



**SISTEMA DE CONTROL DEL MOVIMIENTO**

**INCONTROLADO DE LA CABINA**

**UNINTENDED CAR MOVEMENT CONTROL SYSTEM**

**SYSTÈME DE CONTRÔLE DU MOUVEMENT**

**INCONTRÔLÉ DE LA CABINE**

**KONTROLLSYSTEM FÜR UNBEABSICHTIGTE**

**FAHRKORBBEWEGUNGEN**

**D-BOX**

**INSTRUCCIONES DE USO Y MANUTENCIÓN/**

**INSTRUCTIONS FOR USE AND MAINTENANCE/**

**INSTRUCTIONS D'USAGE ET ENTRETIEN/**

**GEBRAUCHS- UND WARTUNGSANLEITUNG/**

# 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:**  
*Certificate holder:*

**DYNATECH DYNAMICS & TECHNOLOGY S.L.U**  
Pol. Ind. Pina de Ebro, Sector C, P-9  
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**Fabricante de la muestra ensayada:**  
*Manufacturer of tested sample:*

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**Descripción:**  
*Description:*

**Sistema de control de protección contra movimientos incontrolados de la cabina.**  
*Control system to prevent unintended car movement.*

**Componente:**  
*Component:*

**D-BOX Sistema de Control de movimiento Incontrolado de la Cabina**  
*D-BOX Control System to prevent unintended car movement*

**Informe n° y Fecha:**  
*Test report No. and Date:*

**33210061 (14-12-11)**

**Documentos Anexos a este certificado:**  
*Documents annexed to this certificate:*

**Anexo I – Datos básicos**  
*Annex I – Basic Data*

**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 Diez / Armand Hernández  
Organismo Notificado N° 1027  
Notified Body, ID-No. 1027

El Prat del Llobregat, 28.02.2012

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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 coil should be designed to be powered at 24V<sub>DC</sub> and use a current between 150 and 800mA while 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.


In case of using batteries as auxiliary power supply, any charging device shouldn't be connected between the batteries and the D-Box. The D-Box can charge the batteries by itself.



	<p>Important</p>	<p>Connecting a charging device between the D-Box and the batteries can start a fire inside the D-Box. For more details about how to connect the D-Box to your lift control, see the section 6.3 "Wiring diagrams".</p>
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## 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.

If the lift installation has a door pre-opening or re-levelling device, contact Dynatech for the proper installation of the D-Box in the operating control.

### 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 <sub>AC</sub> (between 22 V <sub>AC</sub> and 25 V <sub>AC</sub> ), 1,5A
	Direct current: Between 24 V <sub>DC</sub> and 30 V <sub>DC</sub> , 1,5A
Rechargeable Battery power	12 V <sub>DC</sub> , 1 Ah <sup>1</sup>
Governor unlocking electric coil power supply	24 V <sub>DC</sub> ; 800 mA max.
Governor unlocking sensor power supply	24 V <sub>DC</sub>
Trigger delay of the control system	24ms
Door signal	From 24 V <sub>DC</sub> to 230 V <sub>DC</sub> From 24 V <sub>AC</sub> to 230 V <sub>AC</sub>
Motor signal	From 24 V <sub>DC</sub> to 230 V <sub>DC</sub> From 24 V <sub>AC</sub> to 230 V <sub>AC</sub>
Level signal	24 V <sub>DC</sub>
Unlocking zone signal	24 V <sub>DC</sub>
External manual rescue signal	24 V <sub>DC</sub>
External reset signal	24 V <sub>DC</sub>
Box's IP index of protection	D-Box XS: IP20

<sup>1</sup> The battery charger has been optimised for Ni-Cd batteries. If other types of batteries are used its lifespan will be reduced. Dynatech cannot be held responsible if batteries other than the Ni-Cd type are used

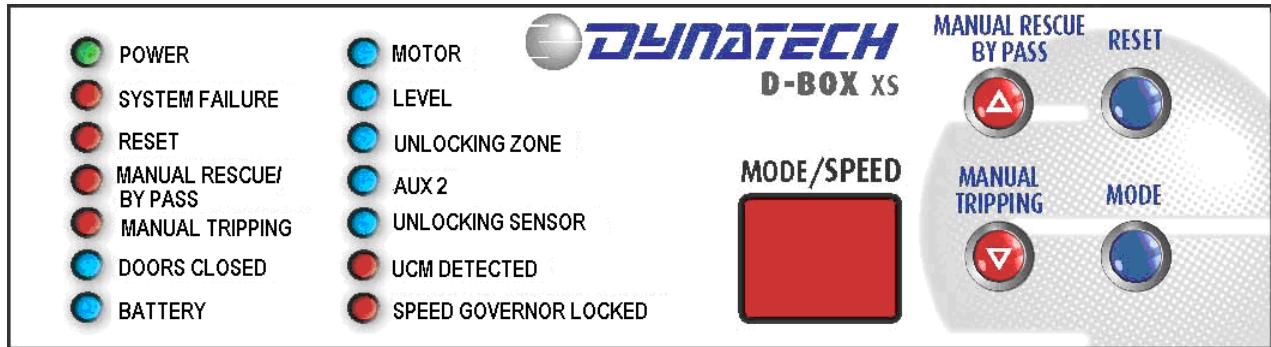


## 4.2 OPERATING ENVIRONMENTAL CONDITIONS

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<sup>2</sup>:** 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 “MANUAL RESCUE/BY-PASS” 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. If the “MANUAL RESCUE/BY-PASS” button is pressed during normal use, when the “MANUAL RESCUE/BY-PASS” button is pressed again to return to normal operation, the coil will briefly be without power, which may cause the governor to lock.

	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 process 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. **MODE<sup>3</sup>:** Allows enabling manual locking, configuring the de-energising standby time at floor level and configuring the logic of level signals and unlocking zone.

<sup>2</sup>The “RESET” function will not work when the “MOTOR” input is activated.

To activate the “MANUAL TRIPPING” mode, please observe the following steps:

- 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.

To configure the logic of the floor level signal and the unlocking zone, please observe the instructions in item “7.2. Change in the configuration of level signals and unlocking zone”.

To configure the de-energising standby time at floor level, please observe the instructions in item “7.3 Configure standby time to de-energise the coil with car at level”.

#### 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 or BATTERY FAILURE. Indicates that the battery is flat or it isn’t connected.
- 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.

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<sup>3</sup> If the “MOTOR” input is activated, the mode cannot be configured.



- 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: The governor is not released when beginning to move between floors.
- F2: UCM detected.
- F3: Failure in external power supply.
- F4: Failure in coil tripping. It does not interlock when it has to, it interlocks while moving between floors or it is not released when pressing the “MANUAL RECUE/BY-PASS” button.
- F5: The coil is not able to unlock the overspeed governor after an UCM or after a manual tripping.
- F6: The battery is flat or it isn't connected. 0.1, 0.2, ...2.0: If the governor incorporates an encoder (Vega A3 Plus model with a 500 pulse/rev. encoder), 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.

## 4.5 FAILURE DESCRIPTION

The possible failures which can be appear during the D-Box working, they possible causes and possible solutions are described in the following table:

FAILURE	CAUSE	POSSIBLE SOLUTION
F1	The parking coil cannot unlock the overspeed governor. The parking has been locked during the normal working.	Check that the anti-creep system control sensor operates correctly. If the problems persist. Check output voltage in coil terminals (terminals 40-41). This voltage should be between 30V <sub>DC</sub> and 20V <sub>DC</sub> .
F2	An UCM has been detected	Call a qualified technician to check the installation.
F3	External power supply failure	Check that the D-Box power supply is correctly connected and that voltage in its power terminals (terminals 30-31) ranges from 20 to 30V <sub>DC/AC</sub> .
F4	The parking cannot lock the overspeed governor.	Check that there aren't anything which doesn't allow the parking to fall down. Check that the anti-creep system control sensor operates correctly.
	The coil is not released by pressing "MANUAL RESCUE/BY-PASS".	Check that the anti-creep system control sensor operates correctly. Check the coil connection <sup>4</sup> .
	The current does not reach the coil while moving between floors.	Check the coil connection <sup>4</sup>
F5	The parking coil cannot unlock the overspeed governor after an UCM or the parking system cannot lock the governor after doing a manual recue.	Unwedge the safety gears. Push the RESET button and make a call. If the failure persists, in case:The coil cannot unlock the governor follow the instructions given to solve the "F1" failure. The parking system cannot lock the governor follow the instructions given to solve the "F4" failure.
F6	The battery isn't connected or it is flat.	Follow the third check-up test "Battery charge checking"

## 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

<sup>4</sup> Check the coil connection at terminals 40-41: Release the connection at terminals 40-41 and check the circuit continuity from the D-Box to the governor coil (for Dynatech parking systems, resistance between terminals must be between 42 and 52Ω).

Storing humidity: 15 – 85% without condensation.

## 6 ASSEMBLY

### 6.1 GENERAL INDICATIONS

Only specialized 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<sub>DC</sub>, others at 240 V<sub>AC/DC</sub>, 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.

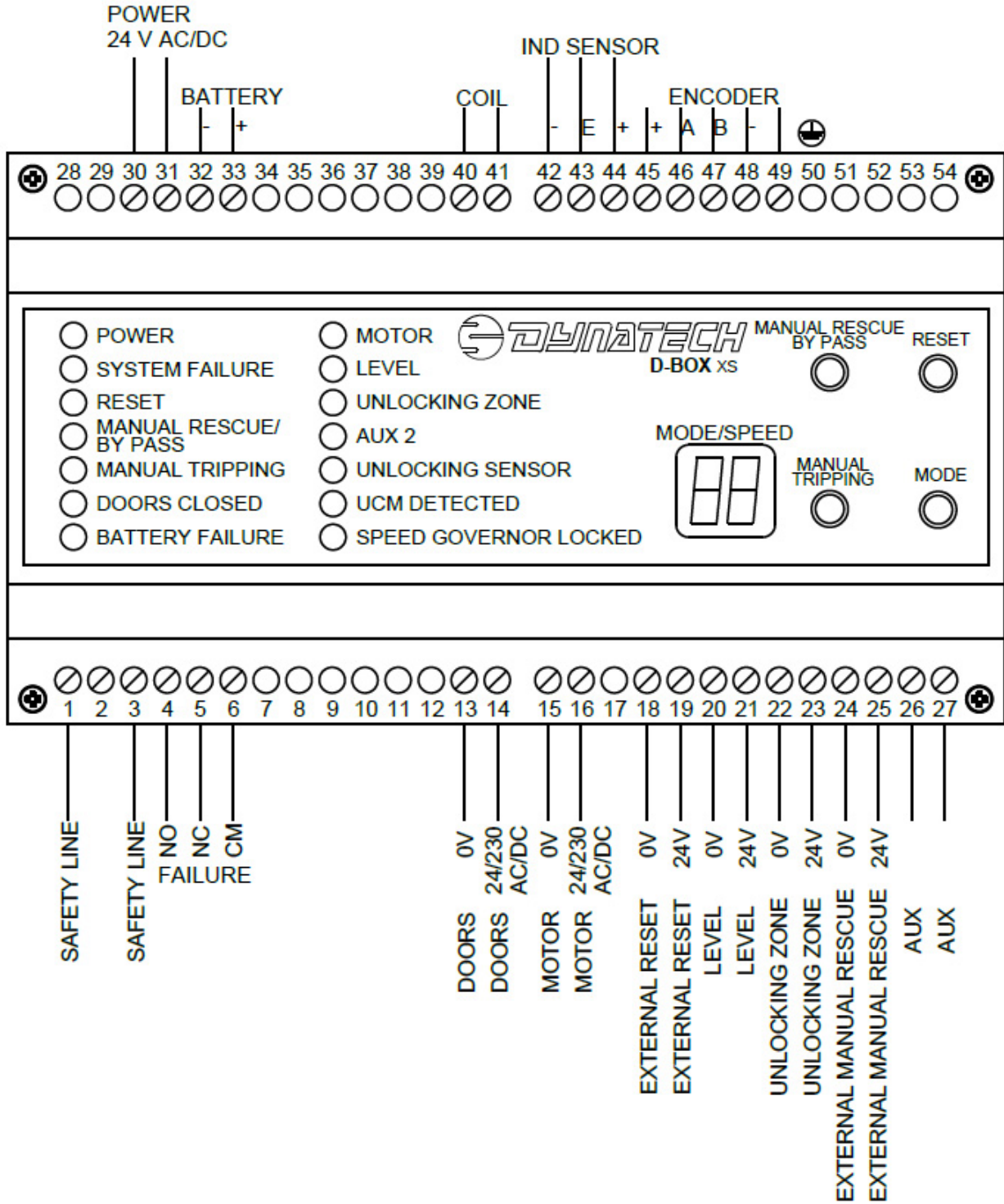
Before assembling, the box must be checked for damages during transport.

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.
	Before connecting batteries, check that the voltage in their terminals ranges from 11 to 13V.
	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<sub>AC/DC</sub> source.
- Battery power (terminals 32-33). This power supply is used when the main power fails to prevent unwanted jamming. These same terminals are responsible for charging the battery; therefore, it is not necessary to connect any additional charger. If a charger is connected between the D-Box and the batteries, the D-Box may burn.

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 24 and 230 V<sub>DC/AC</sub>.
- 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 24 and 230 V<sub>DC/AC</sub>.
- 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<sub>DC</sub> signal.




In installations with door pre-opening or re-levelling, in addition to level signal, the unlocking zone signal must be connected to their own terminals (22-23).

	Important	In installations with door pre-opening or re-levelling, the unlocking zone input must also be connected. If the lift installation has a re-levelling system, contact Dynatech
	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.
	Important	If the lift installation has a re-levelling system, contact Dynatech
	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<sub>DC</sub> signal. The use of this input is optional. In any case, the by-pass can be performed by using D-Box's MANUAL RESCUE/BY-PASS button. If this input is activated while operating with batteries, the D-Box will stop being on stand-by.
- External reset signal (EXTERNAL RESET)<sup>5</sup>: 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<sub>DC</sub> signal. The use of this input is optional. In any case, a reset can be made by using the D-Box's reset button. If this input is activated while operating with batteries, the D-Box will stop being on stand-by.

#### Outputs:

- Safety line contact (SAFETY LINE): Terminals 1 and 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<sub>DC</sub> 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<sub>DC</sub> power supply), Terminal 43 (detection), Terminal 44 (inductive sensor 24 V<sub>DC</sub> power supply). Inductive sensor signal: The governor incorporates a control 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.

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<sup>5</sup> The "RESET" function does not work when the "MOTOR" input is activated.



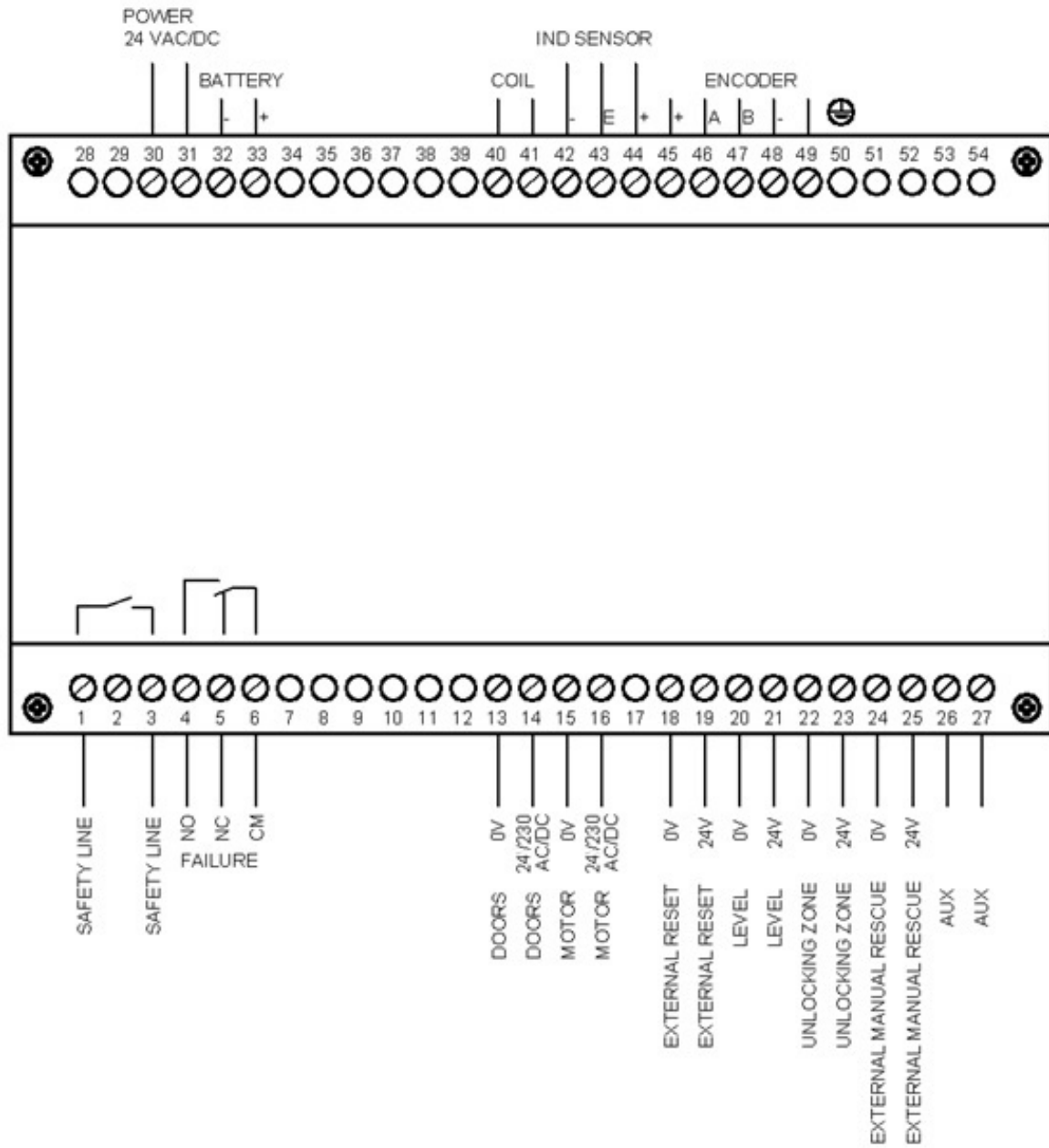
	Important	Connecting batteries is mandatory to get a proper functioning
	Important	Encoder connection is optional. D-Box performs its monitoring function without requiring an encoder.

### 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. 24 V<sub>DC</sub> up to 230 V<sub>DC</sub> or 24 V<sub>AC</sub> up to 230 V<sub>AC</sub>. If there is voltage, this indicates that the door safety line is closed.
- 15 Motor. 0 V
- 16 Motor. 24 V<sub>DC</sub> up to 230 V<sub>DC</sub> or 24 V<sub>AC</sub> up to 230 V<sub>AC</sub>. If there is voltage, this indicates that the motor is in operation.
- 17 Not used
- 18 External reset. 0 V
- 19 External reset. 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<sub>DC</sub> or 24 V<sub>AC</sub> power supply
- 31 0 V power supply
- 32 Batteries. -
- 33 Batteries. +
- 34-39 Not used
- 40 Coil. 24 V<sub>DC</sub>
- 41 Coil. 0 V<sub>DC</sub>
- 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



## 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
<b>Car at floor level</b>	24 V <sub>DC</sub>	<b>Car within the unlocking zone, if any</b>	24 V <sub>DC</sub>
<b>Car off floor level</b>	0 V <sub>DC</sub>	<b>Car out of the unlocking zone, if any</b>	0 V <sub>DC</sub>

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
<b>Car at floor level</b>	0 V <sub>DC</sub>	<b>Car within the unlocking zone, if any</b>	0 V <sub>DC</sub>
<b>Car off floor level</b>	24 V <sub>DC</sub>	<b>Car out of the unlocking zone, if any</b>	24 V <sub>DC</sub>


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.

### 7.3 CONFIGURE STANDBY TIME TO DE-ENERGISE THE COIL WITH CAR AT LEVEL.

The D-Box can modify the standby time to de-energise the coil when the car is at floor level without moving. This value is, by default, 10 minutes but it may be configured in a range from 0 seconds to 10 minutes.

### 7.4 CHECK-UP TEST PROCESS

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 or BATTERY FAILURE	x (if the battery is flat or not connected)	x (if the battery is charged and connected)
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	On	Off
POWER	x	
SYSTEM FAILURE		x
RESET		x
MANUAL RESCUE/ BY PASS		x
MANUAL TRIPPING		x
DOORS CLOSED	x	
AUX 1 or BATTERY FAILURE	x (if the battery is flat or not connected)	x (if the battery is charged and connected)
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.**Battery charge checking

This essay is necessary only in case of using the batteries as auxiliary power source.

#### **Process:**

- Make sure that the battery is rightly connected in the battery D-Box terminals.
- Check that the Battery failure LED is off. If it is on:
  - Check the battery voltage and write down this value.
  - Leave the D-Box connected to the main power source during 30 minutes.
  - When the 30 minutes has left, check again the battery voltage and compare this new value with the previous value wrote down. This new voltage should be higher than the old one. If it doesn't happen, change the batteries.

### **Test 4.**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 "MANUAL RESCUE/BY-PASS" BUTTON.
- Check that the governor unlocks.
- Check that the D-Box emits an intermittent sound while in "MANUAL RESCUE/BY-PASS" 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 or BATTERY FAILURE	x (if the battery is flat or not connected)	x (if the battery is charged and connected)
MOTOR		x
LEVEL		x
UNLOCKING ZONE		x
AUX 2		x
UNLOCKING SENSOR	x	
UCM DETECTED		x
SPEED GOVERNOR LOCKED		x

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

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

**Test 5.** Reaching floor and downtime for longer than the timing entered (by default, 10 minutes):

Process:

- Make a call and wait for longer than the programmed timing (this timing is, by default, 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 or BATTERY FAILURE	x (if the battery is flat or not connected)	x (if the battery is charged and connected)
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 6.** 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 or BATTERY FAILURE	x (if the battery is flat or not connected)	x (if the battery is charged and connected)
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 item "Check-up test process".

### 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 STORAGE AND SERVICE LIFE

The D-Box must be stored in a cool, dry place and protected from excessive light. It should never be exposed to the elements.

Storage temperature: 5-40°C

Storage humidity: 15-85%

The D-Box must remain clean to be clearly identified.

After placing the products or product packaging in layers, the storage height should be in accordance with its load and stability.

Component life may be affected by voltage or current greater than that specified in this manual, and this has not been considered in assessing the lifetime of the component. Similarly, exposure to environmental conditions different to those considered may also affect component life

### 8.4 INSPECTIONS

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

### 8.5 SPARE PARTS

			Replace every two years
Batteries			X


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

## 9 OPTIONS

### 9.1 BATTERIES

Rechargeable batteries	12 VDC, 1,5Ah
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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	The rechargeable batteries required for correct operation are not included in the D-Box XS
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