



DYNATECH

DYNAMICS AND TECHNOLOGY, S.L.

D-BOX

UNINTENDED CAR MOVEMENT CONTROL SYSTEM



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1. INTRODUCTION.

1.1 Description

This system is used for detecting any type of uncontrolled movement of the car (UCM) with the doors open. Should an uncontrolled movement occur, the safety series opens, the speed governor is locked and the safety gears are wedged.

It must be used along with a speed governor incorporating a governor rotation locking coil. The coil releases the governor while energised and locks it when de-energised.

This system compares the status of the car doors and the floor level at all times. Should it detect the car leaving the floor level with open doors, it locks the governor.

When an UCM occurs, a qualified technician is required for the installation to be operative again. Once the problem causing the UCM has been solved, the reset button must be pressed in order to restore the safety series and for the system to be operative again.


The lift controller action is not required to operate the governor coil; the system described operates directly on it.

Should a failure occur either in this contact or in the coil, which may cause a hazard, a system failure signal is activated to report to the controller. When this signal is received, the controller will prevent start-up in the following travel.



2. RISKS AND SECURITY WARNINGS

2.1 Electrical hazard

	Electrical hazard	Do not handle or open the box with its terminals connected to the electrical power supply.
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3. USE

3.1 Type of installations

They can be used:

- both in machine roomless installations and in installations with machine rooms.
- both in installations with re-levelling and in those without it.
- both in installations with door pre-opening and in those without it.

In the last two cases (installations with re-levelling or door pre-opening), in addition to the floor level signal, the unlocking zone signal will be used.

3.2 Exclusion of liability

DYNATECH DYNAMICS & TECHNOLOGY, S.L. cannot be held responsible for the damage caused due to the non-observance of any of the items in this document.

It is strictly forbidden:

To handle any element included in the box.

4. MAIN FEATURES

4.1 Technical features

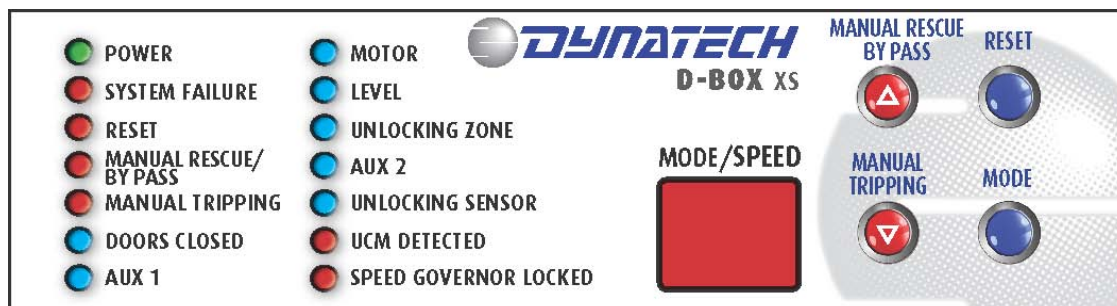
Power supply	Alternating current: 24 V _{AC} (between 22 V _{AC} and 25 V _{AC}).
	Direct current: Between 24 V _{DC} and 30 V _{DC}
Battery power	From 21 V _{DC} to 24 V _{DC} , 1 Ah
Governor unlocking electric coil power supply	24 V _{DC} ; 1 A max.
Governor unlocking sensor power supply	24 V _{DC}
Trigger delay of the control system	24ms
Door signal	From 48 V _{DC} to 240 V _{DC} From 48 V _{AC} to 240 V _{AC}
Motor signal	From 48 V _{DC} to 240 V _{DC} From 48 V _{AC} to 240 V _{AC}
Level signal	24 V _{DC}
Unlocking zone signal	24 V _{DC}
External manual rescue signal	24 V _{DC}
External reset signal	24 V _{DC}
Box's IP index of protection	D-Box XS: IP20

4.2 Operating environmental conditions

Temperature	5 - 40°C
Humidity	15 – 85% without condensation



4.3 General Description

The functions of the control buttons and general information supplied by the LEDs and the display are described below.



Control buttons:

- **RESET:** Enables the system after the first start-up, a UCM, a by-pass action or governor manual tripping.
- **MANUAL RESCUE/ BY PASS:** While activated, D-BOX does not monitor the UCM. It can be used in maintenance operations and perform a manual rescue in case of a power cut-off in the installation. While the by-pass is activated, a periodic sound will be emitted warning that the D-Box is not controlling the UCM. The by-pass function quits by pressing again the “BY-PASS / MANUAL RESCUE” button or by pressing the “RESET” button. This mode's maximum duration with batteries is 5 minutes; after that, the D-Box automatically returns to its normal operation mode. Maximum duration time of this mode with external power is indefinite.

	MAX. 5 minutes	This mode's maximum duration with batteries is 5 minutes; after that, the D-Box automatically returns to its normal operation mode. To warn about the automatic de-connection, during the last minute, it increases the sound frequency
	Applying the by-pass during the proces to disengage the safety gears	After a UCM or a manual tripping, it can be helpful to apply the by-pass, in order to prevent the locking of the overspeed governor in the opposite direction when moving the car to disengage the safety gears.

- **MANUAL TRIPPING.** It is used to lock the governor during maintenance work. It is used along with the “MODE” button and with an indication on the display to prevent the accidental or unwanted locking of the governor.

- **MODE:** It allows enabling manual tripping by combining the following actions:
 - Press “MODE” and “MANUAL TRIPPING” at the same time for three seconds, until the number 55 appears on the display “MODE/SPEED”.
 - Press (▲) 20 times until the number 75 is displayed; press “MODE”. The manual tripping LED comes on indicating that this option is enabled. From this moment on, the “MANUAL TRIPPING” button is enabled.
 - When “MANUAL TRIPPING” button is pressed, the governor will be tripped.
 - When “MANUAL TRIPPING” button is released, the governor will be unlocked.
 - To disable the Manual tripping mode and return to normal status, press “MODE” and “MANUAL TRIPPING” buttons at the same time. It can also be disabled by pressing the “RESET” button.
 - 15 minutes after the last manual tripping operation, the controller is automatically disabled.

LED indicators:

- **POWER:** Indicates that D-Box is powered either from the outside or the batteries.
- **SYSTEM FAILURE:** Indicates that the coil has an operation failure. Failure relay reports the controller about it. If this occurs, the controller must prevent a new start-up.
- **RESET:** Indicates that the reset button has been pressed for the system to be in operation again, after the first start-up or an UCM.
- **MANUAL RESCUE/ BY PASS:** Indicates that UCM control is deactivated. If an UCM occurs while in this status, the governor will not be tripped.
- **MANUAL TRIPPING.** Indicates that the governor has been manually tripped by pressing the “MANUAL TRIPPING” button.
- **DOORS CLOSED:** Indicates that the door series is closed.
- **AUX 1.** Auxiliary LED, without predetermined function.
- **MOTOR:** Indicates that the motor is in operation.
- **LEVEL:** Indicates that the car is at floor level.

- UNLOCKING ZONE: Indicates that the car is within the unlocking zone.
- AUX 2. Auxiliary LED, without predetermined function.
- UNLOCKING SENSOR: Indicates that the unlocking sensor detects that the governor is unlocked.
- UCM DETECTED: Indicates that the system has detected an uncontrolled movement (UCM) of the car. In this case, the safety line contact is open.
- SPEED GOVERNOR LOCKED: Indicates that the governor coil is not powered, therefore, the governor is locked.

MODE/ SPEED: The figures on the “MODE / SPEED” display indicate the following:

- F1: Failure in normal operation.
- F2: UCM detected.
- F3: Failure in external power supply.
- F4: Failure in coil tripping. It does not interlock when required or does not release when required.
- F5: The coil is not able to unlock the overspeed governor after an UCM or after a manual tripping.
- 0.1, 0.2,2.0: If the governor incorporates an encoder (Vega A3 Plus or Star A3 plus model), it indicates the car travelling speed.
- 75: Indicates that the manual tripping button is enabled. The moment this button is pressed, the governor will be locked and the safety gears interlocked.

4.4 Description of operation

Depending on the input signals received from the controller, it can detect uncontrolled movements and only locks the governor in these cases. It does not lock it in normal stops.

Basic operation is as follows:

It requires the following input signals from the controller:

- Doors closed
- Floor level,
- Unlocking zone (in cases of installations incorporating door pre-opening or re-levelling)
- Motor contactor

When the car reaches a floor, the floor level input is activated, the governor does not interlock and the coil continues energised. The doors open and the closed doors signal is missed. If there is a UCM, floor level input will be missed; at this moment, the safety line contact opens, the coil is de-energised and the governor locks. If there is no UCM, the doors will close and a trip will be made.

Several cases are described in more detail below:

Case 1: Reaching floor and door opening:

Floor level signal is activated, motor input and closed doors input deactivated. Governor coil continues energised and the governor unlocked. To reduce the noise and wear of the governor coil and its associated mechanical components, the governor is not locked at each floor stop.

Case 2: Door closing and operation in normal travel.

Closed door signal and motor input are activated, level input is deactivated. Governor coil continues energised and the governor unlocked.

Case 3: Out of service for more than 10 minutes.

In case of being out of service with the car stopped at floor for longer than 10 minutes, the coil will deactivate and the governor will lock. When activity is resumed (motor activation), the coil will activate and the governor will unlock. This function extends the coil's life and saves energy at night or on prolonged stops.



Case 4: Door opening with car in motion:

Closed door signal is deactivated, motor input activated, level input deactivated. Door opening may cause a cut in the safety line and the subsequent stoppage of the motor. D-Box programmes a period of time long enough (4 seconds) for the car to stop using the machine brakes, later on the governor coil de-energises and the governor interlocks. If the doors close before the programmed time, nothing will happen.

Case 5: Governor locked and unable to release

If D-Box receives a locked governor signal (lack of signal in the governor's inductive sensor) with the coil energised, the safety line opens for 10 seconds. The coil continues energised for 5 seconds. In Display Mode, indication F1 will appear (coil failure). The process is repeated seven times at maximum. If the failure persists for 7 consecutive attempts, the safety line contact will be indefinitely opened and the failure contact will report it to the controller. The "System failure" LED will also light up.

Case 6: Loss of voltage in the installation during a trip.

Closed door and motor signals are deactivated, input signal is deactivated. Voltage loss may cause a cut in the safety line and the subsequent stoppage of the motor. Batteries continue feeding the D-Box. D-Box programmes a period of time long enough (4 seconds) for the car to stop using the machine brakes, later on the governor coil de-energises and the governor interlocks. A minute after the loss of electric power, the LEDs and the display are deactivated to save the batteries' energy. If any button is pressed, the D-Box is reactivated using energy from the batteries. On regaining the external electric power, the D-Box automatically returns to normal operation mode.

Case 7: Performing the emergency operation without voltage in the installation.

Batteries continue feeding the D-Box. The governor is locked. On pressing the "BY-PASS / MANUAL RESCUE" button, the D-Box activates the governor coil, the governor unlocks and allows the rescue. While activated, the by-pass will emit a warning intermittent sound as a reminder that the governor is connected to the by-pass and is not controlling the UCM. On completing the rescue operation, press the "BY-PASS / MANUAL RESCUE" button again to restart the D-BOX's normal operation. It can also be disabled by pressing the "RESET" button.

The maximum time for the "By pass/ Manual rescue" status is 5 minutes; after that, the D-Box automatically returns to its normal status.

Case 8: Car uncontrolled movement (UCM) in installation without door pre-opening or re-levelling.

The car is stopped at floor level with the doors open. Level input is activated. Motor input is deactivated. Door inputs are deactivated. If, under these conditions, the level signal disappears, the control system considers that a UCM has occurred. The safety line opens. The coil is deactivated, the governor is locked and the safety gears are interlocked.

Case 9: Car uncontrolled movement (UCM) in installation with door pre-opening or re-levelling.

The car is stopped at floor level with the doors open. Level input is activated. Unlocking zone input is activated.

If the motor is deactivated and the car stopped, the door series will not be shorted; therefore, the closed door input is deactivated. If, under these conditions, the floor signal disappears, even though within the unlocking zone, it implies that a UCM has occurred and the safety line contact will open. The coil is deactivated, the governor is locked and the safety gears are interlocked.

If the motor is activated and the car is within the unlocking zone, the door series will be shorted; therefore, the closed door input is activated. If, under these conditions, the level signal disappears, it does not imply that a UCM has occurred but that it is releveling. Should the car leave the unlocking zone with the doors open for any reason, the safety line will no longer be shorted and the closed door signal will disappear. Under these conditions, on leaving the unlocking zone with the doors open, the control system considers that a UCM has occurred. The safety line opens. The coil is deactivated, the governor is locked and the safety gears are interlocked.

5. STORAGE

The system must be stored in a dry and cool place. It must be protected from excessive light. Never expose it to the inclemency of the weather.

Storing temperature: 5 - 40°C

Storing humidity: 15 – 85% without condensation.

6. ASSEMBLY

6.1 General indications

Only specialised and duly trained staff must carry out the assembly, electrical wiring and start-up.

The different connection terminals operate at different voltages, some of them at 24 V_{DC}, others at 240 V_{AC/DC}, etc. If 240 V are connected to a 24 V input, the D-Box will be damaged.

Protect the box and connection terminals from dust and humidity.



The system is included within a fast-fitting electric box; the box incorporates flanges on its lower side to make installation easier. In its final position, the box must be correctly secured.

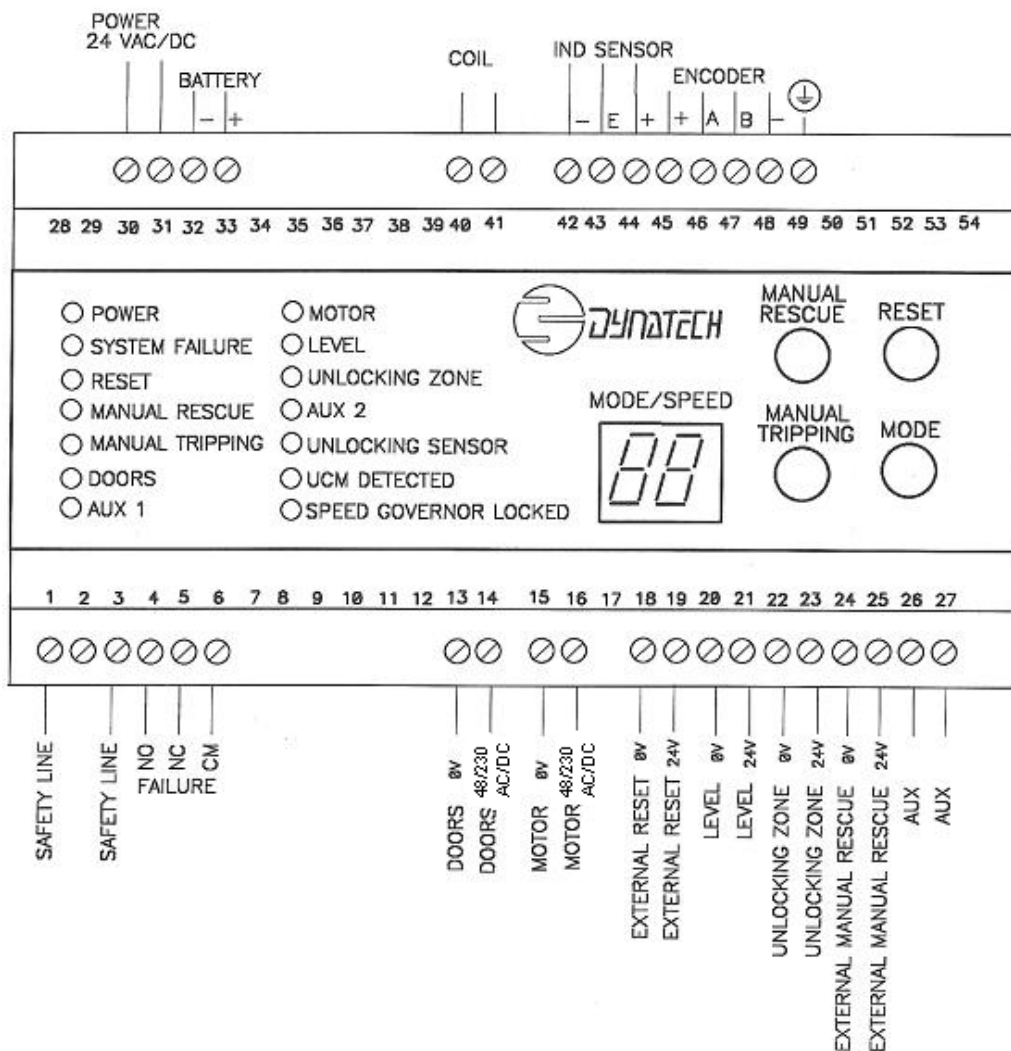
Before assembling, the box must be checked for damages during transport.

The box general dimensions are:

- Length: 157 mm
- Width: 90 mm
- Height: 71 mm

6.2 Electrical wiring

	Before carrying out the electrical wiring, check that there are no risks for the installer's safety.
	The incorporation of the UCM control may affect the lift's maintenance tasks. During the lift's maintenance processes, please bear in mind that the UCM control is connected. Maintenance personnel must bear in mind that any opening operation off floor level will cause the activation of the safety line and the locking of the governor.



Power supply:



- The system's power supply (Terminals 30-31) must be connected to a 24V_{AC/DC} source.
- Battery power (terminals 32-33). This power supply is used when the main power fails to prevent unwanted jamming.

Obligatory input signals coming from the installation:

- Door signal: Terminals 13-14. This signal indicates that the doors are closed. The car doors must be connected in series to the landing doors. The input is equipped with an optocoupler that allows using different voltages, between 48 and 230 V_{DC/AC}.
- Drive machine signal (MOTOR): Terminals 15-16. This signal indicates that the motor is running, that is to say, if there is voltage this means that the motor is running; if there is not, this means that the motor is not running at that moment. The input is equipped with an optocoupler that allows using different voltages, between 48 and 230 V_{DC/AC}.

- Level signal(LEVEL): Terminals 20-21. This signal indicates that the car is at floor level. The input must be connected to a 24 V_{DC} signal.



In installations with door pre-opening or re-levelling, instead of the level signal, the unlocking zone signal must be connected to this input.

	Important:	In installations with door pre-opening or re-levelling, the unlocking zone input must also be connected.
	Floor level information	See section 7.2 to modify the floor level and unlocking zone settings.

Optional input signals coming from the installation:

- Unlocking zone signal (UNLOCKING ZONE). Terminals 22-23. This signal indicates that the car is within the unlocking zone.

In installations without door pre-opening or re-levelling, it is not necessary to connect this input.

	Important:	In installations without door pre-opening or re-levelling, it is not necessary to connect this input.
	Unlocking zone signal	See section 7.2 to modify the floor level and unlocking zone settings.

- External manual rescue signal (EXTERNAL MANUAL RESCUE): Terminals 24-25. This signal is used for the controller to execute the instruction from By-pass or manual rescue. If there is voltage, this indicates that the governor must be unlocked and the UCM control function must be cancelled. The input requires a 24 V_{DC} signal. The use of this input is optional. In any case, the by-pass can be performed by using D-Box's "BY-PASS / MANUAL RESCUE" button.
- External reset signal(EXTERNAL RESET): Terminals 18-19. This signal is used for the controller to execute the reset instruction. If there is voltage, this indicates that the reset function must be executed. The input requires a 24 V_{DC} signal. The use of this input is optional. In any case, a reset can be made by using the D-Box's "RESET" button.


Outputs:

- Safety line contact (SAFETY LINE): Terminals 1-3. This contact is part of a safety relay that opens when an UCM is detected thus causing the safety line to open. As long as there is no UCM, this contact will be closed. In case of a lack of power supply, the contact will open thus causing the safety line to open. In case of coil failure, the contact will also open, but once the motor input is deactivated to allow the car to complete the travel being made at the moment the failure occurred. If the motor is deactivated, it immediately activates on detecting a failure in the coil.
- System failure information (SYSTEM FAILURE): Terminals 4-5-6. This output reports the controller that a failure has occurred. On detecting a failure, the normally open (NO) 4-6 contact will close and the normally closed (NC) 5-6 contact will open.

Governor elements connection:

- Governor unlocking coil. Terminals 40-41. The coil must be powered with 24 V_{DC} to operate. Coil operation releases the governor locking and allows it to rotate freely. If the coil is not powered, a spring-operated system locks the governor. If there is no electric power in the coil with the car in motion, the governor is locked and the jamming of the safety gears may occur; therefore, the use of batteries is necessary to prevent unwanted jamming in case of a power cut off in the lift.
- Inductive sensor: Terminal 42 (inductive sensor 0V_{DC} power supply), Terminal 43 (detection), Terminal 44 (inductive sensor 24 V_{DC} power supply). Inductive sensor signal: The governor incorporates an inductive sensor to check that the coil is operating properly. This signal indicates that the speed governor is unlocked, that is to say, if there is voltage, this indicates that the governor is unlocked; if there is not, this indicates that the governor is locked.
- Encoder: Terminals 45, 46, 47, 48 and 49.

The signal from the encoder is used to indicate the car's travelling speed on the display. The encoder signal does not intervene in the UCM detection. Encoder connection is optional.

	Important:	Encoder connection is optional. D-Box performs its monitoring function without requiring an encoder.
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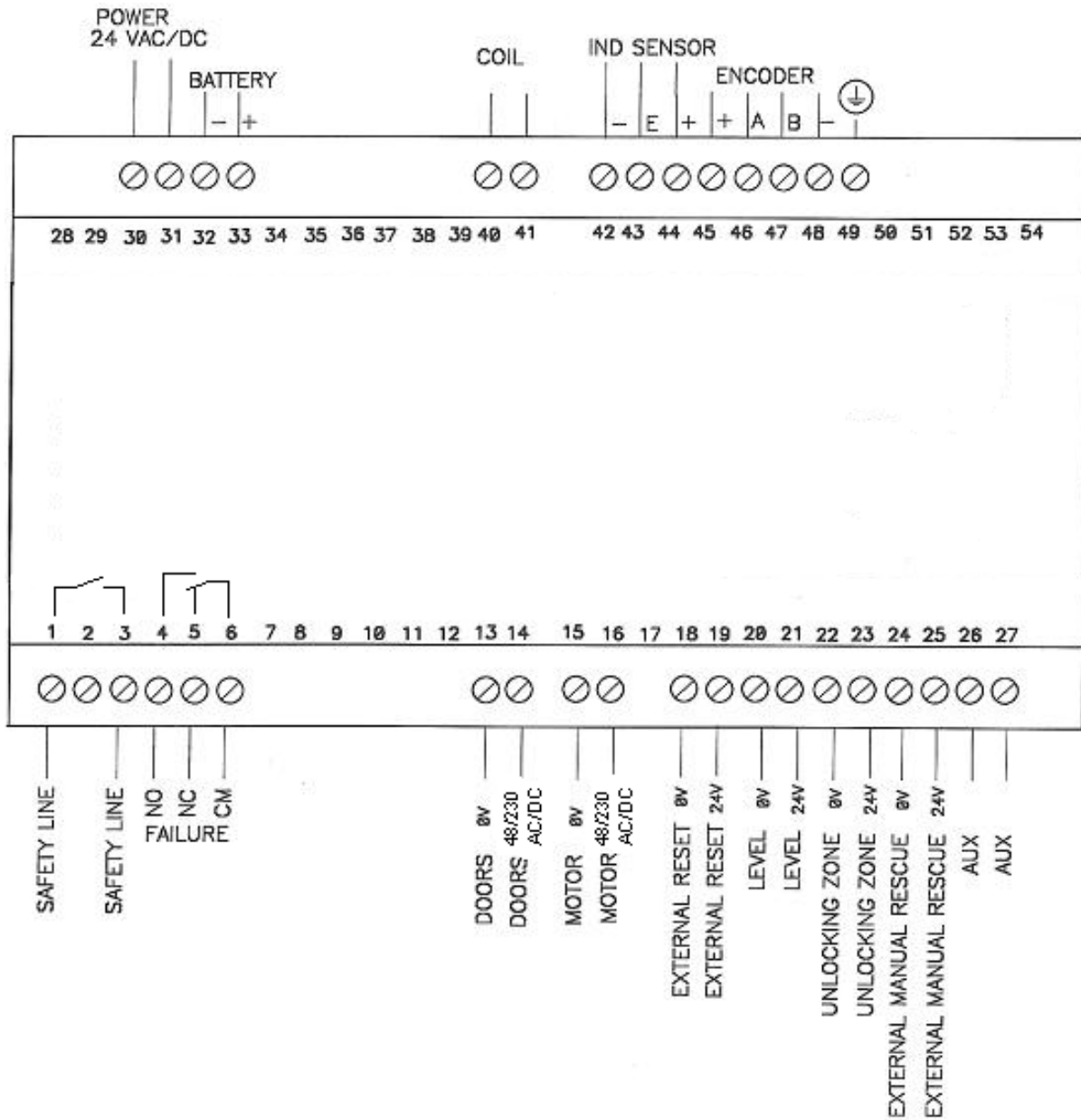
6.3 Wiring diagrams

- 1 SAFETY LINE. Safety common contact to connect the safety line.
- 2 Not used
- 3 SAFETY LINE. Contact is normally open to connect the safety line
- 4 Failure indicator normally open (NO). This contact closes in case of failure.
- 5 Failure indicator normally closed (NC). This contact opens in case of failure.
- 6 Failure indicating common switch.
- 7-12 Not used
- 13 Doors. 0 V
- 14 Doors closed. 48 V_{DC} up to 240 V_{DC} or 48 V_{AC} up to 240 V_{AC}. If there is voltage, this indicates that the door safety line is closed.
- 15 Motor. 0 V
- 16 Motor. 48 V_{DC} up to 240 V_{DC} or 48 V_{AC} up to 240 V_{AC}. If there is voltage, this indicates that the motor is in operation.
- 17 Not used
- 18 External reset. 0 V
- 19 External manual rescue. 24 V. If there is voltage, this indicates that the manual rescue or by-pass action must be executed
- 20 Level. 0 V
- 21 Level. 24 V. Depending on the settings, if there is voltage, this indicates whether it is at floor level or not.
- 22 Unlocking zone. 0 V
- 23 Unlocking zone. 24 V. Depending on the settings, if there is voltage, this indicates whether it is within the unlocking zone or not.
- 24 External manual rescue. 0 V
- 25 External manual rescue. 24 V. If there is voltage, this indicates that the manual rescue or by-pass action must be executed
- 26 Available
- 27 Available
- 28-29 Not used
- 30 24 V_{DC} or 24 V_{AC} power supply

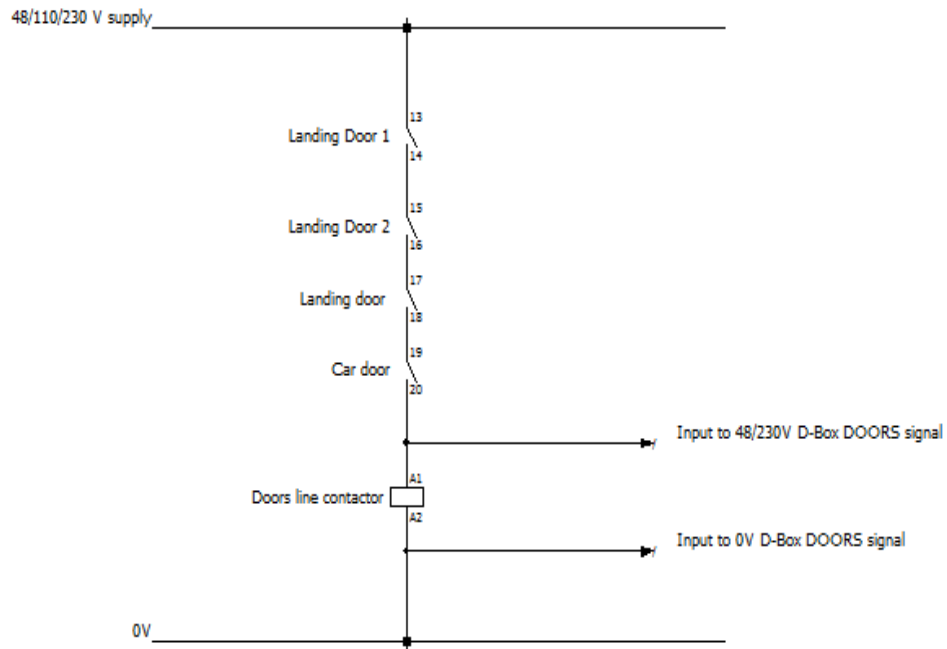


- 31 0 V power supply
- 32 Batteries. -
- 33 Batteries. +
- 34-39 Not used
- 40 Coil. 24 V_{DC}
- 41 Coil. 0 V_{DC}
- 42 Inductive sensor. Power supply, 0 V
- 43 Inductive sensor. Detection
- 44 Inductive sensor. 24 VDC power supply
- 45 Encoder. 24 VDC
- 46 Encoder. A
- 47 Encoder. B
- 48 Encoder. 0 VDC
- 49 Encoder. Screening
- 50-54 Not used

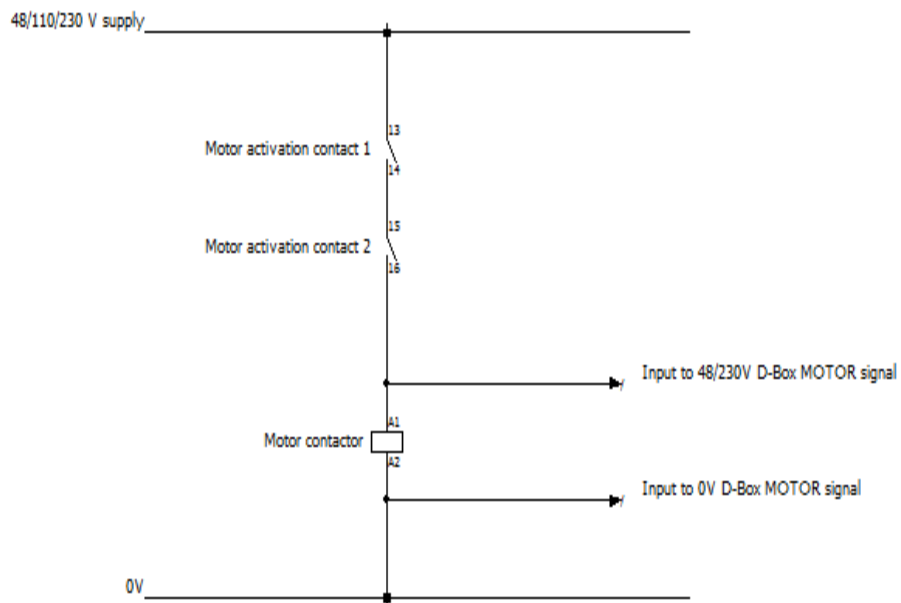
Electrical connections



Door signal connection:



Motor signal connection:



7. OPERATION REQUIREMENTS

7.1 First start-up

When carrying out the first start-up, the reset button must be pressed to restart the system.

It is not necessary to press the reset button after a power failure.

7.2 Changing the level and unlocking zone signals settings.

Some installations supply the signal of the car at floor level with 24 V and the signal of the car off floor level with 0 V. However, other installations supply the signal of the car at floor level with 0 V and that of the car off level with 24 V. The D-box can be set to adapt to both types of installations, including those incorporating an unlocking zone.

The D-Box is configured by default for installations that supply the signal of the car at floor level with 24 V, and that of the car off floor level with 0 V, and the unlocking zone, if any, with 24 V; that is to say, the original settings must be in accordance with the following table:

	Input 21		Input 23
Car at floor level	24 V _{DC}	Car within the unlocking zone, if any	24 V _{DC}
Car off floor level	0 V _{DC}	Car out of the unlocking zone, if any	0 V _{DC}

There are some installations where information about floor level or the unlocking zone, if any, is the opposite of the previous one, that is to say, in accordance with the following table:

	Input 21		Input 23
Car at floor level	0 V _{DC}	Car within the unlocking zone, if any	0 V _{DC}
Car off floor level	24 V _{DC}	Car out of the unlocking zone, if any	24 V _{DC}

Even, the possibility of connecting it to installations where floor level is with 0 V and the unlocking zone with 24 V and vice versa is considered.

The following process must be followed to consult the settings of floor level and unlocking zone:

- Press the “MODE” button for 3 seconds.
- The coded information about the input settings will appear on the display according to the following table:

Information on the display	First digit	Meaning	Second digit	Meaning, if incorporating unlocking zone
11	1	Car at floor level indicated by 24 V _{DC}	1	Car within unlocking zone indicated by 24 V _{DC}
10			0	Car within unlocking zone indicated by 0 V _{DC}
01	0	Car at floor level indicated by 0 V _{DC}	1	Car within unlocking zone indicated by 24 V _{DC}
00			0	Car within unlocking zone indicated by 0 V _{DC}

- Press the “RESET” button to exit without saving changes.


The following process must be followed to modify the original settings:

- Press the “MODE” button for 3 seconds.
- The coded information about the default settings will appear on the display: 11 (indicates LEVEL = 24 V_{DC}, UNLOCKING ZONE = 24 V_{DC})
- Press the button (▼). The coded information will appear on the display: 10 (indicates LEVEL = 24 V_{DC}, UNLOCKING ZONE = 0 V_{DC})
- Press the button (▼). The coded information will appear on the display: 01 (indicates LEVEL = 0 V_{DC}, UNLOCKING ZONE = 24 V_{DC})
- Press the button (▼). The coded information will appear on the display: 00 (indicates LEVEL = 0 V_{DC}, UNLOCKING ZONE = 0 V_{DC})

- When the target setting appears on the display, press the “MODE” button to save changes, or press the “RESET” button to exit without saving changes.

7.3 Check-up tests.

Before commissioning, the following check-up test process must be carried out, and later periodically:

	Note	The following tables are displayed for a floor level at 24 V setting. In installations with a floor level at 0 V setting, the testing process is similar, but the signals of LEVEL and UNLOCKING ZONE, if any, will be OFF instead of ON.
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Test 1. Reaching floor and door opening:

Process:

- Make a call.
- Wait for the car to reach destination and open doors.
- Check that the LEDs are in the status indicated in the following table:

LED indicator	On	Off
POWER	x	
SYSTEM FAILURE		x
RESET		x
MANUAL RESCUE/ BY PASS		x
MANUAL TRIPPING		x
DOORS CLOSED		x
AUX 1		x
MOTOR		x
LEVEL	x	
UNLOCKING ZONE	x (only if there is unlocking zone)	x (only if there is no unlocking zone)
AUX 2		x
UNLOCKING SENSOR	x	
UCM DETECTED		x
SPEED GOVERNOR LOCKED		x



Test 2. Door closing and operation in normal travel.

Process:

- Make a call.
- Check that, during the travel between floors, the LEDs are in the status indicated in the following table:

LED indicator	Iluminado	Apagado
POWER	x	
SYSTEM FAILURE		x
RESET		x
MANUAL RESCUE/ BY PASS		x
MANUAL TRIPPING		x
DOORS CLOSED	x	
AUX 1		x
MOTOR	x	
LEVEL	It will flash when going past each level during the travel	x
UNLOCKING ZONE	If there is an unlocking zone, it will flash when going past each zone during the travel.	x
AUX 2		x
UNLOCKING SENSOR	x	
UCM DETECTED		x
SPEED GOVERNOR LOCKED		x



Test 3: Performing the emergency operation without voltage in the installation.

Process:

- Cut off the lift's electrical power supply. This operation can be performed at floor, it is not necessary to take it off level.
- After 3 seconds, the governor locks.
- Press the "By-pass / manual rescue" button
- Check that the governor unlocks
- Check that the D-Box emits an intermittent sound while in "By-pass / Manual rescue" mode.
- Check that the LEDs are in the status indicated in the following table:

LED indicator	On	Off
POWER	x (flashing lighting)	
SYSTEM FAILURE	x (flashing lighting)	
RESET		x
MANUAL RESCUE/ BY PASS	x	
MANUAL TRIPPING		x
DOORS CLOSED		x
AUX 1		x
MOTOR		x
LEVEL		x
UNLOCKING ZONE		x
AUX 2		x
UNLOCKING SENSOR	x	
UCM DETECTED		x
SPEED GOVERNOR LOCKED		x

- Press the "BY-PASS / MANUAL RESCUE" button
- Check that the intermittent sound disappears
- Reconnect the lift's external electrical power supply
- Check that the D-Box returns to its normal operating status.

The maximum time for the "By pass/ Manual rescue" status with battery power is 5 minutes; after that, the D-Box automatically returns to its normal status.

Test 4: Reaching floor and inactivity for more than 10 minutes:

Process:

- Make a call and wait for 10 minutes
- Check that the LEDs are in the status indicated in the following table:

LED indicator	On	Off
POWER	x	
SYSTEM FAILURE		x
RESET		x
MANUAL RESCUE/ BY PASS		x
MANUAL TRIPPING		x
DOORS CLOSED	x (in standby, doors can either be open or closed)	x (in standby, doors can either be open or closed)
AUX 1		x
MOTOR		x
LEVEL	x	
UNLOCKING ZONE	x (only if there is unlocking zone)	x (only if there is no unlocking zone)
AUX 2		x
UNLOCKING SENSOR		x
UCM DETECTED		x
SPEED GOVERNOR LOCKED	x	

- Make a call.
- Check that the governor unlocks before the car moves and that the safety gears are not jammed.



Test 5. Uncontrolled car movement (UCM)

Process:

- Place the car at floor level with the doors open.
- Disconnect the floor level to simulate that the car leaves floor level with the doors open. In installations with floor level signal at 0 V, provide a 24 V signal to simulate that the car leaves floor level.
- On noticing that it leaves floor level with the doors open, it will detect the UCM.
- Check that the governor locks
- Check that the safety line has opened.
- Check that the LEDs are in the status indicated in the following table:

LED indicator	On	Off
POWER	x	
SYSTEM FAILURE		x
RESET		x
MANUAL RESCUE/ BY PASS		x
MANUAL TRIPPING		x
DOORS CLOSED		x
AUX 1		x
MOTOR		x
LEVEL		x
UNLOCKING ZONE		x
AUX 2		x
UNLOCKING SENSOR		x
UCM DETECTED	X (flashing lighting)	
SPEED GOVERNOR LOCKED	x	

- Reconnect the floor level signal.
- Press reset
- Check that the governor has unlocked.



8. MAINTENANCE

8.1. General maintenance indications

No specific maintenance is required, except for regular check-ups.

An operational verification test of the system will be carried out annually, according to what is described in the “check-up tests” item.

8.2 Cleaning

Never clean the box or the electrical wiring with liquids or elements that may affect the correct operation of the electrical system.

8.3 Inspections

	Installation and start-up	Revision every three months	Annual revisions
Carrying out check-up test	X		X
Coil operation		X	

8.4 Spare parts

			Replace every two years
Batteries. Replace the batteries every two years			X


You can contact either Dynatech or its authorised distributors to purchase the corresponding spare parts.

9. OPTIONS

9.1 Batteries

Batteries.	24 V _{DC} , 1Ah
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Batteries are necessary for the correct performance of the D-Box in case of lack of power supply, but they are not included in the D-Box XS, as some customers have their own batteries supplier.

	Note	Batteries are not included in the D-Box XS but they are necessary for a correct performance
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9.2 24V Safety line

Upon request, D-Box XS which can be connected to a 24 V_{AC/DC} safety line could be supplied.

CERTIFICADO

Examen de Tipo para componentes de acuerdo a
Type-Examination of components according to
EN 81-1/2:1998 + A3:2009

TÜV Rheinland Ibérica Inspection, Certification & Testing, S.A. certifica que los ensayos realizados y el diseño mencionado a continuación cumplen los requisitos de la norma descrita en la versión reseñada.
TÜV Rheinland Ibérica Inspection, Certification & Testing, S.A. hereby certifies that the test performed and the manufacture design mentioned below meet the requirements of the described Standard Version.

Propietario del Certificado: <i>Certificate holder:</i>	DYNATECH DYNAMICS & TECHNOLOGY S.L.U Pol. Ind. Pina de Ebro, Sector C, P-9 50750 - Zaragoza España (Spain)
Fabricante de la muestra ensayada: <i>Manufacturer of tested sample:</i>	DYNATECH DYNAMICS & TECHNOLOGY S.L.U Pol. Ind. Pina de Ebro, Sector C, P-9 50750 - Zaragoza España (Spain)
Descripción: <i>Description:</i>	Sistema de control de protección contra movimientos incontrolados de la cabina. <i>Control system to prevent unintended car movement.</i>
Componente: <i>Component:</i>	D-BOX Sistema de Control de movimiento Incontrolado de la Cabina <i>D-BOX Control System to prevent unintended car movement</i>
Informe nº y Fecha: <i>Test report No. and Date:</i>	33210061 (14-12-11)
Documentos Anexos a este certificado: <i>Documents annexed to this certificate:</i>	Anexo I – Datos básicos <i>Annex I – Basic Data</i>

Este certificado consta de esta portada y el anexo técnico (2 hojas). Su reproducción carece de validez si no se realiza totalmente.

This certificate consists of this main page and the technical annex (2 pages). It shall be reproduced with all its pages to be considered valid.

Este certificado perderá su validez debido a cambios de diseño, procedimiento, cambios en la legislación o en la normativa aplicable. El fabricante deberá poner en conocimiento de este Organismo Notificado cualquier cambio de diseño previsto

This certificate would lose its validity in case of design or procedure modifications, changes in the applicable law or standards. Manufacturer must communicate to this Notified Body any foreseeable change in the design

Este componente puede formar parte de un sistema de protección contra el movimiento incontrolado de la cabina. El diseñador del sistema tendrá en cuenta las notas descritas en el Anexo I relativa a la parte del elemento de parada cuando utilice este componente.

This component can be part of a protection against unintended car movement. Designer of complete system must follow the remarks on Annex I of this certificate when using this component.



Manuel Díez / Armand Hernández
Organismo Notificado N° 1027
Notified Body, ID-No. 1027

El Prat del Llobregat, 28.02.2012

TÜV Rheinland Ibérica Inspection, Certification & Testing, S.A.
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ANEXO I- Datos Básicos
Annex I – Basic Data

- | | |
|---|---|
| <p>1. Campo de aplicación
<i>Scope:</i></p> | <p>Sistema de control de protección contra movimientos incontrolados de la cabina.
<i>Control system to prevent unintended car movement.</i></p> <p>Sección 9.11 Protección contra el movimiento incontrolado de la cabina. Norma EN 81-1:1998 + A3:2009
<i>Section 9.11 Protection against unintended car movement. Standard: EN 81-1:1998+A3:2009</i></p> <p>Anexo F.8 Medios de protección del movimiento incontrolado de la cabina. Norma EN 81-1:1998 + A3:2009
<i>Annex F.8 Means of protection against unintended car movement. Standard: EN 81-1:1998+A3 :2009</i></p> |
| <p>2. Laboratorio de Ensayo:
<i>Test laboratory</i></p> | <p>Instalaciones Dynatech
Pol. Ind. Pina de Ebro, Sector C, P-9 50750 - Zaragoza</p> |
| <p>3. Informe técnico:
<i>Technical Report:</i></p> | <p>Manual de Instrucciones D-BOX
Fecha: 09-02-12 rev03</p> |
| <p>4. Características Eléctricas:
<i>Electrical Characteristics:</i></p> | <ul style="list-style-type: none">- Alimentación Eléctrica: 240V AC / 24V AC/DC- Alimentación mediante baterías: 12 VDC/24 VDC- Alimentación de la bobina eléctrica de desbloqueo del limitador: 24 VDC; 1A- Alimentación del sensor de desbloqueo del limitador: 24 VDC- Señal de puertas:
De 24 VDC hasta 240 VDC
De 24 VAC hasta 240 VAC- Señal de nivel: 24 VDC- Señal de zona de desenclavamiento: 24 VDC- Señal de rescate manual a distancia: 24 VDC- Señal de reset a distancia: 24VDC- Señal de motor:
De 24 VDC hasta 240 VDC
De 24 VAC hasta 240 VAC- Índice de protección mínimo IP de la caja: IP20- Tiempo de respuesta del sistema de control: 24ms |
| <p>5. Notas:
<i>Remarks:</i></p> | |
| <p>5.1 Es de obligatorio cumplimiento los requisitos establecidos por el fabricante. Éstos quedan descritos en el expediente técnico mediante instrucciones de instalación, mantenimiento y uso
<i>It is mandatory to fulfill the requirements established by manufacturer, are described in the technical file with instructions for installation, maintenance and use.</i></p> | |



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5.2 La ampliación del alcance establecido por este certificado consiste en los siguientes items:
The scope extension of this certificate is summarized in the following items:

- a) **La certificación afecta al sistema de control.**
This certificate includes a control system.
- b) **La capacitación como sistema de control en la aplicación dada por el art. 9.11 de la EN81-1:1998 + A3:2009, no excluye el examen de tipo o la evaluación correspondiente dentro del alcance de la norma del sistema completo UCM diseñado con el propósito de dar cumplimiento a los requisitos indicados en el artículo 9.11 por medio de los ensayos y pruebas necesarias.**

This certification regarding control system as stated in 9.11 of EN81-1:1998 + A3:2009 do not exclude type examination for the complete UCM protection system, and do not exclude such complete system of being tested.



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