PRO LYFT

AETOS Range

PROLYTE GROUP

USER MANUAL AETOS HOIST CONTROLLERS

AETOS Hoist Controller Models:

3 phase 400 Volt:
PAE-C4DC-10
PAE-C8DC-10
PAE-C12DC-10
PAE-C4LV-10
PAE-C8LV-10
PAE-C12LV-10

3 phase 230 Volt:
PAE-C4DC-11
PAE-C8DC-11
PAE-C12DC-11
PAE-C4LV-11
PAE-C8LV-11
PAE-C12LV-11

Remote control:
PAE-C24R-10

CONGRATULATIONS
Congratulations with the purchase of your new **PRO**LYFT AETOS hoist controller.

Content of the box or flight case
You have received the hoist controller in a box or a flight case. The following should be included:
- The hoist controller.
- Manual

Before you start using the hoist controller
Before starting to use the hoist controller take care of the following:
- Check the carton box or the flight-case for any transport damage. Contact your supplier if there is any damage found.
- Check the voltage settings of the hoist controller on the sticker on the back of the controller. All hoist controllers come standard with a 400V/3ph/50Hz setting.
- Take care of the proper safety features for lifting loads.
- Enjoy using the hoist controller.

Lifting over people
The **PRO**LYFT AETOS hoist controllers are designed for controlling either Direct Control or Low Voltage Control hoists (depending on the type of controller) to lift loads in entertainment environments. In order to control hoists that are lifting or suspending loads above people extra measures (not included in the functionality of the AETOS hoist controllers) must be taken in order to create the right safety level.
These measures must be based on local regulations or on the outcome of a Risk Assessment.

1. GENERAL INFORMATION

Attention: All users must read these operating instructions carefully prior to the initial operation. These instructions are intended to acquaint the user with the hoist controller and enable him/her to use it to the full extent of its intended capabilities.
The operating instructions contain important information on how to handle the hoist controller in a safe, correct and economic way. Acting in accordance with these instructions helps to avoid dangers, reduce repair costs and downtime and to increase the reliability and lifetime of the hoist controller.
Anyone involved in doing any of the following work with the hoist controller must read the operating instructions and act accordingly:

- Operation, including preparation, trouble shooting and cleaning
- Maintenance, inspection, repair
- Transport

Apart from the operating instructions and the accident prevention act valid for the respective country and area where the hoist controller is used, also the commonly accepted regulations for safe and professional work must be adhered to.
The user is responsible for the proper and professional instruction of the operating personnel.

Suitable for entertainment use
The **PRO**LYFT AETOS hoist controllers are specially designed for use in the Entertainment industry. They must only control electric chain hoists that are suitable for use in the Entertainment industry.
Combining the hoist controller with different type of electric chain hoists might lead to unwanted, unexpected or dangerous situations.
The **PRO**LYFT AETOS hoist controllers are not designed to control hoists suspending or lifting loads above people.

Read the manual of the electric chain hoists before starting to operate them with the hoist controller.

Regulations
The accident prevention act and/or safety regulations of the respective country for using manual and electric chain hoists must be strictly adhered:

- Europe:
- Machine Directive 2006/42/EG
- Safety of Machinery NEN 12100:2010
- Germany: BGV D6, BGV D8

Additional regulations are in effect for lifting or suspending loads over people.
Germany: SQ P2
The Netherlands: NPR8020-10
United Kingdom: BS7950-1

Maintenance/Repair
In order to ensure correct operation, not only the operating instructions, but also the conditions for inspection and maintenance must be complied with. If defects are found or abnormal noise is to be heard stop using the hoist controller immediately.
Attention: Before starting to work on electrical components the power-supply is to be cut off.

2. INCORRECT OPERATION

- **Do not** exceed the rated power capacity per controlled channel.
- **Do not** lift stuck or jammed loads.
- **Do not** shortly and frequently actuate the up/down switch.
- **Do not** control hoists if the movement of the load is not visible from the operating position.
- **Do not** control hoists if you are skilled for lifting loads
- **Do not** use cables with damaged strain reliefs and/or isolation.
- **Do not** use any input- or output cables that are not suitable for the supplied voltage and / or current.
- **Do not** use the Thuja data connection (link in, link out) with other network devices unless these devices are specified to be suitable for use in the Thuja data network.
- **Do not** connect the controller to a mains connection that is not properly fused.
- **Do not** use the controller without proper grounding.
- **Do not** connect more then one hoist on a single channel.

3. ELECTRIC CONNECTIONS

All electric connections must be used with respect for the specified voltages and maximum power consumption.

Power input:
The power input connector is a 5pin CEEform connector suitable for 3 phase 32Amp / 400Volt. 3 Phases, neutral and ground.

Depending on the type of controller it can be plugged in to either a 3 phase 400V or a 3 phase 230V mains connections.

Make sure the mains connection is fused at maximum 32Amps per phase. It is advised to use circuit breakers with a C or D characteristic.

Make sure the mains connection is properly grounded. Improper grousing might lead to dangerous with the **risk of electric shock.**

Maximum power consumption per hoist.
Each hoist channel is capable of switching an electric chain hoist with maximum power consumption of 1,5kW.

Power output to the hoists
For each 4 hoist channels there is a Harting 16 output connector.

Make sure the cables (and each individual wire of the cable) connected to the output connector are suitable for minimum 10Amps at 400V per wire.

To avoid voltage drops longer cables should have bigger wire diameters.

Using local controllers (pickles) in combination with Low Voltage controlled hoists.
The Low Voltage version of the Prolyft Aetos range of controllers is NOT constantly powering the hoists. Power is only switched to the hoists when the UP or DOWN button is pressed.
This is done to avoid the use of local 1-way controllers (the so called pickles) without an Emergency stop button. Often these 1-way controllers are inserted in the control line to create a local control at the hoist.
The use of any control system without an Emergency stop function within reach of the operator is not allowed.

Wiring of the output connector:

Controllers for operating **Direct Control** hoists have the following pin setting:
Pin 01: Hoist 1, L1
Pin 02: Hoist 1, L2
Pin 03: Hoist 1, L3
Pin 04: Hoist 1, Ground
Pin 05: Hoist 2, L1
Pin 06: Hoist 2, L2
Pin 07: Hoist 2, L3
Pin 08: Hoist 2, Ground
Pin 09: Hoist 3, L1
Pin 10: Hoist 3, L2
Pin 11: Hoist 3, L3
Pin 12: Hoist 3, Ground
Pin 13: Hoist 4, L1
Pin 14: Hoist 4, L2
Pin 15: Hoist 4, L3
Pin 16: Hoist 4, Ground

Controllers for operating **Low Voltage Control** hoists have the following pin setting:
Pin 01: Power Hoist 1-4, L1
Pin 02: Power Hoist 1-4, L2
Pin 03: Power Hoist 1-4, L3
Pin 04: Power Hoist 1-4, Ground
Pin 05: Hoist 1, UP
Pin 06: Hoist 1, DOWN
Pin 07: Hoist 1, COMMON
Pin 08: Hoist 2, UP
Pin 09: Hoist 2, DOWN
Pin 10: Hoist 2, COMMON
Pin 11: Hoist 3, UP
Pin 12: Hoist 3, DOWN
Pin 13: Hoist 3, COMMON
Pin 14: Hoist 4, UP
Pin 15: Hoist 4, DOWN
Pin 16: Hoist 4, COMMON

The THUJA network connection:
The link-in and link-out connectors are THUJA data network connectors, used to link controllers together or connect them to remote control panels.

The THUJA network is based on a data-bus system combining control data, power and emergency stop.

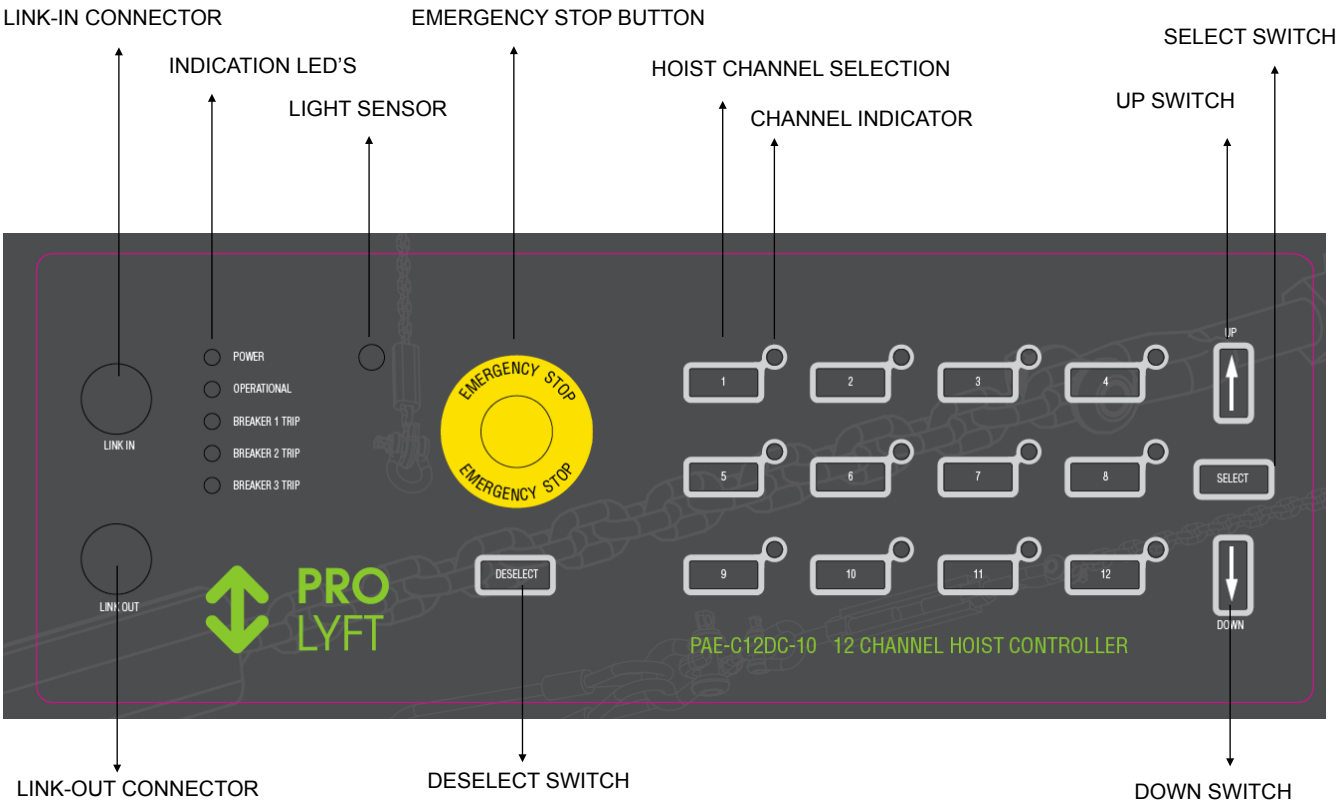
The THUJA network uses standard CAT5 cable in combination with 7pin XLR connectors.

Wiring of the THUJA network connector:
The link-in or data-in connector is a Female connector.
The link-out or data-out is a Male connector.

Pin 1: Orange,	24V (link-in), nc (link-out)
Pin 2: White/Orange,	Ground
Pin 3: Blue	E-stop
Pin 4: Green	RX2+ (link-in), TX1+ (link-out)
Pin 5: White/Green	RX2- (link-in), TX1- (link-out)
Pin 6: Brown	TX2+ (link-in), RX1+ (link-out)
Pin 7: White/Brown	TX2- (link-in), RX1- (link-out)
Shield: White/Blue	Ground

WARNING: wrong wiring of the THUJA network connector might lead to defects.

WARNING: Since the ground of the network is connected to the safety ground of the power supply a so called “ground loop” can be created. Ground loops can affect the data signal.
NEVER solve a ground loop problem by removing the controller from the safety ground of the power supply.



4. FRONT PANEL

On the front panel you will find the following items:

LINK-IN CONNECTOR:	THUJA network input connector
LINK-OUT CONNECTOR:	THUJA network output connector
INDICATION LEDS:	POWER OPERATIONAL BREAKER 1 TRIP BREAKER 2 TRIP (8 and 12 channel only) BREAKER 3 TRIP (12 channel only)
LIGHT SENSOR	Sensor measuring the environment light, in order to adjust the light output of the LED's
EMERGENCY STOP	Emergency Stop button
DESELECT SWITCH	button to deselect all selected channels at once.
CHANNEL SELECTION	individual hoist channel selection buttons
CHANNEL INDICATOR	LED indicating the status of the channel
SELECT SWITCH	button to press and hold in order to enable the select mode
UP SWITCH	Starting button to move the selected hoist(s) in the UP direction
DOWN SWITCH	Starting button to move the selected hoist(s) in the DOWN direction

5. REAR PANEL

On the rear panel you will find, from left to right:

OUTPUT CONNECTOR 1:	Output connector for hoist 1 to 4
OUTPUT CONNECTOR 2:	Output connector for hoist 5 to 8 (8 and 12 channel only)
OUTPUT CONNECTOR 1:	Output connector for hoist 9 to 12 (12 channel only)
BREAKER 1	Circuit breaker for hoist 1 to 4
BREAKER 2	Circuit breaker for hoist 5 to 8 (8 and 12 channel only)
BREAKER 3	Circuit breaker for hoist 9 to 12 (12 channel only)
POWER CONNECTOR	Mains power connector
NAME PLATE	Sticker with serial number, voltage and CE mark

6. FUNCTIONAL DESCRIPTION

Phase order detection
The controller detects automatically the order of the incoming phases. Independent of the order of the incoming phases the order of the phases on the output are always clockwise for UP and anti-clockwise for DOWN.

Circuit breakers
The circuit breakers on the rear panel are not to be used as power switches. The status of the circuit breakers can be read from the front panel LED indicators (see LED indicators)
Each circuit breaker is connected to a 4-channel output/ switch module.

Selecting hoists
In order to select a hoist or a group of hoists press and hold de SELECT button and press each HOIST CHANNEL you want to add to the selection. Pressing the HOIST CHANNEL for the second time will deselect the hoist.
The LED next to each hoist channel button indicates the selection of the hoist.
The selection can be done over all linked controllers.

Clearing the selection
Pressing the DESELECT button will deselect all selected hoists.

Starting a movement
After creating a selection (or group) of hoists the group can be moved up by pressing the UP button, or moved down by moving the DOWN button.
If controllers are linked the UP and DOWN button on the first controller will act like a MASTER UP or MASTER DOWN.

BUMP function
When a group of hoists is selected, individual hoists out of the group can be selected for adjustment (for example to raise the middle hoist on a span lifted with 3 hoists).
Press and hold the HOIST CHANNEL button of the hoist you want to adjust. The CHANNEL LED's of the other hoists out of the selection will switch off to indicate that only the hoist from which the HOIST CHANNEL button is pressed and hold is still active. Now, simultaneously, press the UP or DOWN button to adjust the hoist. After releasing the HOIST CHANNEL button to selection will jump back in to the selected group.

The BUMP function does not work over linked controllers in a Master/slave situation (will be changed in a future software version)
If a remote control is used the BUMP function works on all controllers connected to the remote.

Locking the frontpanel
The frontpanel can be locked by pressing and holding both the SELECT and DESELECT button for 5 seconds. Unlocking can be done in the same way.

Light output of the LED's
The light output of the LED's is automatically adjusted to the ambient light by the LIGHT SENSOR.

Status of the LED's
The LED INDICATORS on the front panel will show the status of the controller:

POWER

Off:	No power connected to the controller
On:	Status OK. Power is connected to the controller

BREAKER TRIP

Off:	Status OK: All phases detected on output/ switch module. No errors.
On:	No or missing phases detected on output/ switch module
Blink 1/5	Communication timeout detected by CPU
Blink 2/5	Communication timeout detected by output/switch module (bit 14)
Blink 3/5	Communication CRC fault detected by output/switch module (bit 15)
Blink 4/5	Estop validation fault
Blink 5/5	Estop equivalent fault

OPERATIONAL

On	Status OK. E-stop OK, (equivalent. output = 0x8000)
Blink 1/4	Estop fault (equivalent. output = 0xC001)
Blink 2/4	Estop fault (equivalent. output = 0xC002)
Blink 3/4	Estop fault (equivalent. output = 0xC003)
Blink 4/4	Contact feedback wait on output/switch module
Off	Else

E-stop equivalent errors are caused by a delay in one of the two E-stop circuits. Again pressing and after a few second releasing the E-stop button is often solving the problem.

Emergency Stop
The emergency stop (E-stop) button must be pressed in any unwanted or unexpected situation. The E-stop affects all linked controllers.
When the E-stop button is released the controller checks all contactors for there expected status. If a contactor has a different status then expected the E-stop circuit will detect a fault and will not release the E-stop although the button is back to its "safe" position. The operational LED will blink accordingly.

7. LINKING CONTROLLERS

Controllers can be linked with a data link cable connected from the link-out of controller 1 to the link-in of controller 2 etc. Maximum 10 controllers can be linked.
Controller 1 will act like a MASTER controller. The UP and DOWN button on this controller will operate all selected hoists on the linked controllers. Selecting and deselecting must be done on every individual controller.

8. REMOTE CONTROL

Connecting the remote control

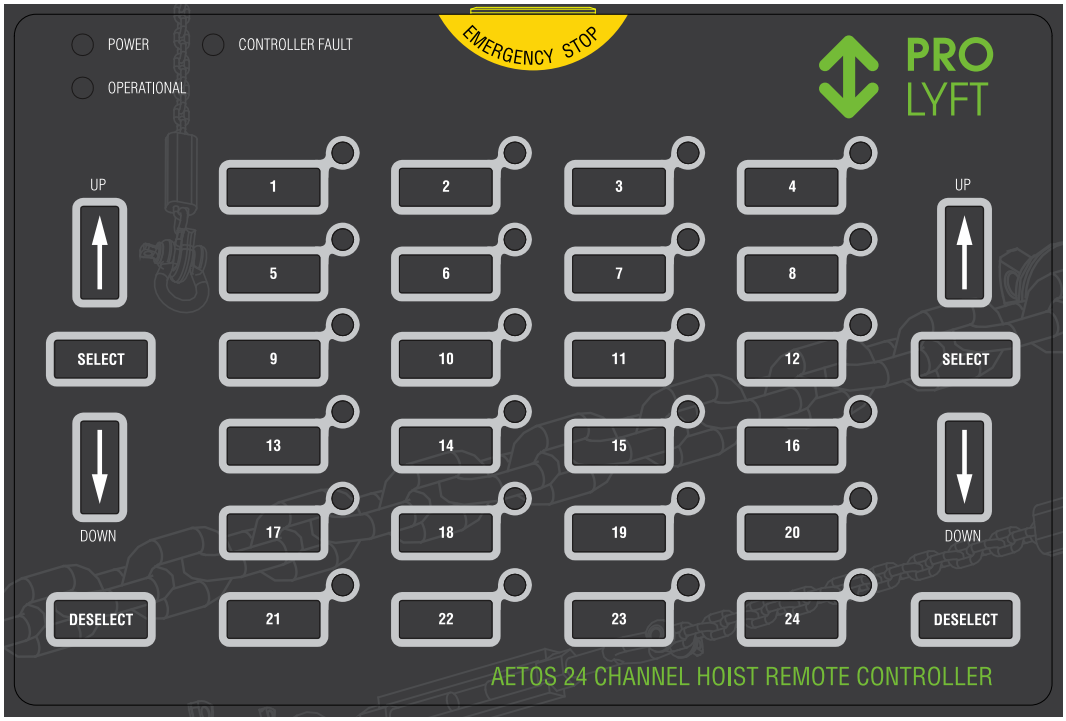
The remote control must be connected to the link-in connector of the first controller. This controller will be connected to the first channels on the remote control. Any next controller linked to the first controller will be connected to the next available channels on the remote. Up to 24 channels.

Operating from the remote control

The remote control functions in exact the same way as the frontpanels of the controllers.
The UP/DOWN/SELECT and DESELECT buttons on the left and right side have exact the same functionality. It makes it possible to make the remote left and right hand operated.
When a remote is connected, the UP/DOWN buttons on the controllers are disabled.

LED indication on remote control

Pressing any E-stop on a controller or a breaker trip on one of the controllers will cause the LED's of the affected channels to blink.



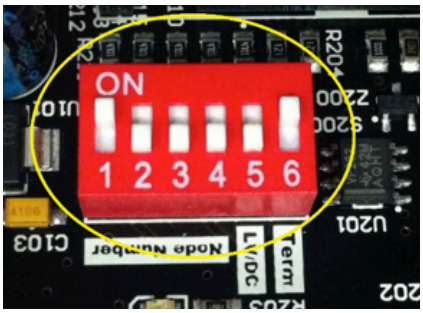
9. REPLACING AN OUTPUT / SWITCH MODULE

Every controller is equipped with 1, 2 or 3 4-channel output and switching modules. They can be either Low Voltage Control or Direct Control modules.

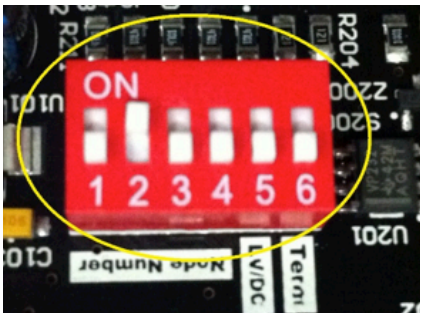
Output/switch modules can be easily replaced for repair or servicing. **Turn off power before opening the controller.** When an output/switch module is replaced the new module must be properly addressed with the dip-switches.
Addressing must be done before reconnecting the power to the controller.
On each output / switch module there are 6 dip-switches.
-Dip-switch 1 thru 4 represent the binary address setting of the module.
-Dip-switch 5 is to select DC or LV.
-Dip-switch 6 is the terminator switch.

Setting the address dip-switches:
With the front panel of the controller towards you the output / switch module on the right is no. 1, representing channel 1-4.

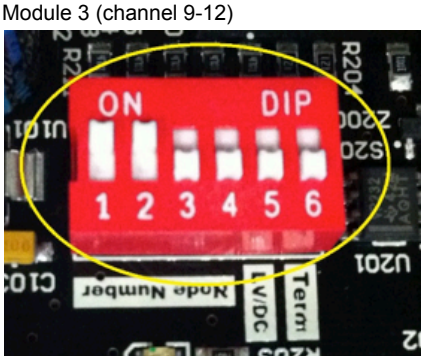
Module 1 (channel 1-4)



Module 2 (channel 5-8)



Module 3 (channel 9-12)



Setting the other dip-switches
Dip-switch no 5 is set to “off” for a DC module and set to “on” for a LV module.

Dip-switch no 6 is only set to “on” on the module at the end of the flat-cable. Normally this is the module on the right hand side. On all other modules dip-switch 6 must be set to “off”. Only 1 module can have dip-switch 6 set to “on”.

10. CHANGING FROM 400V to 208/230V

The Aetos controllers are standard configured for a 3phase 400V power supply. The controllers can be adapted to accept a power supply in the range of 208/230V.

In order to this adaptation it is only required to re-connect the internal 24V power supply (named as 250U1 in the electrical drawing) from Neutral and L1 to L2 and L1.

The controllers are suitable for both 50 and 60Hz frequencies.

It is advised to mark the controller on the outside at the mains connector or the serial number sticker to show the new voltage setting.

WARNING: Hoist running on 3x 208V will use the double amount of current compared to hoists running on 3x 400V.

11. SPECIFICATIONS

The Prolyft Aetos controllers have the following general specifications:

Power supply (standard)	400V, 3 phase, 50 or 60Hz
Power supply (after adapting)	208/230V, 3 phase, 50 or 60Hz
Voltage range	+/- 10%
Power connector	32Amp CEEform, 3ph+N+GND
Operation temperature	+5 / +30 ‘C
Storage temperature	-20 / +60 ‘C
Link in/out	Thuja network connection
Max units to be linked (without additional splitters)	6
Length of link cable	99mtr (single cable)
Max power per channel	1,5kW (400V)
Output connector	Harting 16pin
Circuit breaker (per 4 channels)	10Amp, C-characteristic

12. DIMENSIONS

All units are 19-inch cabinets
Depth from front to back is 38,6cm.
Handgrips on the front need 3cm.
Connectors on the back need 5cm minimum.
Height for 4way unit is 3HE
Height for 8 and 12 way unit is 4HE.

EC DECLARATION OF CONFORMITY
in accordance with Machinery Directive 2006/42/EC (Appendix II A)

We,

Prolyte Sales BV,
Industriepark 9
9351 PA Leek
The Netherlands

hereby declare, that the design, construction and commercialized execution of the below mentioned machine complies with the essential health and safety requirements of the EC Machinery Directive. The validity of this declaration will cease in case of any modification or supplement not being agreed with us previously.
Furthermore, validity of this declaration will cease in case that the machine will not be operated correctly and in accordance with the operating instructions and/or not be inspected regularly.

Machine description:	**Electric chain hoist controllers** PAE-C4DC-10 PAE-C8DC-10 PAE-C12DC-10 PAE-C4LV-10 PAE-C8LV-10 PAE-C12LV-10 PAE-C4DC-11 PAE-C8DC-11 PAE-C12DC-11 PAE-C4LV-11 PAE-C8LV-11 PAE-C12LV-11 **Remote control:** PAE-C24R-10
Serial number:	Serial numbers for the individual units are recorded
Relevant EC directives:	EC Machine directive 2006/42/EC Directive for Electrical Equipment 2006/95/EC
Authorized representative for technical data:	Prolyte Sales BV, Industriepark 9, 9351 PA Leek, The Netherlands www. prolyte.com, www.prolyft.com
Date of signing:	01-07-2014
Signed by:	Michiel van der Zijde Product Manager Prolyft

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Look at “service.prolyft.com” for the latest update

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Kawaguchi 332-0012

Japan:
All Creation
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Lithuania:
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9351 PA Leek

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Josink Kolkweg 18
Enschede 7545 PR

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Thorndon Quay 129-131
Wellington 6141

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Oslo N-0401

Philippines:
Stage Riggers
Katarungan St, Plainview 515
Metro Manilla 1550

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Prolight Sp. z.o.o.
Ul. 3 Maja 183
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Luzhnetskaya naberezhnaya 2/4 bld. 16
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