

	Every 10°C above 25°C reduces the lifespan of the batteries by 50%.

Reminder: operating temperature: 0 to 35°C

This means that the batteries should be replaced once every 2 years as part of the preventive maintenance.

9 Commissioning

Only DYNACO qualified personnel are authorised to carry out this work.

9.1 Control unit

The control unit manages all operating parameters of the door. The absolute encoder at the bottom of the motor allows the end limits of the door to be adjusted.

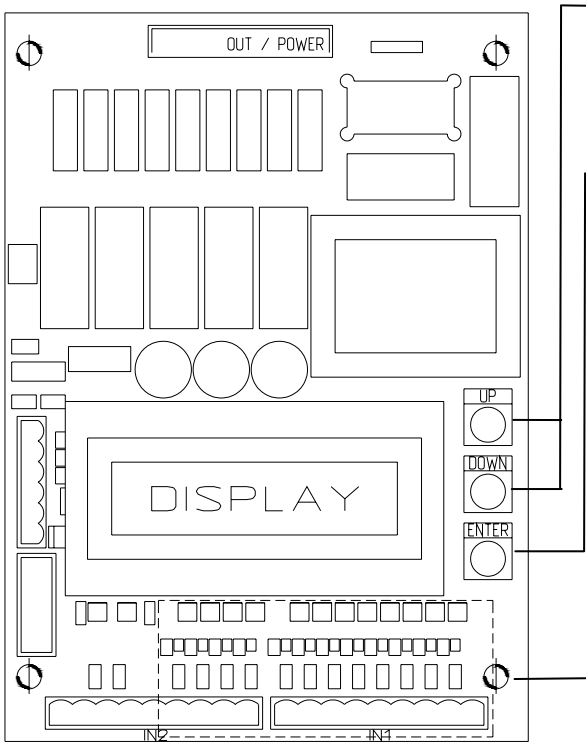


Figure 9-1: Control unit

You can view and change the parameters by using the **UP** and **DOWN** keys.

You can display the value of a parameter and you can confirm this value after changing it by pressing the **ENTER** key.

The **DISPLAY** will show the parameters and the values of the parameters as well as the current output condition and the error codes.

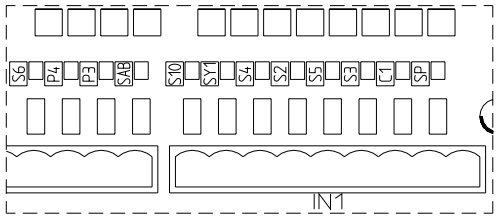


Figure 9-2: Control unit detail

When the contact of an input is closed, the matching LED will be lit.

SP	WDD - DBD	SY1	Opening commant (option).
C1	Photocell.	S10	Interlock switch on/off.
S3	Opening command.	SAB	Interlock status.
S5	Closing command.	P3	Photocell emergency exit / second opening height.
S2	Emergency stop	P4	Opening when there is a power failure.

S4	Auto/manual switch.	S6	Button to clean the drum.

9.2 Motor rotation direction

Only DYNACO qualified personnel is authorised to carry out this work.

A. Allow the door to manually close approximately 0.7 m by using the crank to be found in the control box. Put the crank back in its holder afterwards.

B. **Press the emergency stop ,** switch on the power supply to the control box. Activate the magneto-thermal main fuse of the control box.

C. Press the **ENTER** button that can be found on the control unit in the control box and, next, display the **A007** parameter on the screen using the **UP** or **DOWN** keys and again press **ENTER**. An asterisk (*) should now be displayed next to the numeric value.

D. Press the **UP** key.

E. When the door opens, cabling is correct.

F. Follow this procedure if door closes:

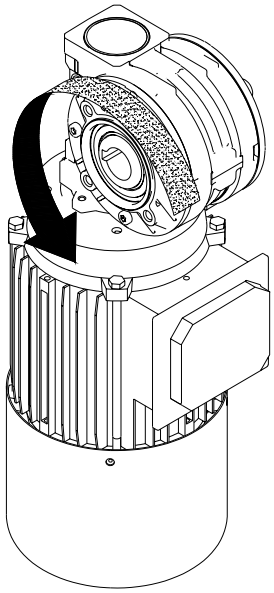


Figure 9-3: Motor rotation direction

1. Press the **ENTER** key.
2. The asterisk will disappear from the screen.
3. Press the magneto-thermal isolation switch (red button).
4. Wait 15 minutes. This is the time needed to discharge the capacitors of the frequency inverter.
5. Switch the two current cables of the motor on the terminals of the frequency inverter (for example, switch the brown wire with the blue wire).
6. Start the procedure again from point B.
7. Adapt the electrical drawing according connecting.

G. Press **ENTER**.

H. Wait 3 seconds to exit the programming mode and to return to normal mode.

9.3 Type and position of the fuses at the control box.

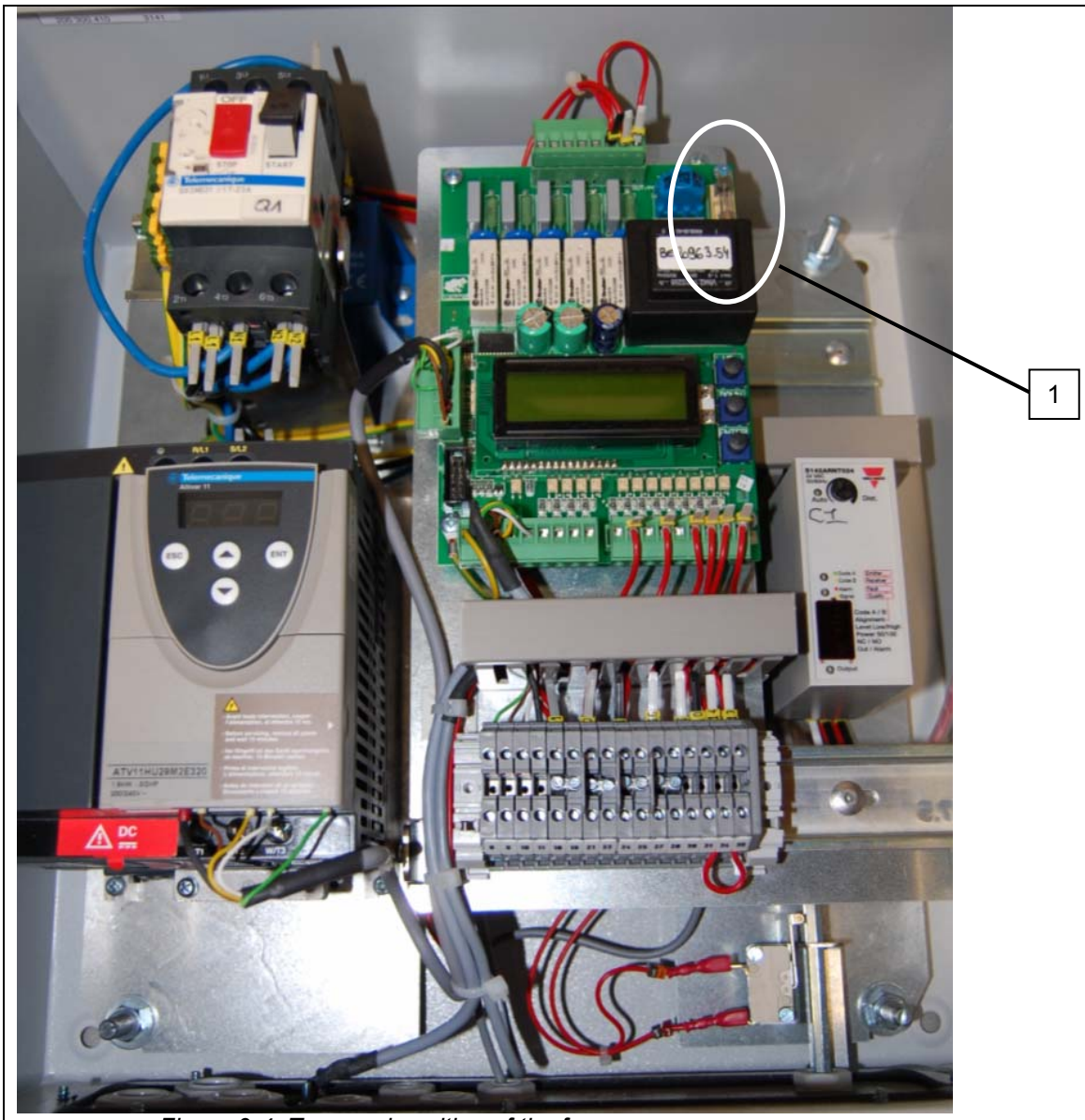
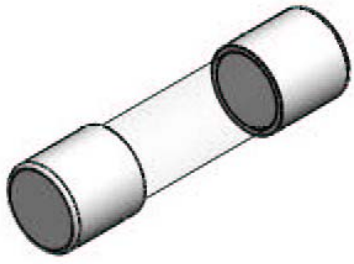


Figure 9-4: Type and position of the fuses.



1: 315 mA

9.4 Adjusting the door

Accurately follow the order of the procedures given below to adjust the different door functions.

9.4.1 Language selection – A001

Step	Action	Display	Remarks
1.	Enter	Axxx	Goes to the function that gives access to different codes.
2.	UP or DOWN	A001	Parameter that enables selecting the working language.
3.	Enter	A001……*	An asterisk means that the parameter can be changed.
4.	UP or DOWN	A001……*	Select the working language: French/English/Dutch/German.
5.	Enter	A001……	Confirm the language selection. The asterisk will no longer be displayed.
6.	Wait 3 seconds to exit the programming mode and to return to normal mode or to implement other settings.		

9.4.2 Setting the "door closed" limit switch – A006

Step	Action	Display	Remarks
1.	Enter	Axxx	Goes to the function that gives access to different codes.
2.	UP or DOWN	A006	You can set the limit switch to door closed (SF) with this parameter.
3.	Enter	A006xxx *	The asterisk means that the parameter can be changed. A digit will be displayed between the code and the asterisk. This specifies the current position of the door curtain.
4.	UP or DOWN	A006xxx *	UP = move the door curtain up. DOWN = move the door curtain down.
5.	Enter	A006xxx	Validate when the door curtain is in the correct position.
6.	Wait 3 seconds to exit the programming mode and to return to normal mode or to implement other settings.		

9.4.3 Setting the "door open" limit switch – A005

Step	Action	Display	Remark
1.	Enter	Axxx	Goes to the function that gives access to different codes.
2.	UP or DOWN	A005	You can set the limit switch “door open” (SO) with this parameter.
3.	Enter	A005xxx *	The asterisk means that the parameter can be changed. A digit will be displayed between the code and the asterisk. This specifies the current position of the door curtain.
4.	UP or DOWN	A005xxx *	UP = move the door curtain up. DOWN = move the door curtain down.
5.	Enter	A005xxx	Validate when the door curtain is in the correct position.
6.	Wait 3 seconds to exit the programming mode and to return to normal mode or to implement other settings.		

9.4.4 Adjusting the timer before closing – A002

Step	Action	Display	Remark
1.	Enter	A000	Goes to the function that gives access to different codes.
2.	UP or DOWN	A002 2	This parameter enables the adjustment of the time setting (0–3600 s). The number in the margin displays the current waiting time (in seconds).
3.	Enter	A002 2 *	An asterisk means that the parameter can be changed.
4.	UP or DOWN	A002 xxx *	Select the delay by using the buttons.
5.	Enter	A002 xxx	Validate the selection. The asterisk will no longer be displayed.
6.	Wait 3 seconds to exit the programming mode and to return to normal mode or to implement other settings.		

9.4.5 Setting the warning before opening – A003

Step	Action	Display	Remarks
1.	Enter	A000	Goes to the function that gives access to different codes.
2.	UP or DOWN	A003 0	This parameter enables the adjustment of the time warnng before opening (0–10 s). The number in the margin displays the current waiting time (in seconds).
3.	Enter	A003 0 *	An asterisk means that the parameter can be changed.
4.	UP or DOWN	A003 x *	Select the time by using the keys.
5.	Enter	A003 x	Validate the warning before opening. The asterisk will no longer be displayed.
6.	Wait 3 seconds to exit the programming mode and to return to normal mode or to implement other settings.		

9.4.6 Setting the warning before closing – A004

Step	Action	Display	Remarks
1.	Enter	A000 *	Goes to the function that gives access to different codes.
2.	UP or DOWN	A004 0	This parameter enables the adjustment of the warning before closing (0 – 10 s). The number in the margin displays the current waiting time (in seconds).
3.	Enter	A004 0 *	An asterisk means that the parameter can be changed.
4.	UP or DOWN	A004 x *	Select the time by using the keys.
5.	Enter	A004 x	Validate the time before closing. The asterisk will no longer be displayed.
6.	Wait 3 seconds to exit the programming mode and to return to normal mode or to implement other settings.		

9.4.7 Adjust the limit switch/photocell height from the floor – A025

The photocell will be switched off when the door is closed. You can determine the height at which the photocell will be switched off with this parameter.
AO25 = photocell height (in mm) + 200
The photocell is at 300 mm.
A025 = 500.
A019 must be set to 3 to be able to adjust A025.

Step	Action	Display	Remarks
1.	Enter	Axxx	Goes to the function that gives access to different codes.
2.	UP or DOWN	A025	This parameter will enable the adjustment of the numeric value for the limit switch height.
3.	Enter	A025xxx *	An asterisk means that the parameter can be changed.
4.	UP or DOWN	A025xxx *	The numeric value specifies the height in mm from the limit switch door closed A006 position.
5.	Enter	A025	Validate. Now the asterisk will no longer be displayed.
6.	Wait 3 seconds to exit the programming mode and to return to normal mode or to implement other settings.		

9.4.8 Protection of parameters – A019

Parameters can be protected with this function that are essential for the operation of the doors: you can, thus, ensure that they cannot be accidentally changed.
If A019 = 1, parameters A005, A006 and A007 cannot be involuntarily changed. A019 must equal 0 to be able to set the limit switches.

Step	Action	Display	Remarks
1.	Enter	Axxx	Goes to the function that gives access to different codes.
2.	UP or DOWN	A019	You can set the protection of the parameters with this parameter.
3.	Enter	A019 0 *	The asterisk means that the parameter can be changed.
4.	UP or DOWN	A019 1 *	Set A019 = 1.
5.	Enter	A019 1	Validate. Now the asterisk will no longer be displayed.
6.	Wait 3 seconds to exit the programming mode and to return to normal mode or to implement other settings.		

10 Terminal bar completion sheet

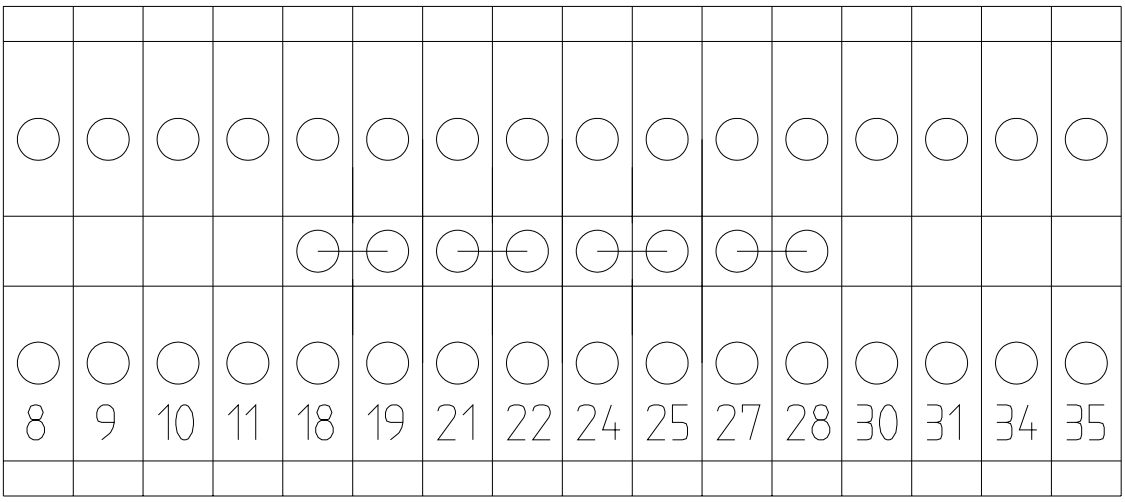


Figure 10-1: Standard terminal bar

Standard connection.	No.
Photoelectric cell E/R	8 / 9 / 10 / 11
Power 24 V AC	18 / 19
	21 / 22
Opening control “SY”	24 / 25 / 27 / 28
Opening button	30 / 31
Emergency stop “S20”	34 / 35

10.1 Registration page for terminal block options.

OPTION	No.
Three-phase switch, frontal/Three-phase frequency regulator	
Orange lights	
Auto/Manu button + closing	
Closing button	
Magnetic loop detector	
Semi-automatic opening in the event of a fault	
Automatic opening in the event of a fault	
Freezer heating cable	
Interlock A	
Interlock ON/OFF witching	
Interlock B	
Remote control receiver	
Opening photocell transmitter/receiver	
2 opening heights	
1 Supplementary photoelectric safety cell, transmitter and receiver	
Only closing manually	
Red lights - green with warning for closing	
Orange lights with warning for opening	
Emergency + reflex cell/opening stop	
Output limit switch “opening”, with NC contact	
Output limit switch “opening”, with NO contact	
Output limit switch “closing”, with NC contact	
Output limit switch “closing”, with NO contact	
Power 24V DC	
Heated control panel	
RPS relay + NO contact to terminal series “door in use”	
Switch for opening permanently	
“Cleaning” button	

11 Trouble shooting

11.1 Error codes from the frequency inverter.

	The frequency inverter will detect a large number of errors with being damaged. Usually, they have an external cause.

Faults displayed.

The cause of the fault must be removed before resetting.
Faults SOF, OHF, OLF, OSF, ObF and PHF can be reset via a logic input if this function has been configured. Faults OHF, OLF, OSF, ObF and PHF can be reset via the automatic restart function, if this function has been configured. All faults can be reset by switching the drive off then on again.

Fault	Remedy
OCF overcurrent	- Ramp too short, check the settings. - Inertia or load too high, check the size of the motor/drive/load. - Mechanical locking, check the state of the mechanism.
SCF motor short-circuit insulation fault	- Check the cables connecting the drive to the motor, and the insulation of the motor.
InF internal fault	- Check the environment (electromagnetic compatibility). - Replace the drive.
CFF configuration fault	- Return to factory settings or call up the backup configuration, if it is valid. See parameter FCS in the FUn menu.
SOF overspeed	- Instability, check the motor, gain and stability parameters. - Driving load too high, add a braking module and resistor and check the size of the motor/drive/load.
OHF drive overload	- Check the motor load, the drive ventilation and the environment. Wait for the drive to cool before restarting.
OLF motor overload	- Check the setting of the motor thermal protection, check the motor load. Wait for the drive to cool before restarting.
OSF overvoltage	- Check the line voltage.
ObF overvoltage during deceleration	- Braking too harsh or driving load. Increase the deceleration time, add a braking resistor if necessary and activate the brA function if it compatible with the application.
PHF line phase failure	This protection only operates with the drive on load. - Check the power connection and the fuses. - Reset. - Check the line supply / drive compatibility. - If there is an unbalanced load, inhibit the fault via IPL = nO (Fun menu)
USF undervoltage	- Check the voltage and the voltage parameter.
Crf charging circuit	- Replace the drive.

11.2 Deviations through the ABENPC control unit.

	The ABENPC control unit is showing a number of deviations.

Error message	Description	Probable cause	Solution
E000	No signal of the absolute encoder	Poor connection of the encoder cable Encoder card faulty	Check the connection of the cables and the encoder
E001	The moment value of the encoder is outside the S0-SF range. (with a certain tolerance for SF)	The door is outside the limit switch position	Use the JOG function (A007) to again bring the door curtain within the range Readjust the limit switch positions if required
E002	Brusque door brake	A047 braking takes too long	Reduce A047
E003	Blocked door (do not block the door)	Poor A023 adjustment (SRO)	Adjust A023<A005
E004	Blocked door	Poor A015 adjustment (S02)	Adjust A015<A005

	An intervention on the control unit is not allowed.

12 Index

13 Table of drawings

14 General diagrams

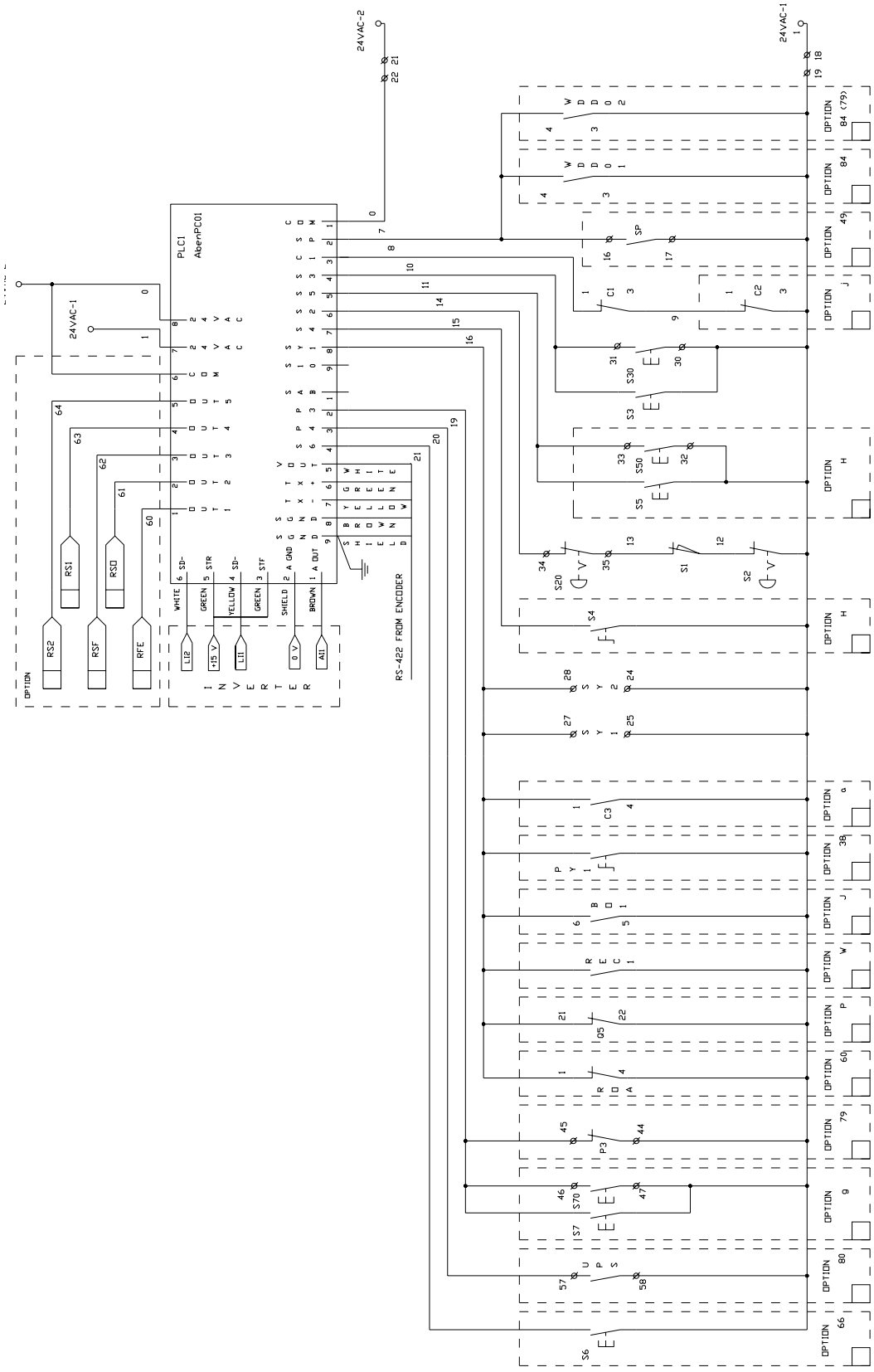


Figure 14-1: General diagram.

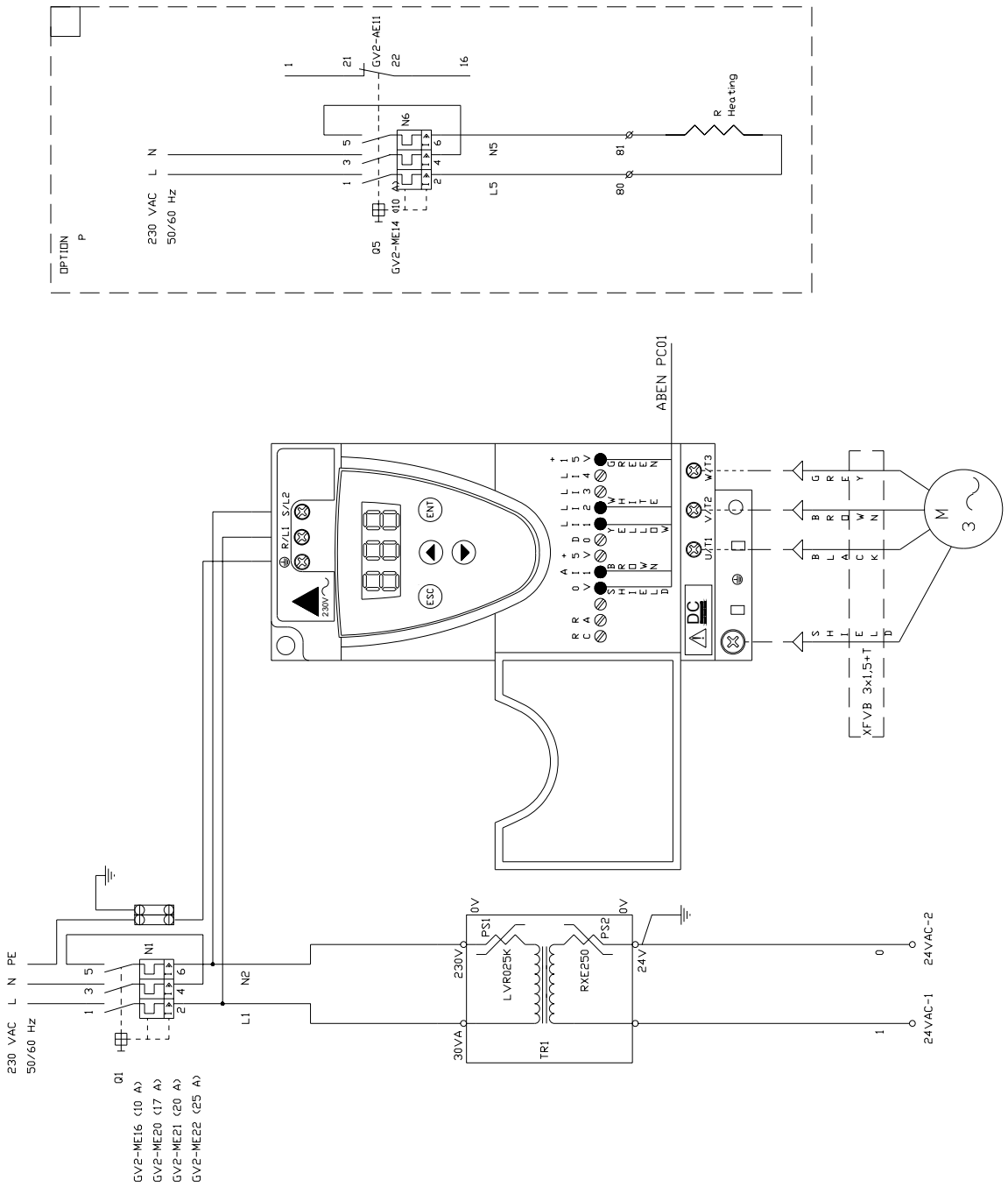


Figure 14-2: General diagram frequency inverter.